Smithsonian Institution National Zoological Park: A Historic Resource Analysis

September 10, 2004

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Under the supervision of Dr. Cynthia Field
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Introduction

The Zoo will shortly begin a new master planning study. Since the Faulkner Fryer Vanderpool master plan produced in 1971, it has been generally recognized that master planning at the Zoo should include a careful understanding of the Zoo’s history and historic buildings. This report is intended to provide such an understanding. A narrative of the Zoo’s hundred and ten year history has been produced, with a special focus on the evolution of the Park’s buildings, roads, landscape features, and general character. After absorbing this report it is hoped that not only will the reader understand how the Zoo achieved the physical appearance it has today, but also understand the various ideas that previous Zoo designers adopted. Such an understanding will help inform decisions for the master planning team.

The Zoo has been an official historic district since 1972. As such, there are limitations on changes that can be made to the Park. Anything that can be identified as a ‘contributor’ to the Park’s historic character should receive not only protection, but continuous preservation. It is accepted that zoological parks must necessarily change in order to provide an optimal experience to visitors. The Zoo’s overriding mission, after all, is to promote scientific investigation, educate, and provide recreation, not to preserve its historic structures. It would seem that continuous growth and adaptation to the most current methods of exhibiting animals is directly at odds with preserving the Zoo’s historic elements.

The conflict must however be resolved with compromise. The Zoo’s historic structures, by being within a district, are recognized to have an irreplaceable cultural value. Their loss would constitute a significant loss to the overall character of the Park. It is therefore imperative that any new master plan incorporate a sensitive approach to dealing with the Zoo’s historic resources. The following report shall outline the major points that the master planning team should address.

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Executive Summary

The Zoo’s buildings can be divided fairly conveniently into three separate generations of construction:

1890-1917

The first generation of designers was characterized by a nineteenth-century approach to design. Buildings were designed to be ‘picturesque’ and ‘rustic,’ reflecting the surrounding woodlands by using natural and rough materials. Because animal health was poorly understood, cages were typically cramped and unhealthy, a condition often described as ‘menagerie’-style exhibiting. Frederick Law Olmsted & Co. created several master plans for the Zoo. Olmsted was succeeded by his son, F.L.O. Jr., who worked with the Zoo until 1905. Smithsonian Secretary S.P. Langley and Zoo Director Frank Baker were also instrumental in forming the Zoo’s early appearance. Very little from this first generation survives today:
1901 Harvard Bridge
1906 Think Tank
1908 Bear Yards
1913 Stone Bridge

1928-1940

Zoo Director W.M. Mann shaped the appearance of the Zoo during this second generation. Under Mann, the Zoo’s architecture turned from a passive reflection of nature to a more active architecture; ornament was used as a communicative device. Sculpted animal forms not only indicate which type of animal is within the various houses, but the sculpture also tells the story of the animal’s evolution. The buildings are eclectic and historicist in style, but were beginning to incorporate modern features; for instance, the Elephant House was the first building at the Zoo to include adjacent moated exhibits. Much of the architecture was built with federal work-relief money. Major works constructed during this period include:
1928 Bird House (additions in 1937 and 1965)
1931 Reptile House
1937 Elephant House
1937 Small Mammal House
1937 Stone Shop Building
1940 Mane Restaurant

1960-present.

After a period of little growth, the Zoo rapidly began to modernize itself beginning in 1961 under a series of master plans. The architecture attempted to de-emphasize itself, intending for the visitor’s focus to be on the animals and nature. As a result, most of the exhibit buildings are partially underground, either built into hillsides, or with earth artificially bermed to partially conceal the building. The Great Ape House in 1980 was the last of the “de-emphasized” architecture exhibit buildings. Since 1980, the Zoo has employed various different styles. The relatively new Amazonia building follows a “post-modern” architectural style, representing a return to expressive architecture.
Nothing constructed post-1960 is a contributor to the Zoo’s historic district. Judgment on treatment for the later buildings is left to the master planning team. The most notable of the recent projects include:
1976 Lion-Tiger Hill
1977 Administration Education Building
1978 General Services Building
1980 Great Ape House
1984-1988 Olmsted Walk
1992 Amazonia
2004 Farm Exhibit

*Historic Contributors:*
The Zoo’s historic buildings can be divided into two types: primary and secondary contributors. The primary contributors are distinguished by being either of exceptional aesthetic value or by being representative of the Zoo’s development. The primary contributors should have their exterior historic appearance carefully preserved as much as possible.

*Primary Contributors:*
1906 Think Tank
1913 Stone Bridge
1931 Reptile House
1937 Elephant House
1937 Small Mammal House
1940 Mane Restaurant

Secondary contributors are structures that are equally historic as the primary contributors, but have been modified or damaged significantly over time and thereby have less historic integrity. Though not requiring strict exterior preservation, the buildings should receive a high level of sensitivity from any future master plan.

*Secondary Contributors:*
1810-1830 (circa) Holt House
1901 Harvard Road Concrete Bridge
1908 Bear Yards
1928 Bird House
1937 Stone Shop Building

Generally speaking, since the 1970’s the Zoo has done a good job of maintaining its most important historic buildings. The most important current preservation issues are:

1. Creating a ‘continuous conservation’ checklist or maintenance schedule, the details of which are discussed in ‘Future Recommendations.’

The Holt House is a special case and is discussed fully within its own chapter. As it stands, no action can be taken on the house until an engineer with experience analyzing historic brick buildings has examined the structure.
Part One: The Zoo as a Whole

Historical Development of the Zoo

Timeline
Maps
Narrative
### Timeline

*Timeline (major projects only)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Project/Building</th>
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</thead>
<tbody>
<tr>
<td>1820 (circa)</td>
<td>Holt House</td>
</tr>
<tr>
<td>1890</td>
<td>Zoo Founded</td>
</tr>
<tr>
<td>1893</td>
<td>Lion House (demolished)</td>
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<tr>
<td>1901</td>
<td>Concrete bridge at Harvard</td>
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<tr>
<td>1901</td>
<td>Large Flying Cage (demolished)</td>
</tr>
<tr>
<td>1904</td>
<td>Bear yard construction begins</td>
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<tr>
<td>1906</td>
<td>Think Tank</td>
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<tr>
<td>1908</td>
<td>Bear yards completed</td>
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<tr>
<td>1913</td>
<td>Stone-faced concrete bridge at Amazonia</td>
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<tr>
<td>1928</td>
<td>Bird House (additions in 1937 and 1965)</td>
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<tr>
<td>1931</td>
<td>Reptile House</td>
</tr>
<tr>
<td>1937</td>
<td>Small Mammal House</td>
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<tr>
<td>1937</td>
<td>Elephant House</td>
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<tr>
<td>1937</td>
<td>WPA builds several stone service buildings at the Zoo</td>
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<tr>
<td>1940</td>
<td>Mane Restaurant</td>
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<tr>
<td>1956</td>
<td>Police, Restroom, Gardener building</td>
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<tr>
<td>1965</td>
<td>Great Flight Cage</td>
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<tr>
<td>1966</td>
<td>Hoofed Stock Buildings (Australia and Panda Houses)</td>
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<tr>
<td>1969</td>
<td>Hospital Research Center</td>
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<tr>
<td>1976</td>
<td>Lion-Tiger Hill</td>
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<tr>
<td>1977</td>
<td>Bear Exhibits</td>
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<tr>
<td>1977</td>
<td>Administration Education Building</td>
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<tr>
<td>1978</td>
<td>General Services Building</td>
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<td>1979</td>
<td>Beaver Valley</td>
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<tr>
<td>1980</td>
<td>Great Ape House</td>
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<tr>
<td>1982</td>
<td>Monkey Island</td>
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<tr>
<td>1986</td>
<td>Hospital Building</td>
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<tr>
<td>1988</td>
<td>Olmsted Walk</td>
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<tr>
<td>1992</td>
<td>Amazonia</td>
</tr>
<tr>
<td>2004</td>
<td>Farm Exhibit</td>
</tr>
<tr>
<td>ref#</td>
<td>Description</td>
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<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>Connecticut Avenue Entrance - from the park's opening until 1897, the connection between the park border and Connecticut was a dirt path, nearly impassable in wet winter weather. 1897 Annual Report, 57.</td>
</tr>
<tr>
<td>2</td>
<td>Boundary Fence - 7 wooden board fence topped with 2 rows of barbed wire, constructed c. 1890-1891, designed by W.R. Emerson. 1891 Annual Report, 24, 48.</td>
</tr>
<tr>
<td>3</td>
<td>Hoofed Stock - Antelope, deer, and goats have been paddocked in this vicinity. 1889 Annual Report, 63, 1889 Map of the National Zoological Park.</td>
</tr>
<tr>
<td>4</td>
<td>Deer Paddocks - Initially built in 1891 on the E side of Rock creek. Local dogs proved hazardous at this location, and the paddocks were moved in 1894 to the W bank near the llama paddocks. The dampness there was unhealthy, and they were moved to the shown location at the W entrance in 1898. Annual Reports of 1891, 49, 1894, 68, and 1898, 63. Illustration xx, photograph of 1894 Deer Shed.</td>
</tr>
<tr>
<td>5</td>
<td>Trail - shown on 1894 Guide to the National Zoological Park by George W. Orme, not shown on later maps. Shows a more direct path to the main buildings for pedestrians.</td>
</tr>
<tr>
<td>6</td>
<td>Road Modification - kink in road is smoothed with a more gradual curve as noted 1897 for safety and ease of travel. 1891 and 1897 Annual Reports, p.48 and 56 respectively.</td>
</tr>
<tr>
<td>7</td>
<td>Path - leg that extends along beaver paddocks added in 1899. 1899 Annual Report, p.55.</td>
</tr>
<tr>
<td>9</td>
<td>Main Road - constructed in parts. In 1891, was macadamized from the Quarry road entrance to about 3,000 feet into the park. The W leg to Connecticut remained a cart track and wood road until work commenced on improving it in 1893-1894. Macadamizing began in 1896, completed in 1897. 1891 Annual Report, 48.</td>
</tr>
<tr>
<td>10</td>
<td>Buffalo House - constructed 1891, also housed elk. &quot;A novel and picturesque structure of black-oak logs admirably harmonizing with the location.&quot; Paddocks were constructed adjoining it. 1891 Annual Report, 25, 49.</td>
</tr>
<tr>
<td>11</td>
<td>Restaurant building - shown on 1899 Map of the National Zoological Park. Temporary, hastily built frame structure. Uncertain initial construction date.</td>
</tr>
<tr>
<td>12</td>
<td>Beaver creek - paddocks enclosed 1894. A second enclosure built in 1896. Macadam walk added in 1899 to allow viewing by visitors. Annual Reports of 1894, 68, 1896, 62, 1899, 55.</td>
</tr>
<tr>
<td>13</td>
<td>Octagonal Elephant Barn - timber frame structure built in 1891 to accommodate an elephant. Dink and Goldust housed within. 1891 Annual Report, 50.</td>
</tr>
<tr>
<td>14</td>
<td>Antelope House - wooden frame structure, built 1898. Site was previously occupied by the Zoo's workshop building, which was relocated a short distance E. Illustration xx. 1899 receives tin roof work, 1900 receives new crushed stone path. Annual Reports of 1898, 1899, 54, 1900, 86.</td>
</tr>
<tr>
<td>15</td>
<td>Aquarium - established in an old workshop building in 1898, tanks acquired from the Atlanta Exposition. New skylights installed in 1899. Annual Reports of 1898, 63, 1899, 54.</td>
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**ZOO DEVELOPMENT 1890-1900**
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Connecticut Avenue entrance - Joliet street built by D.C. in 1902, park entrance drive adjusted to match. 1902 Annual Report, 74-75.</td>
<td>17</td>
<td>Prairie Dog Exhibit - paddocks were completely rebuilt in 1905 to prevent escapes. Also in this area are medium sized cat cages and a condor cage (1910 Map). 1905 Annual Report, 67.</td>
</tr>
<tr>
<td>2</td>
<td>Hoofed stock paddocks - area near western entrance becomes more utilized for animal paddocks beginning in 1901, including for deer, bison, antelope, goats, moose, caribou, sheep, and yak paddocks. 1910 Map of the National Zoological Park, 1904 Annual Report, 70.</td>
<td>18</td>
<td>Bear Exhibits - construction begins in 1902 of 2 new bear yards, the old quarry location being unsuitable. By 1903, the series of 10 yards has been laid out and the area graded. Steel trellis put over pedestrian walk for shade while trees mature. 1907, 1908 4 more yards are completed. Annual Reports of 1902, 74, 1903, 67, 1905, 67, 1907, 71, 1908, 63, 1909, 58.</td>
</tr>
<tr>
<td>3</td>
<td>Flying Cage - 1901-2 a large flying cage, 158x50x50 feet is constructed. Annual Reports of 1901, 106, 1902, 23, 74.</td>
<td>19</td>
<td>Beavers, Otters - 1906 a substantial concrete culvert is built to control water in beaver area. In 1910 the area was significantly modified for new seal and sea lion pools, and the culvert was connected to the Rock Creek intercepting sewer. Annual Reports of 1906, 68, 1910, 68.</td>
</tr>
<tr>
<td>4</td>
<td>Path - 1901 old board walk from Connecticut Avenue entrance to main buildings was replaced with a macadam walk. 1901 Annual Report, 107-108.</td>
<td>20</td>
<td>Sea Lions, Seals - muddy conditions at their large pond forced their move to the pools at the quarry bear pits in 1901. 1910, first work begun on a new pool for them in the beaver area, 47x96x6 feet deep, shelter house of stone included. Annual Reports of 1901, 110, 1910, 68.</td>
</tr>
<tr>
<td>5</td>
<td>Restaurant - No significant changes. Park attendance growing beyond its capacity to serve, request for a new one first made in the 1902 Annual Report, 77.</td>
<td>21</td>
<td>Wolf and Fox yards - 1909, ten yards and dens constructed of wire fencing. Wolves and foxes had previously been kept in temporary yards near the Lion House. 1909 Annual Report, 59.</td>
</tr>
<tr>
<td>6</td>
<td>Stable and feed house - appears on 1910 map, not present on 1902 map. Likely frame construction, a stone building of large dimensions would likely appear in the annual report.</td>
<td>22</td>
<td>Public Restroom - Women's Restroom. 1914 Map of the National Zoological Park (Map xx), 1910 Map of the National Zoological Park.</td>
</tr>
<tr>
<td>7</td>
<td>Buffalo and Elk House - in 1901 the paddocks were separated by double partitions to prevent animals fighting through the fences. 1904, paddock built near Connecticut entrance due to unsanitary conditions and growth of herd, and buffalos were exhibited in both areas. Annual Reports of 1901, 107, 1904, 70.</td>
<td>23</td>
<td>Log Bridge - 1904 flooding undermined the north abutment, additional concrete added and faced with stone. Bank modified to reduce damage of future flooding. 1904 Annual Report, 71.</td>
</tr>
<tr>
<td>9</td>
<td>Octagonal Elephant House - 1902 insulated with building felt to make it more winter-worthy. 1904, modified for housing small animals. Annual Reports of 1902, 74, 1904, 70.</td>
<td>25</td>
<td>Retaining Wall - 1901 D.C. Cathedral Avenue work created bank of loose earth, retaining wall added to prevent detritus eroding onto the park's road. 1901 Annual Report, 108.</td>
</tr>
<tr>
<td>10</td>
<td>Antelope House - 1903, interior extensively modified. 1904 furnace replaced, 1908 west wall and part of north end rebuilt. 1910 a 50x50' extension built, adding 10 new stalls. Annual Reports of 1903, 68, 1904, 70, 1908, 63, 1910, 68. First request for a new antelope house made in 1908.</td>
<td>26</td>
<td>Road - the portion of Adams Mill Road in the park was regraded and resurfaced in 1901. Due to the wash, this length of road needed continual maintenance, receiving it in 1902, 1904, 1907. Annual Reports of 1901, 108, 1902, 74, 1904, 70-71, 1907, 71.</td>
</tr>
<tr>
<td>11</td>
<td>Aquarium - 1902, concrete saltwater tank added. 1903 skylights added, mirror arranged on roof to cast sunlight inside. 1908 building approaching critical dilapidation. Annual Reports of 1902, 77, 1903, 67, 1908, 63.</td>
<td>27</td>
<td>Holt House - 1901 entrance halls refinished, windows improved, a chimney rebuilt. 1902 landscaping done around the house, 1906 receives electricity. 1908 is the first time a desire appears in the annual report to move to a more centrally located building. Annual Reports of 1901, 106-7, 1902, 75, 1906, 69, 1908, 65.</td>
</tr>
<tr>
<td>12</td>
<td>Temporary Bird House - constructed in 1901 as a temporary wood frame building with stucco exterior. Skylights lit interior cages, the heating system was a hand-me-down from the Lion House. A 50x35 extension was added on to the house in 1903. In 1905 it received 2 additions and significant interior work. Annual Reports of 1901, 106, 1903, 68, 1905, 67.</td>
<td>28</td>
<td>Path, Rest House, Shelter - 1908 walk from Adams Mill entrance to the boulder footbridge constructed, replacing old wood walk. Required significant cut and plantings. The shelter and rest house were added in 1909. Annual Reports of 1908, 62-63, 1909, 59.</td>
</tr>
<tr>
<td>13</td>
<td>Llama House - received a new roof in 1907, paddocks entirely rebuilt in 1908. The old deer shed, now within the bounds of the Llama paddock, was removed in 1907. Annual Reports of 1907, 71, 1908, 63.</td>
<td>29</td>
<td>Quarry Road Bridge - 1901 old wood and steel bridge replaced by a concrete bridge. 1901 Annual Report, 107. District of Columbia managed the construction.</td>
</tr>
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<td>14</td>
<td>Shop building - 1902 received a small screen of shrubs and trees. 1906, extended for heating equipment. Partially insulated in 1907 and central heating expanded to serve more park buildings. 1910 a road was built to the coal vault. Annual Reports of 1902, 75, 1906, 68, 1907, 71-72, 1910, 68.</td>
<td>30</td>
<td>Watchman's Houses - two houses were erected for watchmen in 1910. 1910 Annual Report, 68.</td>
</tr>
<tr>
<td>15</td>
<td>Think Tank - &quot;A substantial stone structure, not unduly conspicuous, but harmonizing with the group in which it stands.&quot; Built 1904-1906. Annual Reports of 1904, 32, 1905, 27, 67, 1906, 68, 1907, 70-71.</td>
<td>31</td>
<td>Road Connection - 1903 connection to Klingle road rebuilt for a distance of 300 feet in order to match with new grade. Ford on this driveway also paved with concrete. 1903 Annual Report, 68.</td>
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<td>16</td>
<td>Lion House - 1901 roof repaired, sundial purchased by S.P. Langley set up on the front lawn. 1902 interior alligator tank replaced, fountain constructed in front. 1908 major roof repair, 1910 cages rearranged in the frame extension. Annual Reports of 1901, 106, 1902, 74, 1905, 67, 1908, 63, 1910, 68.</td>
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<tr>
<td>1</td>
<td>Connecticut Avenue entrance - 1914-1917, Zoo attempted to buy property at Connecticut entrance. Received appropriation for land purchase, but failed to acquire land due to delays. 1917 Annual Report, 85.</td>
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<td>2</td>
<td>Deer and Hooved Stock - 1911 chamois and kangaroo paddocks added, 1912 new paddocks and shelter for zebra, vicuñas, alpacas. 1914 paddle and shelter built for Arabian camels near the deer enclosures. 1918 concrete bases and walls for shelter houses were built in some of the deer paddocks. Annual Reports of 1911, 60, 1914, 83, 1918, 78.</td>
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<td>3</td>
<td>Parrot Cage - gift from John B. Henderson allowed construction of a 24x40x26' high parrot cage, completed in autumn 1912. 1913 Annual Report, 84.</td>
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<td>4</td>
<td>Restaurant - repaired, enlarged, refurbished in 1918. 1918 Annual Report, 78.</td>
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<td>5</td>
<td>Hospital - construction commenced in 1915. 1 story, stone, 30x56 feet, 3 rooms. Substantially completed and fitted out by 1917. Retaining wall built and some grading done, macadam drive connected it to the main Park road. Annual Reports of 1915, 79, 1916, 89-90, 1917, 82.</td>
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<td>6</td>
<td>Buffalo and Elk House - 1916-1917 significant regrading done in the Bison and Elk paddocks, filling a gully and lowering a hill, providing a more usable flat area. Building significantly reconstructed to house different hooved animals in 1917. Annual Reports of 1916, 90, 1917, 83.</td>
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<td>7</td>
<td>Zebra house - in 1911 a frame house for zebras, 35x35 feet, is built. 1911 Annual Report, 59.</td>
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<td>8</td>
<td>Cages - 1915, a puma cage and shelter is built near the Lion House. 1920, Oldest cages in the park, on the hill just north of the bird house, are replaced with new cages for medium-sized carnivores. Annual Reports of 1915, 78, 1920, 98.</td>
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<td>9</td>
<td>Bridge - A suspension footbridge here was becoming unsafe in 1913, and was replaced with a similar structure. 1913 Annual Report, 84.</td>
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<td>10</td>
<td>Elephants - 1913-1914 two young African elephants were installed in the frame elephant house, dislocating the occupying tapirs. A new yard and pool was built next to the new elephant house to house the tapirs. Brick elephant house has interior work done in 1918. Annual Reports of 1913, 84, 1918, 78.</td>
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<td>11</td>
<td>Cook Building - in 1913 animal food preparation moves out of the basement of the Lion House and into a new cook house. Construction had begun in 1912. Stone, 24x40 feet, one story and basement. Annual Reports of 1912, 78, and 1913, 83.</td>
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<td>12</td>
<td>Temporary Bird House - significant repairs made in 1915; wooden floor replaced with concrete, &quot;This building is an example of the ultimate costliness of cheap temporary construction.&quot; 1915 Report, 79.</td>
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<tr>
<td>13</td>
<td>Antelope House - 1911 paddocks expanded and public comfort room for men was put in the basement. In 1918, the walls are noticed to be deteriorating significantly, but nothing was able to be done. Annual Reports of 1911, 59-60, 1918.</td>
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<td>14</td>
<td>Bear Exhibits - Modified slightly in 1913, received considerable repairs in 1914. Concrete service drive added in 1916 behind the yards. Illustration xx. In 1914, some bears still housed in the old quarry, along with some chamois in a separate paddock there. 1914 Map.</td>
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<td>15</td>
<td>Wolf and Fox yards - two new yards added to the series in 1914. 1914 Annual Report, 83.</td>
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<td>16</td>
<td>Beaver Exhibits - 1912 three small enclosures for semiaquatic animals built near the otter and beaver yards, walk added to allow access. 1812 Annual Report, 78.</td>
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ZOO DEVELOPMENT 1911-1920
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<tbody>
<tr>
<td>1</td>
<td>Connecticut Avenue entrance - after failed first attempt between 1914-17, the Zoo acquires long-sought property at the Connecticut Avenue entrance in FY 1920-21. 1921 Annual Report, 96.</td>
<td>21</td>
<td>Holt House - in 1929, it is noted: &quot;The office has been painted and redecorated for the first time in 26 years.&quot; 1929 Annual Report, 91.</td>
</tr>
<tr>
<td>2</td>
<td>Hooved Stock - major paddock rearrangements in 1923 on the western side of the park: four extra large yards were constructed on the north side of a new paddock area, housing rocky mountain goats and 3 types of deer. 7 paddocks on the south side housed more hooved animals, including buffalo. The straight road through the middle is a service road only. The shelter buildings are meant to be inconspicuous. Work completed in 1924. Annual Reports of 1923, 101, and 1924, 101.</td>
<td>22</td>
<td>South Entrance gate - in 1984, $2,000 was provided for construction of a gate to the S entrance of the park. 1930 Annual Report, 84.</td>
</tr>
<tr>
<td>3</td>
<td>Bird House - construction commenced spring 1927, completed and opened in summer 1928. Exterior work and outdoor cages completed 1929. Service road from park W border built in 1927. Annual Reports of 1927,106, 1928, 109, 109, 91. Extensive grading was required to secure level ground for this building.</td>
<td>23</td>
<td>Cemetery - in 1923 the Zoo becomes concerned about the dissolution of the adjacent African American cemetery and the District's plan to construct a road through it. 1923 Annual Report, 102.</td>
</tr>
<tr>
<td>4</td>
<td>Flying cages - 1922 saw the construction of 3 outdoor cages for hawks, owls, and Australian grass parakeets. A new large flight cage, 30x60x35, was built in 1927 near the existing large flight cage. Annual Reports of 1922, 102, 1927, 106.</td>
<td>24</td>
<td></td>
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<tr>
<td>5</td>
<td>Main Road - the main road is partially widened 1921 to allow more traffic. In 1923, a completed fill project allows the rearrangement of the road into a straighter configuration. Annual Reports of 1921, 95, 1923, 101.</td>
<td>25</td>
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<tr>
<td>6</td>
<td>Restaurant - extensively rebuilt in 1924. Chiefly built from chestnut timbers salvaged from blighted park trees. Concrete chimney added in 1925. Received electrification for refrigerators in 1927. Annual Reports of 1924, 102, 1925, 98-99, and 1927.</td>
<td>26</td>
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<td>7</td>
<td>Ford - 1921 the ford near the Klingle entrance was rebuilt. 1921 Annual Report, 95.</td>
<td>27</td>
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<td>8</td>
<td>Buffalo and Elk House - No major changes.</td>
<td>28</td>
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<tr>
<td>9</td>
<td>Support buildings - two storage sheds added in 1921 and 1922. Animal warehouse building begun in 1924, completed in 1925. Annual Reports of 1921, 95, 1922, 102, 1924, 101, 1925, 98.</td>
<td>29</td>
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<tr>
<td>10</td>
<td>Elephants - enclosure for Sumatran elephants received a new guardrail in 1921. 1921 Annual Report, 95-96.</td>
<td>30</td>
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<td>11</td>
<td>Beaver Exhibits - No major changes.</td>
<td>31</td>
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<td>13</td>
<td>Bear Exhibits - Quarry (now Harvard) Road exhibits were modified in 1922. In 1924, the metal awning frames were removed from over the pedestrian walks. Annual Reports of 1922, 102, 1924, 101.</td>
<td>33</td>
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<td>14</td>
<td>Antelope House - in 1922 the entire western wall, badly deteriorated, was rebuilt, and the eastern entrance was also remodeled. 1922 Annual Report, 102. Received roof work in 1929. 1929 Annual Report, 91</td>
<td>34</td>
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<td>15</td>
<td>Temporary Bird House - by 1925, the structure was becoming dilapidated, unsafe, and required constant repairs. Demolished in 1929 to make way for the to-be constructed Reptile House. Annual Reports of 1925, 99, 1929, 90.</td>
<td>35</td>
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<td>16</td>
<td>Reptile House - construction commenced in March, 1930. 1930 Annual Report, 100.</td>
<td>36</td>
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<td>17</td>
<td>Monkey House - (formerly called the small mammal house) received hot-water heating boiler in 1921. In 1927, nearly all the interior cages were divided in two to accommodate incoming animals from the Smithsonian-Chrysler expedition. Annual Report of 1927, 106.</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Lion House - received modifications in 1927 to accommodate arrivals from the Smithsonian-Chrysler expedition, roof was partially recovered with asphalt shingles in 1929, and in 1930 the floor was becoming structurally unstable. Annual Reports of 1927, 106, 1929, 91, 1930, 102.</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Waterfowl - received maintenance work in 1924 (silt removal), 1925 (dam repair), and 1930 (cleaning). Annual Reports of 1924, 101, 1925, 98, 1930, 101.</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Property acquisition - 8,000 s.f. of land acquired here in 1923 to protect against unsightly private development. 1923 Annual Report, 102.</td>
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ZOO DEVELOPMENT 1921-1930
MAJOR PROJECTS:

ZOO DEVELOPMENT 1921-1930
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<th>ref#</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>Boundary fence and gates</strong> - 11,000 feet of chain-link fence built around the park, stone pillars built at entry gates. 1932 Annual Report, 59.</td>
<td><strong>Lion House</strong> - 1934-5, unsafe wooden floor is replaced with a concrete-terrazzo floor by the CWA. More terrazzo floor work is completed by the EWA in 1935. Annual Report of 1935, 54.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Grading</strong> - 1933 received grading work and retaining walls to prevent wash. WPA work included a major grading job of cutting down &quot;buffalo hill,&quot; roughly 80,000 cubic yards of earth. Annual Reports of 1933, 45, 1939, 76.</td>
<td><strong>Bear Exhibit</strong> - in 1940, WPA work included building a barless-moat exhibit for medium sized animals between the bear dens and the road. 1940 Annual Report, 71.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Buffalo paddocks</strong> - 1939 a large buffalo paddock is built here, 170x140-50', with a shelter 81x20'. Four additional barless paddocks are finished in 1940 by the WPA, each about 80x150'. Annual Reports of 1939, 76, and 1940, 70.</td>
<td><strong>Outdoor Cat House</strong> - EWA constructed a 15x88' stone building in 1935 to accommodate medium-sized outdoor animals, this replaced a group of old dilapidated cages. 1935 Annual Report, 19.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Wild Horse paddocks</strong> - constructed here in 1932, housing zebras, kiang, and Mongolian wild horses. Paddock, grading, and shelter building work done in 1934 by the CWA. 40x22' frame shelter added in 1935 by the EWA. Annual Reports of 1932, 60, 1934, 48, 1935, 54.</td>
<td><strong>Grading</strong> - 1933 received grading work and retaining walls to prevent wash. WPA work included a major grading job of cutting down &quot;buffalo hill,&quot; roughly 80,000 cubic yards of earth. Annual Reports of 1933, 45, 1939, 76.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Hooved paddocks</strong> - (WPA work) llama, alpaca, vicuna, and guanaco barless-pit exhibits built here in 1940 by the WPA. 1940 Annual Report, 70.</td>
<td><strong>Mane Restaurant</strong> - work began March 1940, completed fall 1940 by the PWA. &quot;Virginia Tavern&quot; type construction, concrete faced with stone. Linoleum mural on interior. 1940 Annual Report, 71.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Flying cages</strong> - 1932 an eagle cage is completed to replace the one torn down to make room for the Reptile House. Annual Reports of 1931, 116, and 1932, 60. In 1935, the EWA completed a condor cage. 1935 Annual Report, 54.</td>
<td><strong>Waterfowl Ponds</strong> - series of four waterfowl ponds were constructed by the WPA in 1940. Concrete, lined with a selection of stone to &quot;represent an ideal section of the geology of this region.&quot; 1940 Annual Report, 71.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Bird House</strong> - 1932, outdoor runs for cassowaries built S side of birdhouse, 1933, regrading work was continued with eventual plan of providing level ground for cages. 1934, CWA built a brick smokestack to replace old metal one. 1935, received some interior work by the EWA. 1937, a major addition, 43x133'; was completed and interior art was done by the Treasury Art Relief project. Annual Reports of 1932, 60, 1933, 45-46, 1934, 48, 1935, 54, 1937, 70.</td>
<td><strong>Flying cages</strong> - 1932 an eagle cage is completed to replace the one torn down to make room for the Reptile House. Annual Reports of 1931, 116, and 1932, 60. In 1935, the EWA completed a condor cage. 1935 Annual Report, 54.</td>
</tr>
<tr>
<td>8</td>
<td><strong>Exterior bird cages and runs</strong> - were constructed from 1931-1932 for various birds, including cranes, pheasant, ostriches, rhea, cassowaries, emus. 1935, the condor cage was completed under EWA work. 1939, a concrete pool was built behind by WPA workers. Annual Reports of 1931, 116, 1932, 1935, 54, 60, 1939, 76-77. Previously bird cages had been scattered about the park, now they are being grouped.</td>
<td><strong>Holt House</strong> - receives water service upgrade and a fire hydrant. 1934 Annual Repot, 48.</td>
</tr>
<tr>
<td>9</td>
<td><strong>Elephant House (new)</strong> - A PWA project. Contract work completed in June 1937. Opened to the public on October 13, 1937. &quot;Simple, well proportioned, and beautiful.&quot; Walls painted with backgrounds by artists of the Treasury Art Relief program. 1937 Annual Report, 70. The old Zebu house was on this site, must have been demolished to make room.</td>
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<td>10</td>
<td><strong>Prairie dogs</strong> - three circular enclosures built in 1935 by the WPA between the small mammal house and antelope house, housed prairie dogs, cavies, and raccoons. These filled the space left from the old elephant houses. Annual Report of 1939, 76.</td>
<td><strong>Parking</strong> - bus parking and automobile parking was improved in 1939. 1939 Annual Report, 77. Parking locations derived from 1939 map.</td>
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<td>11</td>
<td><strong>Small Mammal House</strong> - part of PWA work at the Zoo, completed and opened to the public May 1937. (Old Small Mammal House becomes Monkey House)</td>
<td><strong>Small Mammal House</strong> becomes Monkey House)</td>
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<td>12</td>
<td><strong>Elephant Houses (old)</strong> - brick 1902 and octagonal frame 1891 elephant houses both demolished in 1938 by the WPA. The new elephant house made them obsolete, the frame house was dilapidated, and the brick house inadequate. 1938 Annual report, 67.</td>
<td><strong>Support buildings</strong> - a 51x110' 2-storey stone mechanical shop and a 56x64' stone garage were both completed by 1937. In 1939, a 100x30' house for food storage was built near the wild horse paddocks and the old shop smokestack was demolished. Annual Reports of 1937, 70, 1939, 76-77.</td>
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<tr>
<td>13</td>
<td><strong>Reptile House</strong> - opened to the public on February 27, 1931. Noted as being the most popular and incorporating all the best modern features. In 1932 two murals are added to the building's interior. 1940, outdoor enclosure added on S side. Annual Reports of 1931, 18, 1932, 60, 1940, 71.</td>
<td><strong>Miscellaneous Work Relief</strong> - 1933, 178 cords of wood was cut from the Zoo's forest and given to D.C.'s poor. 1934, landscape work continued, including grading, sodding, planting, painting, and other maintenance-related improvements. The work relief organizations also significantly repaired and upgraded the Zoo's roads and walks: Annual Reports of 1933, 44-45, 1934, 48, 1935, 55, 1936, 53-54, 1939, 77, 1940, 71.</td>
</tr>
<tr>
<td>14</td>
<td><strong>Support buildings</strong> - a 51x110' 2-storey stone mechanical shop and a 56x64' stone garage were both completed by 1937. In 1939, a 100x30' house for food storage was built near the wild horse paddocks and the old shop smokestack was demolished. Annual Reports of 1937, 70, 1939, 76-77.</td>
<td><strong>Sewer and Electrical Work</strong> - the years of 1933, 36, 37, and 39 all saw water, sewer, and electric conduit work under work-relief programs, upgrading the Zoo's infrastructure significantly. Annual Reports of 1933, 44-45, 1936, 54, 1937, 70, 1939, 77.</td>
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<tr>
<td>15</td>
<td><strong>Reptile House</strong> - opened to the public on February 27, 1931. Noted as being the most popular and incorporating all the best modern features. In 1932 two murals are added to the building's interior. 1940, outdoor enclosure added on S side. Annual Reports of 1931, 18, 1932, 60, 1940, 71.</td>
<td><strong>Support buildings</strong> - a 51x110' 2-storey stone mechanical shop and a 56x64' stone garage were both completed by 1937. In 1939, a 100x30' house for food storage was built near the wild horse paddocks and the old shop smokestack was demolished. Annual Reports of 1937, 70, 1939, 76-77.</td>
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**ZOO DEVELOPMENT 1931-1940**
MAJOR PROJECTS:

