UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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1 NAME	TITE CALL LIVINGS	JOHN LETE / WITE LOVE	EL OLOTTONO	<u> </u>
HISTORIC				
Bat Tower/Suga	rloaf Kev			
AND/OR COMMON				
Sugarloaf Bat	Tower			
LOCATION	Ţ.			
STREET & NUMBER				
:	N/A	N/A	NOT FOR PUBLICATION	
CITY, TOWN			CONGRESSIONAL DISTR	ІСТ
Sugarloaf Key STATE		CODE	15 COUNTY	CODE
Florida	12		Monroe	087
CLASSIFIC	ATION			
CATEGORY	OWNERSHIP	STATUS	PRESI	ENT USE
DISTRICT	PUBLIC	OCCUPIED	AGRICULTURE	MUSEUM
BUILDING(S)	X_PRIVATE	XUNOCCUPIED	COMMERCIAL	PARK
XSTRUCTURE	BOTH	WORK IN PROGRESS	EDUCATIONAL	PRIVATE RESIDENC
SITE	PUBLIC ACQUISITION	ACCESSIBLE	ENTERTAINMENT	RELIGIOUS
OBJECT	IN PROCESS	YES: RESTRICTED	GOVERNMENT	SCIENTIFIC
	BEING CONSIDERED	X YES: UNRESTRICTED	INDUSTRIAL	TRANSPORTATION
	N/A	NO	MILITARY	X _{OTHER:} Vacant
OWNER OF	PROPERTY			
NAME				
Lloyd and Miri	.am Good			
STREET & NUMBER				
Post Office Bo	<u>x 148</u>		STATE	
Sugarloaf Shor	res N/A	VICINITY OF	Florida	
	OF LEGAL DESCR		FIOLIGA	
LOCATION	OF TEGYT DESCR	II IION		
COURTHOUSE. REGISTRY OF DEEDS,	ETC. v. a . a			
STREET & NUMBER	Monroe County Cour	rthouse		
OTHEET GIVENIBE	500 Whitehead Str	eet		
CITY, TOWN		-	STATE	
	Key West		Florida	
6 REPRESEN	TATION IN EXIST	ING SURVEYS		
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)			
DATE				
		FEDERAL	STATECOUNTYLOCAL	
DEPOSITORY FOR SURVEY RECORDS	(.	}		
CITY, TOWN			STATE	



CONDITION

CHECK ONE

CHECK ONE

__EXCELLENT

__DETERIORATED

X_UNALTERED __ALTERED

X_ORIGINAL SITE

Z_FAIR

__RUINS
__UNEXPOSED

__MOVED DATE____

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Bat Tower is located approximately 1 mile northwest of U.S. Highway No. 1 on Perky Key, which is part of a larger complex of Keys collectively called Sugarloaf Key. It is positioned in a relatively undeveloped section of the Key.

The Bat Tower is a wood frame structure standing approximately thirty feet high. Square in plan, each elevation of the structure is twelve feet wide at the base. The tower is supported by four 12"byl2" pine posts which are securred to tapered concrete piers by iron straps. Each post has a metal rat shield positioned about five feet above the ground. The tower is open for approximately ten feet at the bottom and the upper, enclosed portion is slightly tapered affording an overall pyramidal form. The apex of the pyramid is truncated and has a shallow pitch hip roof. The exterior of the tapered section of the tower and the hip roof are sheathed with wood shingles (butt-end) while the lower portion of the tapered section is covered with weatherboards. The structure has never been painted.

Extending the height of the shingled portion of the tower and projecting slightly from the south elevation is a fixed-louvered pavilion (suggesting an elongated dormer) which serves as the bat entrance. A small door (now missing) is located at the bottom of this pavilion and provides access to the roosting area.

The upper portion of the interior was the actual roost while the lower portion accomodated the guano collecting apparatus (hopper). The roost is comprised of multiple layers of 1 3/4"by3" wood lath. Below the lath is the guano hopper. It is sloped towards a central shute which was intended to facilitate the removal of the guano in measured fifty pound quantities.

