

Excavations at Scaur Hill Fort, Bermuda

by John R. Triggs

Department of Anthropology, University of Toronto,
Toronto, Canada

*Report prepared for the Department of Agriculture and Fisheries, Bermuda
and reproduced here with the kind permission of the Director.*

ABSTRACT: *An archaeological excavation of the overgrown and largely filled ditch behind Scaur Hill Fort in Sandys Parish, Bermuda showed undocumented aspects of its design and construction. A product of the 1860s, the overall design was based on the earlier Prussian concepts of fortification, while concurrently these were being questioned in the United States as the result of Civil War experience. Features revealed reflect that the fort was considered obsolete by the time it was completed, so that the ditch itself was used for refuse, instead of defence, from the start. Other findings are discussed to show the transitional nature of the fort.*

INTRODUCTION

For three weeks during the month of August 1988, Scaur Hill Fort was for the first time in its history under assault. Armed with a battery of picks, shovels and trowels, a combined force of volunteers and Parks personnel, under the supervision of a professional archaeologist, began to dig into the fort's past. Sponsored by the Department of Agriculture and Fisheries, this represented the first such excavation conducted at the 1870s period fort. Prompted largely by a desire to reveal elements of fortification obscured by decades of plant growth and soil accumulation, the excavation also elucidated undocumented aspects of construction and design. As a result of this work, the casual observer can now visualize with little difficulty the defensive strategies employed at the fort.

THE END OF AN ERA

Scaur Hill Fort was constructed during a period when advancements in armaments, namely rifled artillery, necessitated a re-evaluation of existing concepts of defence. It is precisely for this reason that Scaur Hill

Fort is interesting in that it affords a unique opportunity to examine contemporary responses to a rapidly changing technology.

During the late 1860s and 1870s, defensive works were designed according to recommendations made in the Royal Commission's Report of 1859-60.¹ Concerning land forts, the Commission specified that these were to be constructed of masonry, polygonal in outline, defended by a deep dry ditch, together with caponiers and counterscarp galleries. At the time, this reflected the prevailing attitude of how a proper fort should be constructed. The problem, however, was that the deployment of rifled artillery occurred concurrently in the late 1850s and early 1860s and rendered obsolete the type of land fort proposed by the Commission. Despite reports on the relative ineffectiveness of masonry forts against rifled artillery by American military engineers during the Civil War, these went largely unheeded since British engineers had by that time already embarked on a fort-building campaign which was devoted to construction of granite and iron.

On the basis of experiences such as that described below, the new defensive strategy advocated by the Americans was one that employed earthwork batteries for coastal defence.

Fort Morgan, at Mobile, was engaged by a 100-pounder Parrot rifle at a range of over 2750 m. in July 1864; one shot ricocheted from the crest of the covered way, struck the escarp wall and passed through, leaving a 6 foot hole, and still had sufficient energy to severely damage the casemates where it eventually penetrated and lodged.²

Thus, the commencement of construction at Scaur Hill Fort in 1868 occurred at a time when current ideas of fortification were being called into question and modifications to existing works were already taking place in the United States. The following decade is characterized by a shift from land forts as defensive positions to gun emplacements which were largely offensive in nature. It is somewhat ironic then that by the time Scaur Hill Fort was completed, it was essentially obsolete. Several features revealed during the excavation this summer serve to illustrate the truly transitional nature of the fort.

SCAUR HILL FORT

The overall design of Scaur Hill Fort is one based on the Prussian System developed during the early 19th century by German engineers. This system incorporated existing ideas of fortification with innovations such as the *caponier*; an alternative to the bastion. The caponier, a casemated structure with loopholes on either side, projected into the ditch and allowed fire to be directed along an entire curtain face. As a result of this, the curtains could be straight and the trace of the fort

becar
with
basec
ment
1870s

ficati
ditch
curta
side c
ditch
and v
excav

appr
over a
the fi
indica
from
centu
centu
severi
durin
sugge
fort. 7
ditche
poign
ditch

sugge
offens
up to
contra
rampa
is of d
this a
disma
that th
traditi

ditch.
of exca
excava
previo
with 1'

became polygonal. Comparison of Fort Friedrichsau, built in the 1850s, with Scaur Hill Fort clearly shows the basic plan on which the latter is based (FIG. 1). Marked differences include the addition of emplacements for disappearing guns at Scaur Hill Fort, an innovation of the 1870s.

A notable difference between Scaur Hill Fort and earlier fortifications is the extent of the *dry ditch*. Surrounding the caponier, the ditch is shallow and does not communicate with the ditch on the other curtains. (Compare the *gorge* ditch of Fort Friedrichsau with the gorge side of Scaur Hill in FIG. 1). As Furbert and Harris point out the minute ditches at Scaur Hill are 'the anachronistic remnants of a once proud and venerable defensive idea'.³ This is especially true of the ditch excavated this season on the southwest side of the fort (FIG. 2).