ZOO DEVELOPMENT 1931-1940
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<td>2</td>
<td><strong>Seals and Sea Lions</strong> - 1950, the large sea lion pool is completely relined with concrete. 1950 Annual Report, 92.</td>
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<td>3</td>
<td><strong>Small Mammal House</strong> - 1949, concrete floors are laid in the outside cages. 1949 Annual Report, 105.</td>
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<td>4</td>
<td><strong>Antelope House</strong> - 1941 west side of house is remodeled and a giraffe cage is constructed in the building. 1941 Annual Report.</td>
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<td>5</td>
<td><strong>Reptile House</strong> - 1941, a small waterfall added to outdoor exhibit on the S side of the building. 1950, concrete paths, walks, stairs, and gutters were built to the area behind the house. Annual Reports of 1941, 78, and 1950, 92.</td>
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<td>6</td>
<td><strong>Outdoor Cat House</strong> - 6-inch concrete slabs laid between the sidewalk and cages around the stone cat houses in 1949. 1949 Annual Report, 105.</td>
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<td>7</td>
<td><strong>Plantings</strong> - azalea garden of 300 plants added on the hillside west of the restaurant. 1941 Annual Report, 79.</td>
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<tr>
<td>9</td>
<td><strong>Waterfowl ponds</strong> - four new waterfowl ponds near the old large pond completed in June 1940. The old large pond is was filled in and planned as a future parking lot and picnic area. 1941 Annual Report, 78, 79.</td>
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<tr>
<td>10</td>
<td><strong>Holt House</strong> - 1945-1948 requests are made for a new administration building. The Holt House is stated to be dilapidated and dangerous. Annual Reports of 1945, 74, 1947, 92, 1948, 94.</td>
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* **Wartime** - unusually low activity during this period is due to WW2. |
* **Poison Ivy campaign** - from the summer of 1946 through to 1953 poison ivy was battled in the public areas of the park, often with ammonium sulphate spraying.
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<tr>
<td>1</td>
<td>Hooved Stock - 50,000$ capital outlay provided in 1959 for replacing and refurbishing the hooved stock area near Connecticut. Paddocks enlarged and refenced, some fill was put in.</td>
<td>18</td>
<td>Police Building - opened to the public on March 15, 1956. Houses the Zoo police, gardener's storage, and public restrooms, designed by the Department of Buildings and Grounds of the Government of the Distric of Columbia. 1956 Annual Report, 135.</td>
</tr>
<tr>
<td>2</td>
<td>Bird House - 1953, significant cage remodeling on the interior; 34 cage's wire mesh replaced with glass. 1959, significant plaster repair done, and interior repainting, changing original color palette, and exhibits renovated. Annual Reports of 1953, 106, 1959, 187.</td>
<td>19</td>
<td>Restaurant - 1960, the murals were given a thorough cleaning by the original artist, Domenico Mortellito. &quot;They had darkened through the years, but they may now be seen in their original glowing colors.&quot; 1960 Annual Report, 170.</td>
</tr>
<tr>
<td>3</td>
<td>Flying Cage - old wooden shelters in the large outdoor flying cage replaced with brick-concrete shelters in 1952. 1957, an exhibit of trained birds of prey is begun. 1952 Annual Report, 106.</td>
<td>20</td>
<td>Waterfowl ponds - 1953-54, small concrete shelters were constructed to replace decaying wooden ones and to give the birds protection. 1953 Annual Report, 115, 1954 Annual Report, 108.</td>
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<td>4</td>
<td>Wild Horses - 1953, concrete floors were laid in the 3 shelters housing the zebras, wild horses, wild ass, and scotch cattle, 1958 the zebra paddocks were enlarged. Annual Reports of 1953, 115, and 1958, 177.</td>
<td>21</td>
<td>Lion House - 1951, received extra hot water heaters. 1954-55, roof was significantly repaired, 19 metal skylights were reconstructed and set with copper flanshing, new gutters installed. A heat-regulating device was also installed. Annual Reports of 1951, 116, 1954, 107-108, 1955, 122.</td>
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<tr>
<td>5</td>
<td>Grading - 1955, earth was being received to fill the area across from the Elephant House. Used as a parking lot until the fill settled, later planned to receive paddocks. This fill and the fill between the Hay barn and incinerator completed in 1959. Annual Reports of 1955 and 1959, 188.</td>
<td>22</td>
<td>Monkey House - 1951 received hot water heaters, 1953 received exterior cage modifications, 1960, received rewiring and new lighting. Annual Reports of 1951, 116, 1955, 122, 1960, 170.</td>
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<td>8</td>
<td>Wolf and Fox yards - were extensively repaired in 1951. 1951 Annual Report.</td>
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<td>9</td>
<td>Seal and Sea Lions - 1955, six enclosures here were abandoned due to the inability to keep them in repair. Funds were available by 1959, and construction commenced on new enclosures and pools here. Annual Reports of 1955 and 1959, 188.</td>
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<td>10</td>
<td>Small Mammal House - electric water heaters added in 1951, zone heat regulators added in 1953 for the comfort and well-being of the animals. Two young gorillas kept here received significant cage alterations to better accommodate them in 1956. Annual Reports of 1951, 116, 1953, 115, 1956, 136.</td>
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<td>11</td>
<td>Cages - 1952, four old cages replaced with brick-concrete shelters. 1953, five more (the rest) are replaced with cinder-block shelters. Annual Reports of 1952, 106, 1953, 115.</td>
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<td>12</td>
<td>Service Road - leg from the sheep mountain to the basement of the Reptile House built in 1959. Allowed park vehicles to separate from the public traffic. 1959 Annual Report, 188.</td>
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<td>13</td>
<td>Llama House - &quot;A shelter, constructed in 1893 for a small herd of llamas and used in recent years for elk, was remodeled into a stable for the three police horses.&quot; 1960 Annual Report, 170.</td>
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<td>14</td>
<td>Reptile House - receives extra hot water heaters in 1951. A 2,000 gallon water tank added to the basement in 1953. Heating zone regulators added in 1953 for better care of animals. Unfinished basement space pressed into service in 1958, and an insect-raising room set up. 1959, the original glass at the top of all the permanent cages was replaced with wire screening to allow better ventilation. The whole building is re-wired in 1960. Annual Reports of 1951, 116, 1953, 115, 1958, 178, 1959, 188, 1960, 170.</td>
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<tr>
<td>16</td>
<td>Bear exhibits - new bear cages were added in 1951 to the line of cages N of the Reptile House, in 1952 the bear cage between the Monkey House and Lion House was remodeled. In 1953, the meat behind the main bear exhibit was faced with concrete. Annual Reports of 1951, 115, 1952, 106, 1953, 115.</td>
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<td>17</td>
<td>Clock - A four-faced clock, originally located at F Street near Thirteenth was installed here in 1965. A gift from Elton Howe, a local clocksmith. 1956 Annual Report.</td>
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**ZOO DEVELOPMENT 1951-1960**
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<td>1</td>
<td>Main Road  - work started on major changes to the main road in 1963, completed in 1964.</td>
<td>Waterfowl and Monkey exhibit - 1961, monkey island added to the middle of the waterfowl pond. 1961 Annual Report.</td>
</tr>
<tr>
<td>6</td>
<td>Bird House - 1963, bird house receives significant remodeling. Re-opened to the public on February 14th, 1965. Exterior work completed in 1968. &quot;With new planting and decoration it looks even lovelier than before.&quot;</td>
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<td>7</td>
<td>Elephant House - the giraffe cage was significantly renovated and thoroughly cleaned in 1962 to prepare it for newly-received Masai giraffes. 1962 Annual Report.</td>
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<td>11</td>
<td>Bear exhibits - in 1961-63, the main line of dens was refurbished. New concrete floors, copings, gutters, partition walls, and iron work were installed, old concrete walls, floor slabs, and pools were demolished. In 1968, Smokey Bear's den had large glass windows replace some of the steel bars. Annual Reports of 1961, 176, 1962, 177, 1963, 141, 1968, 418.</td>
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<td>12</td>
<td>Antelope House - temporarily houses birds in 1963 while the bird house is being remodeled, demolished in 1968. Annual Reports of 1963 and 1968, 418.</td>
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<td>15</td>
<td>Gibbons - exhibit for gibbons constructed in area adjacent to the Lion House in 1963. 12x40' cage. 1963 Annual Report, 141.</td>
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**ZOO DEVELOPMENT 1961-1970**
MAJOR PROJECTS:

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<td>3</td>
<td>Hoofed Stock - the large hooved animals were destroying the plant life in their paddocks, planting efforts could not ameliorate the situation and in 1976 many large animals are replaced with more delicate, less-destructive species. Annual Report of 1976, 130.</td>
<td>North American Animals Exhibit - small collection of native american animal exhibits connected with a meandering path, included jaguars, pumas, raccoons, prairie dogs, and wolverines. Constructed 1979-1980. Annual Reports of 1979, 122-123, 1980, 123. The old puma house was demolished in 1975.</td>
<td>18</td>
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<tr>
<td>4</td>
<td>Great Pandas - two pandas were received from the People's Republic of China in 1972. The eastern delicate hooved stock building becomes their home. The building was renovated in 1972 upon their arrival, and in 1979 received HVAC work. 1972 Annual Report, 72.</td>
<td>Mane Restaurant - extensively renovated in 1976. 1976 Annual Report, 130.</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>Bird House - modifications to exterior exhibits begun in 1975, interior renovations begun in 1976. On the exterior, bird runs are increased in size (reducing total amount) and more water features are added to allow natural nesting conditions. The interior is renovated to demonstrate relationships between species. 1979, new owl and eagle flying cages were added on the exterior grounds. Annual Reports of 1975, 120, 1976, 121, 1977, 60, 1979, 123.</td>
<td>Lion House - demolished in 1974 to make way for a modern lion exhibit. 1974 Annual Report, 105.</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Flight Cage - Demolished in 1975.</td>
<td>Lion Exhibit - constructed 1974-1976. Named in honor of the late Zoo director William M. Mann and dedicated on May 25, 1976. Uses modern principals of Zoo design, with large moats containing the animals and allowing the public a clear view to them. Annual Reports of 1975, 119, 1976, 121.</td>
<td>21</td>
</tr>
<tr>
<td>7</td>
<td>Elephant House - receives extensive renovation between 1974-1976, modernizing the exterior exhibits with more open and larger enclosures for the animals. 1976, interior renovation begins.</td>
<td>Small Mammal/Monkey House/Think-Tank - received renovations in 1974, replacing old cage glass with safer glass. Cages were also increased in size and given corresponding exterior enclosures. Annual Reports of 1974, 105, 1975, 121.</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>Cheetah Exhibit - cheetahs moved to this location in 1974 to give them a much larger area for running. 1974 Annual Report, 106.</td>
<td>Nutrition Laboratory - one of the old shop buildings is renovated in 1980 to house a nutrition laboratory. 1980 Annual Report, 128.</td>
<td>24</td>
</tr>
<tr>
<td>11</td>
<td>Old Bear Exhibit - old bear line is renovated 1977-1978. Moats replace bars. All bear exhibits are now grouped close together and are similar in appearance. 1978 Annual Report, 79.</td>
<td>shovel services Building - the largest single project in the Zoo's redevelopment program, the building consolidates all of the Zoo's maintenance facilities and provides additional parking. Construction 1976-1978. Annual Reports of 1976, 130, 1978, 79. Despite its massive footprint, it is well hidden from regular zoo visitors.</td>
<td>14</td>
</tr>
<tr>
<td>12</td>
<td>Great Ape House - constructed 1979-1980 on the empty grounds of the 1890 and 1903 elephant houses. Same architectural style as the administration building. Annual Reports of 1979, 122, 1980, 123.</td>
<td>Golden Marmoset - this endangered species of monkey received special attention from the Zoo in breeding efforts. This building was constructed for marmosets in 1973. Annual Reports of 1972, 76, 1973, 89. Unverified location.</td>
<td>23</td>
</tr>
<tr>
<td>13</td>
<td>Small Mammal House - 1975, receives accessible ramp in program making all Zoo buildings accessible. No other major work until 1980, when the house is closed and animals removed for a complete renovation. Annual Reports of 1975, 123, 1980, 123.</td>
<td>Front Royal - in 1974 the zoo acquires a permit to use 3200 acres of land in Front Royal, Virginia, to be used for scientific and breeding purposes. The land becomes the National Zoological Park Research and Conservation Center. 1974 Annual Report, 96.</td>
<td>15</td>
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<td>14</td>
<td>General Services Building - the largest single project in the Zoo's redevelopment program, the building consolidates all of the Zoo's maintenance facilities and provides additional parking. Construction 1976-1978. Annual Reports of 1976, 130, 1978, 79. Despite its massive footprint, it is well hidden from regular zoo visitors.</td>
<td>1974-76 Renovations - Almost every major building was renovated between 1974-1976. In 1975, one-third of the Zoo's exhibition areas were under construction or renovation. Part of the renovation, in addition to modernization and safety improvements, included adding accessible ramps to the older buildings.</td>
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<td>1</td>
<td><strong>Cheetah Exhibit</strong> - cheetahs move to old hooved stock area. Erosion from hooves and wash was becoming too great. Opening date was March 8, 1991.</td>
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<td>7</td>
<td><strong>Great Ape House</strong> - construction completed in November 1980. Same architectural style as the Administration and Education Building. Connected outside yards use moats and glass to allow unobstructed viewing of the animals.</td>
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<td>12</td>
<td><strong>Gibbon Exhibit</strong> - construction documents dated 1/28/86, by Cooper-Lecky Architects.</td>
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MAJOR PROJECTS:

ZOO DEVELOPMENT 1981-1990
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<td>Panda House - Panda house receives some work, opens Jan 10, 2001.</td>
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<td>6</td>
<td>Grasslands Phase I – walks and landscape renovation around panda plaza &amp; the panda building. Johnson, Johnson &amp; Roy, Inc. CD set dated 9 August 1996. Bison holding building and restroom building with stone pilasters and square block stacked bond infill are part of this project.</td>
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<td>8</td>
<td>Small Mammal House - Small mammal house exterior renovation – roofs and elevations – Quinn Evans, 2/25/04.</td>
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<td>Sea Lion and Seal – filter replaced in , chiller units replaced. 95% set dated 10/28/02. 1994 Seal-sea lion bldg is built. Beaver Valley Keeper bldg – stamped CD’s.</td>
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<td>FONZ Kiosk - 8-14-96. Fonz Kiosk between Rept. House and Think Tank. Intec are the Architects.</td>
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<td>14</td>
<td>Genetics Lab - Genetics lab inserted into old carpenter and shop building. Intec Architects and Engineers As-Built set, April 28, 1997. Interior renovated, stair added to outside, window converted to door.</td>
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<td>Lion Exhibit - Douglas Gallagher, 100% CD’s set for Lions and Tigers exhibit – renovation of existing, opens on Oct 1, 1998.</td>
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<td>Mane Restaurant - Received several small renovations. First renovation set dated 2/8/93, by Battistone Design. Renovation set produced by Intec Companies, 65% submission marked Oct. 30, 1995. Einhorn Yaffe Prescott also renovated the Mane Restaurant, bid &amp; permit set dated 2/20/01.</td>
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<td>Picnic Pavillion - near the Mane Restaurant. Drawings by Einhorn Yaffe Prescott, as-built set dated 8/4/00.</td>
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**ZOO DEVELOPMENT 1991-2004**
The Zoo’s formative years were largely controlled by the efforts of three men: Smithsonian Secretary S.P. Langley, Zoo Director Frank Baker, and landscape architect Frederick Law Olmsted. Langley provided the inspiration, Olmsted the planning, and Baker the execution. Secretary Langley paid considerable attention to the Zoo during the early years; always adding his commentary on the various building projects and hinting at the direction the Zoo should take. Langley’s vision consisted of an ideal function for the Zoo embedded within a particular aesthetic. The function was that of a protected wildlife refuge where animals could roam freely over a semi-wild area as an effort to preserve endangered native American species. The proximity of the collection to the lawmakers in Washington would advertise the cause of saving them from extinction. The founding motive can be seen as a part of a growing consciousness in the United States for the preservation of natural wilderness and wildlife.

The aesthetic image the function would be embedded within was the picturesque [2]. “Picturesque” is a term with a complex history of its own in the fields of architecture and landscape architecture, in the Zoo’s case; the term is used somewhat loosely by Langley. His picturesque appears as an aesthetic attuned to naturalness: nature either preserved or subtly manipulated by man to protect or enhance its inherent beauty. His

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1 1893 Annual Report, p.27. “…it was considered that their presence here at the Capital would be not only useful as regarded the number saved, but as a constant object lesson, under the eyes of the legislature, and in this way, a most important adjunct to the larger reservations like the Yellowstone Park…”
2 See James Mordaunt Crook, The Dilemma of Style, 14-15.
3 1890 Smithsonian Annual Report, 40. Langley writes: “Having once secured the picturesque features of the land from obliteration by the rapid encroachment of the city, it has been the policy to proceed slowly
description of a “wild garden” in 1904 illustrates his idea fairly well: “What is known to
landscape gardeners as a “wild garden” – that is to say, a plantation of indigenous plants
allowed to grow with freedom, yet arranged so as to produce unobtrusive artistic effects -
can be applied to many portions of the park with excellent results.”

Frederick Law Olmsted, the most famous American landscape architect and leader of the picturesque
style in the United States, was a superlative choice for the Zoo.

The ideas of wildlife preserve and picturesque aesthetic served as the basis for the
eyear Zoo development. The situation changed when D.C. began to supply the Zoo’s
operating budget. Langley recognized the full right of the people of DC to demand a
return in the form of entertainment for their investment, which forced the Zoo from the
very beginning to accommodate itself more to the recreational program of a typical zoo
and largely abandon the wildlife refuge concept.

The physical arrangement of the zoo during this period [1] was a cluster of
buildings arranged on a looped road in the most readily build-able portion of the site, the
relatively flat, south-east peninsula-like piece of land surrounded on three sides by Rock
Creek. The choice to limit the development to a central area was not guided by
expediency or convenience, as Langley remarks in his 1891 annual report: “…the
minimum of change in the natural features of the picturesque region being made on
principle and independent of any considerations of economy.” A steward-like respect
for the undeveloped parts of the park would continue throughout the Zoo’s early years,
with little more intervention than the removal of dead trees.

The FLO & Co. master plan of September 1890 [3] was followed fairly closely
in its most basic concept from 1890 to 1900. Most simply, the master plan shows densely
developed paddocks and buildings on the ‘peninsula,’ and sparsely placed shelters and
paddocks on the road to the Connecticut entrance. By 1900 the Zoo had a small but
growing collection of buildings on the main loop forming the ‘dense’ area, and was also
beginning to build paddocks along the road towards Connecticut. The growth towards
Connecticut marked the beginning of much more to follow in later periods.

The most marked difference between how the Zoo developed and the Olmsted
plan was that the 1890 plan shows the north-south road crossing through the main loop.
The grade was too steep for such an approach, and the road was instead diverted to
follow the creek more closely; intersecting the main road near the Quarry Road bridge.
Eventually the Olmstedian loop, a strong element on the 1900 map, will be weakened
(see 1910 map) and cut altogether (1920 map).

By 1900 the District had not yet grown to embrace the park with fully built-out
residential streets, resulting in most of the visitors arriving at the entrance closest to the

with improvements and to utilize the natural advantages of the location, interfering as little as possible with
its original aspects.”

4 1904 Smithsonian Annual Report, 33.
5 1891 Smithsonian Annual Report, 22. “It was, in the nature of things, inevitable that some provision
should be made for the convenience of a curious and interested public…it was intended to set aside a
considerable area, on which the principal buildings should be placed…the larger portion of the park being
still considered as a natural preserve…”
6 “for the present it has been deemed advisable to set aside nearly 40 acres, selected on account of
accessibility and moderate elevation, as well as on account of its being adapted to the purposes of the park
without great expense” 1891 Smithsonian Annual Report, 40-41.
7 1891 Smithsonian Annual Report, 24.
8 See the 1890 master plan, map [3].
9 1899 Smithsonian Annual Report, 63. The deer were moved there because their previous two locations
were either unhealthy or dangerous due to harassing dogs.
city, Quarry Road (now Harvard Road). The road from the Quarry Road entrance to the center loop was the first paved and graded access to the Zoo. A cheap, temporary timber and steel bridge\textsuperscript{10} on granite piers served to carry zoo goers over the unpredictable creek and into the Zoo proper. The early entry experience was somewhat broken; a bridge is powerful gateway device, but the major bear exhibit in the old quarry was isolated on the eastern bank, while the majority of the zoo was together on the western/northern/right bank. Though the bears eventually moved to the main zoo area, this division continued until the 1960’s.

In 1893 the opening of streetcar service on Connecticut Avenue \textsuperscript{4} increased the amount of visitors arriving from the west significantly.\textsuperscript{11} The Park’s main road in that direction was an old log and dirt road through an as-yet undisturbed, dense forest. The new flow of visitors required a road improvement, and between 1893 and 1897 the road was slowly upgraded to a macadamized surface. However, it was not a complete link to the public street; the 180-foot distance between the edge of the Park property and Connecticut Avenue remained as a dirt track until D.C. completed a short stub of Joliet street in 1902.\textsuperscript{12} Compared with the road’s layout in the FLO & Co. 1890 master plan, the main road as built was significantly less curvilinear than as designed due to practical issues of topography. This changed the intended experience greatly, instead circulating around three sides of a paddock, the straighter road would only expose one or two sides.

The Connecticut Avenue and Harvard Street entrances were to become the primary access points, but there were several other entry points used during this period; Klingle Road (north), Adams Mill Road (southeast), Cathedral Road (south), and Ontario Street (between Quarry and Adams Mill). Connecting all of these entrances over the Zoo’s relatively large and hilly 160 acres proved to be the major task of the early years, but by 1900 all entrances were fully connected with treated surfaces (excepting the Cathedral entrance, completed next decade). It was once considered that Cathedral may have become a major access point,\textsuperscript{13} but it never did. Ultimately there were two main roads through the Park: the connection of Connecticut and Harvard formed the park’s “Main Road,” and the connecting of Klingle and Cathedral with a narrower road meandering along the creek completed a thoroughfare for the Rock Creek Park traffic, which was the Park’s secondary road.

Many of the buildings in the Zoo’s earliest years were architecturally interesting. The 1891 Lion House (also called the Carnivore or Principal Animal House) designed by William Ralph Emerson\textsuperscript{14} was the most substantial, built of roughly laid local gneiss with brick arches and accents \textsuperscript{5, 6}. The building’s form was massive, low and long; squat square towers marked the ends containing major entrances. In material treatment, the house displayed Richardsonian\textsuperscript{15} influence in its masonry. The gaping maw of the thick,

\textsuperscript{10} 1891 Smithsonian Annual Report, 23-24. Langley’s comments show an aesthetic preference for picturesque rather than engineered forms. Later artistic bridges (rustic log bridge of 1897 and stone and concrete bridge of 1914) would receive much more approval.
\textsuperscript{11} 1893 Smithsonian Annual Report, 29. Visitors at this entrance could reach 2,000 a day.
\textsuperscript{12} 1902 Smithsonian Annual Report, 74-75.
\textsuperscript{13} 1895 Smithsonian Annual Report, 27. Also, FLO & Co.’s first master plan (June 1890, map \textsuperscript{9}) shows a major road at this entry.
\textsuperscript{15} Henry Hobson Richardson (1838-86) was one of the most famous 19\textsuperscript{th} century American architects, the term “Richardsonian” describes his particular adaptation of the Romanesque style. At the Lion House, Emerson varied from the Richardsonian vocabulary by using square rather than round towers and the unusual use of brick arches in a stone building.
heavy brick entrance arch was perhaps the building's most memorable feature. Such a rough and raw use of materials was consistent with the 'rustic' nature of the site and the picturesque aesthetic Langley desired.16

Emerson also designed the Buffalo Barn [7, 8] of 1891, “a novel and picturesque structure of black-oak logs admirably harmonizing with the location.”17 While the Lion House was a more familiar style adapted for the Zoo, the Buffalo House was novelty with purpose, and is exemplary of historical zoo architecture. The philosophy was that “For distinctively North American animals, a distinctively North American building should be provided.”18 The log cabin image was decided to be most appropriate, and Emerson creatively explored the materials; using logs stacked horizontally, vertically, diagonally, and even using short lengths of log to form an arch. Similar to the Lion House, its materials were natural and extremely rough in treatment, connecting to nature via rusticity, and appealing to the picturesque with its interesting roof form. The overall effect was unlike any log cabin ever imaginable, adding to the fantastic spectacle of zoo-going.

The housing of animals in buildings that reflect something of their origin is an idea descendant from the philosophy of Associationism.19 All Zoos of the nineteenth century followed the idea of Associationism to some degree, resulting in many animal houses with influences of exotic styles. The Zoo built several buildings in a similar vein to the Buffalo house during this period: the 1894 Deer Shed [10], 1897 Zebu house [11], and the 1898 Antelope House [12]. Architects are not definitely attributable to all the buildings, though it is known W.R. Emerson and Glenn Brown20 were active at the Zoo during the time. Brown was a local Washington D.C. architect, hired after delays in correspondence with the Boston-based Emerson.21 Brown can definitely be attributed with the 1897 log bridge [13] and the zebu, llama, and deer houses, and was referred to by Baker as the one “in charge of architectural work at the NZP for several years past.”22

Of the animal houses built 1890-1900, the octagonal elephant house [14] was an anomaly in that it was not an ‘associationist’ work, perhaps due to the haste of its construction. Erected as expediently as possible to house two elephants waiting in

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16 Among Emerson's work, precedents for the Lion House are his 1878 Eustis House, 1878 competition drawing for the Milton Town Hall, and the 1881 Loring House. See Cynthia Zaitzevsky.
17 Frank Baker's report in 1891 Smithsonian Annual Report, 49
18 meeting minutes, June 18, 1890, Arthur Brown of the Philadelphia Zoo, Frank Baker, Sect. Langley, and Asst. Sect. Good present. SIA Archives, RU 74, Box 289.
19 See James Mordaunt Crook, The Dilemma of Style, 20. In its most general terms, Associationism has to do with the connection (or association) of memories with images. An enrichment of experience is achieved via the ability to connect an image to ideas beyond it. By using traditional forms commonly associated with certain values or character, the architect aids the possible memory connection.
21 The relationship between Emerson and the rest of the Zoo team; Olmsted, Langley, and Baker, is a speckled and interesting one. Emerson successfully completed the Lion House, the Buffalo Barn, the Holt House 1890 renovations, and even the boundary fence, but otherwise, he was often late with drawings, made designs out of proportion for the money available, and was difficult to communicate with. Olmsted sent him a letter telling him to seek the consultation of experts when it came to Zoo building design. On the Zoo's side of infractions, it seems that an accounting mix-up delayed him from receiving his $710 fee for the early Zoo work for two years, 1891-93. He was finally paid and in 1894 was eager to do more work for the zoo due to a scarcity of other work. The new work turned out to be paper architecture (elephant house, aquarium), with the zoo lacking funds for actual construction.
22 Quotation from a letter from Baker to Hornaday, February 9, 1898. Buildings are accredited to Brown in Centennial History of the Washington Chapter, 117.
temporary outdoor paddocks, the house was from its completion not deemed satisfactory, either aesthetically or functionally.\textsuperscript{23} Plans to replace it with something deemed more appropriate designed by Emerson [15]\textsuperscript{24} were not realized due to lack of funds.

The buildings described above all had architectural touches, but the Zoo unfortunately could not afford architecture in much of its construction. The aquarium, property house, temporary bird house,\textsuperscript{25} and work shops were all hastily erected frame buildings, examples of the parsimony the Zoo endured. The large frame addition [5] to the Lion house caused particular irritation to Langley: “it appears incongruous when compared with the solid stone structure of which it forms an annex. The original design of constructing this entire building of stone should not be abandoned.”\textsuperscript{26} The addition was never upgraded to stone in the building’s life, mostly due to funding but secondarily due to the problem of finding other housing for the animals during construction. The restriction to as cheap a bridge as possible at Quarry Road also caused some discontent in Langley, showing the desire for a more aesthetic solution: “motives of economy compelled the erection of a bridge... sufficient as an engineering structure but having no claim to beauty other than that of utility.”\textsuperscript{27} In addition to mere visual concerns with shoddy and bare construction, the temporary structures would require near constant maintenance even before a decade into their life, becoming examples of “the ultimate cost of temporary construction.”\textsuperscript{28} The timber and iron bridge only lasted until 1901 before requiring replacement.\textsuperscript{29}

Despite budgetary restraints, the Zoo maintained a clear vision in its early years of providing a picturesque setting in which to enjoy the animals and nature. Many projects were built about the grounds which reinforced the aesthetic particulars of Langley and Olmsted. The decade successfully organized the park for the future, established access in all directions, and sited the core of the animal houses.

\textsuperscript{23} Frank Baker, 1891 Annual Report, 50. “The unexpected gift of an Asiatic elephant by Mr. James E. Cooper made it necessary to hastily prepare a barn. This is a temporary structure... It was prepared for but one animal, but... a second elephant was lent to the park, and the two have been made comfortable within it. The situation of this barn is not wholly satisfactory.”

\textsuperscript{24} Emerson’s exotic design for a new elephant house.

\textsuperscript{25} Architects were Hornblower and Marshall, possibly their foothold commission at the Zoo, any earlier projects are as yet unknown. Frank Baker to Messrs. Hornblower and Marshall, October 18, 1901.

\textsuperscript{26} Secretary Langley, 1893 Smithsonian Annual Report, 29-30

\textsuperscript{27} Secretary Langley, 1891 Smithsonian Annual Report, 23-24.

\textsuperscript{28} Frank Baker, 1915 Smithsonian Annual Report, 83. Referring in the above instance to the 1901 temporary bird house.

\textsuperscript{29} 1901 Smithsonian Annual Report, 107. The bridge had been showing signs of decay as early as 1898. Glenn Brown gave a report in 1897 to Baker about its deteriorating condition. SIA RU 74, Box 42.
1890-1900 Illustrations

[1] 1894 Guide to the National Zoological Park by George W. Orme


[5] *W.R. Emerson’s 1893 Lion House and frame addition.* NZP Photo Archive
[5] W.R. Emerson’s 1893 Lion House main entrance. Smithsonian Archives


[14] Proposal by W.R. Emerson for a new elephant house in 1894, Smithsonian Archives

[16] Bear Yards in old quarry. Zoo Photo Archive
[17] Cage line circa 1900, possibly south of Think Tank. These cages illustrate the ‘menagerie’ style of animal exhibition. Zoo Photo Archives

[18] River crossing in the NZP, circa 1900.
[19] Buffalo paddock in the NZP. 1893. 1893 Annual Report

[21] Visitors at the early zoo feed the swans. 1899 Annual Report

[22] Example of highly 'associationist' zoo design. NZP Photo Archives
Example of ‘associationist’ zoo design. Elephant House in Berlin. Exotic style used to enhance the spectacle of zoo going. Smithsonian Archives

Interior. Note Elephant-shaped column capitals. It is likely that Director Mann and Albert Harris visited this building and similar buildings while on their European tour. Smithsonian Archives
1905 saw the end of Olmsted Brother’s\(^1\) work at the Zoo, and in 1906 Secretary Langley died, leaving the Zoo without strong aesthetic guidance or professional planning consultation. This placed the responsibility of planning and aesthetic selection upon Frank Baker, Zoo director since 1891 (retiring in 1917). From 1890 to 1905 Baker corresponded with all the architects who worked at the Zoo, worked closely with FLO & Co., and endured constant letters from Langley concerning details on almost every Zoo project.\(^2\) Though involvement of the principal creative input (Langley and Olmsted) was lost by 1906, Baker carried the same ideas forward with the Zoo under his directorship.\(^3\) This decade also marks the construction of the first building at the Zoo which still survives, the Small Mammal House (later known as the Monkey House, and finally the Think Tank).

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\(^1\) FLO & Co. became Olmsted Brothers when FLO Senior died in 1903. During the last several years of his life, FLO Sr. was hospitalized and not involved with design. The brothers F.L. Olmsted Jr. and stepson J.C. Olmsted continued work with the Zoo, continuing the aesthetic concerns of Olmsted Sr.\(^2\) Suggestions from Langley on projects included, but were probably not limited too: the temporary bird house, aquarium, brick elephant house, fountains, flag pole, and sundial. In addition, Langley influenced several of the projects that were not built, including aquarium and early bird house schemes.\(^3\) Perhaps the best examples of Baker continuing the picturesque aesthetic after Langley’s passing is his criticism during the construction of the stone and concrete bridge in 1913, his unhappiness with the brick 1902 elephant house, and his comments on the guardboxes in 1908. See letters of Oct. 15, 1913 Frank Baker to Sect. Walcott, August 13, 1902 Baker to Rathbun, and February 29, 1908 Baker to Walcott. Also, his supervision of natural-looking plantings around the walk from Adam’s Mill Road: 1908 Annual Report, 62-63; “Great pains were taken to shape the bared surfaces and to plant them with indigenous ferns and other plants, so as to present a natural appearance.”
The improvements constructed show a period of vigorous growth for the Zoo: the 1901 flying cage and temporary bird house, the 1902 bear exhibits and brick elephant house, and the 1904 Think Tank. The buildings added were significant, but equally significant was the expansion of animal paddocks, with growth enclosing much of the ground along the main road to the Connecticut entrance. This can be partially attributed to the increase in animals, from 839 in 1900 to 1,424 in 1910. The physical growth shows that some money was available for building after operating expenses of salaries, food and fuel were paid. However, the character of the buildings constructed, with the exception of the Small Mammal House, was extremely cheap, showing the Zoo’s continuous pecuniary plight.

The discussions surrounding two bird-related projects illustrate stylistic and site controversies at the Zoo during this period. The Zoo’s ever-growing collection of birds was not housed in a satisfactory fashion in 1900, underlined by continuing requests in the Annual Reports for an aviary. The construction of a flying cage and temporary bird house helped accommodate the bird’s needs somewhat. The large flying cage was built in ‘Missouri Valley’ (beaver/seal/sea-lion valley), a part of the Zoo Olmsted had desired to keep as free of buildings as possible. Alarmed at the intrusion of a large unsightly flight cage in the as-yet undeveloped valley, FLO Junior commented that building in the area was:

…a matter which ought not to be lightly determined one way or the other. …I am inclined to question whether an adequate collection can be properly presented without utilizing every available foot of the land either for animals, or for their landscape setting, or for the public. I hope that the whole or nearly the whole of Missouri valley can be kept as a part of the landscape setting.

The cage was visible from the main drive, and was considered an unsightly interruption of the picturesque view. Moving it was considered by Langley, but, as with the frame extension of the Lion House, expensive post-construction adjustments proved to be beyond the means of the Zoo. Not surprisingly, Langley had something to say about the aesthetics of the cage as well: “I noticed that the cage in which the eagles are, is… unsightly… make it [the new cage] an attractive instead of an almost repulsive object… The cage should be tall and of some attractive pattern, possibly with the introduction of gilding.” All of the above considerations show the struggle with balancing practical demands and aesthetic preference; flat areas for easy building were becoming less obvious, forcing movement into previously undeveloped forest, and Langley’s desired aesthetic was beyond the meager means available.

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4 1900 Smithsonian Annual Report, 98, 1910 Smithsonian Annual Report, 72.
5 1900 Smithsonian Annual Report, 90.
6 Glenn Brown was chosen to supervise the construction. Frank Baker to Glenn Brown, June 20, 1901.
7 The temporary bird house was Hornblower and Marshall’s first major commission at the Zoo, followed later by the Small Mammal House.
8 Letter, Olmsted Brothers to Langley, 10th March, 1902. F.W. Hodge, assistant in charge of office, to FLO Jr, January 3, 1902. “Frederick Law Olmsted… designated a region of twenty or more acres in the National Zoological Park as that in which the buildings were to be grouped, and a long and picturesque valley known as the “Missouri Valley” as a place reserved for solitude and the enjoyment of its natural beauties. By a misunderstanding of his wishes, a very large iron “cage” has been begun away from all the other buildings and at the head of this so-called “Missouri Valley.” The Secretary is himself disposed to move the cage back to the neighborhood of the other buildings,…[but seeks your advice first]” The cage remained as it was built.
9 The cage would “stand out against the sky line from the valley drive most unfortunately.” FLO Jr. to Langley, March 10, 1902.
10 Sect. Langley to Frank Baker, Received by Frank Baker May 2, 1902.
With the burden of a finite budget, Baker was perhaps more practical than Langley in applying the picturesque aesthetic. Correspondence between the two regarding an addition to the temporary bird house is characteristic of their relationship. Langley wished to have the otherwise plain stucco building made more agreeable with ornamental touches applied to the addition: “I should wish that the changes made should render it more picturesque than the present shed, even at some enhancement of cost… Your estimate and plan makes no allusion to the external adornment, and this is always a thing to be considered in a pleasure ground.”

Baker wished to please Langley, but did not see the effort in this case as a prudent expense. The shed addition, at the building’s rear, was not highly visible, the ornament would not be integrated with the rest of the building, and the building was expected to be demolished and replaced in the near future, making unnecessary expense on it senseless.

Facing these arguments, Langley lost the battle for a little more picturesqueness, but the incident shows how Langley would attempt to influence the aesthetics of even the most menial shed addition.

The last of Langley’s small projects constructed at the Zoo include a sundial (1901, [3]), small fountain (1902), and temporary observation towers to photograph soaring birds (1902 [4]). Though minor in overall impact on the experience of the Park, the three are indicative of the direction Langley always wanted the Zoo to take: a “pleasure ground,” and a place of contribution to science.

One of Langley’s drives that did not meet with success until after his life was that of using sculpture about the park. Through letters he suggested to Baker ideas for statues which were invariably romantic and whimsical, aimed to delight the senses. “My idea would be to have an inexpensive basin and a thin but lofty fountain which would support a gilt ball,” or a horse drinking fountain consisting of “a polished red granite trough allowing two horses to drink together, fed by water flowing from a cup held aloft in the hands of a centaur…” (perhaps showing the connection between men and animals in a quite literal sense). The desire to place a sculpture of a mythological animal-man about the Zoo shows a thoroughly romantic mindset. Neither of Langley’s proposed sculptures was executed, but today, the Zoo has an ample collection of sculptural art. The accumulation has been a 100-year long process; the first pieces were the ornamental finials on the roof of the 1904-1906 Think Tank.

The Think Tank [5, 6] represents the last of the 19th Century buildings at the Zoo. Though begun in 1904, it took its cue from the earlier 1891 Lion House in both material treatment and form. While under construction, Langley describes it simply: “This house will be a substantial stone structure, not unduly conspicuous, but harmonizing with the group in which it stands.” Using the same Rock-Creek region gray gneiss as the Lion House, it both strikes a rapport and creates its own image; a romantic and picturesque one; the building is castle-like with its towers and lancet windows. Again some of the vocabulary of Richardsonian Romanesque is employed, but idiosyncratic features of colored glass roof tiles and terra cotta finials render the building memorable.

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11 Sect. Langley to Frank Baker, October 17, 1901.
12 Baker to Langley, October 19, 1901.
The stone base of the sun dial was designed by Hornblower and Marshall: letter, Frank Baker to Hornblower and Marshall, January 22, 1901
14 Sect. Langley to Frank Baker, October 17, 1901
15 Langley to Baker, November 25, 1901
16 Langley, 1904 Smithsonian Annual Report, 32.
17 The heavy masonry and eyebrow window (a feature included in the drawings but dropped from the building itself) are typical Richardsonian, but several elements are not, including the iron gutter brackets,
wearing its clothing of historicist vocabulary, the house incorporated the best technology had to offer at the time with a complex day lighting and ventilation system designed for the benefit of the animals and visitors.

The evolution of the design of the house shows the Zoo’s aesthetic selection at play; the original design was a more much more ornate scheme. With Olmsted Brothers and Langley still influencing the aesthetic choices made, it was completely re-clothed into its current appearance to be a more amiable neighbor to the Lion House and more in tune with the park’s rustic, picturesque image. After the completion of the Small Mammal House in 1906 there was a lull in construction of ‘permanent’ animal houses at the Zoo, with nothing substantial built until the Bird House in 1928. This was due to paucity of funds.

A growing concern for the health of the animals prompted the building of new bear exhibits, and their construction in the main body of the Park established a fixture that would remain until today. The bear exhibit in the old quarry had been recognized for some time to be far from ideal due to excessive dampness and falling rock, and 1902-1909 saw the gradual construction of a line of ten bear yards to replace the old with a more suitable habitat. In heavily modified form (walls and floors were demolished and rebuilt, moats replaced the bars), the exhibits still remain today. During the 1900-1910 period, the exhibits used steel bars to contain the animals and had a metal trellis with plantings to provide shade for the animals and visitors [7]. The move of the bears demonstrates a concern for the animals, as well as helping to increase the density of the Park’s exhibits. Planning the bear yards was done under Olmsted Brother’s time as consultants, and what remains is some of the last fabric of their work.

A third major feature of the Zoo remains from this period, the bridge at Harvard Road, now over 100 years old. The unsafe timber and steel bridge was replaced in 1901 with the elegant, classically-influenced concrete and steel bridge designed by the District Engineer. The bridge’s design and construction was controlled by the Engineer Commissioner for the District of Columbia, negating any influence from Langley or Olmsted on its aesthetics. While the bridge does have graceful classical details with its quoins and balustrades, it is unlikely that its character was deemed appropriate for the Zoo’s rustic setting.

The architects of the Zoo continued to be notable Washington talent. Glenn Brown, the Zoo’s first local architect, was still active at the Zoo, but was being gradually succeeded by Hornblower and Marshall. Brown is confirmed to have supervised the construction of the 1901 flying cage, and in 1910 he was involved in a plan to upgrade roof tiles and sculptural finials. It is difficult to classify this building as a textbook case of style. Like Emerson before them, Hornblower and Marshall gave the Zoo a unique building.

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18 Olmsted Brothers [Jr. and JC] to Frank Baker, May 30, 1903. Not satisfied with the H&M design for the building on many practical grounds, the Olmsted brothers sent drawings from an architect in Boston. The building merged many of the suggested elements. Aesthetically, Olmsted believed that in park design, “little of it [the architecture] can be styled grand or magnificent, the aim being to harmonize to the character of the scenery…” [FLO, Report of the commissioners of Central Park, 1871, found in Kelly’s Art of the Olmsted Landscape, p. 45.] The original H&M design had pretenses to the grand and magnificent.

19 1896 Smithsonian Annual Report, 62. “[the quarry bear yards]… are too damp in winter and too hot in summer for the health of the animals, and are really unsuitable for them. One of the cages has become dangerous, because of the falling into it of large masses of rock. While they are picturesque and striking, much better quarters could be devised for the animals in other parts of the park.”

20 1901 Smithsonian Annual Report, 107. The names C.B. Hawk and W.J. Douglas appear on the 1901 drawings. Who was responsible for the design is not clear.

21 For summaries of Hornblower, Marshall, and Brown’s work in D.C., see Bushong, Robinson, and Mueller’s A Centennial History of the Washington Chapter: The American Institute of Architects.
the frame addition to the Lion House with stone (never executed). Curiously, it seems as though while Brown was working on the Lion house he made an independent effort to fill the master planning void left by the Olmsteds, and began a site planning study. Baker received wind of the enterprise and reminded Brown he was doing only an addition. Perhaps Baker still felt comfortable with the guidance left by the Olmsteds and Langley. In any case, master planning would be absent from the Zoo’s consideration for over fifty years.