The structure has not been altered from its original appearance. It has suffered from exposure to weather and general deterioration. The roof is damaged, the door to the roost has been removed, and several shingles and boards are missing. However, it is in remarkably good condition and not beyond restoration.

PERIOD	AF	REAS OF SIGNIFICANCE CH	ECK AND JUSTIFY BELOW	
—PREHISTORIC —1400-1499 —1500-1599 —1600-1699 —1700-1799 —1800-1899 —XI 900-	ARCHEOLOGY-PREHISTORIC ARCHEOLOGY-HISTORIC AGRICULTURE ARCHITECTURE ART COMMERCE COMMUNICATIONS	COMMUNITY PLANNING CONSERVATION ECONOMICS EDUCATION ENGINEERING EXPLORATION/SETTLEMENT INDUSTRY	LANDSCAPE ARCHITECTURE LAW LITERATURE LMILITARY LMUSIC LPHILOSOPHY LPOLITICS/GOVERNMENT	RELIGION X_SCIENCESCULPTURESOCIAL/HUMANITARIANTHEATERTRANSPORTATIONOTHER (SPECIFY)
SPECIFIC DAT	ES +1929	BUILDER/ARCH	HITECT Campbell, Dr. C	

STATEMENT OF SIGNIFICANCE

CRITERIA OF SIGNIFICANCE

- 1) The Bat Tower at Sugarloaf Key is architecturally significant as one of the last surviving examples of a structure that's design and purpose was intended specifically for the colonization and cultivation of bats.
- 2) The structure is significant for its association with Dr. Charles A.R. Campbell, former Health Officer of the City of San Antonio, Texas, who became internationally known for his work with bats and bat roosts. Campbell is responsible for the conception and design of the bat roost.
- 3) The structure is scientifically significant as one of the last surviving remnants of an early experiment in mosquito control that was directed towards eradicating the spread of malaria in both human and animal populations.

HISTORICAL NARRATIVE

An oddity of architecture, the Bat Tower at Sugarloaf Key stands as an unusual monument to an early effort at mosquito control in the Florida Keys. Constructed in 1929 for Richter Clyde Perky, a resort developer and the largest landowner in the Keys in the 1920s, the Bat Tower was designed to attract and house bats with the hope that their presence would help alleviate the mosquito problem plaguing the Keys at that time. The tower Perky constructed was based on the research and design of Dr. Charles A.R. Campbell. Campbell had become internationally known for his work with bats and for the development of the tower, which he referred to as a "bat roost". As a result of Campbell's work sixteen bat roosts were constructed in the United States and Italy between 1907 and 1929. As far as can be ascertained, the Bat Tower at Sugarloaf Key was the last roost constructed and is only one of three known to have survived to the present.

Dr. Charles A.R. Campbell, a former Health Officer for the City of San Antonio, Texas, began experimenting around 1902 with using bats, which were natural predators of the mosquito, as a possible method of controlling the large mosquito population around San Antonio. The mosquito was of particular concern to Campbell, for in addition to being a general nuisance and hinderance to outside activities, the mosquito was the principal carrier of the malaria plasmodium. This parasite, which caused the sickness known as malaria by attacking the red blood corpuscles of humans and animals, and yellow fever, were considered by many to be the most serious and widespread medical problems in the world at the turn of the century. Chills, fever, sweat, anemia, lethargy, and a swollen spleen were all symptoms of malaria and malaria victims often often died as a result. In addition to the health effects, malaria also impaired the agricultural and

9 MAJOR BIBLIOGRAPHICAL REFERENCES



(See Continuation Sheet)

10 GEOGRAPHICAL DA	TA			
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II FORM PREPARED B	Y			
Rolla L. Queen (Histori	c Sites Specialis	t)		
ORGANIZATIOÑ	_		DATE	
Florida Division of Arch STREET & NUMBER	ives, History and	Records_1	Management TELEPH	December 3, 1980
The Capitol				487-2333
			STATE	
Tallahassee	37077711703		Florida	
12 STATE HISTORIC PI	RESERVATION	OFFICE	R CERTIFIC	ATION
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As the designated State Historic Pres	ervation Officer for the Na	tional Historic	Preservation Act of 19	966 (Public Law 89-665) 1
hereby nominate this property for inc				
criteria and procedures set forth by th				
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TITLE Wintowin Popular	055		DATE	3/25/82
State Historic Pres	ervation Officer			3/03/0
I HEREBY CERTIFY THAT THIS PR	OPERTY IS INCLUDED I	N THE NATIO	NAL REGISTER	
William H. B	when		DATE	5.13.82
ATTEST: KEEPER OF THE PATIONAL RI	EGISTER		DATE	A12/81-
CHIEF OF REGISTRATION			VAIE	עשוכו וס
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NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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CONTINUATION SHEET