Following removal of all vegetation in the ditch in August 1988, approximately 30-100 cm. of fill was excavated by shovel and trowel over a three week period. Consisting of loose sand and rubble, most of the fill appears to have accumulated during the last 60-100 years, as indicated by the artifacts recovered. Three clay smoking pipes dating from the last quarter of the 19th century, along with numerous 19th century wine and mineral water bottles, bone fragments and 19th century ceramics formed the majority of the collection. In addition, several bullet casings and beer bottle fragments point to the occupation during WWI and WWII. The type of debris recovered would seem to suggest that the ditch was used as a refuse pit for most of the life of the fort. The fact that no such accumulation can be found in the other ditches on the offensive side of the fort can perhaps be interpreted as a poignant indicator of the non-functional role played by this area of the ditch even shortly after the fort was completed.

The vestigial nature of the dry ditch in this area is further suggested by the absence of a substantial *counterscarp revetment*. On the offensive side of the fort, this feature is constructed of masonry, stands up to three metres in height and incorporates *counterscarp galleries*. In contrast, the counterscarp revetment on the defensive side behind the *rampart* is cut out of bedrock, stands only about one metre in height, and is of dubious defensive value. It is possible that further excavations in this area will reveal evidence of a masonry counterscarp revetment dismantled at some time in the fort's history, but at present it appears that the dry ditch here was built more out of a concern to conform to traditional concepts of military architecture than for defensive reasons.

Several features were revealed during the excavation of the dry ditch. Removal of the loose rubble and sand fill during the early stages of excavation revealed the bedrock base of the ditch to be fairly level. As excavation proceeded however, it soon became evident that a pit had previously been excavated in the centre of the ditch prior to the infilling with 19th and 20th century refuse (FIG. 2). In August 1988, the function

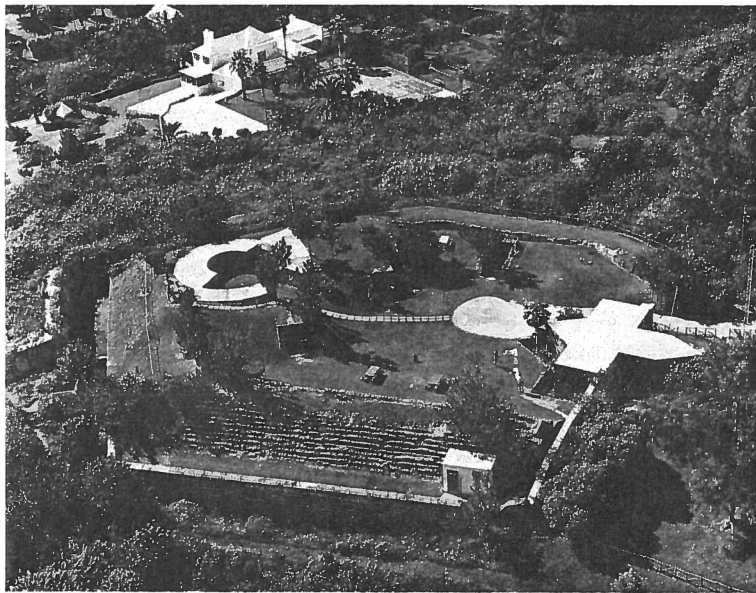
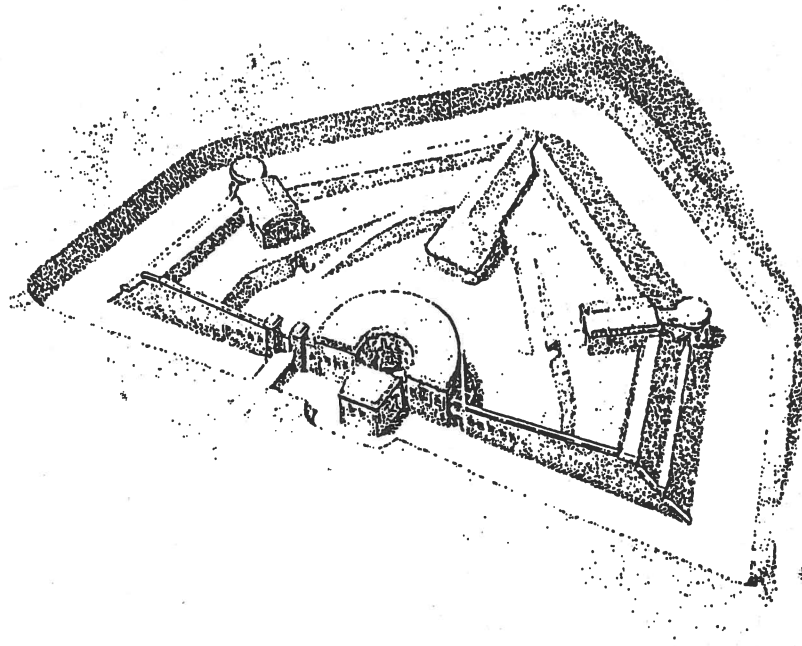


FIG. 1: *The trace of Scaur Hill Fort has as its antecedent a style developed by German engineers in the 19th century referred to as the Prussian System. Characteristic features include the polygonal shape and the addition of caponiers in the place of bastions. (Photograph courtesy of Bermuda News Bureau)*



Figure 2

FIG. 2: I

of the fe
of loose
prepare
Fort, en
Officers
feature.