Hornblower and Marshall received the plum projects of this period. For such a major firm, they did some surprisingly modest works on the Zoo’s grounds, including the base for Langley’s sundial, watchmen’s boxes, the temporary bird house, and the brick elephant house. All these built up to their major work at the Zoo, the Think Tank. Correspondence for all of the projects shows a deep continuing concern for appearances, and an anguish and frustration when desires are not achieved.

The 1903 brick elephant house deserves a brief discussion in this light. An object of dissatisfaction, the house in its shortcomings illustrates the strong vision the Park had for itself. Initially estimated to cost $20,000, the appropriation supplied was a mere $10,000. “Value engineering” was applied, resulting in a smaller building than desired, and one in a different style compared to the other Zoo buildings. Hornblower and Marshall were not yet well attuned to the picturesque aesthetic Langley and Olmsted espoused, and Langley, as usually, had something to say about the design: “[it could be improved by] adopting something of a semi-oriental character about the roof or the employment of colored tiles,” showing a clear push towards ‘associationist’ exoticism of the sort present in W.R. Emerson’s earlier design. Baker was also not satisfied, giving a thoroughly disappointed critique:

The building is not, in its external aspect, such a one as the Park ought to have, indeed it is little better than the present barn. It… carries with it no architectural beauty or character. It is, in fact, wholly insignificant, and does not appear to me to be a worthy example of public building in a park where architectural decoration should be a prime object.

All this makes plain the importance attached to ornamental architectural expression at the early Zoo. Frederick Law Olmsted might have differed from the idea of architectural decoration being a ‘prime’ object, as he was more a follower of “unpretentious beauty” found in architecturally dignified but un-lavishly ornamented buildings. H&M tried to satisfy the Zoo by suggesting treatment of the stucco tympanum “in a sculpturesque

22 Letter, September 13, 1910, Director Baker to Glenn Brown: “I understand from our conversation that you have spent considerable time in devising a general scheme for the arrangement and style of future buildings in the Park. You probably understand clearly that the only matter I had in mind in my interview in June [1910] was the replacing of the frame extension of the lion house by a stone structure. I mention this in order that we may have a clear understanding on the subject and not wishing to in any way interfere with any studies that you may think proper to make bearing upon that problem, which seemed to me a comparatively simple one.”

23 H&M had the commission for the Smithsonian Museum of Natural History (1903-1910) during this busy period at the Zoo.

24 Baker to Langley, October 13, 1902.

25 Evidenced by the buildings they constructed up to the point of the 1904 Small Mammal House, at which, for a ‘permanent’ building, the firm yielded to the Park’s desired rustic aesthetic.

26 Langley to Baker, November 13, 1902.

27 Baker to Rathbun, August 13, 1902. Note how Baker has inherited Langley’s language quite closely from the October 17, 1901 letter regarding the temporary bird house addition: “…allusion to the external adornment, and this is always a thing to be considered in a pleasure ground”
manner. …in very low relief, with a suggestion of elephants..." However, funds were lacking and the building ended as the simple brick box illustrated.

The Park’s roads received an equal amount of attention as the buildings. In general, paths and roads were greatly improved. The most notable internal circulation change was that Olmsted’s center ‘loop’ became a less significant feature, with its north-eastern quadrant narrowed to more of a path. The loop was completely cut between 1910 and 1920.

On the borders, significant grading associated with road work by D.C. placed the Zoo under attack by barren banks of earth: “The park is now bordered on the east side from Quarry road to Klingle road by a bank of raw earth as steep as it will stand and from 15 to 40 feet high.” The heavy fill made by the District authorities along the line of Cathedral Avenue made it necessary to construct a rude retaining wall at one important point to prevent detritus from washing down and filling up the road. The maturation of the District’s roads allowed the Zoo to make their connections more permanent, or forced re-adjustments to meet the new D.C. grades. Klingle, Cathedral, Harvard, Connecticut, and Adams Mill all had to be readjusted.

The three major Zoo entrances, Connecticut, Harvard/Quarry, and Adams Mill all seem to have received significant traffic. The Adams Mill entrance is cited in 1901 as being the principal entrance for the park. From that entrance, visitors would have had an extremely picturesque carriage drive descending down a curving road to be joined by the creek on the left, continuing on to be greeted by the 1897 log bridge. Once across in the main body of the park, expansive waterfowl ponds would catch the eye as one slowly worked their way towards the final destination, the Lion House at the core of the Zoo’s buildings.

The decade of 1900-1910 was one of the most active in the Zoo’s history, but despite the bustling appearance, money continued to be a problem. The aquarium project the Zoo pursued is the best example of failed dreams. Started in 1898 with second hand tanks in an empty support shed of asphalted pine, the aquarium exhibit eventually had to close due to dilapidation. The slow failure of the aquarium showed the difficulty of receiving money for specialized animal houses. Lastly, in finding sites for new development it was beginning to appear that the idea of preserving a large expanse of wilderness was untenable – Missouri Valley, a principal area set aside by F.L.O. & Co. for ‘enjoyment of its natural pleasures’ had now been built upon.

28 Hornblower and Marshall to Baker, November 18, 1902.
29 Road from Adams Mill was widened and re-paved: 1904 Smithsonian Report, 70-71. Cathedral road connection was completed: 1902 Smithsonian Annual Report, 74. Klingle Road connection and ford modified: 1903 Smithsonian Annual Report, 68.
30 1903 Smithsonian Annual Report, 68.
31 1901 Smithsonian Annual Report, 108
32 1901 Smithsonian Annual Report, 108. “The driveway from the Adams mill entrance, which is more used than any other road in the park, has been reshaped and resurfaced with crushed limestone.”
33 The year the aquarium was abandoned is difficult to pinpoint. The first time it is explicitly mentioned as closed is in the 1916 Annual Report, but it is suggested that it could have closed several years earlier.
1900-1910 Illustrations

[1] 1901 Great Flight Cage. NZP Photo Archives

[3] Langley’s sundial and an unidentified gentleman, photo circa 1910. NZP Photo Archives

[4] One of Langley’s temporary towers for the observation of soaring birds. Uncertain location within the NZP. NZP Photo Archives
[5] 1906 Think Tank, shortly after opening. NZP Photo Archives

[6] 1906 Think Tank, shortly after opening. View from across main drive. NZP Photo Archives

PICTURE HERE

[8] 1901 Concrete Bridge. 2004 Photograph

[10] 1903 Brick Elephant House by Hornblower and Marshall. NZP Photo Archives

[12] Visitors in 1901 enjoying one of the fords in the Park. 1901 Annual Report
[13] Photograph from the top of the flagpole on the lawn in front of the Lion House, circa 1910. Lion House at lower left, Think Tank in center right. Eagle cage visible beyond the think Tank. Note interesting stone-henge-like chimney top on the old Lion House. NZP Photo Archives

[14] 'Olmsted Walk,' or the main drive, circa 1910. Photograph is taken from roughly the position of the current Elephant House, looking north. 1903 Brick Elephant House is visible on the right. NZP Photo Archives.
As can be seen from the accompanying map, this decade was a relatively dry spell for construction at the Zoo. During the building lull, however, the popularity of the Zoo skyrocketed with a reported tripling of attendance, from 700,000 in 1910 to 2,200,000 in 1920.1 This vast influx of people dictated that most work done would be an effort towards improving public amenities about the park, such as bathrooms, drinking fountains, and picnic shelters. The automobile also marked itself as a difficult new presence at the Zoo, though little was yet done to accommodate it.2

Major changes in people involved with the Zoo occurred. Long-time director Frank Baker passed the torch in 1917 to Ned Hollister. The retirement of Baker meant that any indirect aesthetic and planning influence impressed on him from the Olmsteds and Langley was now lost; future construction would be free to select a completely different set of aesthetics. Also, the Zoo was put under jurisdiction of the Municipal Architect of the District of Columbia in 1913,3 meaning private architectural firms would no longer be hired for Zoo projects. Snowdon Ashford was the first Municipal Architect to do work at the Zoo; the drawings for the old stone hospital (now demolished) bear his name [1].

Money for construction of something as major as new animal houses was wanting. The Think Tank had been constructed from the Zoo’s regular appropriations over several years;4 but growing costs had reached the point where there was no surplus money to construct a large project after food,5 fuel, maintenance, and staff salaries. Future animal house construction would therefore have to rely on special appropriations. The Zoo could, however, still afford to construct small support buildings from its regular appropriations, and did so; a boiler house (1912, [2]),6 a cookhouse (1913), and a hospital (1915–1917, [1]) were built. Of these, the boiler house still remains.

The only surviving public structure from this period is the 1913 stone and concrete bridge,7 [3] located near the Amazonia building. It was the last hurrah of the picturesque aesthetic at the Zoo. Though the project was outside his control, Baker was particularly interested in keeping the design of this bridge within the character of the Zoo, sending a detailed letter to Assistant Secretary Walcott with points on how to improve its

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1 1910 Smithsonian Annual Report, 70, 1920 Smithsonian Annual Report, 85. An explanation or guess is not provided for the massive increase, though it may have something to do with population growth in DC, and rapid growth in the adjacent residential areas. The animal population at the Zoo remained steady, staying at about the 1908 level through to 1920.
2 1917 Smithsonian Annual Report, 86.
3 1913: D.C. Appropriations act for the fiscal year of 1913 (37 Stat. 437), which states: “...hereafter all plans and specifications for construction of buildings in the National Zoological Park shall be prepared under the supervision of the Municipal Architect of the District of Columbia.” The Municipal Architect will continue to have a hand in Zoo projects until the 1960s.
4 1905 Smithsonian Annual Report, 71: “The new house for animals, mentioned in last year's report, is now approaching completion… As this structure is necessarily built from the general appropriation for the park, its progress is limited by the amount of funds available for use.”
5 In an effort to reduce Zoo expenditures on food, Baker started vegetable gardens near the Holt House, and even converted part of the stable there into a chicken coop in an effort to provide cheap feed for the animals. Annual Reports of 1917, 83, and 1918, 78.
6 Part of the Zoo’s effort to be more efficient by making a central heating plant. 1907 Annual Report, 72.
7 1913 Smithsonian Annual Report, 85: “For the construction of a rough-stone faced bowlder [sic] bridge across Rock Creek to replace the present log bridge on the line of the roadway from Adams Mill Road entrance and Cathedral Avenue, $20,000… work on the new bridge was begun about the middle of June [1913]. The bridge is to be of reinforced concrete, faced with rough blocks of the blue gneiss found in this region. Stone for the concrete is to be obtained in the park.”
“rustic effect.”8 Earlier, he noted that Hornblower and Marshall’s guard boxes should be “ruder.”9 A ‘rustic’ walk and a ‘rustic’ picnic shelter joined the rustic bridge in 1913 and 1915, respectively.10 The persistence of rusticity in Baker’s vocabulary pertaining to the Zoo’s building projects shows a very clear aesthetic intent which was much in tune with Langley and Olmsted’s.

The 2.2 million people arriving received many new accommodations both for their pleasure and their necessity. Public restrooms were erected at various locations throughout the park,11 along with new drinking fountains. The small restaurant building was acutely felt to be inadequate,12 but means to replace it with something more substantial would not be available for quite some time. ‘Rustic shelters’ constructed for picnickers showed a greater catering towards the leisure aspect of the Park. Picnickers were not the only ones to receive benefits, a bridle path was laid out along Rock Creek,13 tennis courts built,14 and playground equipment installed near the Adams Mill entrance.15 The constructed amenities all enhanced the ‘pleasure ground’ qualities of the Zoo, leaving science and education temporarily behind in favor of enjoyment of its natural beauties.

A frontage on Connecticut Avenue, long desired, was actively sought from 1912 through 1920. By 1918, Superintendent Hollister reported: “The principal entrance to the park will always be Connecticut Avenue, and the importance of a frontage on that thoroughfare at and bordering the gate can not be overestimated.”16 Due to problems of securing a special appropriation for buying the land, followed by the time involved in having a survey and chain of title completed, securing the property became a drawn-out battle not won until 1921.17 The felt need to acquire the land shows that Connecticut Avenue was becoming the dominant entrance to the Park.

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8 October 15, 1913, Frank Baker to Sect. Walcott
9 February 29, 1908 Baker to Walcott. ‘ruder’ in the primitive, rough sense, not as ‘offensive.’
10 1913 Smithsonian Annual Report, 84: “a rustic walk, mainly parallel to the roadway, was built from the concrete bridge to the north entrance.” 1915 Smithsonian Annual Report, 78: “A small rustic shelter was… built near the new stone bridge.”
11 There were restrooms previously, but they were becoming dilapidated. Several men’s and women’s rooms added in 1911, 1919, and 1920. 1911 Smithsonian Annual Report, 60, 1919 Report, 75, and 1920 Report, 98.
12 1917 Smithsonian Annual Report, 86: “…It is probably true that the present restaurant occasions more unfavorable comment from visitors than any other one feature in the park. It is only a rude wooden platform with cover, but with open sides; the kitchen and other facilities are inadequate, and the entire structure is in a bad state of repair.”
13 1913 Smithsonian Annual Report, 84: “A bridle path was laid out near the bank of the creek throughout its entire length in the park...”
14 1914 Smithsonian Annual Report, 83: “Two tennis courts were constructed in the lower end of the park where there is level ground that is not as yet available for other purposes.”
15 1915 Smithsonian Annual Report, 81, Baker notes: “At its request, the playground department of the District of Columbia was allowed to install several pieces of apparatus on a meadow near which is a favorite resort of picnic parties. The apparatus has been quite largely used. Objectionable features thus far have been some temporary disfigurement of an attractive part of the park and the tendency to extend playground operations beyond the area that was allotted for that purpose.” Noted as near the Adams Mill entrance.
16 1918 Smithsonian Annual Report, 79.
17 See 1913 Smithsonian Annual Report, 86: “In the last annual report, as in several previous reports, attention was called to the urgent need of acquiring additional land along the western side of the park and the great desirability of extending the park to Connecticut Avenue.” In 1917, a summary of the progress is given in the Annual Report on page 85: “It is to be regretted that this appropriation failed.” In 1920, it is optimistically hoped that next year the land will finally be acquired (page 99), and in FY 1920-21 the land is finally secured.
The continuing problem of finding easily build-able flat ground received aggressive attention with two major grading projects.\(^{18}\) Around the Buffalo House, cutting and filling leveled about 25,000 square feet of land for use by 1917. A more ambitious excavation was then begun with the aim of providing another 70,000 square feet of usable ground just north of the Zebu House.\(^{19}\) Observing the map and Howell & Greenough’s 1890 Topographical Survey, the road there at that time followed its tortuous path in order to avoid an irregularly shaped ravine. Work was halted when the United States became involved in the First World War (April 6, 1917 to November 11, 1918), and only resumed in 1922.\(^{20}\) The pressure of finding new exhibition space within the hilly Park was slowly being resolved the only way possible: by massive cut and fill excavations.

The wooden buildings at the Zoo were beginning to demand an exorbitant amount of upkeep. The Buffalo House, Temporary Bird House, and Antelope House were the primary culprits. Significant portions of these buildings had to be completely reconstructed.\(^{21}\) Hollister notes desperately in 1917 that the Zoo’s appropriation is no longer covering maintenance.\(^{22}\) Extreme frugality would have to be practiced until the next building boom in the late 1920’s.

Perhaps learning a lesson from the maintenance difficulties being presented by the early wood frame buildings, the support buildings constructed were built of stone, a local gneiss similar to the stone of the Lion and Monkey Houses. The Hospital building, though modest, was favorably received by Baker: “It is a pleasing structure, built… of blue gneiss of this neighborhood, warmly colored by infiltration of iron oxide.”\(^{23}\) The long construction period (1915-1917) of the relatively small and simple building shows the lack of fiscal weight the Zoo had, forcing it to construct projects by slowly siphoning off money from its yearly appropriation.

The stone buildings (Boiler House, Cook house, Hospital) are the first examples at the Zoo of a style that has been continually used for the Zoo’s minor buildings. Best described as “Colonial stone vernacular,” it originates from the middle east-coast United States in the 18\(^{th}\) Century. The style is in-keeping with the ‘rustic’ intentions of the

\(^{18}\) 1916 Smithsonian Annual Report, 90: “Attention has previously been called to the fact that the topography of the park is so irregular that it is difficult to find building sites with attached yards in convenient situations without extensive grading.”

\(^{19}\) 1917 Smithsonian Annual Report, 85-86.

\(^{20}\) 1922 Smithsonian Annual Report, 102: “The work of grading in the west central part of the park, commenced six years ago but discontinued during the war, was again taken up and the major part of the leveling and filling, as originally planned, was completed during the year. A large area of ground is now available for comparatively level paddocks for the exhibition of hoofed animals, and the way is opened up for decided improvements in the main roadway traversing the park.” Also mentioned on page 77 of the 1919 Report.

\(^{21}\) 1915 Smithsonian Annual Report, 79: “Progressive deterioration of the temporary bird house again made repairs necessary there. The wooden floor, which had already been rebuilt twice, was replaced with concrete, as was also part of the wooden foundation… This building is an example of the ultimate costliness of cheap temporary construction.” 1916 Annual Report, 90: “The [buffalo house], made of logs with bark on, has become unsightly by decay and requires extensive repairs.” 1918 Smithsonian Annual Report: “Practically the whole west side of the antelope house needs reconstruction. The building is over 20 years old and the timbers and other woodwork on the west side are almost beyond repair. When the work is undertaken the walls should be fixed properly with concrete and the cages considerably enlarged.”

\(^{22}\) 1917 Smithsonian Annual Report, 85-86.

\(^{23}\) 1916 Smithsonian Annual Report, 89-90. The building was demolished in the 60’s when the new main road was built.
Park’s original vision, the grandest example of the style at the Zoo is the Mane Restaurant. Many of the Zoo’s more recent kiosks and public amenities buildings recall this simple vocabulary of construction.

It is interesting to note that as a cost-saving measure some of the Zoo’s construction materials came from within the park itself. Wood from blighted and removed trees was lumbered; gravel and sand were removed from the creek for use in concrete, and even stone was quarried. Use of these materials was only effective for smaller jobs; large projects would still require the hiring of contractors.

The exhibits managed some expansion; along the road in the western part of the park a large number of new shelter buildings were constructed. Little is known about these buildings, and since they received no special recognition in any documentation, it is very likely they were constructed by the Zoo’s work force and were of extremely cheap, temporary nature. For the most part located at the rear of paddocks, away from the public, the shelters were likely not meant to catch the eye, serving merely as sheds. There was one larger wooden animal house constructed, the 1911 Zebra House, demolished in 1937 to make way for the Small Mammal House.

The system of roads and paths in the park did not change significantly from 1910 to 1920. Low-impact changes include the already mentioned slowly disappearing loop, and the development of a bridle path along Rock Creek. However, a large impact was presenting itself:

The question of providing space for the parking of automobiles near the main buildings in the center of the park is becoming serious. The available space is entirely insufficient on nearly every Sunday and on all holidays. In order to provide suitable accommodations for the constantly increasing number of cars it will be necessary to make some change in the roads and lawns at the central point.

At peak times, 2,500 cars could arrive in a single day. Parking areas as we know them today are not present on the Zoo’s maps of the time, drivers made do by parking their cars along the side of the main drive [4]. No efforts at providing large parking areas were begun until the 1930’s. This must have presented a somewhat chaotic and possibly dangerous environment with automobiles strewn about haphazardly.

The Park again suffered from D.C. infrastructure development, this time a large sewer project ran through the Zoo grounds. Several large old trees were destroyed along the banks of Rock Creek and the ground was left in a raw state after the excavation.

24 Langley, no doubt, would have preferred a more ornamented style; however, Olmsted would probably approve of the low-key, subdued vernacular way of building.
25 1910 Smithsonian Annual Report, 68: “Much of this work it has been possible to carry on economically by the use of stone from a quarry in the park and of sand and gravel from the creek.” 1921 Annual Report, 95: “About 150 chestnut trees, many of large size, that had been killed during the past few years by the prevalent bark disease, were logged during the winter.” 1927 Annual Report, 106: “Preliminary to the building of the new bird house, an area about 250 feet square was cleared. …it was necessary to remove a number of large trees - mostly poplars. These were cut into saw-log lengths and converted into lumber.” The restaurant was refurbished with some of the salvaged lumber (1924 Annual Report, 102). The practice would continue, the 1939 Annual Report notes: “All stone used was quarried in the Park. Sand and gravel were also obtained from the creek bed in the park.” (77)
26 For example, the brick shop chimney had its concrete base constructed by the Zoo’s workers, and the chimney itself was built under contract. 1919 Smithsonian Annual Report, 75.
27 1917 Smithsonian Annual Report, 86.
28 Ibid.
29 1914 Smithsonian Annual Report, 85: “The project involves both an open-cut sewer and a tunnel, about 2,000 feet in length, extending from a short distance below the new bridge to the Klingle Road. This
Most of all reflecting the strain on the Zoo during this period are the ‘wish lists’ that often occurred in the annual reports, which outlined what new buildings the Zoo required in order to avoid becoming a third-rate institution. Baker drew out a dreamily extensive wish list in the 1916 annual report,\(^{30}\) showing just how badly he felt the Zoo was being neglected. Next decade, however, the situation would begin to turn around.

1910-1920 Illustrations


construction necessarily produces a considerable disturbance of the surface and defacement of the natural features of the park. This is particularly the case at either end of the tunnel, where thousands of yards of excavated material have been dumped. It is hoped that the District officials will be able to remedy this in some measure when the work shall be completed.” 1915 Annual Report, 81: “The District authorities and the contractor have removed the excavated material and restored the ground to its original condition so far as that is practicable, but some expenditure on the part of the park and considerable time will be required to bring it again into satisfactory condition.”

\(^{30}\) 1916 Smithsonian Annual Report. The exhaustive list includes the following items: aviary, ape house, lion house addition, pachyderm house, reptile house, tortoise house, marsupial house, pheasantry, ostrich house, tropical waterfowl house, birds of prey house, aquarium, public comfort building and a restaurant, gatehouses, a boundary fence, administrative building, stable and forage barn, carpenter shop, insectary, money for site grading work, repair rock creek interceptor damage, House for zebra, wild asses, and others of the horse family, House for tropical antelopes, and finally, money to match rising costs. None of these were provided.

Connecticut Avenue entrance, circa 1910. Note cars parking along the main drive; as yet, there are no regular parking areas. NZP Photo Archive
The early twenties continued in the same fashion as the Zoo had since the 1910’s: barely subsisting. Curiously, the Zoo’s times of plenty would be the mirror-inverse of the nation’s economic strength. The “roaring twenties” were spent fairly quietly at the Zoo, but the big crash of 1929 would be the beginning of a golden age of building.

Two significant personnel changes occurred, William M. Mann1 replaced Ned Hollister and Albert Harris became the Municipal Architect for the District of Columbia.2 Four major building projects were completed: re-grading of the main drive, acquisition of land on Connecticut Avenue, construction of the Bird House, and the beginning of the Reptile House.

Ned Hollister’s tenure as director (1917-1924) had little discretionary money available for building projects. His most important action was to acquire land on Connecticut Avenue, finally allowing the Zoo to have a street presence on its major entrance. Several small stone support buildings and a grading project were also completed by Hollister, but Mann, taking the director’s seat in 1924, would have far greater resources at his disposal.

Mann brought with him a vision of comparable strength to Langley’s; that of a vibrant, world-class Zoo. Seeking to enhance the Zoo’s public image, Mann saw that

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1 Mann is the last Zoo director to head large animal-capturing expeditions in the wild. Most notable was the 1928 Smithsonian-Chrysler Expedition.

2 Snowdon Ashford retired from the post March 31, 1921 to enter private practice. Albert Harris replaced him, serving from April 18th 1921 through to his death in February 24, 1933.
excellent architecture\footnote{1928 Smithsonian Annual Report, 110: Mann notes: “Our buildings have been for years a source of most unfavorable comment on the part of visitors. While other zoos throughout the United States have been improving and enlarging, the National Zoological Park, with the exception of the bird house, has been able to do almost nothing in the way of construction, so that at present, in comparison with half a dozen other American zoos, our equipment is extremely shabby.” Comparison to other zoos was a large measure of progress for Mann. 1934 Smithsonian Annual Report, 49: “The park itself is second to none in natural beauty. The two good buildings, the bird house and the reptile house, are widely and favorably known throughout the United States and, in fact, among zoo enthusiast throughout the world. The other buildings are quite as widely known and the subject of unfavorable criticism by all who have interest in and knowledge of zoological parks.” 1932 Smithsonian Annual Report, page 61, has a similar note.} was a highly visible means to achieve his desired world-class status. But what was excellent zoo architecture? Langley had an established vision in his head of a picturesque park-in-a-landscape. Inspiration for Mann and Harris was to come from the top European precedents, which were concerned with landscape in a quite different sense.\footnote{In preparation for building the Reptile House, Albert Harris and Mann went on a European Zoo tour. 1929 Smithsonian Annual Report, 18: “In order to insure the best and most modern building for the exhibition of reptiles and batrachians, the Smithsonian Institution from its private funds sent the director of the park and Mr. A.L. Harris, municipal architect, to Europe to study the zoological parks of foreign cities. Twenty zoos were visited, and through the courtesy of those in charge many valuable ideas were obtained which will be used in the preliminary plans for the new reptile house.” Mann remarks: “It is interesting to note that we did not see in Europe a single zoo that impressed us unfavorably.” 92} European parks did not attempt to simulate the feeling of being in rustic, natural woodland. The previously built major buildings, the Lion House and Monkey House, had ‘harmonized admirably with the location’ in a ‘rustic’ and ‘picturesque’ manner. The new brick buildings under Mann and Albert Harris had a different motivation. Instead of being passive objects quietly contributing to the overall pleasure derived from the natural setting,\footnote{This would be Olmsted’s exact desire. Langley and Baker’s explicit references to architectural ornament’s importance makes the reality of the early Zoo something of a compromise between passive and active.} they actively brought forth visual information which added to the experience of the Zoo. The sculptural ornament of the new buildings conveyed information in at least two ways: artistically announcing the function of the building, and visually educating about the animals contained therein. Mann’s change was from passive to active design, but the aim in both cases was to end with a visually agreeable architectural result. Come the 1960’s and 70’s, it would be attempted to avoid an architectural result altogether in favor of buildings with little visual presence.

The change in architectural method was accompanied by a change in physical character at the Park. Gradually, the Zoo had been shedding its rusticity. Virgin deciduous forest had covered the majority of the park at its founding through to the 1920’s, when expanding animal paddocks and grading projects began to slowly remove the sense of being surrounded by natural woodland. The physical change was not a direct motivation for the change in architectural style; but increasing density certainly affected the experience of the Zoo, changing it from less of a wilderness retreat to more of a suburban park.

The first example of the new architecture under Mann is Albert Harris’s 1928 Bird House [1, 2], followed by a sister building, the 1930 Reptile House. The two buildings are tied together stylistically by the use of brick, terra-cotta roof tiles, and decorative corbelling at the cornices. Notably, the Birdhouse was the first major exhibition building to be constructed well apart from the original group of animal houses.\footnote{A result of a much earlier wish expressed by Langley to Baker: Secretary Langley to Director Baker, June 19, 1902. See Bird House section in Part II.} The site was not always flat as it is now; the grading effort around this house was the most extensive throughout the entire park until the construction work of the
1970’s. The original configuration of the Bird House’s outside grounds shows the influence of European formal gardens with their grand axial approach and symmetry, the antithesis of Olmsted’s picturesque designs. The sense of grandness such gardens strive to inspire in the viewer is in-keeping with Mann’s desire to increase the Zoo’s greatness.

The manner in which Mann describes the opening of the Bird House, as contrasted with Langley or Baker, shows the new intent for the Zoo’s architecture:

The bird house was completed in June... This building is unique of its kind ...[The indoor flight cage] makes, with its contents, a remarkably fine exhibit. 

...[The architect and contractor] deserve great credit for this building, which has been highly praised by visitors from other zoological parks and by the public in general.

There is no mention of ‘picturesque,’ rusticity, or harmonizing with the location. Distinctiveness ("unique of its kind”), the pleasing of the public and favorable comparison to other zoological parks are the primary measures of success. Mann also briefly notes his site planning strategy in 1930: "The National Zoological Park is second to none in natural beauty, and its building program is planned to conserve this by means of construction of a few large, capacious exhibition buildings instead of more numerous small ones." He recognizes motivation behind the previous generation of design at the Park, and states an intention to conserve the natural beauty. The use of large buildings would also serve Mann’s end of creating highly impressive architecture.

The Reptile House (constructed 1930-1931) was intended to be the Zoo’s pièce de résistance. A trip to Europe harvested ideas from twenty zoos specifically for this building. Mann expected the building to be “the finest reptile house to date.” The building is certainly the apex of ornamental expression at the Zoo, with its major and minor porticos crawling delightfully with slithery forms. A vested message is carried in the ornament about the evolution of the denizens within. In form, the incorporation of a larger tower than in the previous animal houses renders what is actually a relatively small building much more monumental, displaying the building’s intent to impress via both form and adornment. As with the Think Tank, the accommodations for the animals were sensitively adapted as far as possible with the methods then available.

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7 1928 Smithsonian Annual Report, 109: “In connection with the bird house, the maintenance force of the park has done a great deal of work, cutting down a considerable hill to permit a good approach to the building…” 1933 Smithsonian Annual Report, 45: “A bank immediately west of the bird house which had been left in an unfinished state from previous construction work was partially cut away. When this work is finally finished, additional cages will be constructed on the site. The earth from the cutting was used to make needed fills about the Park.”

8 1928 Smithsonian Annual Report, 109. Mann also notes to Dr. C.G. Abbot in a letter of December 5, 1932: “This cage [the great flight cage in the Bird House] is one of the finest in the world and unique in design and has occasioned a great deal of favorable comment.”


10 1929 Smithsonian Annual Report, 18: “In order to insure the best and most modern building for the exhibition of reptiles and batrachians, the Smithsonian Institution… sent [Mann and Harris] to Europe to study the zoological parks of foreign cities.”

11 Dr. W.M. Mann to Dr. L.C. Dunn (Dept. of Zoology, Columbia University), March 23, 1929. Also noted in the 1930 Smithsonian Annual Report, 100: “A contract was let for the construction of the reptile house, and the work was started in March, 1930. This building promises to be one of the finest of its kind in the world.”

12 Memo from Mann, no date. SIA RU 7293, Box 2, folder J, “Over a hundred cages are in this building and they are fitted as far as possible to conform to the natural environment of the reptiles that they house.” In the planning stages, the building was described as “Modern and hygienic” (1929 Report, 19)
The non-architectural improvements were equally significant changes for the Zoo. In addition to the massive grading efforts around the Bird House, major fill work that had begun before WWI near the present Elephant House’s location was completed in 1923.13 This allowed the sharply curving line of the old road to be straightened, much improving safety for automobile driving. A small paved area appears at the location of this completed fill; the Zoo’s first parking lot.

Zoo exhibition techniques were continually developing, and the subject of modernization to the new bar-less moated exhibits was becoming a consideration for Mann. He notes in the 1928 annual report ‘wish list’ section that “Open, barless exhibition quarters for bears, lions, and tigers [are desired]. Such exhibitions are most popular and some of the newer zoological parks are specializing in them.” Mann was tentative about immediate conversion, as he continues: “It is our desire to have only a limited number of these.”14 Integrating bar-less exhibit techniques at the Zoo would be a long process, but exhibits were steadily improving. Along the western part of the main drive, it can be seen that the paddocks were organized much more systematically with a non-public alley-like road serving the backs of six new shelter buildings, helping to remove unsightly service functions from the view of the public.

The onset of the Great Depression in 1929 paradoxically began the greatest period of material progress for the Zoo. As a highly visible public institution, the Zoo would find itself on the receiving end of a great amount of work relief money.

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13 1923 Smithsonian Annual Report, 101: “After building a new road… over the edge of the fill previously made, the old winding road was abandoned…”

14 1928 Smithsonian Annual Report, 110.
1920-1930 Illustrations

[1] Albert Harris’s 1928 Bird House viewed from the north, with original axial plaza and gabled portico. Smithsonian Archives

[3] Albert Harris’s 1931 Reptile House shortly after opening. NZP Photo Archives

Part I, section 5: 1930-1940

During the Great Depression an alphabet soup of work-relief agencies provided money, labor, and materials to the National Zoo. The CWA, EWA, WPA, and PWA all contributed. The most notable lump sum was the allotment of $680,000 in 1935 by the Public Works Administration for the construction of a good portion of the Zoo’s “wish list”: a small mammal house, a pachyderm house, an addition to the Bird House, and service buildings. Supplements between 1936 and 1937 increased the total of the grant to $892,920. Construction of this proportion was unprecedented, and would give the park a completely new character by the end of the decade.

Mann’s new style of building received an approving response from the public. The completion of the Reptile House in 1931 was a celebrated occasion, drawing 3,000 people. A few years after opening, the building’s continued popularity suggested to Mann that he was correct in his aesthetic preference: “The reptile house continues to be the most popular building at the Zoo, and proves that it is worth while from all points of view to exhibit animals suitably.” He would continue with his convictions during the Zoo’s largest building boom. By the end of it, he would declare that the growth had given “the Zoo four of the best buildings in the world…” Albert Harris was responsible for two of those buildings (the Bird and Reptile Houses), and would probably have continued, but his death in 1933 put Mann through the difficulty of having to find another suitable architect to convert the huge 1935 grant into actual buildings. Entrusting such a large sum to a generic Municipal Office with no experience designing for zoos was not a pleasing option. Picking an architect would also give much greater control over the aesthetics. The search led Mann to Edwin C. Clark, a Chicago-based architect with qualifications established by his work at the Brook Park and Lincoln Park Zoos. An arrangement was made in which Mann could have Clark design the buildings, with the Municipal Architect’s office producing the construction documents in D.C.

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1 Respectively, the Civil Works Administration, Emergency Works Administration, Works Progress Administration, and Public Works Administration. Also aiding the Zoo were the Work Planning and Job Assignment Committee of the District of Columbia, and the Treasury Art Relief Project.
2 1937 Smithsonian Annual Report, 69.
3 1931 Smithsonian Annual Report, 18.
4 1932 Smithsonian Annual Report, 61.
6 1935 Smithsonian Annual Report, 116, Mann writes: “On January 26, 1935, an allotment was made by the Public Works Administration of $680,000 for the construction of a small mammal house, a pachyderm house, an addition to the bird house, and mechanical shops in the Zoo. Edwin H. Clark, an architect who has specialized in zoo construction, was engaged to take charge of the designing and construction of these buildings. …The completion of these projects will be one of the most important single events in the history of the Zoo since its foundation…” During his time working for the Zoo, Clark also prepared drawings for a new antelope house (not executed) Clark to Mann, September 11, 1935. Albert Harris prepared drawings for a small mammal house [1], but after his death the design was changed.
7 For information of Clark, see Louise H. Huber, “Residences in Lake Forest, Illinois Designed by Edwin Hill Clark, Architect” p.1, Biographical Information on Edwin Hill Clark, Lake Forest Library. It is noted that Clark was an “eclectic who favored classicism.”
8 Clark would have preferred to do the drawings in his own Chicago office. He notes the difficulties of the situation in a September 10, 1935 letter to Mann: “I get very depressed when I think of how much more satisfactorily we could do them [the construction drawings] here [at his office in Chicago] instead of being told every minute that I cannot change the cabinet sketches, I cannot do the structural work the way I want it done because it isn’t Treasury practice, that the methods of heating and ventilation I am accustomed to are not Treasury practice, etc., and I also think that the fact that the draftsmen are all unfamiliar with their work and are constantly changed and that the squad leaders desire to grind the thing out and not depart in
The three ‘boom’ animal house projects (Bird House addition [2], Small Mammal House [3] and Elephant House [4]) were constructed simultaneously between 1936 and 1937. The Bird House addition can be seen as the final completion of the building; the 1928 plans show that the southern third of the building was eliminated from the contract.\(^9\) At the Small Mammal House, Clark adopted a modest version of the brick and terra-cotta tile\(^10\) vocabulary of the Reptile and Bird Houses. Compared to the Reptile House, the building is quite bare of ornament [3]. The columned, tripartite entrance is the building’s most distinctive feature. It can be speculated that Clark’s design energies were focused on the larger Elephant House, which is far more richly detailed, both on the exterior and interior.

A host of stone vernacular style support and shelter buildings joined the exhibition houses, the largest of which, the 1937 carpenter and blacksmith shop,\(^11\) survives today. Others, now demolished, most notably included an out door cat house\(^12\) (1935, demolished 1975) near the bear yards, and a 100’x30’ house for feed storage (1939, demolished c. 1964) in the area of what is now the cheetah exhibit. The small group of stone buildings to the north of the Small Mammal House appear on maps from this period, they are the last remaining of the smaller-scale shelters built by work-relief funds.\(^13\) The relatively simple masonry work was extremely suitable for work relief labor, and in 1932 the present stone gate posts were erected at the major entrances.\(^14\)

The largest of the stone vernacular buildings constructed was the 1940 Mane Restaurant [5, 6], at last providing the Zoo with an adequate restaurant building. The winning argument that won funds for it was Mann’s perception that the building would be a “self-liquidating undertaking.”\(^15\) He was correct, yearly rent from the building would by 1953 be half of its original construction cost.\(^16\) The exterior is simple colonial, described by Mann as “Virginia Tavern type of stone construction.”\(^17\) The PWA provided $90,000 for construction, and the Treasury Art Relief Program provided funds for art on the interior. Painter and sculptor Domenico Mortellito created a Noah’s Ark scene in an interesting medium; painted low-relief linoleum (no longer present in the building).

The Small Mammal and vernacular stone buildings all followed styles familiar to the Zoo, but Edwin Clark was allowed an idiosyncrasy with his classically inspired Elephant House. The robust quoin and random-ashlar stone work exude heaviness and strength, yet the scroll work and arches above the entries lend a sense of refinement. Art representative of animal forms is employed on carved stone transoms above the entries and aluminum and terrazzo medallions on the interior. The Elephant House marks an interesting last and first for the Zoo: it was the last exhibit building to use historicist

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\(^9\) In fact, the title block on the 1935 drawings names the project building: “Bird House Completion,” not ‘addition.’ Albert Harris/DC Municipal Architect’s office architectural drawings, 1936.

\(^10\) The ‘terra cotta’ is actually a metal roof simulating terra cotta.

\(^11\) 1937 Smithsonian Annual Report, 70.

\(^12\) 1937 Smithsonian Annual Report, 55. Constructed by the E.W.A. “this structure is known as the outdoor Cat House and replaces a group of unsightly dilapidated cages formerly on this site.”

\(^13\) Also, an extremely small stone shed that probably dates to the depression era is located near the Connecticut Avenue entrance.

\(^14\) 1932 Smithsonian Annual Report, 59.

\(^15\) 1937 Smithsonian Annual Report, 72.

\(^16\) Rents for the first eight years after construction are not noted in the Annual reports, but from 1949 through 56 they are recorded, and the building pays itself back almost three times over.

\(^17\) 1940 Smithsonian Annual Report, 71.
styles and expressive ornament, and it was the first to incorporate modern exhibit techniques with moated outdoor yards. After the Elephant House, the next major exhibit building constructed would be the 1965 Great Flight Cage.

The push to modernize begun by Mann in the late 20’s became a more comprehensive program in the 30’s, with bar-less moats becoming a regular feature of new work. A small moated pool appeared near the Bird House in 1935, in 1937 the yards of the Elephant House employed modern techniques, and an explosion of paddock exhibits were upgraded in 1939-1940. Huge amounts of earth were shifted in the exhibit modernization and expansion efforts. For the buildings, the modernization program was not comprehensive, but was limited to the Elephant House. The older animal houses, including the Lion House and Think Tank, would retain their attached steel cages for quite some time.