ITEM NUMBER

PAGE

economic development in the areas it occurred. Livestock became unhealthy or died, and affected farmers and workers were usually less productive. 4

Until the 1880s, malaria remained a mysterious illness. Many people, including doctors, had thought that malaria resulted from inhaling bad air, such as sewer gases. In 1880, however, Charles Louis Alphonse Laveran, a French Army surgeon, successfully isolated the malaria parasite. His findings were confirmed by an Italian physician, Camillo Golgi, in 1886. Between 1895 and 1900, two other doctors, Patrick Manson and Ronald Ross, were able to demonstrate successfully that the malaria parasite was transmitted by the mosquito. It followed, therefore, that the control of malaria rested in a large part on the control or eradication of the mosquito population.

Several methods were employed to control mosquitos, including draining the soil, oiling stagnant pools of water, cutting brush and grass, and applying larvacides and insecticides. Other preventive measures were also instituted, such as screening, distributing quinine, isolating malaria victims, and encouraging the use of mosquito nets over beds. During the construction of the Panama Canal, the effectiveness of these measures in controlling the mosquito population, and thereby malaria, was demonstrated successfully by General William C. Gorgas, then a United States Army Surgeon. Gorgas vigorously applied these methods and by completely controlling yellow fever and almost eliminating malaria made construction of the canal possible. 7

Gorgas had proven that malaria could be contained by mosquito eradication, but the efficiency and cost of the methods employed were high and probably beyond the means of most city and local authorities. Into this dilemma stepped Dr. Campbell. Campbell contended that the bat provided the natural answer to mosquito eradication. He also believed that bats, like bees, could be colonized and cultivated for man's benefit; i.e. the eradication of mosquitos. This proposition had "two separate but distinct values," wrote Campbell. "One of these is hygienic, the other commercial." Campbell detailed his theory and approach in his book, Bats, Mosquitos, and Dollars, which he wrote and published in 1925. In the book, Campbell set out to prove four allegations and thereby the importance of bats and the validity of bat roosts in mosquito and malaria control. These were:

- ALLEGATION ONE: That the malarial mosquito is one of the greatest enemies of mankind.
- ALLEGATION TWO: That the bat is one of man's best friends, because it so relentlessly destroys the malarial mosquito, that insect being its natural and principal food.
- ALLEGATION THREE: That we can build a home for bats in a scientific manner to meet the requirements of their most singular habits, and one which they will inhabit; a home where, being protected from their natural enemies,

(See Continuation Sheet)

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

two

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DATE ENTERED:

CONTINUATION SHEET

ITEM NUMBER

PAGE

they will increase in countless numbers and eradicate the malaria in its vicinity.

ALLEGATION FOUR: That each bat roost, in addition to its great hygienic value, is in itself a little gold mine, by reason of the cash obtained from the natural high-grade fertilizer, guano, which it will constantly produce. 9

In his experiments and his book, Campbell attempted to demonstrate that bats and the bat roost, unlike other methods of eradicating mosquitos, represented a limited, one-time investment and resulted in both medical and commercial benefits. These were: the eradication of mosquitos, the eradication of malaria, and a commercially useful, natural high grade fertilizer.