The automobile was forcing another modern feature onto the scene: the parking lot. Mann notes in 1939 “A definite aid to the always-present parking problem was the improvement of several parking areas.” The 1939 map shows two growing parking areas, one across from the Elephant House, the other below the Mane Restaurant. Previously the Zoo had found it difficult to locate flat ground for buildings, but now parking lots, which have much larger footprints, demanded even more area. Eventually the only forest remaining in the main body of the park would be that which happened to grow on ground too sharply sloping to be used.

The parking lots allowed an important way of gaining information for the Zoo. By surveying license plates, the origins of visitors could be partially accounted for, providing ammunition for the argument about who should be paying the majority of the costs for the Zoo, the District or the Federal Government? The surveys of 1934, 1936, and 1940 show that the proportion remained fairly steady at half from D.C., half from the rest of the nation. The information would become more pertinent in the 1960’s, when the thorny issue of funding received significant attention.

The depression years saw Mann’s dreams realized; the Zoo received a plethora of fine new buildings. The Lion House, Think Tank, and Bird House were joined by the Reptile House, Small Mammal House, and Elephant House; a doubling of the Zoo’s ‘permanent’ exhibit buildings. Improvements in infrastructure and service buildings were equally impressive. One might think that buildings constructed during a depression would be cheaply built, but thanks to the Federal Relief Art Program, that was not the case; the buildings abound with artistic flourishes. In addition to the elaborate sculptural

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18 1935 Smithsonian Annual Report, 55: “[completed by the EWA] were: …construction of a concrete pool of irregular shape 20 by 60 feet and 2 feet in depth, partially surrounded by a shallow moat, low concrete wall and guard rail (for swans, cormorants, and pelicans)…”

19 1939 Smithsonian Annual Report, 76-77: “A reinforced concrete pool… was completed back of the bird house. This is about 53 by 23 feet, with open moat effect and enclosed by a paneled guard rail.” “On this site [buffalo hill] are also being constructed four paddocks, … These four paddocks are of the barless type with dry moats separating visitors from the animals.” 1940 Smithsonian Annual Report, 70-71: “Five paddocks… were constructed across from the large mammal house. …These paddocks are likewise of the barless-pit type…” “An enclosure was constructed… It is also of the barless-moat type of construction on the front…. there is practically completed an enclosure on the south side of the reptile house… a moat keeps the animals in their enclosure but offers no obstruction to the view of the public.”

20 Smithsonian Annual Reports: 1931, 116: earth was brought in from outside the park for fills. 1932, 60: new fill behind the bird house receives bird runs. 1933, 45: bank of earth near bird house cut down, used for fills about the park. Buffalo yard regraded, retaining walls added. 1934, 48: wild-horse exhibition area graded. 1939, 76: buffalo hill is leveled, excavating approximately 80,000 cubic yards of earth.

21 1939 Smithsonian Annual Report, 77.

22 Survey results are included in Annual Reports of those years.
ornament integrated with the buildings, Langley’s earlier vision of using free-standing sculpture about the park was being realized. Heinze Warneke’s granite “Tumbling Bears” (1935) and Erwin Springweiler’s bronze anteater (1938), while not Centaur-shaped horse-drinking fountains, add much to the visual pleasure of the Park. Unfortunately, post WWII the Zoo would begin a decade of slow decline.

1930-1940 Illustrations

[1] An elevation by Albert Harris for a small mammal house at the NZP (unexecuted). Had Harris lived longer, the Zoo might have had more buildings like the Reptile and Bird Houses. Smithsonian Archives


[5] 1940 Mane Restaurant, 1940 Annual Report

[6] 1940 Mane Restaurant interior. Note the original mural. 1941 Annual Report
Part I, section 6: 1940-1950

Since 1929, the Zoo's growth had been dictated by national events outside its control. In the thirties the Great Depression was surprisingly benign to the Zoo, but the United States involvement in WWII during the forties would not result in such kind treatment.\(^1\) All resources were diverted to the war effort, putting the Zoo onto a lean budget and reducing its personnel. The years following the war were slowly spent playing catch-up. The only accomplishments of note are the completion of the Mane Restaurant and four nearby waterfowl ponds (both finished before the war), and the improvement of several parking areas between 1947 and 1950.\(^2\)

The improvements immediately after the war being limited to serving cars shows the automobile gaining its strong presence in America. The limited parking areas were proving inadequate, and two more were added on the east bank of Rock Creek. The old large waterfowl pond on the north side of the creek, present since the earliest times at the park, was filled in and planned as parking.\(^3\)

\(^1\) December 7, 1941 through to August 6, 1945. For several years after the war, maintenance catch-up was played and the staff was smaller than desired.

\(^2\) Smithsonian Annual Reports: 1947, 90: “Physical improvements included the completion of...a small parking area opposite the large-mammal house…” 1948, 93: “…surfacing 4,800 square yards of parking area near the Harvard Street entrance…” 1949, 105: “By clearing and surfacing additional land, the capacity of the bus-parking area was increased from 20 to 40 buses. The capacity of the automobile parking area also was increased from 650 to 750 automobiles.” 1950, 92: “A parking area between the restaurant and the creek, 300 feet long and 20 feet wide, was given bituminous-stone surfacing.” 92 “Five thousand square feet of parking area was surfaced with bituminous-stone mixture.” 92

\(^3\) 1941 Smithsonian Annual Report, 79. It became parking in 1966.
The Zoo continued to drift as it passed from the forties into the fifties. The Korean war from 1950-1953 proved to be a similar drag on the Zoo as World War II had been. Generally speaking, the Zoo was suffering badly from inability to keep up with maintenance and was beginning to lag behind in modernization compared to other zoos.1 Mann notes in 1954 “Maintenance and repair work at the Zoo suffered considerably during the fiscal year… owing mainly to shortage of funds for the hire of personnel… This year, as in the previous year… only the most urgently needed repairs could be undertaken. Consequently maintenance of the grounds, as well as the physical plant, has been at a minimum.”2 The press had been haranguing the Zoo on occasion, the situation was becoming embarrassing.3 By 1957 ten exhibits had been closed for nearly ten years due to the inability to meet maintenance demands.4

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1 1956 Smithsonian Annual Report, 72.
2 1954 Smithsonian Annual Report, 107. He had stated the same problem verbatim the year before.
3 Ibid. “The job of cleaning up the grounds is a major undertaking. Using all available manpower, it usually takes 5 to 10 days to pick up the trash and restore the Park to a fair degree of presentability after Easter Sunday and Monday. This work has of necessity been reduced to a minimum, with the result that the Zoo has been criticized by correspondents and the press for the condition of the grounds.”
4 1957 Smithsonian Annual Report, 153. “Ten enclosures, including the pools for the exhibition of aquatic mammals, have been abandoned for nearly 10 years. It is hoped that in the near future funds will be appropriated for the following badly needed new construction and improvements:”
With such problems, physical improvements were extremely limited. Nonetheless, a combined police, gardener, and public restroom building was constructed in 1956 [1], fulfilling a long-felt need. While not strictly ‘colonial stone vernacular,’ the building does use stone and simple gabled roof, connecting it to the other rustic non-exhibit buildings. Other small improvements were made throughout the park; exhibit houses received hot-water heaters and better thermal controls. Decaying wooden cages and shelters were replaced with more durable concrete block. However, for the most part improvements were extremely limited.

A major city infrastructure improvement affecting the Park was in its planning stage by 1954: the construction of a Rock Creek Parkway. A road was sought to deliver cars directly through the Park from north to south. Cars had always used the Zoo’s main road as a thru-road; an undesirable situation from the standpoint of safety and aesthetics [see section cover picture, p.101]. The solution was to construct a road following the east bank of Rock Creek all the way through the park. Where the sudden bend in the creek occurs in the southern half of the Park, rather than go around the ‘administration hill’ upon which Holt House sits, it was decided to tunnel through it. Actual construction did not commence until the 60’s.

A dramatic personnel turnover occurred between 1956-1957. Long-time director W.M. Mann retired in 1956, and in addition to him the Zoo also lost three of its most senior staff members. The head keeper of 48 years, the superintendent of construction of 36 years, and the assistant director of 27 years all retired. Among all the retirements, Theodore H. Reed took the directorship and was almost immediately confronted with the most tragic incident of the Zoo’s history in 1958: the killing of 2-½ year old Julia Ann Vogt by a lion at the Lion house. The tragedy immediately spurred a safety survey which produced a twenty page report. The report highlighted the fact that the exhibits for the most part kept the animals contained, but means of preventing people from exposing themselves to danger from the animals was not rigorous enough. A guard rail might prevent people from reaching a dangerous distance from cages, but nothing prevented unattended children from slipping through or over the rails. Maintenance problems were also highlighted, from minor tripping hazards in deteriorating concrete paving to the dilapidated condition of the Antelope House, boiler house, and Holt House. 1959 was spent quickly applying temporary measures to all cages to improve safety.

The tragedy and following report stimulated much concern for and discussion of the Zoo’s future, eventually resulting in the 1961 master plan by architects Daniel, Mann, Johnson and Mendenhall. The citizen’s organization Friends of Our National Zoo (FONZ) was founded the same year of the accident, and would be a positive force behind the Zoo’s re-development, independently sponsoring an additional master plan by

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5 1956 Smithsonian Annual Report, 135.
8 1954 Smithsonian Annual Report, 111.
9 1957 Smithsonian Annual Report, 125.
10 Freeman M. Shelly, Chairman of Special Survey Committee, to Director Reed, August 8, 1958.
11 Ibid, 6-7.
12 1959 Smithsonian Annual Report, 187. “Most of the year’s work done throughout the Zoo was with a view to improving visitor and employee safety, continuing the effort started in the last quarter of the previous year. The new type of visitor safety fence, 46 inches high with a 12-inch 45° angle outward at the top, has been installed around the bear pits, the elephant pools, and the lion house. Additional horizontal bars were placed on the outside lion cages.”
landscape architects Mead & Trotter. Master planning was beginning anew for the first time since 1905.

**1950-1960 Illustrations**

In a 1960 report entitled *Crisis at Our National Zoo* FONZ declared: “Our National Zoological Park seems to be the only zoo in the world which has been decaying rather than progressing over the recent past. It has been 23 years since any major exhibition building was built.” The report and growing concern about the Zoo’s plight brought sufficient attention into the legislature, and in the Act of October 4, 1961 1.7 million dollars per year was earmarked for the next 10 years.

The massive influx of money faced a third generation with the question of how to build a good zoo. The first generation of Zoo designers (Baker, Langley, Olmsted) had had a very unique vision for the Zoo; a picturesque, rustic woodland park. In the second generation, Mann introduced the standard method of measuring progress: comparative judgment. The Zoo would be a good zoo if it had fine buildings compared to other zoos. Entering the sixties, FONZ and director Reed continued the same mode of operation as Mann. Though the same comparative method of measuring quality was used, the resulting architecture would be completely different from what Mann had arrived at; showing how dramatically ideas about zoo architecture had changed in under thirty years.

If ‘picturesque’ ‘rustic’ and ‘world-class’ were the descriptors for the Zoo before, ‘modern’ became the new buzz word. Modernization was the imperative, with two important issues in mind: animal health and public safety. The FONZ-produced works: *Views of Modern Zoos* and *Views of The National Zoological Park* graphically illustrate the desired picture. A photograph of the Lion House is captioned: “Massive bars and cramped cages represent the old-fashioned menagerie-type display. The modern zoo uses moated open-type exhibits.” A photograph of the Monkey House is captioned: “This obsolete (1906) menagerie-type monkey house, ill-lighted and poorly ventilated, does not allow visitors to see the monkeys to the best advantage. It has no place in a modern zoological park.” The selection of photographs depicting modern zoos focus on dry or wet moated exhibits and stress safety for the public and healthiness for the animals. Exhibit aesthetics are not discussed in the same sense that previous directors had, who used terms related to style. In fact, the role of the director seems to have diminished greatly in choosing the architecture. No more battles over building style would be fought as had been over the Think Tank and the 1903 Brick elephant house. As the Zoo grew and modernized, greater specialization among the staff inevitably occurred. Jack-of-all-trade directors who had previously taken an active role in choosing the Zoo’s architecture would no longer do so; a greater role would be taken by the architects themselves. The

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2 SI Archives, RU 50, Box 154.
3 Draft letter from Sect. Leonard Carmichael to the Honorable Clair Engle, February 4, 1963: “…the physical facilities, such as the houses and cages remain examples of architectural style and animal exhibition technique of the era in which they were built. (frankly, with modern exhibition technique and recent knowledge of animal needs and animal behavior, the manner in which the animals at the National Zoological Park are exhibited is plainly old fashioned, if not archaic.) Many visitors who have had the opportunity to see more recently constructed zoos, unfavorably compare the manner of physical exhibition…”
4 SI Archives, RU 50, Box 127
5 For instance, Mann’s “Simple, well proportioned, and beautiful” description of the Elephant House, or Baker, discussing the appearance of proposed guard boxes with Sect. Walcott: “It does not quite meet my idea of what such a structure should be... If there could be something ruder, more unpretentious and retiring I think I should like it better. Do you think that this design will answer?” (Baker to Secretary Charles Walcott, February 29, 1908.)
basic understanding was that the architects would provide something modern, and they did so.

There were different entities circulating master plans for the Zoo in the early sixties. The first of which was the FONZ-funded plan by landscape architects Meade and Trotter in 1960. The firm was not officially hired by the Zoo, but was undertaking the plan in order to stir up ideas and show the Zoo’s potential. Several impractical ideas were put forward, but three areas of discussion included items that reached fruition in other master plans:

(1) Both pedestrian and vehicular circulation was a major problem M&T attempted to solve. A ring road around the entire circumference of the Zoo was suggested, restricting the interior to pedestrians only. The road was impractical for grading reasons, areas of the Zoo around the perimeter are simply too steep for automobile traffic. For the interior pedestrian traffic, a ‘central greenway’ was proposed, showing the felt need for a strong unifying circulation feature. The M&T greenway idea took on a formal, axial arrangement, shooting straight from point to point; not unlike the axial arrangement at the plaza in front of the Bird House. Eventually, Olmsted walk would be an evolution of the ‘greenway’ into a more curvilinear form.

(2) The most significant recommendation pointed out in the M&T plan was the need for an off-site conservation center. The 1974 acquisition of Front Royal was the realization of this prompt, a strong affirmation of the Zoo’s founding goal.

(3) Lastly, the M&T plan placed two buildings at the sites which they were ultimately constructed upon; the administration building near the Connecticut Avenue entrance, and the Hospital and Research building near Holt House.

Shortly after the presentation of the FONZ-sponsored Meade and Trotter plan, Daniel Mann Johnson and Mendenhall submitted a plan for the Zoo in 1961, and produced construction documents for several projects around the Park from 1963-1966. The key objectives of the new master plan by DMJM included: “[to] present the animals in attractively landscaped surroundings consistent with their native backgrounds, employing modern exhibit facilities,” and to “Subordinate buildings and other structures and emphasize the natural setting of the park.” The second idea is quite interesting in comparison with the intent of the first generation Zoo buildings, which also intended to

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6 Site Plan and Master Plan by FONZ and Meade Palmer and Morris Trotter, Landscape Architects. November 1960, Map x.
7 One of the first items identified in the FONZ Crisis at Our National Zoo paper.
8 Master Plan by FONZ and Meade and Trotter: “with the physical plant of the Zoo up-dated according to the highest standard… one step will remain to be taken: the establishment of an out-of-the-city breeding zoo, to serve the scientific and conservation purposes which a zoo primarily educational and exhibitional could not accomplish. …Fittingly, such an “open” country zoo, dedicated to the preservation of animals threatened by extinction, should be operated in conjunction with the National Zoo itself.”
9 Master Development Plan for the National Zoological Park, prepared by Daniel, Mann, Johnson and Mendenhall, September 11, 1961. The major points of the plan include: (1) Present the animals in attractively landscaped surroundings consistent with their native backgrounds, employing modern exhibit facilities. (2) Insure safety of people and promote the well-being of the animals. (3) Subordinate buildings and other structures and emphasize the natural setting of the park. (4) Improve pedestrian circulation. (5) Provide essential automobile parking facilities and disperse automobile traffic to the periphery of the Zoo. (6) Enhance the educational and recreational values of the exhibits and of the natural park. (7) Centralize and improve maintenance facilities. List is from the letter of Secretary Leonard Carmichael to the Honorable Clair Engle, February 13, 1963, regarding the DMJM modernization.
10 NZP office of construction management files.
emphasize the natural setting. Discussing the hoofed stock winter house, (the building west of the Panda house, currently not used) the DMJM master plan declares:

To utilize the site to the best advantage, and to develop additional flat paddock area, this building is “sculptured” into the hillside. …it will appear as a great cave, appropriate in scale and character to the animals housed. The roof structure is designed to resemble layers of sedimentary rock… a secondary viewing grotto is reached by a cul-de-sac walkway…”

A comparison with W.R. Emerson’s 1891 Buffalo Barn is unavoidable. The barn, as with the Lion House and Think Tank, was believed to express the local land and at the same time be suited to the animals contained therein. “Appropriate in scale and character to the animals housed” is a near-exact restatement of the ideas that created the earlier Buffalo and Llama houses. The difference occurs in the use of architectural analogy. While the first generation buildings attempted to be natural-looking or appropriate to the character of the animals, they did not disguise the fact that they were buildings with walls and roofs. DMJM introducing the idea of a building as a cave with a roof of sedimentary rock layers is a case of architecture attempting to imitate nature in an extremely literal sense. Rather than to ‘be of’ the land, the architecture was to ‘be’ the land. The two 1966 hoofed stock structures (Panda and Australia houses, [1, 2]) became the precedents for the 1974 Education Administration building and the 1980 Great Ape House.

Another parallel occurs when the word “rustic” makes a re-appearance in the description of the planned Reptile House renovation: “…stone walls, stone dry moats, and rustic bridges are proposed to recreate a more intimate naturalistic setting for the species exhibited.” The DMJM plan for the Reptile House was not executed, but it is interesting that many underlying ideas about how the Zoo should look remained similar. The new exhibits, in some cases, appear to be as romantic as the earlier ones; hoofed animals typically do not inhabit caves, nor do monkeys inhabit treeless islands. Smokey bear’s exhibit was undergoing plans for renovation in 1963, and a log-cabin look was deemed appropriate for him. But beyond aesthetic or symbolic concerns, the new exhibits met their goals by being far superior for the animal’s health, typically giving much greater space for movement than the earlier exhibits.

Confusing the issue of architecture, the exhibition buildings constructed during the sixties are examples of different kinds of styles. Previously buildings constructed during the same period had similar vocabularies (rustic stone or elaborate brick), giving the Zoo a somewhat homogeneous appearance. Now the new buildings being constructed not only looked extremely different from those already built, but also looked different from each other; possibly the condition that lead to the Fine Arts Commission rejecting a submission from the planners in 1966 as looking too much like a county fair,
“where lots are sold to different exhibitors.” And indeed, the Zoo was becoming a disunited collection of buildings interconnected with a mess of roads and paths. The 1965 Great Flight Cage [3, 4] is modernistic sculptural form, and the 1966 Panda and Australia houses are the first representatives of the Zoo’s de-emphasized architecture. The hoofed stock exhibit near the Connecticut Avenue entrance was built in a third style. Previous generations of Zoo buildings were not 100% homogenous due to the differences between permanent and impermanent exhibits, but they had managed to maintain enough homogeneity among the core buildings to present a unity of thought. The third generation of construction in the sixties had the difficulty blending yet another layer over an already complicated existing situation.

Besides the buildings, the roads of the Zoo experienced significant development during the sixties. The North Road was completed in 1964, and Beach Drive project was completed in 1967. The completion of these two large projects was momentous for the Zoo, effectively establishing the present automobile circulation pattern. Reed states: “Through traffic in the center of the Zoo has been completely eliminated except for Zoo vehicles. The removal of intrusive and dangerous automobile traffic has created a more leisurely and parklike atmosphere in the heart of the Zoo.” The north-south and east-west traffic had finally achieved what it had wanted since the time of Olmsted; the separation of pedestrian and vehicular traffic.

In conjunction with the road improvements, the construction of a streamlined modern concrete bridge over Rock Creek at the Harvard Road entrance added a third representative to the Zoo’s artistic bridge collection. Reed describes the bridge simply: “it is aesthetically pleasing and of modern design.” Period examples of bridges are now available for nearly all eras of the Zoo: the 1901 classical bridge, the 1913 rustic bridge, and finally the 1968 modern bridge.

After the completion of the Bird House renovation and the projects around the Connecticut Avenue entrance (Hoofed stock buildings, Australia House, Deer Paddocks [5]), the pace of construction eased off as the master plan was re-examined. The Fine Arts Commission was concerned that the Zoo was not considering the site and architecture together, and recommended that the Zoo hire a landscape architect to rectify the problem. Landscape architect Richard K. Webel prepared a new plan which was rejected by the Commission in April of 1966 as being too segmented, lacking unity. Prominent architect Gordon Bunshaft, a member of the Commission, said “We just want the architecture and landscaping considered together so we’ll come up with something really beautiful.” With the Commission putting the brakes on, exhibit construction would cool off until the seventies, when a new architect would take over the second

17 1964 Smithsonian Annual Report.
19 1964 Smithsonian Annual Report, 155.
21 1966 Smithsonian Annual Report, 160: “A landscape architect was engaged last year at the recommendation of the Fine Arts Commission to restudy the entire master plan, and design and construction of the hospital-research-service area have been delayed until preliminary phases of the restudy are completed. The designs for these buildings, completed by the architect Alan Jacobs, have been approved by the Fine Arts Commission and the National Capital Planning Commission, and construction is expected to begin in late fall 1966.”
phase of the Zoo’s modernization. The ‘cooling off’ begun by the rejection of Webel’s plan became a forced measure when war-time restriction on building stopped capital appropriations for the Zoo between 1967 and 1971.23 Designed and approved before the construction ban, the non-public Hospital Research Building [6] managed to be an exception and was built between 1967 and 1969.

The beginning of a new idea for the Zoo is also evident in the M&T and DMJM master plans: the attempt to group animals of one region or terrain type together where possible. Some confusion is evident; the DMJM master plan also included a prominent ‘multi-climate house,’ where animals of vastly different terrain types would be displayed close to each other. The multi-climate house idea would be discarded, but the idea of regional organization would also not immediately move forward.24 Eventually, regional organization would become a strong force with the completion of Amazonia, the Grasslands area, and the beginning of Asia Trail. As with the modernization to open-pit moats in the 1930’s and 40’s, regional grouping would very gradually be implemented.

1960-1970 Illustrations

![1964 Hoofed Stock building. Building as nature. NZP Photo Archives](image)

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23 1971 Smithsonian Annual Report, 57: “For the fourth consecutive year, there was no appropriation for capital construction, in keeping with wartime restrictions on federal building. Approximately $1.4 million of funds previously appropriated were frozen, pending Congressional approval of revised construction plans, although sums were appropriated for renovation and repairs.”

24 February 4, 1963, draft letter from Sect. Leonard Carmichael to the Honorable Clair Engle: “…we agree that the geographical exhibition of animals would be nice, that is, the exhibition of all the animals from Australia and all the animals from Africa, etc., in one particular location. However, because of the already existing buildings with the zoo which are capable of being remodeled to modern zoo standards it would be more advantageous for the zoo to exhibit the animals comparatively, depending on compatibility rather than geographic ranges.”
[2] 1964 Hoofed Stock building. Entry to the grotto. NZP Photo Archives

1960-1970


The seventies can be characterized as having a more rigorous master planning approach than the preceding decade. 1972 saw the continuation of the flow of money after the 1967-1971 interruption, and the Zoo immediately went back to work, this time with a different architect.

Keeping in mind the advice of the Fine Arts Commission, a new master plan was developed by Faulkner, Fryer, Vanderpool (FFV). The criticism that the DMJM 1961-1963 plan was not integrated with the landscape was met by careful selection of the design team for the new plan; the firm of FFV was selected because of their close association with Lester Collins, a prominent landscape architect. A close alliance between architect and landscape architect was hoped to achieve the desired results. Between the two firms a detailed and comprehensive plan was assembled over the course of fifteen months. On December 2, 1971, the National Capital Planning Commission unanimously approved the new design’s concepts. It was generally agreed that the new plan was a huge improvement over the previous one.

The plan is interesting in that, as with the DMJM plan of 1961-1963, the FFV 1971-72 master plan continued the same general idea as the Zoo’s early buildings, attempting to find a way of ‘harmonizing with the natural surroundings.’ Wolf Von

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1 July 30, 1971, James Bradley, Under Secretary to L.F. Roush, assistant commissioner for office of operating programs, General Services Administration: “The Faulkner, Fryer, Vanderpool firm now doing the master plan was chosen after careful evaluation of work performance and with consideration of the firm’s association with Lester Collins, one of the foremost practicing landscape architects in the United States.”

2 Memorandum, Director Reed to Sect. Ripley and Dr. Challinor, December 7, 1971.
Eckhardt, a writer for the Washington Post, describes the design in an article entitled “Time to Bring Nature Back to the Zoo”:

In the past few years our zoo keepers sent architect after architect before the Commission with drawings and models for more buildings, more paved roads, more parking lots …But the Commission, to its credit, would not approve such helter-skelter pollution of Olmsted’s idea. …Faulkner and Collins are designing with nature, rather than in defiance of nature. Under this plan, the buildings will gradually disappear. “We are keeping our architectural egos in check,” says Faulkner. “We are trying to design non-architecture.” …Faulkner and Collins would cut the necessary stables and shelters into hills with the outdoor spaces for the animals out front on the slopes and terraces. …To preserve as much nature as possible, there are to be no separate roadways for the trackless trains and service trucks.3

The buildings would be hidden as much as possible by artificial hillsides. The older 1965-1966 Hardy Hooved Stock buildings are similar in idea, but slightly different in execution. Some architectural metaphor was sought with the already discussed “roof of sedimentary rock.” The two sixties buildings were simulations of nature; the seventies buildings would try to be invisible – a silent harmony with nature. Several of the new concrete “non-architecture” buildings were constructed: the 1976 Lion Hill [section title picture], 1977 Administration Building [1], 1978 General Services Building, and the 1980-1981 Great Ape House [2, 3].

The FFV plan took greater pains to acknowledge and make detailed study of the existing conditions of the Zoo. Master planning has gradually become more and more sophisticated; today, FFV’s master plan looks fairly thin; but comparing it to the previous DMJM plan a significant increase in depth is shown. Parking was closely surveyed to make estimates of need. Existing buildings were noted for preservation where deemed desirable.4 Perhaps unsatisfied with the earlier Bird House renovation, the plan called for “…a more rational dismantling of numerous buildings to reassert the park.”5 The history of the Zoo was briefly laid out, and the original intent of the Zoo’s design was studied – one of Olmsted’s master plans is featured in the plan, and Olmsted Walk was put forward as a means of unifying pedestrian circulation. Lastly, there was greater community involvement in the design process.6

While the question of how to exhibit large groups of animals (regional, by type, or comparatively, etc.) was decided mostly on a pragmatic basis, the general question of the best exhibit techniques was well established (moats or glass). FFV intended with its master plan to make all exhibitions fully modern. “Heavy bars, railings and fences…separate the animals and the visitors and, in the process, impede the educational experience of a trip to the Zoo. …The “Menagerie” [4, 5, 6] of the past is no longer an acceptable means of exhibiting animals.”7 Initially begun by Mann in the 1930’s, moated

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4 “Existing buildings are to remain when their historic or economic value dictate.” FFV Zoo Master Plan Report, page 3. part 1
5 Wolf Von Eckhardt, “The Washington Post.” Time to Bring Nature Back to the Zoo. Saturday, April 22. Irrational “dismantling” would apply very well to what was done to the Bird House.
6 FFV Zoo Master Plan Report, Part 1. page 3. “The consultants met frequently and regularly with the Director of the National Zoo and his staff over a two year period to develop the information required for design. In addition, the new Master Plan has been developed in consultation with the Secretary of the Smithsonian, The Commission of Fine Arts, the National Capital Planning Commission, and interested Citizens’ Associations.”
and glass exhibits were now standard. The argument made was not only that larger and open space was better for the animals, but that such a modern exhibition made for a more educational experience for the zoo-goers. Moats and glass would allow observation of “the behavioral characteristics and tendencies of animals in quasi-natural environments. In this way, zoo visitation can become a more meaningful and dynamic educational experience than merely observing animal species in barren, small cages.”

The FFV plan was the first to have what might be called a “historic preservation” element to it. A selection of buildings are listed as having “either historic value, and can be remodeled, or they are relatively new structures that represent a significant investment of public funds.” The list provided is as follows, with probable category of value added in brackets (the category of value was not specified by FFV):

1. Bird House, Flight Cage and Eagle Cage [economic investment]
2. Delicate Hoof Stock Buildings [economic investment]
3. Elephant House [historic]
4. Small Mammal House [economic investment]
5. Reptile House [historic]
6. Monkey House [historic]
7. Boiler House [historic]
8. Hospital and Research Building [economic investment]
9. Holt House [historic]

A list of candidates for demolition follows, which includes two buildings we would hesitate to demolish today: the Mane Restaurant and the police building. A system of treatment for historic resources should be included in all future master plans.

Observing the accompanying set of maps, the amount of new construction related to the FFV plan shows an unprecedented amount of growth, even considering the explosive expansion between 1928 and 1940. In the midst of the construction, an excited Director Reed opened his 1975 Annual Report with “In the Orient, this is the year of the hare. The year at the National Zoological Park could be well called the year of the caterpillar – tractor that is. …One-third of the exhibition areas have been in the process of renovation. …At the year’s end, one dozen projects were underway and on target, with twice as many due to be active by late fall.”

The major projects have already been mentioned (Admin building, Lion Hill, GSB, and Great Ape house), but several other notable projects were executed during the blaze of activity. The continuing push for modernization swept the Zoo’s historic buildings with a series of renovations: the Think Tank (1974), Elephant House (1974-1976), Bird House (1976), Reptile House (1980), and Small Mammal House (1980) were all renovated. For the Think Tank, Reptile House and Small Mammal House, renovation would include gutting and rebuilding the interior. The Bird House had already been gutted. Only the Elephant House escaped massive interior re-arrangement, probably because of its large size and already simple arrangement. Despite the fairly major renovations, No FFV work was as destructive as the 1964 renovation of the Bird House; all important exterior features were retained on the historic buildings. Beaver Valley and was also thoroughly rebuilt between 1978-1979 [9], and Polar and Grizzly bear exhibits were added between 1976-1977 [7]. Lastly, a minor project that shows an increased

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8 Ripley records, SIA 1974 Box 25.
9 List is from FFV Zoo Master Plan Report, Part 2. page 11.
10 1975 Smithsonian Annual Report, 119, 123.
awareness of accessibility issues was put into effect; the renovations included the addition of ramps at several buildings for those in wheelchairs or with baby strollers.

With the growth, the Zoo did incur a significant loss; the 1893 Lion House was demolished in 1974 to make way for the new Lion Hill. It is regrettable that the first ‘permanent’ building, especially one of such great architectural character, had to be demolished. The small house’s spaces were severely incompatible with the needs of the large animals it was originally designed for, but the building no doubt could have easily been adapted for smaller creatures or non-exhibit uses. With the loss of the Lion House, the Think Tank becomes the sole representative of the Zoo’s earliest building style during the time of Baker, Langley, and the Olmsteds.

As a final note, there were two major events in the 1970’s which greatly affected the history of the Zoo but had little impact on the Zoo’s buildings. Firstly, in 1972 the great pandas arrived as a gift from China. The panda bears have been immensely popular ever since. The eastern Hardy Hoofed Stock building was modified to accommodate the new guests of honor [10]. Secondly, Director Reed describes: “Perhaps the Zoo’s most notable achievement since its founding in 1890 was receiving, in January 1974, a permit for 3200 acres of land in Front Royal, Virginia…”[12] The acquisition of such a large expanse would finally allow something close to what Secretary Langley had originally desired for the Zoo; a wildlife refuge. In 1890, the Zoo’s 160 odd acres sounded impressive when compared to other zoos which tended to be much smaller, but it was quickly found that a wildlife refuge was not feasible within only 160 acres, and instead the Zoo turned into a “Pleasure garden.” With the establishment of the Conservation and Research Center at Front Royal, science could conveniently be conducted separately from education and recreation, allowing the Zoo’s mission to be fulfilled with much greater ability.

1970-1980 Illustrations

[1] 1977 Education Administration Building front entrance. Smithsonian Archives


[4] circa 1895 photograph in the NZP. The old ‘menagerie’-style exhibit. NZP Photo Archives


[10] *Panda House, photo circa 1971. Smithsonian Archives*
The Faulkner Fryer Vanderpool master plan construction continued into the 1980’s. With the construction of the major buildings (Administration Building, GSB, Great Ape House, Lion Hill) completed, attention was turned to Olmsted Walk. Many other projects were completed during the 1980’s, but Olmsted Walk stands out due to its large scale and the way in which it provided the Zoo with a cohesive pedestrian circulation element.

The construction of Olmsted Walk can be seen as the realization of the desires stated by F.L.O. Jr. in a 1904 letter to Baker:

…indeed at some time in the future when [a through road for vehicles is established around the park] we believe that general driving on the present road should be stopped, the road converted into a broad and ample promenade and better accommodations provided for the constantly increasing throng of people on foot.¹

It took eighty years to bring about the construction of Olmsted Jr.’s broad and ample promenade. After 1904, a unifying circulation device dropped from the discussion until the 1960 Meade & Trotter plan. As has already been discussed, the M&T plan suggested a formal, axial point-to-point version of Olmsted Walk. An excellent idea in concept, the M&T incarnation of the walk did not follow the topography or character of the park, and as M&T were not the official firm for the Zoo the idea remained on hold. The drawings accompanying DMJM’s 1961 plan show paths that would have made the Zoo a fearsome

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¹ Olmsted to Frank Baker, 21 Nov 1904. SI Archives, RU 74 box 129 folder 1
mazes. For instance, six new bridges over Rock Creek were proposed, along with several new paths and bridges within the Park itself. Such a jumble is perhaps one of the reasons that lead to the Commission of Fine Arts forcing a re-evaluation of the Zoo’s master planning.

When FFV began producing its 1971 plan, it was obvious that a strong pedestrian element was needed. Being the first plan to consider the Zoo’s history, FFV found an appropriate development of the M&T plan’s idea in Olmsted’s original concept. The inclusion of Olmsted’s September 1890 drawing in FFV’s 1971 master plan shows the obvious general inspiration for Olmsted Walk. A comparison of the 1890-1900 Zoo Development map with the 1980-1990 map will show the differences between Olmsted’s main road and today’s Olmsted Walk. The differences occur mostly due to issues of grading – in 1890 the Zoo’s topography was much different than the 1980’s topography. The steady earth-moving projects, especially in the areas between the Small Mammal House and the Connecticut Avenue entrance allowed Olmsted Walk to follow much more gentle and gradual curves than the 1890 original. The main road had continually evolved over the Zoo’s history, and the Walk follows the general line of the road as it existed in 1980, but takes an interesting turn to emphasize the Reptile House. Descending from the Connecticut entrance, a sharp left turn occurs at the Great Ape House and suddenly you are greeted with a pleasing view the Reptile House’s tower and portico. The only part of Olmsted Walk which closely follows the original is the lower stretch, from the 1901 bridge to just north of the Police building. Because it was naturally flat, little grading was done in that area, and the elevation of the Walk may be very close to what it was in 1890.

The only possible problem with Olmsted Walk is the name. The Zoo can claim to have had Frederick Law Olmsted as its original landscape designer, but Olmsted did not design today’s walk. The name is strictly honorary, just as the William M. Mann Memorial Lion-Tiger exhibit is named in honor of Mann. ‘Olmsted Walk,’ however, combined with a notion that “this is an Olmsted-designed park” makes it possible that visitors might believe that Olmsted designed Olmsted Walk. Such associations should be discouraged if possible.

The two ends of the decade display another radical change in architecture. The thoroughly modern 1980 Great Ape House is met by the post-modern 1990 Amazonia building. Architects of the previous three generations managed to justify their choice of style at the Zoo by modifying the style to build a relationship with nature in some way. Amazonia blends with nature by snuggling itself into a hillside; similar to the 1960’s and 70’s buildings, but Amazonia uses post-modern details rather than blank concrete walls.

Besides Olmsted Walk, other notable projects of the 1980’s include:
1980 North American Wildlife (now closed) [1]
1982 Veterinary Hospital
1982 Monkey Island [2]
1984 Gibbon Exhibit

And a series of renovations occurred:
1980 Small Mammal House
1981 Reptile House

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2 Daniel, Mann, Johnson, Mendenhall, Master Development Plan for the National Zoological Park of the Smithsonian Institution. September 11, 1961. SI Archives, RU 50, Box 127.
3 Only one of the proposed bridges was built, the 1968 Modern bridge. The rest of the proposed bridges were pedestrian bridges from parking lots.
4 1976 Smithsonian Annual Report, 121.
1988 Elephant House

The renovations removed the majority of the historic interiors of the buildings, but were much more sensitive than the 1965 Bird House renovation; all historic exterior features were retained and no large additions were built. The Elephant House, while receiving some interior work, has retained much of its interior historic character.

At the end of the eighties, the FFV master plan’s major items had been realized.

Illustrations


Part I, section 11: 1990-2004

This report is intended to focus on the Zoo’s historic resources, consequently very recent construction shall be only briefly discussed. To give a sense of the work, the major projects include:

1994 Panda Plaza
1996 Buffalo Yard
2001 Orangutan Line
2004 Farm Exhibit
2004 Asia Trail

Major renovations include:
1995 Think Tank
2001 Mane Restaurant

It is difficult to make any general statements about the recent projects. In some ways, the new buildings are very much in-character with the Zoo’s historic buildings. The buildings at Panda Plaza are similar to the “colonial stone vernacular” style employed at the Mane Restaurant, police building, and boiler house. Though drastically different in appearance, the Farm Exhibit uses the same philosophy as the earlier Buffalo and Llama houses by using architectural forms and materials “appropriate in scale and character to the animals housed.”

Sensitive cases of ‘contextual’ architecture have been built within the Zoo, the most notable example being the small refreshment huts at Panda Plaza and the Reptile House. The two huts use the same form, but one is rough stone with a wooden shingle roof, the other is polychromatic brick with a terra cotta roof. Such small adjustments to the architecture have an immense overall effect by reducing disagreeable architectural contrast.

With Asia Trail under construction, the future looks exciting and bright. Three preceding generations of Zoo designers have asked themselves how to re-define the Zoo. Today, a fourth generation of master planners will shortly be facing the same question. Upon absorbing this historical narrative they will hopefully now have a complete understanding of the Zoo’s history.
Part Two: *Individual Structures*

Think Tank

Bird House

Reptile House

Elephant House

Holt House

Bridges
1906 Think Tank

(Known as the Small Mammal House from 1906-1937, as the Monkey House from 1937-1995, and as the Think Tank 1995-present)

Building History

Despite being constructed between 1904 and 1906, the Think Tank is a 19th Century building in spirit. An effort was made to make the building ‘harmonize’ with the then-existing 1891 Lion House (demolished in 1974), which was of similar appearance. The loss of its partner has not diminished the house’s potent presence among the newer animal houses. Considered to be the second ‘permanent’ animal house, the Think Tank was constructed to relieve pressure on the Lion House which was filled beyond desirable capacity. Prominent local architects Hornblower & Marshall, who had worked on other projects at the Zoo, prepared the drawings for the building. Also strongly influential in the design were the Zoo’s first generation of designers and managers: Secretary Langley, Director Baker, and Frederick Law Olmsted Jr. The house is the only surviving example of the aesthetics applied during the Zoo’s founding period.

The story of the Think Tank’s design is an interesting tale of give-and-take between architect and client. Correspondence and drawings reveal that the house went through no less than four re-designs in less than a year. Initially envisioned by H&M as a modest stucco covered structure, it was determined that “as a permanent improvement… it is of prime importance that we should have a pleasing design, especially for the exterior.” A second design was therefore prepared, with polychromatic glazed bricks of brown, yellow, red, and blue achieving “a kaleidoscopic effect in brown tones.” As colorful as the walls, the roof was to be “tiled in uneven colors, the ridges hips and eaves in darker tones, and the field mixed as for panels of sides.” This would have been an extremely eye-catching building. Frederick Law Olmsted Jr. offered criticism: “Picturesqueness is perhaps to be desired, but it should be picturesqueness of the unobtrusive and modest kind… I have some fears that the building… would verge upon the bizarre.” FLO Jr. felt strongly enough about practical aspects of the design to have an architecture firm near him in Boston, Stickney and Austen, prepare drawings which introduced the idea of using glass in the roof for better lighting of the cages. A third re-design reduced the color palette to “grayish brick varied somewhat with red,” but this was still not deemed acceptable. Finally, in November of 1903, Baker reports to Langley: “Messrs. Hornblower and Marshall in response to criticism passed upon their design for a small mammal house of brick with terra cotta trimmings, have prepared sketches for a new design to be executed in the gray gneiss of the Rock Creek region, similar to the stone used in the carnivore house. This design seems to be much better

1 Reacting to H&M’s earlier polychromatic design for the building, FLO Jr. noted: “...the type of building is so striking… [it] …would be more obviously incongruous with the old Carnivora House [Lion House] and with future buildings… in its vicinity.” He suggested a re-design to reduce contrast with the old building. FLO Jr. to Baker, April 9, 1903.
2 Baker to Langley, January 22, 1903. SIA RU 74, Box 126, f4. The design may have been similar to the stucco-covered temporary bird house.
3 Hornblower and Marshall to Baker, March 4, 1903. SIA RU 74, Box 13, 468-69.
5 FLO Jr. to Baker, April 9, 1903.
6 Baker to Langley, November 17, 1903.
suited to the location, and more in keeping with the character of the Park…” 7 The ‘unobtrusive and modest’ rustic picturesque had achieved victory over “the flashy allure of exoticism.

However, exoticism would have its day. The unaccepted 1903 H&M drawings display a style not unlike the later Bird House and Reptile House. Albert Harris, architect of the two later houses, was working at the office of H&M in 1903. He may have had some authorship of the design [3], making the Bird and Reptile houses the realization of a 25-year-old intent.

The most unique feature of the Think Tank is the nine terra cotta animal roof finials, the only features to survive from H&M’s exotic design. Local artist Laura Swing Kemeys sculpted smaller-scale models which were reproduced to full size by the terra cotta company Parth Amboy. In justifying their cost, Baker calls them “an integral and necessary part of the structure.” 8 The delightful little animals are the first public sculptural pieces at the zoo, and precursors to the explosion of animal forms found on the neighboring Reptile House.

The house has seen much change in its 100 year history, both in its surroundings and in itself. Its exterior cages were not present at its opening; the western cages were completed in 1908 and the eastern cages not until 1911. A public restroom was somehow built under the outdoor cages in 1911. Cage improvements or subdivisions were the primary improvements until 1960, when the house had its wiring and lighting modernized.9

None of the modifications made a significant impact on the building until the 1974 renovation.10 As part of the Zoo-wide modernization under Faulkner Fryer Vanderpool, the Monkey House (as it was called then) received much attention. The interior cages were all demolished and rebuilt. Originally, the keeper accessed the cages from the back via a narrow corridor following the perimeter of the building. In 1974 the corridor was eliminated; the cages were made to abut directly against the outer wall. The keeper accessed the cages from the front by a space between the public guardrail and the cage fronts. The original glass operable panels over the cages were removed and replaced with suspended ceilings. In the public spaces, some of the original materials were covered up or removed; the front vestibule received a layer of furring and more plaster, and the main hall had its flooring removed and replaced. Three large architectural radiators that sat in a line in the middle of the space [5] were removed as part of a heating and ventilating upgrade. The building also lost its original doors and windows at this point; some of the windows were replaced in kind, but the upper story windows were replaced with metal louvers. The service spaces of the building also saw much improvement; the stairs were demolished and replaced with steel stairs, and a small locker room and kitchen were added. The original catwalk in the roof trusses was replaced with precast concrete planks. Lastly, an important safety improvement was made: the old plate-glass cage fronts were replaced with laminated safety glass.11

On the exterior, the roof was to receive maintenance, noted: “Exist. clay & glass tile roofing – inspect, repair, replace tile.” It is unclear how much work, if any, was carried out on the roof. Any tiles of varying design or color may date to this renovation, but the roof appears fairly homogeneous. To the northeast, a large retaining wall was
built, securing more level ground around the back of the building. A police locker room was located under the cages on the east side, accessible from the basement. The original exterior cages were noted to be demolished and replaced with new cages, but it appears as though the exterior cages survived until the 1995 renovation, when they appear on the demolition drawings again.

The 1974 work sufficed for the house until 1995, when another similarly-scaled renovation took place, leaving the Think Tank as it is today. The interior was effectively gutted with the removal of nearly all finish material and partitions. Poured concrete was used in some locations on the interior to create walls and to encase old columns. The plaster vault was replaced with a clerestory lined with precast concrete panels and areas of glass block. The glass block filters some light from the eastern roof’s glass tile skylights through to the building’s main hall. Openings were cut into the eastern wall to allow access to a sizable addition attached to the back of the building, and stone was salvaged from the cuts to fill several window openings on the ground floor. The addition is feels similar to a greenhouse or solarium with its continuously glazed wall.

On the exterior, the outdoor animal yards were completely redesigned. The east side was lost to the new addition; public circulation around the rear was cut off. On the west, the old metal bar exterior cages were replaced with more modern cages using glass and mullions spaced much farther than the previous bars, allowing better visibility of the animals. A large wall of stone echoing the walls of the original building was constructed near the entrance. The new enclosed roofed cage on the south west quarter of the building has an elaborate system of roof trusses, creating a much more dominant visual presence than the previous cages.

Lastly, the building’s roof details received refurbishment during the 1995 renovation. The finials are noted: “Repair damaged terra cotta animals.” Missing or damaged decorative wrought iron roof brackets were replaced to match the originals, and copper downspouts were adjusted to avoid the new addition and the enclosed glass cage.

The Think Tank, a turn-of-the-century building, has now undergone two modernizations. The building has proven itself to be adaptable, and has retained its characteristic roof and walls.

**Current Conditions**

**Structure**

The building is a masonry load-bearing wall structure. The bulk of the wall is solid gneiss as it appears on the exterior, with an inner skin of brick which received the interior finish coat of plaster. A ½” air space is specified between the brick and the stone, making the wall a primitive cavity wall system. The bricks are specified to bond to the stone wall every seventh course.

No sign of structural distress in the walls is apparent from a visual survey of the building’s exterior. The eastern wall had openings cut into it during the 1995 renovations. Steel I-section lintels were inserted to carry the masonry above.

A structural analysis of the roof trusses was outside the scope of this study. It is assumed that the stability of the historic steel trusses was verified at the time of the 1995 renovation. From the outside, no sagging is visible; though visual analysis is not sufficient to determine stability. The roof is quite old, and bears a considerable weight.

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Any future renovation should include simple verification of the roof’s continued integrity.

**Roof**

The roof is the building’s most distinctive feature, and it remains largely in its original condition. There are no signs of uncontrolled water runoff damaging or staining the masonry below, aided by the large overhang and well maintained gutters and downspouts. Weathering damage is visible to only a small number of the flat terra-cotta tiles. Two of the custom decorative hip end cap tiles have lost their glaze and badly spalled.

**Interior**

No historic material remains on the interior of the building. The interior received continuous small modifications throughout the building’s history, but the major interior demolition occurred in 1974-75 renovation, and again in 1995. White-painted gypsum board and carpet are now the predominant interior materials.

**Exterior Envelope**

The exterior envelope is in excellent shape, attesting to the durability of stone. Several window openings have been filled in with stone, salvaged from where new openings were cut in the building’s renovation, resulting in a good match. Ivy is growing on the building, notably at the northern and southern ends. Where the old exterior cages were located vertical scars on the walls on the western face of the building are visible. Presumably there are scars on the eastern face of the building as well, but the new addition covers them.

**Service Systems (HVAC, Plumbing, electrical, etc...)**

The service systems shall only be mentioned where they visually interfere with the exterior or interior appearance. The Think Tank has no difficulties in this regard.

**Preservation Action**

The focus on preservation at the Think Tank should be in maintaining the building’s external historic appearance. Points include:

1. **Roof maintenance**
   The Think Tank’s terra cotta and glass tile roof is its #1 preservation priority. To replace it with a different roof system would be unacceptable. Fortunately, it appears to be in sound condition. Repairs on the roof should take great pains to replace any damaged materials with new materials that match the existing as closely as possible. The damaged hip end-caps are unsightly, and should be replaced during the building’s next major renovation to protect the historic appearance of the building. A mold could be fashioned from one of the existing intact tiles.

   It is not known what the building’s performance in winter is, but it is possible that this building is prone to developing icicles. If this is so, the installation of resistance heating in the building’s gutters is advisable.

2. **Sculptural terra cotta finials**
   The nine terra cotta statues are of special importance to the character of the building. They received repairs recently in the 1995 renovation, and their condition should be
continually monitored as part of the Zoo’s regular maintenance schedule. They should receive visual inspection periodically with binoculars, perhaps twice a year. Currently, an unidentifiable white substance is accumulating on two of the statues [10]. The white material may actually be the clay base that is visible after the green glaze has spalled off. An art conservator or preservation architect should be consulted to discuss the continuing preservation of these pieces; it may be advisable to paint them with a protective coating.

3. Removal of Vegetation
Important in connection with mortar maintenance and roof maintenance, the growth of ivy on the building is detrimental in the long term to the building’s life. Currently, ivy is growing primarily on the north end of the building, and has climbed all the way into the gutters of the main entrance tower. The growth can clog and damage the gutters, leading to possible water problems. The ivy should be killed and gently removed.

4. Mortar joint maintenance
Mortar joints in masonry wall systems need attention periodically. Weathering causes the mortar to deteriorate, allowing water to seep into the wall. In spring and fall the water can freeze and thaw, causing damage even to dense stone. A visual inspection of the Think Tank reveals that the joints are currently in good shape. The maintenance staff at the Zoo should on a yearly or bi-yearly basis visually check the mortar joints and note their condition. Maintenance on mortar joints can be expected every 20-40 years, though the Think Tank, with its roof overhang protecting its walls from direct rainwater, may need maintenance even less. An architect with experience rehabilitating historic masonry structures should be involved in specifying the mortar to be used; the mortar must be a low-strength lime and sand based mortar rather than a high-strength portland cement. The lower strength mortar has been proven to provide a more flexible joint, while the high-strength mortar’s inflexibility can cause irreversible damage to the surrounding material.

5. Interior
The interior can be freely remodeled as seen fit, so long as changes do not affect the exterior. Ideally, a future renovation would make use of all the original glass-tile skylights, restoring the historic connection between interior and exterior. Historically, the skylights were never directly exposed, but had glass relights which lit the cages below.
[1] Original floor plan. 1904 Annual report
[2] Hornblower and Marshall drawings. NZP files. Proposed eyebrow window over the entrance was not included in the actual construction.


[5] Original interior of the Think Tank. The three central sarcophagi-shaped elements are part of the heating system. Smithsonian Archives.

[7] The exterior as it appeared shortly after construction. NZP Photo Archives.

Current Illustrations

[8] Hip end cap detail. Intact end cap visible on upper right, damaged end cap at lower left. Photo is of the south west tower, taken from near the southern entrance.

[10] Contrasting white substance visible on the roof finials. The white may be the clay base of the statues. If so, it is advisable to consider applying a protective coating.
Ivy growth on the southeast tower. Ivy does contribute the picturesque appearance of the building, but it should be removed.

Ivy growth on the north end of the building. The ivy is being carefully kept short of the gutters. If a visual screen for the building is desired, planting which does not grow directly on the building would be ideal.
Chronology of Think Tank modifications: evidence from Annual Reports and drawings on file in the Zoo Office of Construction Management

[1904]
“In order to relieve this [overcrowding] in some degree, it was decided to build a new house which should serve as quarters for some of the more important ones and in which they would be under more wholesome conditions of temperature. This house will be a substantial stone structure, not unduly conspicuous, but harmonizing with the group in which it stands. At the present time [June, 1904] only the walls of this building are completed…” 32 “After consultation with Mr. F.L. Olmsted a site for the structure was selected near the principal animal house, in the situation shown in the accompanying plat. It was decided to build it of stone, using the same gray gneiss, found in the region of Rock Creek, that was used in building the principal house. A plan of the main floor of the structure is shown herewith…. It is estimated that the total cost of the building will be about $40,000.” 70

[1905]
“The new house for animals, mentioned in last year’s report, is now approaching completion… As this structure is necessarily built from the general appropriation for the park, its progress is limited by the amount of funds available for use.” 27

[1905]
“tile roof was finished about May 1, 1905. This roof was ornamented by terra-cotta finials after models designed by Mrs. Kemeys…. As the building is situated near the edge of a steep declivity, a heavy fill of earth supported by a retaining wall will be required on the eastern side in order to accommodate the necessary cages and walks.” 67

[1906] DC is in a building boom, it is affecting the construction of the Small mammal house: “This building, which has been under construction for several years, is now practically completed, with the exception of the exterior cages, walks, etc., …Work on it has been much delayed because of the difficulty of procuring suitable workmen, owing to the great amount of building going on in the city.” 68

[1907]
“…was finally opened on November 15 [1906]”

[1907]
“It is found to be much the most satisfactory of the buildings erected at the park, being easily warmed, quite sanitary, and free from drafts. The method of lighting is unusual, there being skylights formed of glass tile in the roof which admit light directly over the cages, the central corridor in which the public are admitted being lighted indirectly. Screens of ribbed glass protect the animals from the cold air which descends from the roof. The cages are readily ventilated by tilting these screens… The outside cages required for this house were not wholly completed at the end of the year… Work upon them was, however, well advanced. … The grounds about the house have been graded, improved, and planted, and contracts let for a concrete walk along two sides.” 70-71

[1908]
“The concrete walk along the front and west side of the small mammal house, for which a contract was made under the previous years appropriation, was completed soon after the beginning of the year. This walk was extended to the temporary bird house. …The outdoor cages on the west side of the small mammal house were completed and are now in use.” 63

[1911]
“a new comfort room [public restroom] was constructed beneath the outdoor cages of the small animal house.” 60

[1913]
“Foundations were laid for cages on the east side of the small mammal house, and a concrete walk was constructed there.” 60

[1921]
“…and a new hot-water heating boiler [has been] installed in the monkey house.”

[1927]
“The large accessions from the Smithsonian-Chrysler expedition necessitated alterations to the lion house, bird house, and monkey house to accommodate them. Practically all the cages in the monkey house were divided each into two.” 106

[1951]
“…electric hot-heaters were installed in the …monkey house… to provide hot water at locations where it had not previously been available…” 116
“Nine cages outside of the monkey house were extensively repaired and new partitions between the cages installed.”

“Working at odd times between other urgent maintenance jobs, the mechanical force has made a remarkable transformation at one end of the monkey house. Eight old, small, poorly lighted cages were removed and the platform on which they stood enclosed with glass and wire fabric. Heavy tree limbs were added so that there is now an excellent large indoor cage for miscellaneous monkeys.”

“…rewiring and a new system of lighting were installed in the monkey house.”

“The old Monkey House is being renovated at this time and should be completed early in the next calendar year. This house, built in 1904, will be modernized to have 12 glass-fronted, larger inside exhibit cages and the corresponding number of outside cages.”

“Remodeling of the 1904 monkey house, as described in *Smithsonian Year 1974*, was completed early in the winter and the cage decorations were assembled.”

Coastal Design, Inc, prepares drawings for a complete renovation of the house. Addition built on the eastern side, making several large openings in the stone, interior completely demolished.

Renovations are completed on October 25, 1995. Re-opens as the “Think Tank” on October 25, 1995.

(Rick Hider notes)


**Building History**

After the completion of the Small Mammal House in 1906 there was due to financial limitations a lull in permanent animal house construction until the Bird House of 1928. A bird house had been desired for quite some time; after establishing houses for elephants, lions, and small mammals, the next targets were bird and reptile houses. The 1901 temporary bird house had been in bad shape since 1915, when Baker powerfully noted “This building is an example of the ultimate costliness of cheap temporary construction.” Hornblower and Marshall’s drawings for the temporary house show that the heavy timber frame was not even mounted on foundations of any kind, but driven into the earth as posts. Over-crowding and deterioration was becoming a serious problem by the twenties, and finally in 1926 an appropriation of $102,000 was awarded by Congress for the construction of a proper shelter for the Zoo’s birds.

Mann had big plans for the Zoo, and the Bird House was his first exhibition building. A clean break was made with the previous aesthetic ideas the Zoo had followed; the Bird House’s ordered symmetry cannot in any sense be called “picturesque” or “rustic.” The massive amount of grading and tree-clearing to create the surrounding bird runs could hardly be described as “harmonizing with the location,” nor do the materials of the house reflect its natural surroundings in any way. Architecture under Mann had turned away from rusticity and towards elaborate refinement. The house was “unique of its kind” and “highly praised by visitors from other zoological parks.” Architectural distinction became the goal.

The decision to build such a major building apart from the rest of the exhibition houses was a major one which had been gestating over the course of the last twenty odd years. The construction of the 1901 great flight cage at the undeveloped head of “Missouri Valley” led to the accumulation of other bird cages in its proximity, as directed by Secretary Langley to Baker in a 1902 letter: “My intention is… to sooner or later group these [bird exhibits] together, and I want you to consider this as an instruction.” With the construction of the 1901 great flight cage, the birds had become spread out, with the earlier eagle cage among the core of animal buildings. Baker (and later Hollister) heeded Langley’s directive, and a string of bird cages started appearing in the area: the 1913 parrot cage, the 1922 hawk, owl, and paroquet cages, the 1927 large flight cage, and

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1 Many new buildings were wished for in the annual reports, but the bird house is the most consistently asked for (followed by a reptile house and a proper elephant house). To give an idea of the consistency, requests appear in Smithsonian Annual Reports of: 1908, 1909, 1914, 1915, 1916, 1918, 1919, 1922, 1923, 1924, and 1925.
2 1915 Smithsonian Annual Report, 79.
4 Alexander Wetmore to H.P. Caemmerer, Secretary of The Commission of Fine Arts, May 24, 1926.
5 See further description of this topic in the narrative.
6 1928 Smithsonian Annual Report, 109. Mann also notes to Dr. C.G. Abbot in a letter of December 5, 1932: “This cage [the great flight cage in the Bird House] is one of the finest in the world and unique in design and has occasioned a great deal of favorable comment.”
7 Secretary Langley to Director Baker, June 19, 1902. “...I want to call attention to the fact that the birds of all kinds had undoubtedly better be grouped in some relation to each other, and that they are being entirely divided – one great cage being at the top of the “Missouri Valley,” and another proposed to be located at this quarry, and the third where the birds now are. It would be difficult, in the limits of the Park, to put them farther apart than it is proposed to do. My intention is unchanged to sooner or later group these together, and I want you to consider this as an instruction.”
finally the Bird House itself. Thus, the not entirely-planned construction of the 1901 Great Flight Cage in Missouri Valley evolved into a plan. In fact, as early as 1912 Glenn Brown proposed a site for the bird house near the 1901 great flight cage.\textsuperscript{8}

With the site selected, the architecture had to be worked out. The choice of architect for the new Bird House proved to be a convenient coincidence for the Zoo. It was required that the Municipal Architect of D.C. design the Zoo’s buildings,\textsuperscript{9} and as it happens the Municipal Architect since 1921 had been Albert L. Harris,\textsuperscript{10} a man the Zoo already had a connection to; Harris had worked in Hornblower and Marshall’s office.\textsuperscript{11}

The last major building at the Zoo (the Think Tank) had been a complex result of give and take between clients, consultant, and architect (Secretary Langley, Baker, Olmsted, and Hornblower and Marshall). In 1928, secretary C.G. Abbot did not take an active role in design, and there was no planning consultant, making the design process much simpler. Harris and Mann only had to please the Commission of Fine Arts, who offered but small objections to Harris’s initial design, noted to be “approved in general but that the detail of cornice and gable over the entrance were to be referred to the Municipal Architect [Harris] for modification to place them in full harmony with the rest of the building.”\textsuperscript{12} The axial plaza on the north side of the building was also modified from the initial plan; Mann had wanted a reflecting pool. Assistant Secretary Alexander Wetmore discouraged him on practical grounds, and the approach ended up as a simple tree-lined space [2].\textsuperscript{13} A reflecting pool on axis with the front portico would have placed enormous emphasis on the building, serving Mann’s intent of celebrating the architecture.

It is possible that Harris had an architectural style in his mind for a Zoo building ever since at least 1904, shown by the early H&M drawings for the Small Mammal House (Think Tank). Harris proved humble brick to be capable of the imaginative byzanto-romanesque building present today. Perhaps the plans were a little too bold, as a third of the building had to be eliminated from the design. It is unknown exactly what is responsible for the trimming; over-design, under-estimation, or shortness of

\textsuperscript{8} Letter, Frank Baker to Asst. Secretary Wolcott, with attached sketch by Glenn Brown, May 22, 1912. The sketch proposed placing the building between the 1901 great flight cage and the main road. Grading would have been extensive, and this scheme was not carried out.

\textsuperscript{9} Assistant Secretary Alexander Wetmore to Horace W. Peaslee, August 6, 1926. Peaslee had asked in a previous letter if the Zoo was seeking an architect for the new Bird House, to which Wetmore replied: “In the matter of preparing plans for a bird house in the National Zoological Park there is no option as to the choice of an architect, Congress having required for some years past that plans for buildings in the Park shall be prepared by the Municipal Architect of the District of Columbia. This is further strengthened by a clause in each successive appropriation act forbidding the payment of “architect’s fees or compensation…. The Municipal Architect has preliminary plans in hand which have been approved, with certain suggested changes by the Fine Arts Commission, and it is expected that work on the final plans will be under way soon.”

\textsuperscript{10} Snowdon Ashford retired from the post March 31, 1921 to enter private practice. Albert Harris replaced him, serving from April 18\textsuperscript{th} 1921 through to his death in February 24, 1933

\textsuperscript{11} Heather Ewing/Cynthia Field, “The image of the National Zoological Park: What We Learn from What We See.” Unpublished draft paper, Smithsonian Office of Architectural History and Historic Preservation.

\textsuperscript{12} Alexander Wetmore, Assistant Secretary, to H.P. Caemmerer, Secretary of the Commission of Fine Arts, May 24, 1926.

\textsuperscript{13} Assistant Secretary Alexander Wetmore to Dr. Mann, March 1, 1929: “Confirming our conversation of last Saturday I do no favor constructing a reflecting pool before the entrance of the new bird house in the National Zoological Park, as such a pool is necessarily out of service in our climate for several months each winter. It must, in that location, be fenced to keep children from falling into it, while, further, we need additional water pools elsewhere for aquatic birds. The idea of breaking the cement plaza before the entrance of this house is excellent, but may be accomplished by a center to be planted with barberry or other low shrubs. The form and size of this opening is a matter for decision by the architect.”
appropriation, but the original drawings were adapted to eliminate the rear third of the building and leave the possibility of a future addition. The south end was left with filled in arches that could quickly be adapted, and the corbelled cornice was left out along the southern elevation’s roofline in expectation of a later completion [3].

When money became available in 1935 under the PWA, Edwin Clark designed the addition to complete the building, finished in 1937 [4, 5]. Relatively small changes had occurred to the building in the short time between its construction and the 1937 addition. The southern third was added in a manner sympathetic to, but not exactly mimicking the original. Comparing Harris’s drawings with Clark’s, it can be seen that Harris had wanted arches over the southern entrances, while Clark used the straighter lines now present. Clark continued the same corbelling and clay tile treatment around the parapet of the addition, blending old and new masses seamlessly together as one. Besides the different entrance detailing, Clark utilized a different skylight system that included interestingly rigged operable sashes. Overall, the 1937 construction can be described as a sensitive addition to the original.

With the completion, the building had reached its original intent; a box within a box. The central box housed the tall large flight room under the high hipped tile roof, and the outer box formed a loop of exhibits around the central box. The outer space was housed under the flat lower roof, punctuated with skylights. The central large flight room was lighted by clerestory windows and a central skylight. Thick load-bearing masonry walls separate the inner from outer, and, due to the phased construction, southern third from northern two-thirds.

After the addition/completion in 1937, the next major change for the house came in 1963, when the Zoo was completing its first round of modernization work under architects and engineers Daniel, Mann, Johnson & Mendenhall. In the interim several small changes were made, the most major of which include: interior cage modifications (1950, 1952), cage front repairs (1952-1953), penguin cage modifications (1956), plaster repairs and painting (1959), and roof repairs (1961). All traces of these modifications would be removed in the extensive 1963-65 renovation work.

During the sixties the Park wished to re-create itself as a modern zoo, and the Bird House felt a strong hand of modernization [6, 7]. DMJM introduced several modern elements to the house, and removed two of its important historic features: the terra-cotta tile high roof, and the gabled entrance portico on the north. The added elements were the large 1965 Great Flight Cage and three smaller protrusions from the main building: an entrance vestibule and two flight cages. A dramatic new sculptural bridge connected the Bird House to the new Great Flight Cage. In order to make the bridge, it was necessary to bring visitors up a level inside the house, which previously had been only one story. Two large concrete ramps were designed, wrapping around the large flight room’s thick masonry walls. In placing the ramps, rebuilding all the interior cages and adding the

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14 See original 1927 drawing set, Albert Harris, Municipal Architect. NZP files.
15 Edwin Clark is fully discussed in the Elephant House section. He was the Zoo’s architect during the 1935-1937 expansion.
16 See complete chronology at end of this section. The grounds around the house were modified, a brick chimney was added, and some interior terrazzo work was done.
17 Notes on Clark’s drawings include: “…cornice & Spanish tile coping to match existing work” “Conc. Exposed aggregate to match present work,” and “rail and gates to match rail in present building.”
18 See complete chronology.
19 See FONZ material; Pictures of Modern Zoos. As contrasted with the Pictures of the National Zoo. The intent is clear; the Zoo needed to modernize.
20 DMJM drawings dated October 3, 1962, as-built stamp dated April 1966. NZP files.
three small additions, the interior was effectively gutted. The original symmetrical system of rooms was replaced with an open arrangement. Parts of the masonry load-bearing walls were removed where necessary in order to allow the more flowing interior spaces. All the cages were rebuilt in the new configuration, with new railings, signage, and tensioned wire cage fronts. The thick masonry walls surrounding the large flight room were difficult to work with, so the house retained its basic ‘box within a box’ arrangement; a loop of exhibits around the central large flight room. The hipped tile roof over the central box was replaced with a daring skylight system. Open-web steel trusses supporting plastic vault-shape skylights span the space, with a metal mansard roof built up to enclose the exposed edges.  

The new plastic skylights proved to be troublesome [8, 9]. They accumulated dirt, and worse, the skylights in the great flight room soon started to buckle and leak. In 1969 drawings were produced to install glass over the low roof skylights. In 1972, less than eight years after opening, the high roof plastic skylights needed serious work.

Secretary Dillon Ripley noticed the problem and corresponded with Director Reed: “I am greatly concerned about the overcast and light shading effect of the roof of the bird house and hope that measures can be undertaken to clean the roof as well as the inner layer of plastic…”

Ambitious use of untested new materials was proving to have unforeseen problems. In 1975, drawings were produced that demolished the low roof skylights and covered over them with plywood, insulation, and composition roofing. The use of 2-½ inches of insulation boards shows that perhaps the recent 1973 energy crisis may have been a factor in covering up the skylights. The high roof skylight in the large flight room

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21 Notes on the 1963-65 renovation appear in the February 1965 Smithsonian Torch: “…National Zoological Park Director Theodore Reed pointed out that the new bird exhibits represent advanced concepts of animal exhibition that have evolved over years of research. Wherever possible, Dr. Reed explained, the exhibits were designed for the eyelevel of a child rather than an adult, visual barriers were eliminated or minimized, and exhibits were placed on only one side of walkways. With its 27 exhibit cages, large flight room, two indoor-outdoor cages, and modern facilities, the Bird House is a deluxe bird-hotel. Some of the cages have removable wall panels that provide flexibility in cage sizes, some feature independent control of temperature and humidity; and some have fronts consisting of series of vertical-tensioned, small-diameter wires that provide maximum viewing. … on the lower level [there] are a bird kitchen and scullery with modern stainless steel equipment, a dumb-water, an incubator room, and seven “holding” or quarantine cages.”

22 11/20/69 Wagner-Dame Associates “Repair and renovation of skylights on the Bird House Roof.” All skylights replaced except for the ones on the high roof.

23 5/2/82 NZP-produced drawing “Birdhouse repairs to skylight in roof” The high roof plastic skylights were buckling and received screws and sealant to make them weather tight again.

24 Sect. Dillon Ripley to Theodore Reed January 16, 1974: “I am greatly concerned about the overcast and light shading effect of the roof of the bird house and hope that measures can be undertaken to clean the roof as well as the inner layer of plastic and also to make sure that the filters which control the intake of air into the area are kept appropriately clean and maintained. I understand that for a certain period there were no filters on the intake fans and this greatly enhanced the dirt which came into the system. We cannot possibly grow plants in the bird house without appropriate care of the plastic roof. In this connection it would be useful to make a survey of the roof as a whole and find out whether or not there are not some areas which should be cleared and plastic installed to enhance the light filtering and plant growing aspects of the exhibit cages. I continue to be concerned about the state of the cages themselves and the interior maintenance of the house. The health of the birds appears to me to be good but the appearance of the cages leaves much to be desired.” The issue continued until Sept 5, 1975: Theodore Reed to Dillon Ripley: “Pursuant to your desires and mine to get the Birdhouse fixed, i.e., ceiling of the great flight room, improve the lighting so the plants will grow better, change and improve air handling for cooling and heating, as well as painting the building, plans have been drawn and we are ready to go out for bids. [referring to Smith and Faas 9/8/75 drawings].”

25 9/8/75 Smith and Faas renovation drawing set. NZP files.
was left uncovered. The plastic vaults still remain, and patches of water on the floor after rain confirm continued trouble with leaks.

Since the 1963-1965 renovation, the Bird House has seen relatively little change. In 1968 the entrance underneath the bridge to the great flight cage was made accessible with the ramp and glass vestibule that remain there today. In 1974, the second wave of master planning under architect Faulkner Fryer Vanderpool left minimal marks on the Bird House. FFV made extensive interior modifications to the Reptile House and Think Tank, but the Bird House required little work since DMJM had already modernized the building. Drawings by FFV date to 1974, and work was completed in July 1975. On the east side of the house, small pools were laid out as they remain today in deep and narrow bird paddocks. There were only two small changes to the building itself, an exit door cut into the east wall, and an exterior service elevator added on the west wall that served the basement floor.

Shortly after FFV’s work, their engineering consultants Smith and Faas returned in 1975 to make some needed modifications to the building. The stainless steel mesh was added in the large flight room to prevent the birds from perching among the trusses, and a 5’x7’ metal louver was installed on the exterior wall at east side of the north wall. The tile copings on the parapet walls received their first maintenance. A cooling tower was added on the east side of the roof, with steel structural supports.

The eighties saw work at the house limited to maintenance while the grounds around it continued to evolve. In 1984 cages had ceilings and light fixtures removed and replaced. As part of the same renovation job, the skylight in the large flight room saw more maintenance; missing screws were replaced and the gutters re-worked. The concrete pergola on the south eastern side of the building was added at this time. Shortly thereafter, in 1986, the wetlands exhibit was drawn up. The wetlands ponds replaced the axial plaza in the front of the building, one of the last vestiges of the house’s original symmetry. The curvilinear, natural-looking ponds that replaced the plaza areironically more in-keeping with the picturesqueness of the Zoo’s first generation of designers.

The biggest projects of the nineties for the house were HVAC renovations between 1995 and 1996. Some architectural changes resulted from the work. The 1975 cooling tower was removed and a new steel armature for a chiller unit built on the roof. Two large rooftop HVAC units were installed on the roof near the chiller. In the eighties the ceilings in the cages had been re-built, now the ceilings over the public corridors were demolished so that a huge amount of new duct work could be installed above. Once the duct work was completed, new suspended gypsum board ceilings were installed. Since the work in 1996, no major work has been done on the building.

Art was originally a prominent feature of the house. Albert Harris’s gabled entrance [1] is a clear precedent to the portico of his later Reptile House. Birds were carved in relief on the column capitals, a use of art in the exact same manner as the Reptile House’s lizard column capitals. An artist friend of Director Mann, Stephen Haweis, designed the main entrance’s decorations around the portal. The entrance was

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27 9/8/75 Smith and Faas drawing set, NZP files. Smith and Faas also made modifications to the skylights, noted in the preceding paragraph devoted to the skylights.
28 1984 Zoo drawings by Mark J. Mazz, NZP construction management office. NZP files.
29 10/14/86 Design Tech East drawing set, NZP files
30 Bird House HVAC Renovation drawings, Phases I and II. Drawing sets dated 1/24/95 and 1/19/96, by Intech Engineers and Architects. NZP files.
31 “…the English artist, Stephen Haweis, agreed to design the main entrance to the building as a favor to his friends, Bill and Lucy Mann, at whose wedding he had served as bets man. Mrs. Mann remembers that he
Bird House

regrettably demolished and replaced with an anonymous glass box during the 1963-64 renovation, but Haweis’s decorative work around the portal was saved and re-installed in the large flight room. Edwin Clark’s 1937 addition on the south continued the use of art with the incorporation of cast stone panels depicting birds above the entrances. The entrances were sealed off during the 1963-1965 renovation, and the public cannot approach the building closely enough on the southern side to appreciate the cast stone panels.

Of all the Zoo buildings, the Bird House has perhaps the most complicated built history due to its two large additions and ever-evolving paddock areas surrounding it. To summarize, there are two major differences between the building today and its original condition: the lack of its north gabled entrance, and the lack of its clay tile roof. The interior has been completely re-arranged, but that is not unusual in Zoo buildings.

**Current Conditions**

**Structure**

The building’s bearing structure is composed of solid load bearing brick walls. The structural walls occur around the perimeter and the central box. At the low roof areas, reinforced concrete beams and slabs are used in spanning, which rest on the brick perimeter walls and the interior brick walls of the large flight room. At the high roof, the structure dates to 1964. Steel trusses span the space, supporting the plastic Skylights.

The brick structure shows no visible problems around the exterior.

**Roof**

From the drawings on file at the NZP construction office, it is not clear if the bulk of the flat roof was ever modernized to a system with insulation. The documentation suggests that the last time the roof was completely redone was during the 1963-1965 renovation, and at that time no insulation was added.

The high roof composed of steel and plastic Skylights has some problems. The general condition of the interior walls of the large flight room is quite poor in areas close to the roof, deteriorating paint and plaster is visible. The possible causes of this are either condensation on the inside of the roof dripping down during winter, or rain leaking through during the warmer months. Snow melting on the roof and dripping through may also be a problem. The steel trusses appear to be rusting in places, and streaking is occurring at some locations where the trusses meet the wall.

**Interior**

No historic fabric remains on the interior other than the brick structure, which is intended to be hidden, and the decorative portal in the large flight room.

There are some locations where water is splashed here and there. This could be a leaky roof or condensation occurring on the HVAC equipment within the buildings itself.

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declined financial remuneration with the quip that his reward would be the fame he would derive from the design. However, after the building was dedicated in 1928, he rather ruefully commented that he could expect little fame from his contribution as his name was misspelled and printed upside down at the bottom of the right-hand column. This handsome mosaic archway depicting a variety of exotic birds and plants framed in colorful geometric designs was carefully preserved and moved inside the building during the renovation of the Bird House in 1964.” Phyllis Yingling and Diane Terry, *Spots and Stripes* vol 8 no. 3, Fall 1971. Published by FONZ.
Parts of the interior are showing their age, notably the translucent plastic panel insulation on the eastern wall.

**Exterior Envelope**

The surface of the exterior walls appears to be in good condition. No ivy is growing and mortar joints appear to be in fine condition. There are only minimal occurrences of efflorescence. Ledges have green growth on the northern side of the building.

**Service Systems (HVAC, Plumbing, electrical, etc...)**

On the path around the south-eastern side of the building quite a loud noise is audible from the air-handling unit. This detracts from the otherwise tranquil sylvan surroundings.

Walking around the building allows frequent views of the roof. With the metal mansard and rooftop units, the appearance is fairly cluttered and contrasting to the rhythmic corbelling marching around the parapet.

**Preservation Action**

Due to the 1965 renovation the Bird House has fairly weak historic integrity; its important elements: symmetry, portico, and roof, were destroyed. The only remaining historic elements are the brick walls, the elegant cast stone corbelling around the parapet, and the remaining art: the portal on the interior and the sculptural panels above the southern doors.

The priorities for the building are:

1. To somehow mitigate the problems with the large flight room’s skylight.
2. To consider some aesthetic intervention with visual screens to make the roof appear less cluttered.
3. To consider relocating the 1937 cast stone panels on the southern side of the building, perhaps to a more prominent location inside the building or in the new entrance vestibule. The empty spaces on the southern elevation left by the panels could either be bricked up or filled with blank concrete panels.
4. Lastly, to make an effort to lower the amount of noise produced by the air-handling equipment. To have complete silence in the area of the Bird House, so that one could clearly hear the bird’s songs, would be extremely beneficial.

The 1965 modernizations can be taken today as a lesson of what *not* to do to a historic building. The addition of modern elements is acceptable, but the needless demolition of historic character-giving elements is to be avoided at all cost.
Bird House

Historic Illustrations

[1] Bird House nearing completion, circa 1928. This photograph gives a sense of the massive amount of grading work required to level the surrounding area, and also shows the clear relationship that used to exist between the Bird House and Reptile House. NZP Photo Archives.

[2] The original symmetrical tree-lined space places emphasis on the building. NZP Photo Archive
[3] Bird House pre-1937 addition. The southern third of the building is yet to be built. NZP Photo Archives.

[4] 1937 addition to the building by Edwin Clark. Note the artistic concrete panels over the doors. 1937 Annual Report

[6] Bird House shortly after the 1965 modernization. NZP Photo Archive
Current Photos


[8] Overall view of large flight room skylight.