Most of Campbell's early bat roost experiments were conducted around San Antonio, Texas. His experiments were apparently successful and resulted in the construction of several public and private bat roosts in the San Antonio area. 10 They also resulted in the passage of city and state legislation making it a misdemeanor to kill or injure a bat. 11 His work also garnered the attention of W. C. Gorgas, Surgeon General of the United States Army, the Belgiam and Italian governments, as well as several inquiries from private and public interests, one of whom was R.C. Perky. 12 The Italian government was so impressed by the operation of the bat roost, or was perhaps desperate in light of the serious malaria epidemics plaguing that country, that it may have built as many as six bat roosts according to Dr. Campbell's specifications. 13 Campbell apparently never charged for the plans or specifications for the bat roosts and would provide any information free of charge to anyone who expressed interest. Bats, however, could not be transplanted from caves to bat roosts nor be forced to accept them as homes. Instead, they had to be enticed to adapt the roost by a special bat bait that Campbell had developed. Campbell kept the recipe a secret, but supposedly it was a foul smelling mixture with a base of bat quano. Campbell sold the bat bait for a nominal fee and no bat roost could succeed without it. 14

All the bat roosts known to have been constructed were similar in appearance with deviation appearing only in exterior ornamentation. The basic roost rested on four 12"by12" piers and was approximately thirty to forty feet in height. It had a truncated pyramidal type shape with a small, shallow hip roof. Many roosts appear to have been shingled and several were adorned with a crucifix. A fixed, louvered pavilion, which resembled a elongated dormer, projected from and ran the height of one side of the roost. This provided an entrance for the bats. The interior of the roost consisted of multiple levels of 1 3/4" by 3" lathes which provided the roost for the bats. A hopper at the base of the enclosed section of the structure served as a guano receptable. It was specified that a bat roost not be painted and that it should be located in a quiet area. 15

R.C. Perky had heard about Campbell's San Antonio experiments while on a trip in Texas exploring possible oil interests. Perky owned approximately 23,000 acres of land in

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR HCRS USE ONLY
RECEIVED
DATE ENTERED

CONTINUATION SHEET three

ITEM NUMBER 8

PAGE :

the Florida Keys at the time and was attempting to develop a resort on Sugarloaf Key (then called Perky Key). Mosquitos, however, made life intolerable for both residents and guests and placed the success of his resort in jeopardy. Perky envisioned Campbell's bat roost as a potential solution to the mosquito dilemma. He sent Stephen Singleton, who served on the Key West Chamber of Commerce, to San Antonio to investigate Campbell's bat roost experiments. Singleton returned with a favorable report. Perky then contacted Campbell about constructing a roost. Campbell indicated that he would forward the plans and specifications without charge. Campbell instructed Perky to send him a photograph upon completion of the structure so that he could insure the roost was constructed correctly. He also told Perky to send \$175.00 for the cost of the special bait. 16

Construction began on the bat tower in March, 1929, according to the plans provided by Campbell. Fred L. Johnson, a Perky employee and the local postmaster, supervised construction on the project. The construction materials were imported from Miami and caused an initial delay in the time of the actual construction. The roost was completed in September, 1929. An inscription was placed on one of the concrete piers when the foundation was initially laid, which read, "Dedicated to Good Health at Perky, Florida, by Mr. and Mrs. R.C. Perky, March 15, 1929." 17

Complying with Campbell's request, Perky forwarded the photo and \$175.00. A couple of months later, a wooden box arrived containing the special bat bait. Johnson placed the box in the tower and, according to Campbell's instructions, then drilled eight holes in the box, four on each side. Four ounces of distilled water was poured into each hole and the box began to give off a distinctive odor. Johnson later remarked that a smell like that "ought to attract something." The box of bait remained in the tower for a year but failed to attract any of the local Keys bats. Perky wrote Dr. Campbell requesting another box of bait. However, he received a letter from Dr. Campbell's son that told of Campbell's death. The letter indicated that no one else knew Campbell's secret formula.

The Sugarloaf Bat Tower, which Perky claimed to have cost him \$10,000, remained standing as a source of mild humor and embarassment for Perky, but even Perky recognized it as a kind of a monument. The Bat Tower, however, is not known to have harbored even one bat. ²⁰

The Bat Tower is practically the last remaining structure of Perky's development. Perky's house and lodge have been destroyed to a great extent by either fire, hurricanes, or general deterioration. The Bat Tower, however, remains, an unusual testimonial to man's incessant attempt to either harness or adapt to the forces of nature.