Chronology of Bird House modifications: evidence from Annual Reports and drawings on file in the Zoo Office of Construction Management

[1927]
“The firm of Arthur L. Smith was awarded the construction for the new bird house by the District architect, and construction was begun on the building in the late spring. The work of grading and laying foundations progressed satisfactorily. Brick work is being executed and the prospects are that the house will be ready for the installation of the bird collection in early spring.” 106

[1928]
“The bird house was completed in June and the installation of the birds commenced, so the building will be opened to the public early in the summer. This building is unique of its kind in providing four rooms under one roof, with 145 indoor cages. The great flight cage in the center room is 58 feet long by 22 feet wide and 30 feet high, with rock work and running water at one end, a large pool in the middle, and a fine tree at the opposite end, and makes, with its contents, a remarkably fine exhibit. Mr. Harris, the District Architect, and Arthur L. Smith, the contractor, deserve great credit for this building, which has been highly praised by visitors from other zoological parks and by the public in general. …Outdoor cages will be built during the coming fall, which will make the bird house the center of the ornithological section of the park. It is planned to develop the area about this building as runs for outdoor birds. In connection with the bird house, the maintenance force of the park has done a great deal of work, cutting down a considerable hill to permit a good approach to the building, building walks and roads, installing sewers, and other details necessary to the new building, so that in general we have been able to make few improvements in other parts of the park.” 109

[1929]
“During the year the work on the exterior of the bird house has been completed, outdoor cages have been constructed, and an attractive approach made to the building. Snow guards have been put on the skylights and the area in the rear of the building has been paved. In connection with this house it was necessary to lay 285 feet of pipe to a culvert.” 91

[1932]
Letter, W.M. Mann to Dr. C.G. Abbot, Secretary, December 5, 1932. “Developments… during the past year have been chiefly in a small way. However, the great flight cage with artificial cliff background for the eagles was completed early in the summer…This cage is one of the finest in the world and unique in design and has occasioned a great deal of favorable comment.” (located on grounds NW of Bird House)

[1933]
“A bank immediately west of the bird house which had been left in an unfinished state from previous construction work was partially cut away. When this work is finally finished, additional cages will be constructed on the site. The earth from the cutting was used to make needed fills about the Park.” 45
“No new construction has been attempted with the exception of the wiring of three cages that had been started in the previous fiscal year and left unfinished and the construction of 20 small cages for the bird house. These are to house a collection of the smaller cage birds.” 46

[1934] C.W.A.
“Construction of brick smokestack at bird house to replace the metal one that was in very bad condition.” 48

[1935] E.W.A.
“The more important pieces of work [completed by the EWA] were: …grinding 75 linear feet of terrazzo gutter in the floor of the bird house…” 54

4/26/35 “Completion of Bird House” drawings, by D.C. Municipal Architect’s office, Edwin Clark as consulting architect. Operable skylights, dropped plaster ceiling, white metal doors and frames, cast stone decorative panels set above exterior doors on south wall. Uses much of same detailing as original building.

[1936]
11/6/36 planting plan for south side of the house (drawing by D.C.). Formal, orthogonal arrangement with only slightly rounded corners.

[1937] TARP
“The addition to the bird house, 43 by 133 feet, was completed in November 1936…The backs of a number of the cages, including that of the penguin room, have been decorated with scenes representing various geographical regions, which greatly enhances the attractiveness of the exhibits. The art work was done by the Treasury art relief project.” Drawings for the project dated to 4/26/35, Edwin Clark, consulting architect.

[1950]
“The space in the bird house formerly occupied by eight double-deck bird cages that had never been satisfactory was remodeled to accommodate three large cages that are much better.” 92
[1952]
“Made extensive repairs to all outside cages attached to the bird house, and painted them.” 106
[1953]
“In the bird house, glass was installed in the upper half of the fronts of 34 cages to replace wire that had deteriorated.” 115
[1956]
“Made extensive repairs to all outside cages attached to the bird house, and painted them.” 106
[1958]
“A special experimental cage was constructed behind the bird house for the secluded study of species of birds that do not adapt themselves well to exhibition.” 177
[1959]
“The ceiling of the birdhouse was patched and plastered where necessary…it had been necessary to close one wing for a year. The inside of the birdhouse was repainted, using light sunny colors. The cages in the “new” wing of the birdhouse have been completely redecorated, furnishing a more naturalistic setting with extensive use of plantings and trees. Not only are the birds exhibited in a much more interesting fashion but they seem happier and more contented. The keepers have done all this work on their own initiative.” 187
D.C. Department of Buildings and Grounds produces drawings for replacement of roofing for the birdhouse. All flat roof areas receive new composition roofing. Set dated 12/2/59.
[1961]
“They [the DC Dept. of Buildings and Grounds] also repaired the roofs of the…bird house…” 175
[1962]
“An experimental panel employing the use of high tensile strength wires stretched vertically with no horizontal ties so as to be almost invisible to the viewer, yet contain the exhibited birds, has been installed between two of the hawk cages…” 179
Daniel, Mann, Johnson & Mendenhall produce bird house renovation drawings dated Oct 3, 1962 (as-built set stamped April 1966) Modifications to the house are extensive. In the basement a food prep area was added, new stairs put in, bathrooms added on the north east side, and a holding area was added. Concrete block partitions were added throughout. On the first floor, the interior was completely rearranged. A stair was added on the northern corner, large concrete ramps were inserted. A large artificial rock display was added in the large flight room, and areas of the original brick load bearing walls were removed to allow a more free-flowing plan arrangement. The gabled portico on the north façade was demolished and replaced with a smaller boxy vestibule; Stephen Haweis’s decorative cast stone portal was saved and relocated to the south wall of the large flight room. The clerestory windows in the large flight room were all sealed up, either concealed or converted into lighting coves. Existing skylights no longer lined up with the spaces below as they had originally, and they were reglazed themselves with clear plastic acrylic or opaque ¼” cement-asbestos boards. Translucent plastic was used as a material on the north east vestibule. Brick chimney removed. Four-ply composite roof added everywhere, with gravel covering. New roof penetrations were made for hatches and exhaust fans. A standing seam metal mansard was built up where the hipped tile roof used to be. Steel trusses spanned the area in the large flying cage with a plastic skylight system. Existing plaster ceilings were removed. Three small additions built: 2 vestibules, one flight cage composed of octagons. The vestibules are built of concrete, glass, and insulating plastic panels. A large addition was also built, the 1964 great flight cage, with a bridge connecting it to the birdhouse. A door had to be cut into the old building, removing masonry.
[1963]
“The remodeling of the bird house and the construction of the new east-west access road put an additional burden on the mechanical division, as temporary shelters and enclosures had to be improvised for the birds and animals dislocated by the new construction.” 142
[1964]
“During this fiscal year work continued on the remodeling of the birdhouse and construction of a new flight cage. It is hoped that construction will be finished and the house stocked and opened to the public in late December or early January.” 155
[1965]
2 illustrations – interior of remodeled birdhouse shot, and shot of new great flight cage.
“On December 4 final inspection of the remodeled birdhouse was made and the building accepted from the contractor. The next 2 months were spent in feverish activity of planting, decorating cages, assembling the
Birds, and developing new routines of management. On the evening of February 11, there was an
invitational black-tie opening… On February 14 the birdhouse was opened to the general public…” 207
“Installation of a new gas-fired boiler for the remodeled birdhouse was also started.” 207

[1968]
“Remodeling of the birdhouse was completed. With new planting and decoration it looks even lovelier than
before.” 4 April 1968, drawings by Jenkins & O’Hear, architects and landscape architects. Entrance
underneath bridge to great flight cage is made accessible. 2 steps removed, ramp built, vestibule of metal
and glass built around the entrance.

[1969]
11/20/69 Wagner-Dame Associates “Repair and renovation of skylights on the Bird House Roof.” All
skylights replaced except for the ones on the high roof.

[1972]
5/2/72 NZP-produced drawing “Birdhouse repairs to skylight in roof” The high roof plastic skylights
installed in the 1962-64 renovation needed repair. They were buckling and received screws and sealant to
make them weather tight again.

[1974]
“Plans are proceeding for the renovation of … the outside cages of the birdhouse.” 106

8/5/74 Falkner Fryer Vanderpool drawings set. Grounds around the birdhouse see some new features, the
house itself has two small changes: east wall has a new door cut into it, and the south western side received
a new loading dock/exterior dumb waiter. A new receiving lift onto the south west corner of the building.

[1975]
“The level plaza surrounding the bird house is being completely redeveloped for three new duck ponds in
front of the building, crane yards on the left, new flamingo pool, and exhibit behind in additional small
cages throughout the area.” 120

9/8/75 Smith and Faas, (FFV consultants) produce renovation drawings for the house. Terra cotta copings
repaired, skylights closed up. Acrylic is removed, plywood is placed over all low-roof skylights. Plywood
is covered with 2-1/2” of insulation and topped with a composition roof. A steel frame is built over the
roof to support a cooling tower, south-east side. A metal screen similar to a mansard is built around
cooling tower. 5’x7’ metal louver is installed at the north east corner, north wall. Stainless steel mesh is
added in the free flight area. Smith and Faas produce drawings dated 9/8/75, bird house renovation set,
electrical drawings. Good portion of lights demolished out of cages and replaced.

[1976]
“…the outdoor waterfowl ponds and the crane yards around the Bird House Plaza opened in July…” 121
“Renovation started on the interiors of the Elephant House and Bird House.” 121 R.S. Dame architect
consultant produces drawings for an oval-oid cage on the N corner of the birdhouse. Not connected.

[1977]
“Also, the Bird House area was renovated. The crane area emphasizes barrier-free design and breeding
potential; already the sarus crane and Stanley’s crane have produced young. Four outdoor exhibits for
hardy bird species were constructed. A new Flamingo Exhibit allows year-round exhibition with a heated,
glass-fronted house with pool and sand floor for winter. The front of the Bird House is approached through
three waterfowl ponds, which include natural nesting conditions… the interior of the Bird House was
redone to demonstrate relationships between species.” 60

[1981]
1/25/81 Komatsu/Brown Architects produce drawings for repairs to the 1964 great flight cage. Cleaned,
painted, and doors replaced.

[1984]
Birdhouse renovation drawings created by Zoo. Mark J. Mazz. Concrete pergola added to grounds to the S
of the birdhouse. On interior, ceilings in cages are replaced, light fixtures are replaced. New doors on the N
side of the large flight room. Skylights receive maintenance – replace missing screws, add new gutters,
some new cages added in the basement. Three translucent panels in the 1964 vestibule addition’s roof are
replaced.

[1986]
10/14/86 Design Tech East produces drawings for wetlands exhibit on the north side of the building. Old
tree-lined axial plaza is replaced with pools and a wooden walkway.

[1995]
1/24/95 Bird House HVAC renovation Phase I, Intec Architects, Planners, Engineers. Chiller unit installed
on east side of roof on a built-up steel platform. New platform built, old cooling tower screen removed.
1/19/96 Bird House HVAC renovation Phase II, Intec Architects, Planners, Engineers. Larger renovation. Some asbestos removed, noted as: “remove known asbestos as noted in the Versar report.” All new HVAC ducts installed in ceilings. Main floor: old plaster ceiling demolished and replaced with a dropped gypsum board ceiling. Plaster lighting cove remains. In basement, no spaces re-arranged but all ceilings removed to install new duct work. Roof: exhaust fans removed, two new large roof-top HVAC units installed on south side of roof.
1931 Reptile House

Building History

The Reptile House is Municipal Architect Albert L. Harris’s last and finest work at the Zoo. During a radio address in anticipation of its opening, Director Mann announced: “We are very proud of it [the Reptile House]. …The new building itself will say far more than I can in 14 minutes and 7 seconds over the radio.”¹ The building and its ornaments do indeed speak volumes to the zoo-goer, and represent a significant achievement of Mann’s wishes for the Zoo. Harris’s expressively ornamented brick buildings had become the new style for the Zoo’s exhibition buildings.

The house is the second of four exhibition buildings constructed during the Zoo’s golden era of building, 1928-1940. A clear connection can be seen between the Harris’s Reptile House and its sister building, the Bird House. The original northern entrance façade of the Bird House would have made the connection between the two even more apparent, but the portico was demolished in the house’s 1963-64 renovation, weakening the connection greatly. Edwin Clark’s Small Mammal House, due to its similar form and materials, can also be considered part of the brick building entourage. Harris’s Bird House and Reptile House tend toward a Byzantine-Romanesque style, while Clark’s Small Mammal House tends towards a simpler, more classical expression using dentils rather than arched corbelling. The three together, with the Elephant House, represent the Zoo’s second generation of buildings.

The Reptile House is the result of an accumulation of ideas gathered during a trip by Harris and Mann to the best of the European zoos.² The similarity between the Reptile House and the 1928 Bird House, designed before the 1929 trip to Europe, shows that for the general appearance of the building, Harris already had a predetermined idea. The trip was largely an information-gathering expedition for the technical side of reptile houses. A concern is expressed to have the building be as modern as possible: “Tentative plans for a modern, hygienic building have been prepared”³ “The best modern ideas as to the exhibition of reptiles will be incorporated in the building.”⁴ The arrangement of the cages, skylights, and keeper areas may well have been influenced by European experience; but the architectural style to be employed was already chosen.

The art on the exterior of the building requires special attention, as it is the Reptile House’s distinguishing feature.⁵ The colored concrete door molding was executed by John Joseph Early,⁶ and the dinosaur mosaic in the transom is the work of Charles R. Knight. Knight would also serve the Zoo at the Elephant House, executing much of the artwork of that building. Early was an innovative artist in the medium of concrete, who

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¹ Transcript of Dr. Mann’s radio talk presented Friday, December 19, 1930, under the auspices of Science Service over the Columbia Broadcasting system.
² 1929 Smithsonian Annual Report, 92. The zoos at London, Hannover, Hamburg, Copenhagen, Berlin, Dresden, Leipzig, Halle, Vienna, Budapest, Munich, Nuremberg, Frankfort, Cologne, Dusseldorf, Elberfeld, Antwerp, Amsterdam, Rotterdam, and Stellingen were visited. Stellingen was the most famous progressive zoo, owned and designed by Carl Hagenbeck. His zoo used moats to contain the animals.
³ 1929 Smithsonian Annual Report, 19
⁵ For a detailed description of the condition of the most important art, on the main portico, see the 1987 conservation report in the appendix.
managed to form the ungainly medium into previously unimaginable works.\(^7\) Of the art on the Reptile House, it is difficult to tell what was architect-conceived, artist-executed, or what was artist-conceived and executed. Albert Harris’s drawings of the porticos show a large amount of sculptural detail, the only change from paper to reality being in the column capitals.\(^8\) Shown as hunched atlases, they were replaced with lizards. The materials used for the detailing are extremely fine, but are not what one might expect. The stone appears to be marble, but the 1987 conservator’s report notes that the two types of stone used on the portico are actually highly veined limestone.\(^9\) Early’s specialty was artistically-formed concrete; the small lizard-head corbels along the parapet that appear to be carved stone are actually fine examples of his work. The art must be seen as integral to the building, and it defines Mann’s late 20’s and thirties vision of the Zoo – ornamented grandeur for the benefit of the public. He noted during its construction: “This building promises to be one of the finest of its kind in the world,”\(^10\) and surely the sculpture, in Mann’s view, was what made it so.

The content of the art fulfills two roles; identifying the building as a reptile house, and artistically displaying the evolutionary history of reptiles. The large mosaic stegosaurus over the entrance connects present day reptiles to their larger ancestors. Pterodactyls clutching the corners of the portico ready to spring off into flight hint at the ancestral connection between birds and reptiles. The ten panels on the doors alternately display a lumbering stegosaurus and battling yin-yang lizards. Much like religious stained glass, the art is used in the traditional role as a means to communicate. A simple message is conveyed: ‘these animals are all related, and here are some of their ancestors.’ The animals are not applied haphazardly, but are used in classical architectural elements: column capitals, bases, and vussoirs. In its original condition, the art went beyond merely visual and into the tactile; you could not enter the building without handling snakes: two intertwined serpents formed the original door handles. The art enriches the experience of the building; yielding pleasure and education, two of the founding directives of the Zoo.

The form of the house is a blending of program and aesthetics. The plan is dictated by a practical circulation system; a public corridor looping around the building is faced with cages on either side, contained within exterior walls forming a rectangle with clipped corners. The clipped corners create an apse-like exhibition space at either end. At about two-thirds of the building’s length, the main entrance occurs with a large octagonal tower above. On the interior at the entrance, a connecting corridor turns the loop into a figure-eight (the connector was filled in with an information room during the 1980 renovation, simplifying the circulation). The strong symmetry of the Bird House

\(^7\) Frederic Cron, 16. Notable works include a concrete replica of the 1922 Fountain of Time in Chicago, the Shrine of the Sacred Heart in D.C., and a replica of the Greek Parthenon in Nashville, Tennessee.

\(^8\) Harris’s control over the design of the applied art illustrates the traditional role of architect-artist-craftsman. The architect would specify the location of the art, the subject, and even perhaps lay out the composition. The artist would then prepare further detailed sketches or models of the piece, and then craftsmen or the artist would execute the work. A well-documented example of this relationship occurs at the Elephant House. Edwin Clark’s architectural drawings show a space for sculpture over the entrances, and notes outline the composition and subject. From this, Knight prepared detailed drawings of the stone reliefs, which were then executed by a contractor. Sketches appear in Sylvia Massey Czerkas and Donald F. Glut, Dinosaurs, Mammoths, and Cavemen: The Art of Charles R. Knight. E.P. Dutton, Inc, NY. For relationship with contractor/craftsman, see letter, Knight to Mann, May 19, 1936. SI Archives RU 74, Box 225 f1.

\(^9\) 1987 Conservation Report, Carol A. Grisson and Marion Mecklenburg

\(^10\) 1930 Smithsonian Annual Report, 100.
begs the question: “why is the Reptile House not symmetrical on its entrance façade as well?” The tower sitting off-center makes the building less formal, more at ease. Speculating, the lack of symmetry could be because the Reptile House’s site did not allow a grand approach vista. The Bird House achieved its monumentality via its massive square bulk and its approach axis, the Reptile House achieves monumentality via its tower and main portico. Monumentality was important to establish for the houses; the Zoo was attempting to prove itself as one of the best in the world. The more passive first-generation buildings of Zoo with their low, squat towers simply would not do.

The Reptile House’s interior has seen continuous modifications since completion in 1931.11 Changes typically had the motivation to improve exhibit experience, animal health, building systems performance, or accessibility. The basement space has continually evolved, from a strictly non-public service area to an exhibit space. The basement’s first modification occurred in 1958 when an insect and meal-worm raising area was added.12 Considering visitor comfort, the building’s hard surfaces proved echo-prone, and acoustic compound was sprayed on the vaults in an effort to reduce ambient noise in 1961.13 The early sixties saw Zoo-wide safety modifications in response to the 1958 Lion House tragedy, and in 1963 all of the plate-glass cage fronts in the Reptile House were replaced with laminated safety glass.14 After the burst of maintenance including painting and electrical work between 1960-1963, the building was allowed to stand without major work until the seventies.

Leading up to a major renovation in 1980, several improvements were made to the house during the seventies. A Zoo-wide accessibility upgrade reached the Reptile House in 1975, adding a ramp for wheelchairs and baby carriages, and the same year the basement level food storage area was improved with a re-arrangement of storage spaces and the insertion of a staff lounge and locker room. 1978 saw the commissioning of two artists to paint murals about the Zoo. Judith Ingelese painted at the new administration building, and Mame Cohalan executed two background murals for Reptile House exhibits.15 The interior of the Reptile House had seen the hand of a professional muralist before, R. Bruce Horsfall painted two murals in 1932 shortly after the building’s opening.16 Due to the wear of continuous cage cleaning, neither Horsfall nor Cohalan’s work is still visible.

The largest amount of change to the House occurred during the 1980-1981 modernization by architects Wilkes and Faulkner.17 The basement area which had previously served only as a non-public support space was utilized as an exhibit space for nocturnal animals. A small brick vestibule was added on the eastern side of the building on the lower level to serve as an entrance to the exhibit. On the main level, the original figure-eight circulation arrangement was turned into a simple loop by placing an information space in the middle of the central vault under the tower. While solving the circulation problem, the encroachment resulted in a dropped ceiling being installed over the suspended plaster vault. On the rest of the loop, box lighting coves were installed to

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11 See end of this section for a complete chronology of modifications to the Reptile House. What is provided here is a summary of major changes only.
13 1961 Smithsonian Annual Report, 175.
14 1963 Smithsonian Annual Report, 142.
15 1978 Smithsonian Annual Report, 71. The murals have worn off over time. See “Spots and Stripes,” Vol 8, No.3, Fall 1971, p.11. Published by FONZ.
16 1932 Smithsonian Annual Report, 60. Horsfall was the staff artist for Nature Magazine.
17 Construction drawing set by Wilkes and Faulkner dated Nov 30, 1979 on file at the NZP construction management office.
wash light up onto the smaller vaults. At the main entrance, an airlock vestibule was added at a forty five degree angle to the geometry of the building. The angle orients the visitor as they step through the doors, enforcing an orderly counter-clockwise circulation through the exhibits. Other major work of the renovation was limited to non-public areas; the stair was removed and replaced with a steel fire stair and fire-rated enclosure, and extensive maintenance was performed on the roof. The old simple composition roof was replaced with a more modern insulation board and a membrane roof with gravel ballast. Original copper flashing around the perimeter was replaced with composition flashing, the skylights were partially replaced with insulation panels, and a bank of solar panels was installed on the south eastern side of the roof. Just to the north of the Reptile House, an exhibit for crocodiles consisting of small, angular concrete masonry sheds and wooden decking joined the house.

After the 1980-1981 renovation, changes were not as extensive. In 1985, the “India Exhibit” was added; a small hexagonal space on the eastern side of the building, taking the place of two cages. In 1986 the nocturnal exhibit was demolished and replaced with an invertebrate exhibit.18 The majority of the partitions in the central basement area were re-worked (the periphery remained non-public), and another entrance was cut on the eastern elevation.

Bringing the house to its current condition, in 1991 a solarium shed addition was built on the eastern side of the building,19 and in 2000, the non-public cricket processing room in the basement received some mechanical renovations.20

Current Conditions

Structure

The building has thick brick bearing walls around the perimeter and a concrete and steel structure in spanning. The flat roofs and floors are composed of concrete slabs, and the sloping roofs are steel frame. Beams and slab edges simply rest on the brick perimeter walls or internal masonry piers. Steel trusses are used for spanning the sloped areas of roof.

At the southeast corner, on the eastern elevation, there is a stress crack [9] in the brick that continues into the concrete foundation. The crack could have several causes. Excavation of the loading dock ramp may have disturbed the earth at the corner, causing foundation settlement problems. Corners often naturally develop cracks, due to the stresses that develop between walls as they try to move independently. Brick used as a veneer on a non-brick structural frame will often lead to cracking at corners due to differential movement between structure and façade. In the Reptile House, the brick is solid, so the problem is likely a natural cracking due to the corner condition, or a sign of foundation trouble.

Roof

The roof is fairly complicated, with areas of flat roof, sloped roof, and extensive skylighting. The lower parapet is capped with a small terra-cotta tile roof, behind which is an unseen flat roof. From the ground, the terra cotta tiles appear to be in good condition; there are no missing tiles or obvious gutter and downspout problems.

A small vegetative growth can be seen growing on the southern flat roof [10].

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18 NZP produced drawings, dated 1/30/86. NZP files.
**Interior**

The interior does not retain any of its historic character. The suspended plaster vaults remain exposed in about \( \frac{2}{3} \) of the interior, but the acoustical compound sprayed on in 1961 destroys the historic feeling of the spaces. The flooring also has been changed from the original smooth terrazzo surface to a more textured brick flooring.

At the cages in the southern end of the building, a condensation problem is observable. Due to differences in temperature and humidity, water condenses densely enough on the exhibit’s glass cage front that it obscures a good view of the animals. The air-conditioned public space is many degrees cooler than the animal’s hot and humid cage. Water vapor in the air condenses as it comes in contact with the relatively cool surface of the glass. It is not known how prevalent this problem is for this cage, but a special means of preventing condensation should be investigated.

**Exterior Envelope**

The building’s exterior is beginning to acquire the patina of age and is in generally good condition.

Efflorescence appears in some areas on the brick. Efflorescence is staining on a building produced by water-soluble salts. Salts are often naturally present in mortar or brick, and if the brick becomes wet, the salts will be carried by the water to the surface as the brick dries. When the water evaporates the salts are left on the surface, forming a white-colored stain as they build up over time. Efflorescence is a purely aesthetic problem and does not affect the structural integrity of the wall. On the eastern elevation, a large splotch of efflorescence is visible at the loading ramp area [11]. Obscured by growths of ivy, more splotches can be observed on the southern elevation. Fortunately, no major staining has developed on the building’s most important elevation facing Olmsted walk. A very small efflorescence stain appears on the portico’s elevation high up at the cornice, along with a dark dirt stain.

Ivy has covered a good amount of the building’s north and south ends, growing from the ground all the way up to the low roof’s tile parapet [12]. Ivy is especially damaging to concrete, and it is enshrouding many of John Early’s artistic cast-concrete corbels.

**Service Systems (HVAC, plumbing, electrical, etc...)**

On the Olmsted walk side of the building, no HVAC equipment or extraneous antennae are visible. On the less-important eastern side, there are some visual and auditory intrusions. A tall vent stack attached to the side of the building (not original, likely installed during the 1980 or 1986 renovations) is somewhat unsightly. HVAC equipment at the north east corner is well-hidden behind a brick wall, but creates a considerably amount of noise.

**Preservation Action**

As with the Think Tank, preservation at the Reptile House should focus on maintaining its historic exterior appearance; specifically the north, west, and south elevations of the building. Interior changes are acceptable so long as they do not interfere with the exterior in a detrimental fashion.

1. *Portico*
A professional and thorough report on the portico’s condition was prepared in 1987 (selections included in the appendix). It is apparent that more maintenance work has been carried out since 1987. Repairs to the left column were well-executed. Cracks are visible but, filled with a closely color-matched material, they do not detract from the appearance greatly. The right column suffers from a mis-matching patch at the base of the arch [14, 15]. It is greatly desirable that the patch be either re-done in a material more closely resembling the surrounding stone or the damaged stone piece should be replaced altogether with a matching piece.

The portico is the building’s most important feature. Preservation of it should be the first issue for any maintenance work on the building.

2. **Roof maintenance**

The house’s terra cotta roof tiles are important for the building’s historic appearance. Future renovation work must take care to replace damaged or missing tiles with the best match possible. The non-visible flat roof areas can be re-roofed with whatever the most up-to-date roofing system is as future renovations require. The small growth on the south-western part of the roof should be removed before its roots do damage.

3. **Mortar joint maintenance, efflorescence**

Currently, the Reptile House’s mortar joints appear to be in good condition, not requiring maintenance. When repairs are necessary, the mortar should carefully match the existing mortar in both appearance and strength.

4. **Interior**

The interior has little historic integrity remaining. The historic suspended plaster vaults are still in place, but the acoustical compound is unsightly, and extremely difficult to remove; if necessary, the vaults could be demolished. In any future renovations, there are only two items of note for the interior:

1. Original art pieces should continue to be re-used in public places; i.e., the original portico doors (now at the information area) and the small stone relief sculpture at the main entrance.

2. The skylights should continue to be used to light the interior. The materials of the skylight systems are not important historically, but should be the best technology currently available.

Other than the above two items, the interior of the building can be remodeled as seen fit by current zoo design standards, so long as the exterior remains in undisturbed condition.

The issue of condensation on the southern cage’s glass can be solved easily enough. A second pane of glass could be used to create a cavity, so that one pane of glass does not experience cool air on one side and hot air on the other, the cause of condensation. A cavity alone may be sufficient to remove the problem, but a heated cavity would be a certain solution.

5. **Structural crack in the masonry at the south east corner**

The crack at the building’s south east corner is not severe, but it should be monitored. Zoo construction management office staff can attach a crack monitor and collect readings over the course of a year to observe if the crack is actively moving or if it is stable. In addition to monitoring, the crack should be caulked to prevent further damage from water infiltration.
6. Exterior openings
Various doors, windows, hatches and louvers have been added over the years. Some are painted different colors, some are rusty; a hodge-podge of different materials and finishes is the result [13]. To reduce visual noise, it would be greatly beneficial to come up with a unifying scheme to make the various openings seem less disordered. This could be as simple as painting them all a similar color; preferably a color that will blend closely with the brick.

7. Ivy
All ivy should be removed from the building. Kill the ivy at the roots and the gently remove from the brick.

8. HVAC noise
The HVAC noise that occurs on the east side of the building is a nuisance. During a future renovation, it would be worth investigating means of reducing or eliminating the noise.
Historic Illustrations

[1] The Reptile House as it appeared shortly after opening in 1931. NZP Photo Archive

Reptile House interior shortly after opening. The hard echo-prone surfaces led to acoustical compound being sprayed onto the plaster vault. NZP Photo Archive

Main portico before grade was raised to eliminate steps. NZP Photo Archive

detail of paneled doors. Smithsonian Archive


Current Photos


[10] Small vegetative growth on the southern roof, visible from Olmsted walk.
[11] Large splotch of efflorescence on eastern elevation. As it is not on the Olmsted Walk elevation, cleaning is not critical.

[12] Ivy growth on the north west side of the building. This ivy should be removed.
Visual ‘noise’ accumulating on the building. Louvers, fire bell, door canopy, and black pipe contrast with the original window sash. One possible method to reduce the noise is to paint all of the new elements a brick color so that they contrast less. Dirt staining around the gutter above the portico also suggests there may be overflow trouble at that location.

The left capital has had a stone piece replaced with a new piece to match. The match is not as close as might be desired, but it is more acceptable than the patch on the right capital. The patching material used contrasts considerably with the surrounding light gray stone. A better patch should be attempted.
Chronology of Reptile House modifications: evidence from Annual Reports and drawings on file in the Zoo Office of Construction Management

[1929]
“It is planned to erect the reptile house on the site of the old bird house [Hornblower and Marshall’s temporary bird house], and this necessitates the razing of the old building, which has been used up to now as a storage house for animals and birds for which there were no other quarters. The destruction of this building will reduce the exhibition space so much that no attempt has been made to enlarge the collection…” 90 “An appropriation of $220,000 has been made for the construction of a reptile house during the fiscal year 1930, and considerable work has been done on planning this building, which will, when completed, enable us to extend the collection to include reptiles, batrachians, and insects.” 91

[1930]
“A contract was let for the construction of the reptile house, and the work was started in March, 1930. This building promises to be one of the finest of its kind in the world.” 100

[1931]
“The new reptile house was opened on February 27, 1931, with a reception attended by 3,000 people. The building contains special lighting and ventilating systems and all the modern features known for the best exhibition of animals. Since its opening it has become the most popular building in the entire park.” 18

[1932]
“R. Bruce Horsfall, staff artist of Nature Magazine, has contributed to the Zoo two beautiful panoramas which he painted in the reptile house. One of these shows a Galapagos Island scene... The other is a Komodo Island landscape… These paintings add greatly to the building’s attractiveness.” 60

[1940] WPA
“At the end of the fiscal year there is practically completed an enclosure on the south side of the reptile house that will accommodate such animals as lizards, snakes, crocodilians, and turtles. This is provided with a pool; a moat keeps the animals in their enclosure but offers no obstruction to the view of the public.” 71

[1941]
“The reptile pit on the south side of the reptile house was completed by adding a small waterfall at one corner.” 78

[1950]
“The surface area behind the reptile house was improved by 2,100 square feet of cement surfacing, 175 linear feet of curb, 175 feet of concrete retaining wall 4 feet high, and 60 linear feet of steps, V-gutters were installed in front of these cages. This will improve the appearance of the area, check erosion, and improve sanitation.” 92

[1951]
“... electric hot-heaters were installed in the … reptile house, … to provide hot water at locations where it had not previously been available…” 116

[1953]
“The installation of heat zone regulators in the small mammals and reptile houses was completed. These provide even and adequate distribution of heat, so necessary to the health and well-being of the animals housed in these buildings.” 115 “A 2,000-gallon water tank was installed in the basement of the reptile house to supplement the 1,000-gallon tank, which has never been adequate.” 115

[1958]
“The basement space under the big tortoises’ enclosure in the reptile house was opened up and made into a storage room. An insect-raising room was constructed in the basement of the reptile house, and the animal department now has centralized and consolidated their mealworm raising.” 178

[1959]
“Some of the cages of the reptile house were redecorated with additional stonework, giving the reptiles crevices to lie in and providing them a sense of security and at the same time keeping them on exhibition. Some of the cages were repainted in pastel colors, and several equipped with fluorescent lights, as a pilot exhibit anticipating the day when all of them will be lighted in this manner. The glass at the top of all the permanent reptile cages was replaced by wire screening to provide better ventilation; four of the portable cages were reconstructed out of aluminum as pilot exhibits.” 188

[1960]
“A complete rewiring of the reptile house was completed…” 170

[1961]
“They [the DC Dept. of Buildings and Grounds] also repaired…the walls and ceiling of the reptile house. The ceiling of the reptile house was sprayed with acoustical compound, which reduces noise in the building...
by at least 50%. Because of the bad echo, this house had been extremely noisy when filled with people.”

“Remodeling of the alligator and crocodile exhibit in the reptile house was done primarily for safety reasons, but resulted in an improvement in the general appearance. The old coping was removed, and ¼-inch glass fronts installed up to a height of 8 feet. A 42-inch guard rail prevents the visitors from tapping on the glass. Inward-curving spikes keep the alligators back from the glass. A child with a 28 inch eye level is able to see all but 10 inches of the water.”

“The large second-floor room at the reptile house was redone and made suitable for use as an auditorium.”

“Results of the maintenance program are most apparent in the reptile building. The new paint in the visitor area and the rebuilding and decorating of the cages, along with the contract work done as a safety measure, have resulted in an orderly, well-kept building. Among the improvements not readily apparent are the new electric panels which provide uninterrupted service for the electric lighting as well as power for the refrigeration and other commissary activities in the reptile-house basement.”

“Many improvements made during the year were in the interests of safety. In cooperation with the District of Columbia Department of Buildings and Grounds, practically all the glass cage fronts at the reptile house were replaced…”

“The large second-floor room at the reptile house was redone and made suitable for use as an auditorium.”

“An extremely popular new exhibit is the jungle scene in the Reptile House.”

May 21, NZP produced drawings. Metal cages added in non-public basement area at the south/east end of building.

May 31, NZP produced drawings. Some glass cage fronts replaced, broken or cracked cages only. NZP produced light boxes added in front of all the cages.

“At the year’s end, one dozen projects were underway and on target, with twice as many due to be active by late fall. Work is now in progress on ramps for the small mammal house and reptile house. When these are completed, all exhibits will be accessible to wheel chairs and baby carriages.”

NZP produced drawings: renovation of commissary. Changes limited to non-public areas: new dry foods storage area, new canned goods storage, a staff lounge and locker room added, some block partitions added. The basement has a small machine shop area.

“The Zoo commissioned a second muralist, Mame Cohalan, to create backdrop displays for the Reptile House’s lizard and python enclosures.”


Lower level: concrete masonry, wood, gypsum board & stud partitions demolished. Stairs by main entrance demolished and replaced with a fire-rated stair and enclosure. Dumbwaiter demolished. Nocturnal exhibit installed in basement. Several partitions built, the central area becomes public, but periphery on the N, S, and W sides of the building remain non-public. A new brick vestibule is added on the east wall.

Main level: Marble tortoise mosaic removed from near the entrance. Brass railings removed & stored for re-use. Many cages knocked out, most glass fronts replaced. Door opening at north end of building widened to 4’. Partitions put in, cutting up main hall, adjusting circulation flow from an unrestrained figure eight to a simple loop. At the main entrance, a square vestibule is added at 45 degree angle to hall’s walls. Brick flooring is added. New sprayed concrete animal exhibits. Dropped ceiling added in public main space at entry area, information room put in. A built-out box lighting cove is added continuously around the public space at the spring-line of the plaster vault.


Crocodile exhibit: New adjoining exhibit is angular concrete masonry sheds surrounded with wooden decking.
“All animals in the Reptile House have been moved to the old mechanical shops building while their house undergoes complete renovation. We hope for public opening of the renovated Reptile House in the third quarter of fiscal year 1981.” 123

[1981]

“Remodeling of the Reptile House started in February 1980 and the building was turned over to the Zoo by the contractor in mid-September 1981 after completion… Located in the area behind the reptile house are three new, small houses, for indoor exhibits of crocodiles, and four outside yards and pools. The Reptile will not be completed until early in fiscal year 1982.” 115 “The basement of the Reptile House has been remodeled for a nocturnal exhibition of various animals, primarily small mammals. For the National Zoological Park this is a new exhibit and will not be occupied and opened to the public until later within the next fiscal year.” 115

[1982]

“In December 1891 the renovated Reptile and Amphibian House and Small Mammal House were completed, and preparations for opening began.” 110

[1985]

NZP office of construction management produces drawings for “India exhibit” – small hexagonal room created on main level, cages added. NZP also produces a drawing this year for the demolition of the nocturnal exhibit in the basement, to be replaced with an invertebrate exhibit. The public space is completely demolished and re-designed, but the perimeter service rooms remain untouched.

[1986]

NZP Office of construction management produces drawing for Invertebrate exhibit space renovation on 1/30/86. Interior only work. HL Aurey, PE Consulting Engineers, produce drawings. Central basement interior re-worked. New partitions, new door at east side of building, and the northern lower level vestibule is modified with new storefront.

[1991]


[2000]

Building History

The Elephant House (constructed 1936-1937) by Chicago architect Edwin Hill Clark (1878-1967) is a grand monument to the depression-era work relief programs at the Zoo. In 1935, the PWA granted $680,000 to the Zoo for construction of several buildings, including the Elephant House. The extremely large growth at the Zoo demanded somebody with experience, and Clark, having designed for both the Lincoln Park Zoo and Brookfield Zoo in Chicago, possessed the necessary skills. His resume makes him the first architect at the Zoo to have previous experience with zoo buildings; but he was not a ‘zoo specialist’ in the same sense that some architects today might be highly specialized in a building type; his firm constructed a variety of projects in and around Chicago, including residences, public buildings, a country club, and schools.

The building is unique for the Zoo. It does not fall into any of the stylistic categories constructed before or since. The mass and detailing exudes a strength befitting the animals contained inside. The exterior adopts a classical vocabulary, but the interior is harder to classify. Metal grill work and lettering hint at an art-deco influence, and oval-oid, streamlined columns with delicately incised grooves recalling fluting are an art-modern abstraction of the classical vocabulary present on the outside. Fine limestone rustication on the exterior is mirrored on the inside, but in concrete, showing an artistic play between stylistic vocabularies. There is subtle poetic expression into the building: The portals on the western elevation for the elephants are rough stone arches, while the human visitors pass through the much more smoothly finished and finely rusticated arches on the east; saying something in the architecture about the differences in refinement between man and beast. The house is one of Clark’s finest works. Mann was extremely satisfied, declaring: “The design of the building is simple, well proportioned, and beautiful.”1 In terms of contribution to the historic district, the building is equal to the Reptile House or Think Tank.

The story of the building’s design and construction is somewhat less turbulent than the Think Tank’s. The plans had to be approved by The Architectural Advisory Committee of the Secretary of the Treasury, and a scare occurred during a meeting between Mann and Clark with this Committee. The Committee did not immediately approve the plans, and wanted to re-design the site placement of the Small Mammal and Elephant House, turning the small mammal perpendicular to the Reptile House. Mann vented his frustration at being told what to do with his park in a letter to a colleague: “None of the members of this committee had interest enough to really look over conditions in our Zoo.”2 The Committee seems to have yielded over time, Mann notes hopefully to Clark in a later letter “Things look hopeful. …The idea is to turn around the small mammal house to somewhat the same position as we had originally planned and thereby eliminate the sore thumb sticking out in the road and coming back to the original and sensible design. Apparently everybody believes that its present position is atrocious.”3 Despite the initial upset, the Zoo would be allowed to do close to what it desired.

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1 1937 Smithsonian Annual Report, 70.
2 William Mann, SI Archives RU 7293, Box 1 File D. The letter is marked as unsent, but it vividly portrays Mann’s anger at the Commission.
3 Mann to Clark, January 3, 1936
The building uses a significant amount of ornament and integrated art; in the fear that some might be trimmed out as a cost-saving measure, Clark justified himself to the treasury department: “The architectural design is very simple and no features involving unnecessary expense have been used, nor are the buildings more elaborate than similar buildings in other zoological parks. ...it is my opinion that any attempt to modify the construction and details of these buildings, in order to reduce their cost, would be a distinct detriment to their usefulness.”\(^4\) All the details were fortunately retained. Notable artist Charles R. Knight\(^5\) was commissioned to execute much of the art for the Elephant House, including the 12 aluminum panels of prehistoric creatures and five terrazzo floor medallions (rhinoceros, elephant, hippopotamus, giraffe, and tapir). Knight also produced drawings for the limestone reliefs in the transoms above the entrances depicting elephants and their prehistoric ancestors.\(^6\) “Distinct detriment to their usefulness” shows how strongly it was believed this art was necessary in the building; the art and ornament was itself functional.

Since construction in 1937 the building has received many small modifications, always with the aim of improving animal health, building functionality, or visitor experience. It remained untouched from its original condition until 1951, when a portion of the acoustical tile ceiling collapsed. The ceiling was quickly repaired entirely with 1’x1’ cork tiles.\(^7\) In 1961, the arrival of delicate Masai giraffes led to a refurbishing of the original giraffe cage. In a concern for sanitation, the cage was sterilized and re-painted, and all wood was removed. Even the top six inches of dirt in the adjoining paddock were replaced as a preventative measure protecting the foreign species’ health.\(^8\)

1974 through 1976 saw the first major renovations to the house, part of the Zoo’s 70’s modernization work under Faulkner, Fryer, and Vanderpool. 1930’s standards for elephant paddock size were realized to be unacceptably small, and the adjoining paddocks were expanded to their present size; about tripling or quadrupling their original area. The method of containment remained the same with concrete moats. The work required large amounts of grading surrounding the house; part of the path on the southwest was a raised concrete bridge. On the interior, radiators were relocated on the south side of the great hall, and two non-public entrances were filled in on the southern side of the building.\(^9\) 1975 saw some public guardrail modifications, plaster work at ceiling soffits, and most significantly the construction of a viewing platform on the east end of the building.\(^10\) The platform offered a more on-level viewing of the animals, and the idea would be carried forward further in the 1988 renovation.

1983 saw fairly minor improvements.\(^11\) Bridges were built across the moats between paddocks so that animals could be transferred more conveniently. On the interior, some cages on the southwest had metal panel partitions replaced with poured-in-place concrete walls. Heavy concrete doors were added on the south west side of the building. An unsightly electrical conduit that ran across the main hall’s soffit was finished over with a stainless steel cover plate. The modifications were mostly to enhance the building’s functionality.

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\(^{4}\) Edwin Clark to Director of Procurement, Treasury Department, December 4, 1935.
\(^{5}\) Knight (1874-1953) is one of the most influential museum and zoo artists of the last century.
\(^{6}\) Charles R. Knight to W.M. Mann, May 19, 1936
\(^{7}\) Smithsonian Annual Reports of 1951, 115, and 1952, 106.
\(^{8}\) 1962 Smithsonian Annual Report, 177.
\(^{9}\) Faulkner Fryes Vanderpool Architects, July 12, 1974 Elephant House Renovation drawing set. NZP files
\(^{10}\) NZP construction office produced drawings dated September 8, 1975. NZP files
The 1988 renovations brought the house to its present condition. The 1975 viewing platform was deemed as a success; and replaced with a larger, more permanent platform, and a similar sister platform was constructed on the western end of the great hall. The structures are a remarkable throw-back to earlier zoo design philosophy; with logs and cedar slats forming a rustic, exotic-feeling hut. The platforms covered much of the floor at either end of the hall, running over the Charles Knight designed floor medallions. The art was carefully removed and placed in the floor of the platforms to ensure continual enjoyment of the pieces. On the spandrel, light sconces were added, two between each of the cast aluminum animal medallions. The vaulted ceiling received attention; damaged or missing cork tiles were replaced, and then a metal mesh was screwed on over the entire surface. Large skylights were cut into the high roof at either end of the great hall, aluminum trim was installed over the joints between the skylight wells and the metal mesh vault. Functionally, ‘squeeze cages’ were added to retain the animals for their handlers during occasional treatments.

Since the 1988 renovation, no major changes have been made to the building. In 2003, McMullan & Associates were the designers for a steel cable fence around the southern outside paddock. Drawings for an exterior renovation are on file at the Zoo, work should proceed in the near future.

**Current Conditions**

**Structure**

The building has a hybrid-structure system, with a concrete and steel frame system in spanning and perimeter unreinforced masonry walls carrying some of the bearing loads. The roof is a concrete slab poured over steel I-sections encased in concrete. Pairs of reinforced concrete columns line the central hall, and poured-in place concrete walls running from floor to ceiling separate the cages. Skylights over the cages are born by small steel trusses. Parts of the original roof slab were removed in constructing the skylights over the main public hall.

The structure appears to be in solid condition; no signs of distress have appeared in the masonry around the exterior of the building.

**Roof**

The roof is unimportant architecturally; but it is visible as one approaches from the north on Olmsted Walk. The two copper-clad boxes on the high roof are original to the building, but all other roof equipment has been added.

**Interior**

The Elephant House possesses one of the Zoo’s most impressive interior spaces, and it retains largely the same feeling as the historic interior. The construction of viewing platforms has enlivened the space and allowed better angles from which to view the animals, but broken the original symmetry of the interior.

Small amounts of rust are visible streaking off some of the skylight trusses over the cages [7]. The source of the problem is likely to be water in the humid interior air condensing on the cold metal in winter.

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12 Coastal Design. January 15, 1988 renovation set. NZP files. There has been no interior work since.
14 Quinn Evans, January 23, 2004 renovation set. NZP files.
Exterior Envelope

The lime-stone clad parapet walls, absorbing the brunt of the weather, are beginning to show some signs of distress [8]. Dirt staining and traces of removed vegetation are visible at various locations. The stone coping’s joints are deteriorating, and some stones appear to be buckling up slightly from their original setting.

The ornamental scrolls flanking the entry vestibules were unfortunately designed without taking into account possible water-shedding problems. As a result, dirt carried in rainwater washes off the scrolls and onto the wall’s surface, leaving large stains on the walls [9].

Ivy is beginning to grow on the limestone quoins near the northern main entrance. [10]

Service Systems (HVAC, Plumbing, electrical, etc...)

The roof of the building is visible while approaching from the north on Olmsted Walk. A large roof-top HVAC unit is visible to the wandering eye while approaching from the north. While approaching the northern entrance of the building, an antennae mounted to the building’s parapet wall causes some visual noise [6].

Preservation Action

The Elephant House’s top priorities are: maintaining the limestone-clad parapet wall around the perimeter of the building, and considering a new finish material for the main hall’s vault.

1. Mortar joint maintenance
The mortar joints of the Elephant House are not as protected as those at the Think Tank, and consequently should receive greater care. Of primary concern are the mortar joints on the parapet walls, where water is most likely to penetrate into the wall structure and then freeze, possibly breaking the connection between the limestone cladding and the brick backup, or spalling off small pieces of material around the joints. Several joints from the ground already appear to have been evacuated of a significant amount of mortar.

2. Water shedding from ornamental scrolls and parapet
The problem of water runoff from the ornamental scrolls is a difficult one. Periodic cleaning of the masonry may remove the stains, but the source of the problem remains. Installation of a gutter would be inappropriate. A possibility to permanently solve the problem while respecting the historic appearance would be to drill through the stone on its top surface (not visible from the ground) and create an internal gutter, tying in to the building’s interior downspouts. This would create an invisible way to shed the water, though it would remove some of the building’s historic fabric. In the long term it is better for the building to permanently solve the problem than have water continually washing down the walls.

The parapet wall also suffers from imperfect original detailing. It is sloped properly, shedding water onto the roof rather than the exterior wall, but the overhang is insufficient to protect the perimeter walls from any weathering. The parapet coping and cladding is not in a critical condition, but it is beginning to show some unsightly wear after 67 years. Maintaining the joints in the coping and cladding will go a long way towards increasing the life of the parapet. Applying a metal coping cap would be unacceptable.
3. **Interior**
   The interior has historic integrity remaining. The modification to the vaulted ceiling is the most major intrusion: the joint between it and the plaster below [11] is not well executed and has added electrical conduits running along the joint in some locations. The metallic mesh nature of it is also not the same character of surface originally installed; the roughness is not in character with the rest of the interior’s very smooth aesthetic. Refinishing of the vault, and making a cleaner joint between it and the soffit wall should be a topic for the house’s next major renovation.

   The general appearance of the interior has become more cluttered than the original intent, but the platforms are not destructive to the building. They allow children better views, and allow the space to be experienced in different ways.

4. **Vegetation**
   The ivy growing near the north entrance of the building should be removed immediately.

5. **Condensation on skylights**
   A modern glass skylight system should be able to prevent thermal bridging and reduce the amount of condensation on cold metal surfaces. The amount of rust streaking is not large, but the selection of a new, double-glazed, laminated glass skylight system with thermal break should be considered on the house’s next major renovation. As this report is being produced, the work is in progress to modernize the glass system.

6. **Roof clutter**
   If the building is renovated, an attempt should be made to reduce the visual noise on the roof of the building. Antennae should be removed or relocated, and any new HVAC equipment should be carefully placed, preferably on the less visible south western side of the building.
Historic Illustrations


[2] Early interior photograph. NZP Photo Archives

Current Photographs

[5] Photograph of giraffe yards. NZP Photo Archive

[6] Roof clutter. The temporary barriers are part of the skylight upgrade work, but the two antennae should be removed or relocated if possible.
[6] Skylight system before upgrade. As of September 2004, the skylights are being modernized. The trusses should be cleaned and re-painted.

[7] Detail photograph of parapet area. The mortar joints have already received some maintenance, the white caulk is not original. All of the coping joints should be inspected and maintained where required.
[9] Staining from water runoff at ornamental scrolls.

[10] Ivy growth at northern entrance.

**Chronology of Elephant House modifications: evidence from Annual Reports and drawings on file in the Zoo Office of Construction Management**

[1937]
“The contract work on the large mammal house was completed in June 1937, but considerable [sic] still remains to be done before it is ready for occupancy. This work is being carried on by the Zoo’s regular personnel which it is hoped will be augmented by assistance from W.P.A. It is anticipated that the building will be occupied by animals late in the summer of 1937.” “The walls of the cages for hippo, African and Indian elephants, and giraffe have been painted with appropriate backgrounds by artists of the Treasury art relief project.” 70

[1938]
“The stone large-mammal house, which had been completed in the previous fiscal year, was stocked with animals during August and September 1937, and was opened to the public October 13, 1937…” 67

[1951]
“In July 1950 a portion of the arched acoustical block ceiling in the large-mammal house fell. The building was immediately closed to the public, and the Public Buildings Administration was requested to make a study of the condition to determine the extent of the necessary repairs and how best to do them. On their advice a deficiency appropriation of $63,000 was obtained, and the work of repairing the entire ceiling was undertaken under a contract handled by the public Buildings Administration. Most of the work was completed by June 30, 1951.” 115

[1952]
The work of rehabilitating the large-mammal house, which was begun in the previous fiscal year, was completed December 10, 1951.” 106

[1961]
“They [the DC Dept. of Buildings and Grounds] also repaired the roofs of the…elephant house…” 175

[1962]
“The giraffe cage, both inside and out, at the elephant house, was completely rebuilt for the Masai giraffes received on September 30, 1961. Ironwork in the cage and partitions was redesigned so as to eliminate all wood, a possible source of contamination; the ground in the inside cage was removed to a depth of 6 inches and replaced; inside and outside cages were steam cleaned and sterilized prior to repainting.” 177

[1974]
“Plans are proceeding for the renovation of the outside Elephant House yards…” 106

[1975]
[Giraffe and pygmy hippo yards were modernized.] 119

[1976]
“…the enlargement of the Elephant House yards for the African and Indian elephants, Indian rhinoceroses, and Nile hippopotamuses were finished in the late fall of 1975.” 121 “Renovation started on the interiors of the Elephant House…” 121

[1981]

[1982]
“…a design contract was awarded in August 1982 for renovation of the Monkey and Elephant houses. Construction should start at the end of 1982.” 111

[1984]
“Renovation of the Monkey and Elephant Houses was completed in October and November of 1983, respectively.” 116

[1988]

[2004]
Quinn Evans, Architects, produce Elephant House exterior renovation drawings dated 1/23/04.
Holt House

Many excellent investigations of the Holt House have preceded this report, including work by consulting architectural historian Denys Peter Myers (1977), the Smithsonian office of Architectural History and Historic Preservation (1997-1998), and by Quinn Evans Architects (2003). All of the above sources will be heavily relied upon in the following report, no new research material is being provided. It can be assumed that at this point we know essentially all that can be discovered about the building from the existing documentation. In order to learn more, the building itself must be examined in detail. Unfortunately the interior has deteriorated to a point where internal investigations are hazardous. For safety reasons descriptions of the interior will rely upon Denys Peter Myers’s description from observations made in 1977, and from more recent interior photographs made by the Zoo staff, AH&HP staff, and the 2003 Quinn Evans report.

The simple conclusion of the Denys Peter Myers report was that “no restoration with integrity is possible.” This is not only due to the poor and altered condition of the building but is also due to the problem that if it was to be restored, we lack evidence to guide us in what it should be restored to. It is simply not known what the building’s original details were, or even if the building originally had a five-part Palladian plan. Myers decisively describes the approach that should not be taken: “It would be indefensible, for obvious reasons, to offer a conjectural set of designs for an imaginary “restoration” based on nothing but a romanticized notion of what the building now known as Holt House ought to have looked like when it was built… it must be pointed out that efforts at “restoration” made from insufficient evidence, while sometimes superficially attractive, can succeed only in producing falsifications that romanticize both facts and artifacts.”

Certainly the Zoo wishes to avoid falsification, and the truth is that little is known about the early days of Holt House puts the preservationist in an extremely difficult position; how are decisions to be justified?

The source of justification will come from legal documentation. The house was put onto the National Register in 1973 on the grounds of it being an example of notable design. “Although greatly altered and in a bad state of repair, the house is rather unusual for several reasons. In its present state, the house has a five-part plan, one of the few remaining five-part Georgian schemes in the District of Columbia.” As supporting evidence for the house’s significance, the nomination provides favorable quotations regarding the house from Secretary Langley and Frederick Law Olmsted Jr. Essentially,

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4 Myers, 35.
5 Myers, 1-2.
6 The reference to Georgian is incorrect. The house’s date is almost certainly Federal.
the nomination made a case that the house’s rare five-part arrangement is the reason why it is worthy of the National Register.8

As a diligent architectural historian, Myers challenges the register’s claim that the building is indeed a good example of a five-part plan in his 1977 report. Technically speaking, the emphasis on design would today fall under “Criteria C” for the National Register: “Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master; or possess high artistic values…” Myers evaluates Holt House as a representative of its type by comparing it with two other five-part plan houses, Homewood in Baltimore (1801-1803) and Tudor Place (completed 1816, [1]) in Georgetown. He concludes:

The case for architectural significance of Holt House rests almost entirely upon its having a five-part Palladian plan. There is at least a question, raised by Frank Baker’s previously quoted statement in his letter of July 5, 1890 to Samuel P. Langley, whether or not the house was originally so built. Whatever the case, it was badly built, and, in view of the lack of adequate light in even its principal room, it must also be said that it was badly planned. It appears to have been built by a vernacular builder, as its plan would have done no credit to even a far less skilled amateur architect than Dr. Thornton [the amateur architect of Tudor Place]. Even as an admittedly rare (although late) example of the Palladian five-part plan, Holt House must be ranked as a comparatively poor representative of its type.9

This is valid criticism; Holt House is an extremely different class of building than either Homewood or Tudor Place. Holt House, from what evidence we have, was a much more humble building, or, as Myers describes, “dull provincialism.”10 If indeed Roger Johnson had it built for himself (as will be discussed in the following narrative on the house’s history), it was built by an industrial American slave-owning class, not an amateur aristocratic gentleman dabbling in architecture. Regardless of the class of person who built it, the fact remains that the house is a comparatively poor example of a five part plan, but it is a prime example of a vernacular attempt at high-design.

The discussion of the Holt House will continue with a historical narrative, compiled from the work of Cynthia Field, Sabina Wiedenhoeft, and Lara Pomernacki, after which the possible futures of the house will be discussed.

**Historical Narrative of the Holt House**

Because the original construction date of the house is unknown, it is best to start from as early as possible to develop a complete understanding of the house. A few items of note shall be focused on while progressing through the narrative:

1. The relationship between the house and the mills that were built along Rock Creek.
2. Notes on possible slave presence at the site.
3. Notes on the few significant personages that can be linked to the house. As Myers mentions, none have any national significance.11
4. Major alterations and possible developments of the building.

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8 1973 National Register Nomination form. In item 8, ‘statement of significance,’ the closest the form comes to clearly stating the House’s significance is as follows: “Although major alterations were undertaken, the significance of the building’s design was recognized from the beginning.”
9 Myers, 34.
10 Myers, 33.
11 Myers, 5.
Although the house is strictly listed as being of architectural significance; the above notes will add a broad historic interest to the house. It is hoped that a combination of historic interest and architectural character can contribute to a better future for the house.

**Pre-colonial history**

Upon acquisition of the Zoo’s property in 1890 the Smithsonian had a botanist, ornithologist, geologist, and archeologist survey the property and had their findings printed in the Institution’s Annual Report of that year. The archeologist determined that: “Unmistakable signs of Indian occupation have been found. …a careful observation of the bowlder-beds [sic] of the Potomac formation… found many chipped implements, showing that here, as elsewhere in the Rock Creek region the quartzite pebbles are shaped into weapons. While most of those found were the imperfectly formed and rejected stones, some portions of finished blades were discovered. It is not improbable that an Indian village once existed within the Park limits, near the soapstone quarry on the eastern side of the creek.”

By the time of any settler improvements on the site (late 1700’s), the Native American population had been gone for some time.

**Beall Family**

During the eighteenth century the Beall family was granted 863 acres in Montgomery County which included land that would become a large portion of the District of Columbia, including the Holt House’s land. It is unknown if the Bealls in any way developed the land in the area of Holt House and the Mills before it was purchased from them by Benjamin Stoddert in 1793.

**Benjamin Stoddert (1751-1813, owned NZP land 1793-1800)**

Much like a good portion of the District of Columbia, the Zoo’s property passed through the ownership of Benjamin Stoddert. Stoddert, a revolutionary war major and first secretary of the Navy, was one of a group of nineteen land purchasers approached by President George Washington to secure land for the establishment of a federal city. Stoddert appears to have been the first to have improvements of some kind constructed on the Zoo’s land, possibly a mill referred to in one of his wife’s letters. It is unlikely that he built the Holt House on the site, as he did not live on the property himself, and he was in a difficult monetary state after donating a large portion of his land to the government. It is unknown how Stoddert administered his mill (if indeed it existed at

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12 1890 Smithsonian Annual Report, 74.
13 The Beall family was one of the earliest to settle in Maryland and many histories have been written of the family. These reports, which include information on the various land grants, can be found at the DAR Library in Washington, DC and the Maryland State Archives in Annapolis, MD.
15 In the land transfer deed from Benjamin Stoddert to Walter Mackall it states "the buildings, improvements", not specifically mentioning the mills. From a personal letter by Mrs. Rebecca Stoddert it is known that the Stodderts owned a mill in the District of Columbia. Since no other mill property has been traced to the Stodderts in DC, it is therefore assumed that Stoddert constructed the Columbia Mills and that the "buildings, improvements" refer to Columbia Mills. District of Columbia Recorder of Deeds, Land Records Liber F6, folio 95-97. Personal letter to Eliza Gantt from Rebecca Stoddert, August 4, 1799. Library of Congress, Manuscript Division, Personal Papers of Rebecca S. Stoddert.
16 “Stoddert donated approximately half of his land holdings in the Washington, DC area for the creating of the new federal city, thereby loosing a lot of money. Land parcels which he did try to sell did not gain enough of a return for him to pay off his debts.” Letter to James McHenry, Esq. from Benjamin Stoddert
the time); he may have leased it, and there may have been slaves working at it. The portion of Stoddert’s property within the Zoo, including the mills, was sold to Walter Mackall in 1800. Curiously, the mill is not mentioned on the deed, though “buildings, improvements,” are. The absence may have been due to hasty writing, or Mackall may have built the mill on the property.

It is unlikely that Stoddert would have built the Holt House in the form we see today, as he already had a country house called “Beall’s Pleasure.” However, during Stoddert’s period of ownership it is a possibility that some other, smaller building occupied the site of the Holt House. The odd variegated brick and stone mix of the Holt House’s foundations suggests many things, including that an older house’s foundations could have been built upon, or that stone was salvaged from another building on the site.

With absolute certainty, all that can be said of Stoddert’s period of ownership is that “Buildings, improvements” were built on the site, without knowing if such buildings included either the mills or a house of some kind.

Walter Mackall (owns zoo property December 1800 until January 1804)

Mackall, a wealthy Maryland property holder, held the land for only three years before re-selling it to Jonathan Shoemaker. When Mackall sold the land in 1804, the deed made specific mention of “Mills, Mill seats, way waters, buildings, improvements,” but not of a house that would indicate the Holt House. It is unknown if the land or mills were used or maintained during Mackall’s fairly brief ownership. It may have been a speculative venture; buying the land, building mills, and re-selling; or he may have simply been attempting to sell what he bought at a higher price than what he paid for it.

The transitory nature of Mackall’s ownership also suggests that he did not build the Holt House. Had he built such a large house, the next owner, Jonathan Shoemaker, who appears to be a small-business miller probably could not have afforded the property. All we can know for certain is that at the time of sale in 1804 there did exist “Mills, Mill seats, way waters, buildings, improvements” on the property. The improvements make logical sense for Shoemaker, a miller, to purchase. A rather large house that can be described as a country estate would not make sense.

Jonathan Shoemaker (owns zoo property 1804-1809)

Coming from a line of Philadelphia Quaker millers, Jonathon Shoemaker purchased the mill from Mackall with the apparent intent of establishing himself in the area. His grandmother had built, in partnership with other relatives, a corn-grist mill near

regarding land values in DC, 10/31/1803, Library of Congress, Manuscript Division, Personal Papers of Benjamin Stoddert. He also had his own country home “Beall’s Pleasure”

Stoddert was a slave owner. 1/1/1800, MLK Library, Washingtoniana Division, Census Records, 1800, Dt. of Col.-872-31001-31010-0(11), DC Census Records for the Benjamin Stoddert family: “Benjamin Stoddet family living in Georgetown "1 male between age of 45-60 yrs, 1 female between age of 26-40 yrs, 1 boy between age of 10-16 yrs, 1 girl between age of 10-16 yrs, 3 girls under age 10, 3 boys under age 10, 11 slaves.” It is unverifiable if the slaves actually worked at the mill or on other lands owned by Stoddert, or simply at his household.

18 12/1/1800 DC Recorder of Deeds, Land Records Liber F6, District of Columbia, folio 95-97., Land Transfer Deed from Benjamin Stoddet to Walter Mackall. The improvements mentioned are: “Together with all and singular the buildings, improvements, priviledges, advantages and appurtenances to the said part of a Tract of land hereby bargained and sold.”

Philadelphia which remained in the family for a century. Despite such a family record, Shoemaker was unfortunately plagued with business difficulties in Washington; he had to take a mortgage on the mill,20 and after settling accounts on the Rock Creek Mill, his attempts to make a different mill profitable for Thomas Jefferson ended in failure.21 In 1809 Shoemaker sold the property to Roger Johnson.22 Due to Shoemaker’s financial problems, it seems unlikely that he would have built such a large building as the Holt House. There is also little precedent for such a grandiose Palladian villa among the Quakers. If there was a house on the property at this time, it may have been a much more modest structure.

Notably, Shoemaker established a Quaker cemetery on his land in 1808,23 a use that would later expand with the establishment of the Union Benevolent Association colored cemetery, which partly had property within the Zoo’s bounds. The sale of the property to Roger Johnson would exclude the Quaker cemetery.24

George and Roger Johnson (active at zoo property between 1809-1835)

Roger Johnson was a wealthy entrepreneur who had established himself in the iron business with his older brothers, one of whom was Maryland’s first governor, Thomas Johnson. He purchased the property at the Zoo apparently hoping to establish his son George profitably in the milling business. The mill would be run under George Johnson from 1809-1818, at which point it was mortgaged to pay off debts.25 George had a large and modern mill built in 1814 to replace the old mills, and non-payment of services rendered to him by the millwright (among others) lead to a slew of litigation actions being brought against George between 1814 and 1820.26 In 1821 an advertisement for the sale of the mill would appear in the National Intelligencer newspaper.27 The failure of the mill and the debts incurred apparently caused some bad

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23 1/2/1808 Land Transfer Deed from Jonathan Shoemaker to the Friend's Meeting for a Friends' Burying Ground.
24 7/6/1809 Land Transfer Deed from Jonathan Shoemaker to Roger Johnson, DC Recorder of Deeds, Land Records Liber W22, District of Columbia, folio 109-111. In addition to noting the exclusion of the Quaker burying grounds, the mill is also not mentioned in the deed. This may show that the mill was in extreme disrepair and becoming outmoded. Roger and George Johnson’s heavy investment would support this.
26 Civil Trial Records from 1814-20. National Archives, Record Group 21, #E1, Docket Books. Daniel Kemp vs. Johnson in 1814, Oliver Evans vs. Johnson in 1814, Wilson vs. Johnson in 1815, Falls Bridge Turnpike Company vs. Johnson in 1818, Johnson vs. Wallach in 1818, Bank of Columbia vs. Johnson in 1819, Zachariah Smart vs. Johnson in 1820. Daniel Kemp and Zachariah Smart were builders suing Johnson for non-payment. Oliver Evans was an innovator in mill technology, he also demanded money from Johnson.
27 5/29/1821 ‘National Intelligencer’ Advertisement for Sale of Columbia Mills, Johnson selling Columbia Mills, MLK Library, Washingtoniana Division, Microfilm 'National Intelligencer', NP2016, Reel 29, p. 4. “This valuable property lies on Rock Creek, a never-failing stream, near Georgetown. A large brick wheat Mill, 50 by 54 feet, 4 stories high, running 4 pair burrs, overshot wheels, 16 feet head and fall,
blood between father and son; in Roger Johnson’s will ten of eleven of his children received some of Roger’s extensive properties; the exception was George. In the 1814 case of Kemp (the millwright) versus Johnson, it is noted: “…[a letter] contained a request from Mr. Kemp that Johnson would send him his negotiable notes endorsed by his father in payment of his Bill for the work on his mill”, suggesting an understanding existed that Roger Johnson was the person providing the capital, not George.

It is almost certain that the Holt House was built in some form under the tenure of the Johnsons. The first solid proof of its existence occurs in 1831 in Johnson’s will, and the etching of “1827” in a second floor window pane suggests a ‘no later than’ date for the house’s construction, barring the possibility of a window pane being recycled from another building. With Roger Johnson a man of enough wealth to build such a house, and a reason to do so, occurs: he may have been attempting to set up his son in a manner befitting his higher social status. With the mill and the house George would have had a suitable place to live and a source of income. Apparently things did not work out in as idyllic a fashion as Roger Johnson desired.

Reasonable speculation allows two scenarios: either the house was constructed before George failed at the mill, or after. It seems more likely that the house was built before, between 1809 and 1818, rather than after, for several reasons: firstly, the large amount of debt George brought upon his family by 1818 ($50-60,00029) seems to have broken their relationship; if his father would not include him in the will, it is likely he would not build him a mansion. Secondly, upon the failure of the mill and its being sold in 1823, the property was split, the part with the Holt House being retained by Roger Johnson. There would have been little reason to split the land had there not been something of value upon the property (such as a large house) that Roger Johnson had a desire to keep.

If the house was built before 1818, then it must have been intended to be a family home for George Johnson, in which case he would have been living at Holt House while attending the milling operation. With George living at the house, a possibly connection is established between the house and the story of American small industry.

The second scenario is that Roger Johnson built the house after the failure of the mill. This seems less likely, but is easily possible. The debts forced Johnson to sell some

manufactures 100 barrels flour per day with ease. A brick plaster mill which grinds 12 tons plaster per day. A two story framed building, 23 by 30 feet. Two other brick buildings for workmen, with stabling for 12 horses, sheds and all new, and in complete repair, with about 30 to 32 acres of land under good fence. The terms will be made accommodating, which will be made known by application to Roger Johnson, near Fredericktown, MD or James Dunlop, Jr. Georgetown, DC. The mills cleared the last season 25 per cent on the amount that they are valued at and will be sold for.”

28 3/14/1831, Frederick Co. Recorder of Wills, Frederick, MD, Liber G.M.E.1, Folio 212, Roger Johnson’s will. Further ammunition against George occurs in a letter: 01/06/1838, Library of Congress, Manuscripts Division, Adams Papers, Louisa C. Adams Letterbook, Reel 538, Letter from Louisa Catherine Adams to son Charles Frances Adams regarding the Columbia Mills: “… Mrs. Newmans says...George Johnson had nearly ruined his father who had paid his debts to the amount of sixty thousand dollars. The old gentleman had been very wealthy but to meet such an emergency he had been compelled to sacrifice the best portions of his fine estates at the most unpropritous time and had only been enabled to preserve his paternal farm and another small estate which he bequeathed to his youngest son. He provided for his daughters at their marriage, one only remaining single and devoted to the care of her mother.” Though gossiply and possibly inexact in details, the letter seems to suggest a family rift occurred with George.

29 01/06/1838, Library of Congress, Manuscripts Division, Adams Papers, Louisa C. Adams Letterbook, Reel 538, Letter from Louisa Catherine Adams to son Charles Frances Adams regarding the Columbia Mills. Louisa claims the amount at $60,000, George Johnson would claim he spent $50,000.
of his properties;\textsuperscript{30} one does not begin to build a large brick mansion when one is selling
off property to pay debts. Also, there would have been little reason for Roger Johnson to
build the house for himself; he lived some distance away in Frederick County.\textsuperscript{31} The
reason for its construction then becomes a retreat to use when visiting the District, to
house friends, or as an additional inheritance to distribute among his many children. It is
not known what Johnson’s travel habits were or if he frequented the area enough to merit
building a house such as the Holt House. It is known that between the failure of the mill
in 1818 and the sale of the house in 1835 there were probably at least temporary
occupants due to the ca. 1827 dates scratched in the second floor window lights. (A way
to test the ‘recycled’ theory would be to see if any were mounted with graffiti scratches
on the exterior. Such an observation would still not be conclusive, and regrettably is now
impossible in any case) Questions remain: who was occupying the house during those
years between 1818 and 1835? Did George Johnson live at the house? Was it vacant?

Combining the above speculation with the actual physical evidence of the
building itself, we can feel confident that the building was constructed sometime around
the period of 1810-1830. Denys Peter Myers, observing the qualities of the brick,
suggests a date after \textit{circa} 1820,\textsuperscript{32} which is in favor of the post-mill failure scenario.
Myers’ observations on the interior reach a similar conclusion, noting “The aprons of the
windows all have a profile typical of the 1820’s”,\textsuperscript{33} though he carefully notes that the
aprons’ presence at windows known to be modified during NZP renovations suggests
they are an imitation of what was there before or possibly an invention. Further
muddying the waters, according to Myers the mantelpieces are of a design that goes “at
least as far back as 1810.”\textsuperscript{34} All the above analysis regrettably cannot form a date for the
building beyond a very broad-sounding 1810-1830, so the question of date shall be left at
that.

A point of historical interest is that both George and Roger Johnson possessed
slaves,\textsuperscript{35} making it extremely likely that slaves were used on the property, either working
at the mill, building the house, as servants in the house, or in any agricultural activities on
the property. It has been suggested as “most probable” that the Johnson family used their
slaves in the construction of one of their iron furnaces.\textsuperscript{36} They constructed several such
furnaces around Maryland; it is a small step to consider that slaves were used in the
construction of one of their houses, especially considering the vernacular quality of the
building. Though an item of historic interest, this does not necessarily make the house
significantly unique, many country houses built around Washington before the Civil War
were likely to have had slaves involved in some way.

\textsuperscript{30} Ibid. Louisa claims Johnson had to sell several properties at a very “unpropitious” time.
\textsuperscript{31} 1/1/1820, Nat'l Archives, Microfilm Room, Frederick Co. MD, M-33 Roll
\textsuperscript{32} Myers, 21
\textsuperscript{33} Myers, 27
\textsuperscript{34} Myers, 29
\textsuperscript{35} George had 2 males slaves of working age in the 1820 census (notably after his financial difficulties; he
may have had more before litigation and debt took its toll), Roger Johnson had 13 males slaves and 21
female slaves that same year. 1/1/1820, Nat'l Archives, Microfilm Room, Frederick Co. MD, M-33 Roll
43, p. 81, Maryland Census Record for the Roger Johnson family, 01/01/1820, DC Census Records for
George Johnson, National Archives, Microfilm Room, Washington County, DC, M33 Roll 5, p. 68.
\textsuperscript{36} Dr. Edmund F. Wehrle, \textit{Cactoctin Mountain Park: A Historic Resource Study}. U.S. Coast Guard
Academy, March 2000.
From 1821, the mill remained up for sale until 1823 when John Quincy Adams purchased it; shortly afterwards JQA became the President of the United States (1825-1829). Adams’s involvement was due to a familial connection; George Johnson happened to be a cousin of his wife. At JQA’s purchase of the mill, the Holt House was split from the mill property, with the Holt House retaining most of the top of the hill and the mill keeping a swathe of land along the creek. If any association between the Holt House and local water-driven industry can be made, it relies upon speculative evidence. It is known that George Johnson continued to manage the mills for JQA until 1826. He may have continued to live at the Holt House until that time, but it is not certain. By 1830 the city directory notes George Johnson as working as a clerk and living in Georgetown.

Aston Alexander (owns the Holt House from 1835 until 1844)

At Roger Johnson’s death in 1831 a house on the property was earmarked for sale to pay off debt according to his last wishes. Nothing more is known about the house until Ashton Alexander’s purchase in 1835, producing a four-year interval during which the house may have been vacant. From the deed, it is certain that when Alexander purchased the property a house in some form came with it.

Alexander was a prominent Baltimore doctor who collected several properties in Washington and Baltimore during his life from which he derived extra income in rent. Holt House was one such rental property to him; a colorful advertisement posted in 1841 gives us some clue as to the activities at the house: “For lease, sale, or rent… a most desirable retreat… to the injury of the property, it has undergone three years of deterioration by the worst treatment by those who unfortunately tenanted. The proofs of which are grievously visible at a glance…” The advertisement continues to give us our first clue as to the form of the house: “…The house is very superior; it is 126 feet long, two wings and a centre building…” Myers has noted the discrepancy between the

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38 Library of Congress, Manuscript Division, Adams Papers, John Quincy Adams Diary, Reels 36-40, entries of November 10, 1823, November 17, 1823, March 5, 1824, June 9, 1824, August 24, 1824, November 28, 1825. By January 1826, Johnson requested Adams to provide him with a reference for another position.
39 SI American History Library, Microfiche file for City Directories, Washington/Georgetown City Directory, 1/1/1830, p. 44, no. 1520.
41 4/1/1855, Maryland State Archives, Annapolis, MD, wills, Liber 26, folio 375, CR 136-2, Ashton Alexander's will. Although Alexander no longer owned Holt House by the time of his death, he owned other rental properties from which he collected income. During his ownership of Holt House, the property was rented, as is evident from the for sale advertisement dated 6/30/1841.
42 6/30/1841, MLK Library, Washingtoniana Division, Microfilm of 'Daily National Intelligencer', Reel 63, 'Daily National Intelligencer' advertisement, front page. The full text of the advertisement is as follows: “For lease, sale, or rent, and is now offered to the members of Congress, Foreign Ministers, heads of Departments, and visitors to the seat of Government, that most desirable retreat on the heights of Washington called by the oldest physicians of the District 'The Seat of Health', as it surely is of beauty, and but one mile and a half from the President's square. 'Fatally for the interest of the owner it was called Jackson Hill, by an influential friend of 'the old tyrant'. And more still, to the injury of the property, it has undergone three years of deterioration by the worst treatment by those who unfortunately tenanted. The proofs of which are grievously visible at a glance. And for the whole three years not a dollar, so far, has been received for damages or rent.'Gentlemen or Ladies, of taste and fortune, would do well to ride out and examine for themselves 'a retreat so lovely'. The house is very superior; it is 126 feet long, two wings and a
house’s actual size (88-½ feet) and the advertisement’s 126 feet. Given the flavor of the rest of the advertisement the technicality can be attributed to overblown flourishes of salesmanship. The discrepancy should remind us however that until this 1841 advertisement, we have no evidence to suggest the house had achieved its existing “two wings and a center building” arrangement.

Enough evidence exists to raise serious doubt in the above regard. There is a watercolor painting [2]33 that is just credible enough of a source to raise interesting questions. The date of the painting is unknown, but judging as how the copy of the painting arrived into the possession of the Smithsonian via a descendant of Amos Kendall, a renter of the Holt House under Ashton Alexander’s period, the date can fairly reasonably be put at between 1838-1841, the time of Kendall’s tenancy. The features of the painting which suggest that it is indeed the Holt House include the four front steps, the arrangement of the drive, the central wing of the building, the way the grade is arranged as it meets the building, and lastly, how the property around the house is “destitute of trees,”44 matching Henry Holt’s 1891 verbal description of what the property looked like upon his 1843 arrival. But in the painting the entire west wing of the building appears to be missing, with a shed roof over what is now a ‘hyphen’! Myers has noted that Baker observed in a July 5, 1890 letter to Secretary Langley: “The western room should be left entirely unfinished for the present. I am not at all sure that you will not wish to have it torn away altogether when you return. It was not an integral part of the original house but was added later.” The painting would seem to be corroborating evidence with Baker’s observation. If Baker and the painting are correct, then the Holt House would have been an extremely odd composition, leading to yet another possible scenario: was the house designed as a five-part plan but not originally completed as such? The only way to verify if the wing is an addition for certain would be to remove all interior finishes and carry out a detailed examination of the building’s structure throughout. Ultimately, merely the painting, which may have its perspective distorted by an amateur artist, and Baker’s statement, which could be based in opinion, are insufficient evidence for a solid judgment. Only with a third piece of evidence from within the building itself could something definitive be said.

If the west wing was not present for some time in the building’s history, more questions are created. When was the addition built, why, and who built it? Unfortunately, we do not have answers other than the statement in Alexander’s 1841 advertisement that the building had “two wings and a center building” by at least that time.

To continue with the narrative; Amos Kendall is perhaps the House’s most famous resident, though he only rented the house temporarily (c. 1838-1841). Kendall was “an influential political colleague of President Andrew Jackson and postmaster general under Jackson and his successor, Martin Van Buren.”45 Kendall lived in some style while he was there, throwing at least one party, recollected as follows by notable guest, John Fairfield: “…I had a rather pleasant time. It was Kendall’s first, and was centre building, rooms of every size, unique and beautiful in its plan; and wants but to be newly papered and painted to make it delightful... Hill, valley, and stream, cliffs, rocks, and forest trees, in an unending variety - romantic in beauty of landscape - are there to regale the eye. Water, delicious, and as cold as if it rushed through an ice-berg. And the elevation is so high that it is the very focus of the winds, in heating weather, to save you from the dust of the avenue; and in full view of Peirce's pleasure gardens, and in rear of the Columbian College.”