FOOTNOTES:

Bats, Mosquitos, and Dollars. (Boston: The Stratford Company, 1925), pp. 88-159. Campbell specifically mentions bat roosts that he built on a local United

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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RECEIVED
DATE ENTERED

CONTINUATION SHEET four

ITEM NUMBER 8

PAGE 4

States Experimental Farm (p. 91) and at Mitchell's Lake (p. 100) near San Antonio; a Municipal Bat Roost (p. 121) constructed by the City of San Antonio; the Hygieostatic Bat Roost (p. 134) constructed by Albert Steves (former San Antonio Mayor) near Comfort, Texas; the Asylum Bat Roost (p. 136) constructed by the State of Texas on the grounds of the Southwestern Insane Asylum; the Alamo Heights Bat Roost (p. 140) constructed by the residents of Alamo Heights on the grounds of the West Texas Military Academy in San Antonio; the Bat Tower in Temple Terrace (Tampa), Florida (p. 151); a Bat Roost in Gulfport, Mississippi (p. 151), constructed by the Gulf and Ship Island Railroad Company; the Bat Roosts near Colonia Glena and Terracina (p. 133), Italy, constructed by the Italian Army. Campbell also mentions orders for four additional cases of bat bait, and indicates that the Italian War Department and Department of Navy were going to construct four additional roosts (154).

²Ed Deitz, "A Home for Bats Tops List", in <u>Tampa Tribune</u>. (March 18, 1976); Marshall T. Steves, Telephone conversation with Rolla Queen (FDAHRM) November 13, 1980; The other two towers were the Bat Roost in Tampa and the Hygieostatic Bat Roost in Comfort, Texas.

³Greer Williams, The Plague Killers (New York: Charles Scribner's Sons, 1969), p. 101,110.

⁴ Ibid., p. 102; Greer related that many medical historians contend that malaria, "by sapping people's strength and depopulating the countryside, had a part in the downfall of Greek civilization."

⁵Ibid., p. 107.

⁶Ibid., p. 113; Campbell, p. 156.

7 Williams, p. 113.

8Campbell, p. 3.

 9 Campbell, p. 4; also see pages 5, 36, 88, and 160.

10 These are described in footnote #1.

¹¹Campbell, p. 131; The Texas legislature also passed a resolution encouraging the nomination of Campbell for the Nobel Prize (see pages 139-140).

 12 Campbell, p. 153; Fred L. Johnson. Interview with Wright Langley (HKWPB) January 30, 1980.

Campbell, p. 153-154; Deitz, in Tampa Tribune; Steves, conversation with Rolla Queen.

14
Johnson, Interview with Wright Langley.

(See Continuation Sheet)

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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DATE ENTERED.

CONTINUATION SHEET five

ITEM NUMBER 8 PAGE

Johnson, Interview; Dan Deibler (FDAHRM), on site inspection; Historic American Buildings Survey. Bat Tower, Fla-193. Conducted by F. Blair Reeves and Betty M. Bruce. June-July, 1967.

¹⁶ Johnson, Interview;

Johnson, Interview; HABS; Pat Parks, "Bat Tower" in <u>The Key West Citizen</u>. February 28, 1967.

¹⁸ Johnson, Interview;

¹⁹ Ibid.; Fred L. Johnson, Letter to the Editor in The Key West Citizen. ca. November-December, 1967.

²⁰ Johnson, Interview

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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DATE ENTERED

CONTINUATION SHEET Six

ITEM NUMBER 9 PAGE

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- Campbell, Charles A.R., Dr., <u>Bats, Mosquitos, and Dollars</u>. Boston: The Stratford Company, 1925.
- Deibler, Dan (Architectural Historian for FDAHRM) conversation with Rolla Queen. November 20, 1980.
- Deitz, Ed. "A Home for Bats Tops List", in Tampa Tribune. March 18, 1976.
- Gusley, Nina Leslie. "Great Bat Tower Was Great Big Folly" in The Key West Citizen. November 12, 1967.
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FHR-8-300A (11/78)

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NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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RECEIVED
DATE ENTERED.

CONTINUATION SHEET seven

ITEM NUMBER 10

PAGE 1

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