33 SI Archives, RU 365, Box 35, Folder 9.
44 Myers, 3.
45 Direct quotation from the Quinn Evans 2003 report, 12.
gotten up in very good style. There were four rooms below, all pretty well filled, and two of them with cotillion dancers. There were two chambers with tables, cards, chess boards, &c. I beat Doctor Taylor of New York, two games of chess, besides spending a considerable time in seeing the ladies dance, eating and drinking the good things provided for us, and playing at chit chat with A. B. C. & D."\(^{46}\) Kendall also had two of his daughters married at the house, referred to as “Jackson’s Hill” in the marriage announcements in the Daily National Intelligencer.\(^{47}\) These activities are noted not to indicate that they contribute to the house’s historical significance, but to show the variety of use the house entertained; briefly, it is provable that it did serve the role it was possibly built for; a luxurious country villa. Fairfield’s mention of ‘four rooms below’ can also be seen as curious; the lower floor currently has five rooms. Either one room was closed off to the festivities, Fairfield miss-stated himself, or the house was missing a wing in 1839.

Henry Holt would purchase the property from Alexander in 1844. It is possible that the building remained vacant in the three year interlude between advertisement and sale.

**Henry Holt (Holt family own the Holt House from 1844-1890)**

Henry Holt purchased the property in 1844 and turned it into a small farm.\(^{48}\) From New York, Holt was the first long-term resident of the house, raising a family and tending crops. Several out-buildings existed around this time to support farming activities.\(^{49}\) It is apparent that he did not maintain the house very well, as seen from the photographs taken ca. 1889 [3, 4], and this is possibly because of some financial difficulties he had during his time at the house. In 1854 Holt transferred the deed of the house to a relative, Thomas Jackson, and after fulfillment of payment twenty three years later the property transferred back to Holt.\(^{50}\) A lean period of maintenance over twenty three years no doubt resulted in some of the dilapidation present when the Smithsonian purchased the property. Tax assessments between 1868-1877 also show that the property lost some value.\(^{51}\)

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\(^{47}\) Researched by SI AHHP. The Daily National Intelligencer, Nov. 1839, and Friday August 14, 1840.


\(^{49}\) The outbuildings included, for certain, a stable (used when the NZP purchased the land), a shed, And what is shown in the accompanying photographs.


\(^{51}\) 1/1/1879, Nat'l Archives, RG351 Records of Gov. of DC for the County of Washington, Vol. 12, 1878-79, p.106106, Tax Assessment for Holt House; Henry C Holt owner. The land value decreased significantly in only 4 yrs for both lots. The entry for a single brick house on 13 1/2 acres matches the entry in Vol. 10, 1879.
We know very little about the evolution of the house under Holt, other than his already mentioned comment on the treeless state of the property on his arrival. When the NZP purchased the house they found it in a near-critical state of dilapidation.

**National Zoological Park Ownership (1890-present)**

With Director Baker and Secretary Langley taking over possession of the house, the amount of available documentation increases dramatically and we can make informed judgments about the modifications carried out by the Zoo’s architects, W.R. Emerson, Glenn Brown, and Hornblower & Marshall. The three architects faced a difficult task to make the house habitable, limited by the discretionary funds the Zoo had to spend. Under the close attention of Secretary Langley they did succeed in patching the house up and making it useful for the Zoo for a long time. For a detailed explanation of the changes carried out, the thorough AH&HP office’s report: *Holt House Structural Alterations* is included as an appendix, and for an analysis of the existing fabric with an eye for what may date to the original house, excerpts from Denys Peter Myers’ report are also included as an appendix. At the end of this section is attached a timeline of alterations to the house under Zoo ownership. After the initial modifications by the trio of Zoo architects, ending around 1901, the history of the building becomes a history of makeshift repairs, deterioration, and the attempt to find another use for it.

During Zoo ownership another reference to a possible addition is made by architect Glenn Brown, highlighting the enigmatic nature of the building’s construction: “...two periods of construction are represented; the one of the original design and another of a later restoration, very nearly like, but distinctly inferior to the original.” Brown thought that the gabled addition on the north side of the central building (which Emerson’s cantilevering addition is attached to) was not original. Supporting Brown’s statement, it appears as though no stone is used in the foundations of the northern spur; while all other wings do appear to have some stone in their foundations, but more evidence is needed to make a conclusive statement. This is an important question, because if Brown is correct and the northern central spur is an addition, then Myer’s claim that the building was “badly planned” in terms of lighting looses some weight. Without the northern spur, the principal room would have had a wall with ample northern exposure.

**Rehabilitation**

The problem of re-using the Holt House has two problems, the first of which is that of finding a use to put into the building. Many ideas have already been put forward, including:

- Children’s museum (Director W.M. Mann, 1948 Annual Report, 94)
- Visiting scholar’s housing (Meade and Trotter master plan, 1960)
- Conference center, exhibit building/historical museum, or office. (Quinn Evans, 2003)

The most difficult issues facing re-use are as follows:

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1. Relatively small rooms difficult to adapt to large uses.
2. The existing brick load-bearing wall structure is difficult to modify.
3. Remote from the core of the Zoo; not a good location for general public access.
4. Difficulty in estimating the cost of rehabilitation due to unknown conditions.
5. Complete restoration and allowing public access would require the Zoo to cease unsightly but necessary activities (storage of construction materials) in the vicinity. Non-public use would allow necessary ‘back-of-house’ operations to continue in the area.

The house lends itself most easily to an office or residential use for many reasons already described by the Quinn Evans report. None of the difficulties above unduly affect a non-public office or residential use, making the house an excellent opportunity for a relatively small department or departments. For example; FONZ, or small Smithsonian or Zoo offices could be adequately housed within the building.

The second and possibly fatal problem is the possibility that the building’s walls have weakened beyond the point of feasible re-use. The only way to determine this is to have a professional engineer with experience analyzing historic structures perform a survey of the building’s walls. It is likely that in order to carry out the work the engineer will require significant demolition of interior finishes to allow observation of the interior wall surfaces, and such demolition is acceptable (see Myer’s recommendations for possible interior items to preserve).

The 2000 Cagley and Associates crack monitoring project is a beginning towards the end of determining brick stability, and their conclusion, that the cracks are not active and that the building is not moving significantly, is encouraging; but the conclusion is not enough to satisfactorily guarantee the future stability of the building. The brick walls themselves are the most important element with any remaining integrity in the house, measuring the extent of their health is important for the future of the building. At this point a thorough structural feasibility study by an engineer is required before further progress can be made.

With an analysis by a historic structures engineer, there will be two possible outcomes: 1. the building is unsound and structurally beyond repair, or, 2. repair is feasible. With such knowledge some action could finally be taken on the Holt House.

If unsoundness beyond repair is the verdict, the Zoo could waste no further resources in maintaining the building and consider demolition as an option. Since the building is in a non-public area, the building need not be demolished immediately; the site could be left as is for future archeological study. Alternatively, if the Zoo has an immediate use for the site, the house could be demolished and a new building of any type could be constructed on the site. Before demolition can occur the house should be taken off the Register, and it will have to be proven that the house is not a contributor to the Zoo historic district. Since the house has never been accessible to the public, it can be argued that it has never been a presence, and therefore could not be a contributor.

If an engineer’s study determines that the building’s brick walls are structurally viable then a rehabilitation of the building should be planned and set in motion as soon as possible to avoid having the building unoccupied any longer. The minimal funds spent to keep the building unoccupied, though minimal, are effectively wasted.

**Issues during a future rehabilitation**

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54 The timber structure of the house is not historic, dating from the Zoo’s extensive renovations. Circular saw marks, machine-made wooden lathe, and modern nails betray this fact, as noted by Myers, 27.
A standard guide to follow during the restoration of a historic building is the Secretary of the Interior’s Standards for the Treatment of Historic Properties, though technically they would not necessarily apply to a rehabilitation of Holt House, they are outlined below:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The application of these rules to Holt House can allow considerable freedom in a future rehabilitation. Our lack of knowledge of the house becomes a liberty, for we should not attempt to restore what we cannot prove existed. A restoration and any possible additions would have to carefully satisfy the feeling of what constitutes the house’s “historic character,” while at the same time not making any possible fabrications. A sensitive contemporary approach is suggested in handling the rehabilitation’s design.

The features that contribute to the house’s historic character have been identified in other reports, but shall be listed again here for completeness:

1. Hornblower and Marshall’s 1901 doors and windows (under guideline #5)
2. Glenn Brown’s details in the second floor central room (under guideline #5)
3. W.R. Emerson’s cantilevering addition could possibly be argued as an element to be preserved. (under guideline #4)
4. Mantelpieces identified as being possible originals, identified by Myers. (#5)
5. The federal-style window sashes that Myers notes to be possible originals55 (#5)
6. The house’s symmetry. (#2)

Without question, the house’s symmetry is the most important single item that should be sensitively handled in any rehabilitation. If additions were to be added, they would have

55 Myers begins his discussion of fenestration on page 22 of his report.
to be added in symmetrical fashion, or in a scale similar to the existing hyphens and wings. The retention of items 1 through 5 is more flexible, and dependant on the projected re-use of the building.

To illustrate the difficulties of deciding what “historic character” constitutes, an example will be discussed. Something as seemingly simple as choosing a kind of stucco to put on the building is actually quite a sticky problem. Myers suggests that applying smooth stucco scored to represent ashlar masonry would be appropriate to the house, but he did not see any physical evidence of such stucco on the building. The more recent Quinn Evans report implored the Zoo to apply a new coat of stucco to the building, without specifying what kind of stucco. The rough stucco currently on the building, referred to as “pebble-dash” dates from around the turn of the century. Imitating the pebble dash may not be in the historic character of the house, as the house dates from well before the turn of the century. As we have no physical evidence of the building’s early life, we do not know if the brick was bare or stuccoed in c. 1810-1830. The c. 1840 watercolor painting shows what appears to be a white surface on the house, but alone it is not a substantive source. It is suggested by this report that a contemporary means of weatherproofing the brick might be investigated. Simply stripping the remaining stucco, patching the worst areas of brick damage, repointing where necessary, and then giving the building coats of high quality exterior paint would be within the Secretary’s Standards for Rehabilitation, and would be a lower-maintenance, more long-lived and economical way of proceeding.

**Phasing of a Rehabilitation**

In order to illustrate the reality of what will happen if the Holt House is renovated; a brief outline of the process is given below, discussing items of note as they might occur. It is assumed that in order for an extensive rehabilitation to occur, an engineer has already examined the foundations and brick walls and determined that they are viable.

1. **Salvage**

Identify elements to be saved and re-used (listed as 1 through 6 above), and remove them from the building or, if non-removable (Glenn Brown’s plaster frieze), install protection to prevent damage during renovation. Brown’s frieze, if the House is rehabilitated, is one of the items that should be high on the list for preservation.

2. **Demolition and Stripping**

With the items of significance removed or protected, the building can be demolished down to its bare bricks and timbers. Areas on the interior that do not require any work need not be stripped of the original plaster. All the exterior stucco will have to be stripped.

3. **Structural assessment**

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56 Myers, 36. Myers suggested that while stripping the existing rough stucco off the building, a watchful eye should be kept for any traces of smooth stucco.

57 Quinn Evans, 34.

58 The applicable standards: #2, applying paint does not damage or remove anything. #3, no false historical imitation is attempted. #4 and #5 provide arguments for keeping the existing stucco on the building, but in order to check condition of the brick, the stucco will have to be removed.
Only with the building in such a naked state can the timber joists be examined and a strategy formulated for rebuilding the house’s floors. At this point additional light might be shed on the many questions about the building’s origins: Does the west wing appear to be an addition? Is the central spur on the north an addition? Other facts about the rest of the building may come to light. Lastly, while the house is bare, the architect might produce measured drawings as a base for further work.

4. Structural repair and rebuilding

The spanning and bearing structure of the house would receive attention at this point. The brick walls will likely require drilling and the insertion of rebar in epoxy or portland cement beds at certain locations around the building, most notably the northwest corner. The timber lintels that are failing will need to be replaced with steel lintels. The failing lintels occur at the long-span windows which have a great weight above, notably the southern hyphen second floor window lintels that carry a good portion of the roof above them. After the brick consolidation, it is to be expected that large cracks will still remain in the building. Such cracks would simply be filled with soft mortar.

Depending on their condition, the joists might be removed, or they might be left in place and “doubled up” or consolidated with epoxy. If they are removed, dimensional lumber, engineered lumber, or light gage metal joists might be used as replacements. Any new flooring system must remain close to the original system’s weight and loading pattern to avoid more structural problems with the brick.

Though requiring care, neither the brick repairs nor the insertion of new floors are extremely problematic. The drilling and insertion of rebar into the brick is the most specialized task the Holt House will require (assuming that the addition of rebar is what the engineer recommends).

5. Rough work

After the building is made structurally sound, the rehabilitation can continue as a conventional renovation job. All the building’s systems will have to be updated; plumbing, HVAC, electrical, telephone/IT. The utilities at present do not enter the building in a very dignified or aesthetic manner; they might be relocated to be less intrusive. With the building gutted, there would be an opportunity to easily add sprinklers, which should be taken. An elevator would also have to be installed, the location of which would have to be carefully considered. This would also be the time to execute any insulation strategy if desired for the exterior walls, keeping in mind the problem of condensation.

6. Remaining issues

Interior finishes could be standard and economical for today, including gypsum board and carpet. The wooden windows ought to be retained and restored according to Denys Peter Myer’s notes, though to improve energy efficiency storm windows should be added on the exterior. Minimal landscaping around the house might be done. The large stegosaurus is certainly not in the historic character of the building (the building is not that old), and ought to be removed, perhaps relocated to the nearby Hospital Research Building. Currently steps occur at the driveway around the house, a ramp would have to be designed at least one entrance to make the building accessible.

When the current asphalt shingle roof’s life is up, it should be considered upgrading to a slate or metal roof. The skylight can be removed or replaced with a modern system. The current aluminum gutters and downspouts might be replaced with
something more historically appropriate when the roof is upgraded. Myers suggests box
gutters.\textsuperscript{59} The possibility of phasing the roof upgrade in at a later date will help break the
investment in the house in smaller, easier to handle pieces.

\textbf{Immediate maintenance considerations}

In the possibility that the engineer finds that the building’s brick is structural
sound, but no rehabilitation can move forward for several years, there are a few small
items which could be done to extend the life of the building:

The timber lintels are the most critical items. Their bare wood was never meant
to be exposed to the weather, and at least two of the lintels show real possibility of failing
if they do not receive some attention. Simply inserting a timber post at mid span of the
lintels will help relieve the load and prevent further deflection. At the hyphens, inserting
a post at mid-span on the upper floor windows should be accompanied by inserting a post
in the lower floor windows to ensure safe transfer of load down to the ground. The posts
should not attempt to ‘jack up’ the sagging lintels, but merely be inserted to prevent
further movement downwards.

The large cracks in the brick are a concern for water infiltration. It can be
assumed that the roof overhang protects the cracks near the eaves, but lower, wind-driven
water can easily make its way into the building’s walls. Once inside the wall during
months where a freeze-thaw cycle occurs, the water can do significant damage. Filling
the cracks with a flexible caulk can help prevent the damage, and the work can be carried
out without interfering with the existing crack monitors.

There is a good amount of vegetative growth in the gutters of the building. It is
extremely important that water, the most significant source of deterioration, be kept away
from the building, making gutter maintenance critical. Some ivy is also making progress
at places on the building, and should be removed during the gutter maintenance. At
locations where it is only growing on stucco, there is no immediate need to remove it.

Lastly, the building needs to be properly ventilated. A significant amount of mold
growth can be curtailed by providing more vents in the windows. Currently, spaces have
at most only one vent. To allow a good air flow for each space, another vent should be
added on the opposite side of the building.

The issue of replacing the stucco as a maintenance issue has been brought up by
other reports, but it is not an immediate need. If the gutters and roof overhangs function
properly, the bricks should not be unduly exposed to water. The mortar joints appear to
be in generally acceptable condition. In one location on the east side of the central
wing’s southern addition, the mortar joints have been evacuated considerably, but the
damage is at a location under a window that does not bear any weight. Another location
where the mortar joints might be questionable is at the chimney brick-arches, but this is
also not critical.

To summarize:
1. Fill large exposed cracks
2. Insert timber posts under failing lintels
3. Continue to maintain the gutters and downspouts
4. Ensure good ventilation

\textsuperscript{59} Myers, 37.
Conclusion

The venerable Holt House has quite a lot of history behind it, but it suffers from the fact that it was poorly built and heavily altered. It is absolutely essential that an engineer with experience analyzing historic structures be hired to thoroughly analyze the stability of the masonry walls. Only then can the Zoo formulate some action to take on the House’s future. It is recommended that the Zoo’s next master plan allot funds for such an engineering study. A note from Denys Peter Myers shall be used to conclude: “In short, although a real restoration is impossible, a compromise involving rehabilitation might be considered… the house does have a modest merit. Its best assets are its symmetrical design, good proportions, and air of restrained dignity.”60

Holt House Illustrations


60 Myers, 36.
The only pre-zoo visual documentation of the Holt House? Circa 1840 watercolor. Note how it appears as though the western wing is missing, and the hyphen has a shed roof. Alternatively, the perspective may be distorted.

Dilapidated state of the house in 1890. Stairs that were located on the north side of the building. Smithsonian Archives.
[4] 1890 Photograph, south side. Wooden balconies were located on the hyphens. Smithsonian Archives.


Chronology of Holt House modifications during period of Zoo ownership
Source material: Lara Pomernacki and Cynthia Field’s 1997 “Holt House Structural Alterations,” and Annual Report entries

[1890] Acquisition by the Zoo
“The Zoo decided to transform the house and make it suitable for the purpose of administrative offices. …it was badly in need of repairs, and on March 29, 1890 the Zoo Appropriations Committee allocated the sum of $2,000 to make the building "suitable for occupancy." The repairs to the building were to include new steps, a new roof, repairs to the plastering, and a skylight in the large central room.” William Ralph Emerson recommended “removing the bars on the cellar windows, excavating the ground, removing the balconies on right and left of the south front, and tearing out the stairs on the North front.” July 1890, Baker writes to Emerson: “had some laborers tearing off the roofs and taking out the floors and partitions” and “getting up the basement floor.” After some work, it was discovered that there was “amount of weakness in the old structure that was not dreamed of at first.”

[1891] …during this year $500 was allocated to make repairs to the roof so that it could weather the winter.

[1895] Water service
“The water supply has been extended so as to supply the office of the park…”

[1896] Gas and plumbing
“$499.45 was spent, $320.47 of this amount was used for plumbing and gas fittings, the remaining sum was spent on chairs, stoves, and “graters.”

[1897] “On September 29, 1896, the city of Washington was visited by one of the severest storms that ever occurred in this region… within the park hundreds of trees were laid prostrate, and a portion of the roof of the Holt house, where the office is situated, was blown off… repairing of the roof of the Holt house cost $100, sums that could ill be spared…”

[1898] Foundation repairs
Work on underpinning the walls was completed on September 17, 1898. Mentioned in the 1899 annual report, 54-55: “…the walls of the office building have been underpinned and part of its interior finished; the cost, including the architect’s fees, was $3,000.” Which walls received underpinning work is not known.

[1899] W.R. Emerson and Glenn Brown modifications
Skylight in large central room is altered; frieze designed by Glenn Brown is added in same room. Emerson-designed modifications are also executed by Brown in the same year: “On June 6… the addition was made and further repairs were also begun, including flooring the large upper room, as well as the south vestibule, and applying pebble-dash to the exterior. All of these repairs were completed by July 20, 1899.” “The addition” refers to the small cantilevering extension on the north side of the building.

[1901] Hornblower and Marshall modifications
“The old building which the office of the park is placed has been, up to the present time, in a very ruinous state. In order to restore it to something like its pristine condition, the entrance hall and large room connecting with it were finished with a brick floor and suitable windows, the entrance hall on the second floor repaired, one of the chimneys entirely rebuilt, and an extra flue constructed. Several bookcases were built in the library room, furniture was purchased, and several small alterations made to the outside of the building.” Under Hornblower and Marshall, windows at the west and east ends of the building are cut, fireplace detailing is built, and the lower level south entrance door.

[1902] “…many shrubs and vines were planted around the office building as a screen and for ornament.”

62 ibid, note 11. Letter to W.R. Emerson, Architect From Baker, Superintendent, NZP, 9 July 1890
63 ibid.
64 ibid.
65 ibid.
66 ibid.
67 ibid.
68 ibid.
“Reference books and bookcases for the superintendent’s office were purchased during the year at a cost of $200.”

[1906] Electrification
“A local company having extended a conduit for electric lighting as far as the entrance to the park, advantage was taken of this to run wires to the office building and stable, which have never been furnished heretofore with any fixed lights.” 69 The lights were installed in “the upstairs room.”

[1913] The metal ceiling is installed in the director’s office in December.

[1914] Hot-water Radiators installed
“A hot-water heating plant was installed in the office building, which had up to that time been heated, rather unsatisfactorily, with stoves. At the same time new floors were laid on the main floor of the office and some other much-needed repairs were made.” 83 Stairs were added to allow access to the cellar.

[1915] “The roof of the office building had to be reshingled and some other repairs made at a cost of $400.”

[1917] “A considerable portion of the pasture land near the office was plowed as an addition to the garden, in an effort to decrease the cost of feed for the animals.”

[1918] “Part of the stable building near the office was rebuilt for a chicken house and, in a further effort to lessen the cost of food for the animals, the garden acreage was again materially increased.”

[1929] “The office has been painted and redecorated for the first time in 26 years.”

[1934] C.W.A. work relief
“Laying 6-inch water main into the Director’s office and installing fire hydrant near office.” 48. Other work by the CWA included “new electrical wiring, patching up of plaster, a new floor in "a portion of the building, and a new heating boiler.”

[1951] “...electric hot-heaters were installed in the …and Director’s office to provide hot water at locations where it had not previously been available…”

[1961] “A new floor was installed in the director’s office, as the old one had been badly damaged by termites, and the office was painted.”

[1962] “The downstairs office rooms in the east wing of the administration building, more than 100 years old, were refurbished following the replacement of the wood floor which had yielded to the onslaught of time and termites. Asphalt tile over the new concrete, an acoustical tile ceiling, and repainted walls and woodwork were included in the project. At the request of the division of political history of the Smithsonian Institution, a window pane from one of the upstairs rooms was removed and taken to the institution. Visitors to the house had scratched political slogans on the glass with diamonds: “Down with Hickory’s enemies”; “Huzzah for Old Hickory”; “Old Hickory Forever.” One was dated 1827.”

[1965] “Two old storerooms in the administration building were cleared out and completely remodeled to serve as offices for the director.”

[1973] “In April of 1973 some maintenance of the building was undertaken. New lintels were installed over the windows, and a dropped ceiling was installed in the large upper story room.” It can be assumed that the lintels referred to are those that are no longer timber.


69 Lara Pomernacki, Cynthia Field “Holt House Structural Alterations”
70 ibid.
71 ibid.
72 ibid.
73 ibid.
Conclusion and Future Recommendations

1. General Strategy

In terms of preservation, what should the Zoo do in the most general terms? As noted in the Executive Summary, the Zoo has certain structures which are contributors to the historic district:

- 1810-1830 (circa) Holt House
- 1901 Harvard Road Concrete Bridge
- 1906 Think Tank
- 1913 Stone Bridge
- 1928 Bird House
- 1931 Reptile House
- 1937 Elephant House
- 1937 Small Mammal House
- 1937 Stone Shop Building
- 1940 Mane Restaurant

The above structures have good external integrity, but have lost their historic interiors. It is natural and healthy that the interiors should be modified to meet the improving techniques of animal exhibition. The general strategy is then to preserve the contributing buildings’ exterior appearances as much as possible, with a special emphasis on:

1. Material integrity
2. Artwork
3. Historic Character

Material integrity means wherever possible, the historic building components shall be retained or replaced with as close a match as possible. For instance, at the Think Tank, if broken roof tiles were to be replaced in the course of regular maintenance, they would have to be replaced with custom fabricated pieces made to match the existing tiles. Another example of the same idea is the recycling of stone on the Think Tank during the 1995 renovation: stone was taken from the holes cut into the building’s eastern side and used to fill window openings on the north side. That was a much better approach than infilling the unwanted window openings with concrete block. For a bad example, 1965 renovation of the Bird House blocked off the clerestory windows in the great flight room, but rather than infill with brick re-used from the extensive demolition work around the building, cement plaster was used to cover over the window openings, resulting in a glaring contrast on the building’s elevation. The best approach is to avoid having to make such modifications. However, over the course of regular maintenance, bricks, tiles, mortar, flashing and other minor parts of the Zoo’s historic buildings will have to be replaced from time to time, and when they are, they must be replaced with as close a match as possible.
Historic Bridges of the Zoo (1901, 1913, 1968)

Bridge Histories

Rock Creek’s twisting nature was a difficulty in the Zoo’s early development; expensive bridges had to be constructed to allow the public access to the park. Over the years the Zoo has collected three bridges of note, and much like the buildings, the bridges tell the story of the Zoo’s aesthetic development.

1901 Classical Harvard Road Bridge

The small concrete bridge at the lower end of Olmsted Walk is the Zoo’s oldest surviving structure, now 103 years old. Only the Holt House, which was not built by the Zoo, is older. Technically, the Zoo did not actually build the bridge, it was constructed under the supervision of the Engineer Commissioner for the District of Columbia, but the bridge was built for the Zoo.

Built to replace the decaying timber and steel bridge on the same location, the 1901 bridge is a fine example of the historic “Melan” system of bridge construction, patented in 1894 in the United States. Before reinforced concrete construction became standardized in the early 20th Century, multiple different types of steel reinforcing were experimented with; the Melan system was one of the more successful and ubiquitous. The Melan system used small steel members riveted together to form an arch-shaped truss which was then solidly encased in concrete. The system is not quite true modern “reinforced” concrete, which uses steel reinforcing bars rather than the Melan system’s riveted flat plates, angles, or I-beams. Melan bridges were slowly succeeded after 1910 by modern reinforced concrete. The weakness of the system was its inefficiency; the structural steel shapes were over-engineered. Adding small-diameter, light reinforcing bars in areas of the structure where tension occurs made for a lighter, more efficient structure.

As a Melan system bridge, the Zoo’s 1901 bridge is a good example of an earlier step in the evolution of American bridge construction. The bridge also has a fair level of aesthetic appeal. Whether or not the bridge’s aesthetics were those desired by the Zoo at the time of its construction is questionable. The bridge has a character of demure classicism; though we do not have their opinion on this bridge, all evidence suggests that Director Baker and Frederick Law Olmsted would have preferred something more rustic. Secretary Langley’s more eclectic tastes undoubtedly would have accommodated the bridge. In the Zoo’s second generation of building under W.M. Mann, the bridge would appear more at home when joined in 1937 by other classical vocabulary structures such as the Elephant House, and, to a lesser extent, the Small Mammal House (the Holt House is also a member of the classically-influenced brethren). Whatever the desires of the

1 1901 Smithsonian Annual Report, 107. The names C.B. Hawk and W.J. Douglas appear on the 1901 drawings. Which of the two is responsible for the design is not clear.
2 The system derives its name from the Austrian Engineer, Joseph Melan, who developed it. General historical information regarding bridges is derived from the following sources: Louis G. Silano, Parsons Brinckerhoff Bridge Inspection and Rehabilitation: A Practical Guide Wiley-Interscience; 1 edition (November 4, 1992). And Graham Tilly, Gifford Bridge Conservation: A Guide to Good Practice Sponpress; 1st edition (June 15, 2002), and the Maryland State Highway Administration Department of Transportation website: http://www.sha.state.md.us/keepingcurrent/maintainRoadsBridges/bridges/OPPE/historicBridges/IX-HD.pdf
Zoo’s early designers, considered individually, the bridge is worthy of conservation and or preservation efforts.

**1913 Picturesque Rock Creek Park Bridge (near Amazonia)**

This bridge was constructed after the involvement of the Olmsted’s at the Zoo, but it is of a character that makes it a contributor to the Olmsted period (1890-1905) structures. The number of Olmsted period buildings is rather slim, with only the bear yards and the Think Tank remaining. The stylistic connection between the bridge and the 1904 Think Tank is obvious in the two structure’s materials; they both employ the same type of roughly-tooled stone. Such stone was thought befitting for the natural and rustic character of the park. With its 1913 date, the bridge is the last of the major ‘rustic picturesque’ style structures of the Park.

The bridge replaced an earlier 1897 picturesque bridge composed of logs which was feared to be decaying beyond the requirements of safety. Though the bridge’s construction was outside his control, Director Baker took the time to make some very specific suggestions which show his sensitive eye for details:

With regard to several features my opinion has differed widely from that of the Engineer of Bridges, who has insisted upon his method. 1. As to the arch stones. They should have increased notably in size from the key-stone to the ends of the arch… 2. As to the height of the balustrade. It is too high and will obscure the view of the creek to small children. 3. …it would greatly add to the rustic effect of the structure if the ends should flare …At present the structure looks much too large and very obtrusive. If you think nothing better be done I can plant evergreens and shrubbery at the abutments and train vines so as to conceal what I consider to be the aesthetic defects of the structure.3

It is not known exactly how Baker developed his aesthetic convictions, but it is notable that his were roughly the same as Langley’s and the Olmsted’s’. He had worked closely with both from 1890-1905, they possibly influenced him. On his own as Zoo Director until 1917, Baker’s above description shows how he continued the first phase of the Zoo’s aesthetics well after Langley’s passing and the end of Olmsted Brother’s contract in 1905. It is also notable that none of Baker’s advice was taken, as the construction was so far advanced that making the modifications would be prohibitive.

Like the 1901 bridge, the 1913 rustic bridge is a reinforced concrete arch. The stone is primarily an aesthetic veneer, but it is also highly functional in that it protects the vulnerable structural concrete from weathering.

**1968 Modern Harvard Road Overpass**

The sweeping undecorated lines of the 1968 modern bridge display a new style for the Zoo. Rather than using ornament or material texture, sculptural form was the new mode of expression. A kindred structure with this bridge is the similar vintage and appearance 1964 Great Flight Cage.

Technically, this bridge cannot be considered a ‘historic’ structure, as 50 years have not yet elapsed since its construction. When it reaches maturity in 2018 the Zoo can evaluate the bridge in terms of cultural significance and determine if is should receive any more than basic maintenance.

Judged by the standards of Langley, Olmsted, Baker, or Mann, the modern bridge is not appropriate for the Zoo. However, for what the Zoo was attempting to achieve

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3 October 15, 1913, Frank Baker to Sect. Walcott
during the sixties (announce itself as a competitive modern zoo), the bridge is perfect. As described by Director Reed: “it is aesthetically pleasing and of modern design.”4

**Current Conditions and Preservation Action**

**1901 Classical Bridge**

Besides the steel arch encased within, the entire bridge is concrete, even the balustrades. Concrete unfortunately suffers from the fact that it is not a durable material when left exposed to the weather. Compounding this problem is the fact that there are presently no good ways to repair concrete that do not result in unsightly and obvious patches. After patching, the only way to make the surface appear homogenous is to paint the whole bridge. Paint does make a very good protective surface, but it is not ideal for surfaces highly exposed to weathering such as the bridge. Paint also significantly modifies the appearance and texture of what it covers, intruding on the historic character of the bridge.

The bridge shows many areas where material has spalled off the surface. Biological growth and staining is visible on the balustrades. A concrete restoration specialist should be hired to advise on the best way of conserving the bridge.

**1913 Rustic Bridge**

The 1913 bridge remains as picturesque as the day it was completed. The stone veneer has done an admirable job protecting the concrete underneath, but it introduces the maintenance problem of repairing mortar joints periodically. The most critical of the joints are the joints on the upper surfaces of the parapet wall or balustrade. They are easily accessible for maintenance by the Zoo staff. Currently, despite some moss growth, the joints appear to be in good shape.

A significant amount of small shrubbery and grasses have taken root directly on the bridge’s mid-span, on the side facing upstream. These should be removed immediately in as gentle a fashion as possible; some mortar joint repair will likely be needed in association with this work. As with the Zoo’s other historic masonry buildings, the mortar should not be a high-strength Portland cement, but a lower strength mortar that matches the existing mortar as closely as possible.

**1968 Modern Bridge**

The most notable aesthetic detraction from the bridge is the large amount of rust staining that is present. The steel guardrails are the culprit. Cleaning off the staining would be an aesthetic improvement for those arriving by car from the east, but is not immediately necessary.

As has been discussed above, concrete is a material that does poorly if exposed to weather. It is therefore important to proactively maintain the white paint on the bridge. Currently it appears to be in fine condition.

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4 1968 Smithsonian Annual Report, 416.
Illustrations


Conclusion and Future Recommendations

1. General Strategy
2. Preventative Maintenance Program
3. Interior Preservation
4. Notes on Future Design

1. General Strategy

In terms of preservation, what should the Zoo do in the most general terms? As noted in the Executive Summary, the Zoo has certain structures which are contributors to the historic district:

- 1810-1830 (circa) Holt House
- 1901 Harvard Road Concrete Bridge
- 1906 Think Tank
- 1913 Stone Bridge
- 1928 Bird House
- 1931 Reptile House
- 1937 Elephant House
- 1937 Small Mammal House
- 1937 Stone Shop Building
- 1940 Mane Restaurant

The above structures have good external integrity, but have lost their historic interiors. It is natural and healthy that the interiors should be modified to meet the improving techniques of animal exhibition. The general strategy is then to preserve the contributing buildings’ exterior appearances as much as possible, with a special emphasis on:

1. Material integrity
2. Artwork
3. Historic Character

Material integrity means wherever possible, the historic building components shall be retained or replaced with as close a match as possible. For instance, at the Think Tank, if broken roof tiles were to be replaced in the course of regular maintenance, they would have to be replaced with custom fabricated pieces made to match the existing tiles. Another example of the same idea is the recycling of stone on the Think Tank during the 1995 renovation: stone was taken from the holes cut into the building’s eastern side and used to fill window openings on the north side. That was a much better approach than infilling the unwanted window openings with concrete block. For a bad example, 1965 renovation of the Bird House blocked off the clerestory windows in the great flight room, but rather than infill with brick re-used from the extensive demolition work around the building, cement plaster was used to cover over the window openings, resulting in a glaring contrast on the building’s elevation. The best approach is to avoid having to make such modifications. However, over the course of regular maintenance, bricks, tiles, mortar, flashing and other minor parts of the Zoo’s historic buildings will have to be replaced from time to time, and when they are, they must be replaced with as close a match as possible.
The need to preserve all the artwork incorporated into the historic building’s architecture is critical, as the artwork is part of the building’s defining character. What would the Think Tank be without its animal finials? The Reptile House without its portico? The individual needs of each building have been outlined within their respective sections, but the most important items shall be re-stated for emphasis:

Reptile House:
- Portico, cast-stone corbels, marble tortoise mosaic, stone relief at entrance.

Think Tank:
- Terra-cotta animal finials.

Elephant House:
- Ornamental stone scrolls, terrazzo medallions, cast metal panels, carved stone transoms.

A master plan should include an investigation into conserving the above items with the consultation of an experienced preservation architect.

A building’s historic character can be slowly degraded by the introduction of non-historic elements. When conduits, louvers, externally-mounted lights, antennae, etc., are added without sensitivity to a building, the historic character is degraded. Such haphazard modifications have been described in the Reptile House and Elephant House sections as “visual noise.” Reducing visual noise is an important way of keeping the building’s appearance optimal. For a good example, the Think Tank is currently the building with the least visual noise on it; only an observation TV camera and a few lights are attached at the eaves. A general strategy should be to reduce visual noise as much as possible and plan future renovations in a sensitive manner so that alterations are concealed or removed.

Lastly, as part of maintaining the building’s historic character, “aggressive interventions” must be avoided. Aggressive interventions are anything that significantly detracts from or minimizes prominent historic features of a building. Replacing an architecturally important roof with a new skylight system, as happened at the Bird House, is an aggressive intervention. However, historically unimportant roofs that are not visible on the exterior, such as flat roofs, could be replaced with skylights as seen fit. For another example, an addition that doubles the floor area of a small building would be unacceptable. Building a new large exhibit building in very close proximity to a historic building or attached to a historic building would also be considered aggressive. All potential conflicts cannot be discussed in detail, but if questions should arise, the Zoo or master planning design team should consult with the Smithsonian Architectural History and Historic Preservation Office.

2. Preventative Maintenance Program

It has been observed over the course of this report’s production that close attention is already being paid to the buildings, making some of the following advice redundant, but it shall be repeated for emphasis. All buildings should receive inspections on at least twice a year for the following items:

- Roofs, gutters and downspouts (ensure they are working properly)
- Ivy/plant growth (kill and remove all ivy)
- Mortar joints (inspect and maintain)

Mortar joints require maintenance considerably less than twice a year, but while the roofs, gutters, downspouts and ivy are being dealt with, the joints should be surveyed and their condition noted. Ensuring mortar joints are properly maintained is as important for the building’s long-term health as having an intact roof.
3. Interior Preservation

It has been stated above that the focus should be on preserving the historic building’s exteriors. An opportunity exists for the Zoo for interior preservation at two of its buildings: the Elephant House and the Mane Restaurant. The Elephant House possesses the Zoo’s most impressive interior space, but regretfully has deteriorated somewhat, as described in its section. The Mane Restaurant originally had a quite amazing dining space with beautiful murals that have since been removed. The original murals were painted on carved linoleum; it may not be feasible to restore them, but a close replication may be possible. While most of the Zoo’s historic interiors have been lost, a partial restoration of the above interiors is feasible, and would add greatly to the visitor’s experience of the Zoo.

4. Notes on Future Design

Beginning with Secretary Langley, the Zoo’s buildings have always attempted to have some kind of relationship with nature. Any future building within the historic district should also attempt to do so. The trends in the Zoo’s design have been tracked in depth in Part I of this report, but shall be restated here succinctly:

Reflection of nature
(W.R. Emerson, Langley, Olmsted, Baker) Not a strict imitation of nature, but an interpretation of it. Exceedingly rough natural materials (stone, logs) are assembled to make a building that feels appropriate for the rustic woodland setting. (Examples: Lion House, Think Tank, Buffalo House)

Illustration of nature
(Mann, Albert Harris, Edwin Clark) The building’s form and materials do not attempt to be ‘of nature,’ but the art on the building illustrates facts about the animals inside. The building becomes a visual dictionary of the continuum of the animal kingdom, going all the way back to prehistoric times. (Examples: Reptile House, Elephant House)

Imitation of nature
(Daniel, Mann, Johnson, Mendenhall) The building takes a form metaphorically related to a form naturally occurring in nature, such as a cave or hill. (Example: Panda House)

Submission to nature
(Faulkner, Fryer, Vanderpool) The building attempts to avoid the center stage, and accomplishes this by being partially buried under landscaping and lacking any detail that could distract the eye. (Exemplar: Education Administration Building, Great Ape House)

It is possible that there remain yet more different ways to find relationships with nature. It is even possible to combine elements of the above four methods. To end on a note from Secretary Langley, whatever any new architecture might attempt, it will be out of place unless it attempts to “harmonize admirably with the location.”
Appendices