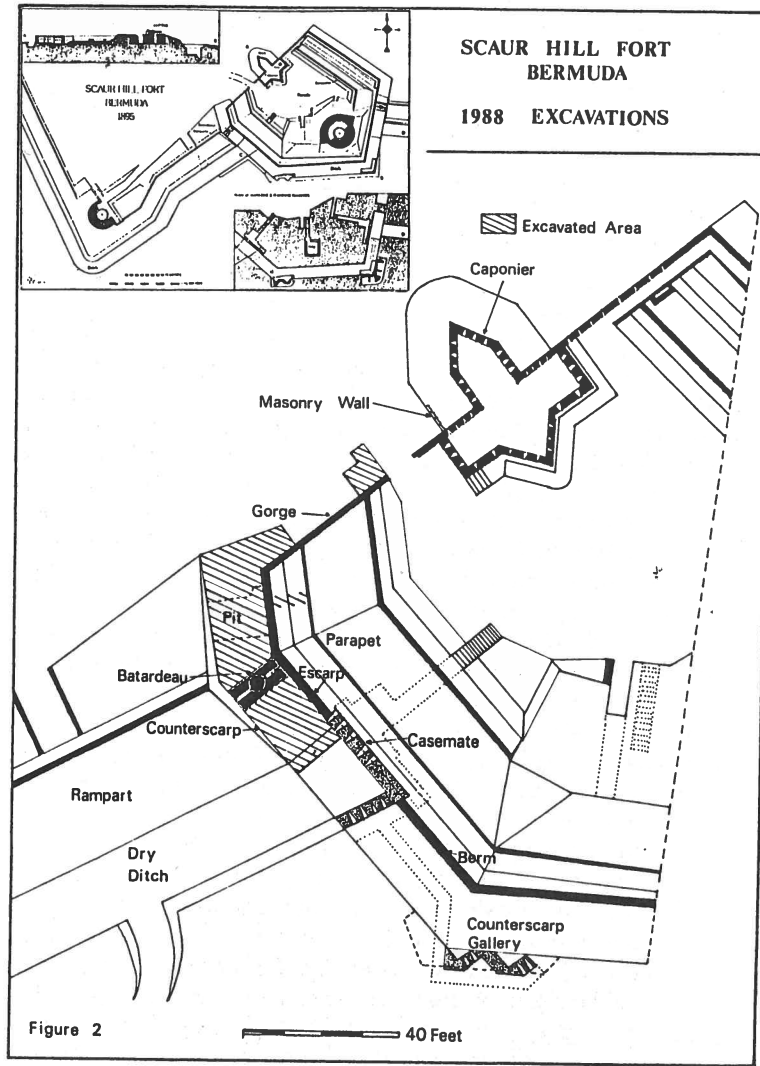
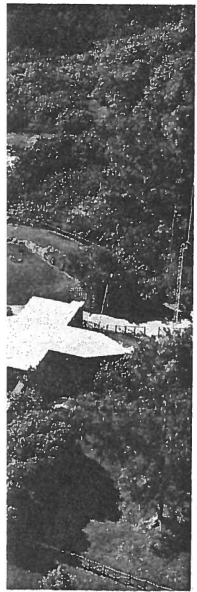
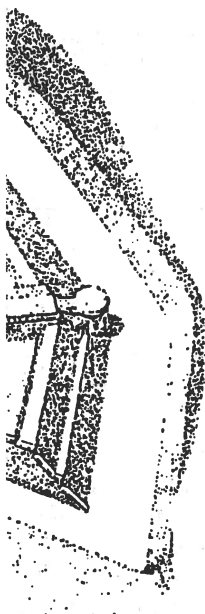


FIG. 2: Detail showing 1988 excavation area and elements of fortification referred to in the text. (Inset: Courtesy of Edward Harris³)

of the feature was the subject of much conjecture, since the fill consisted of loose rubble and sand devoid of artifacts. Reference to a manual prepared in 1849, twenty years before the construction of Scaur Hill Fort, entitled *Introductory Essay to the Study of Fortification for Young Officers of the Army*, has provided a likely explanation for this enigmatic feature.



style developed by
in System. Charac-
of caponiers in the
us Bureau)

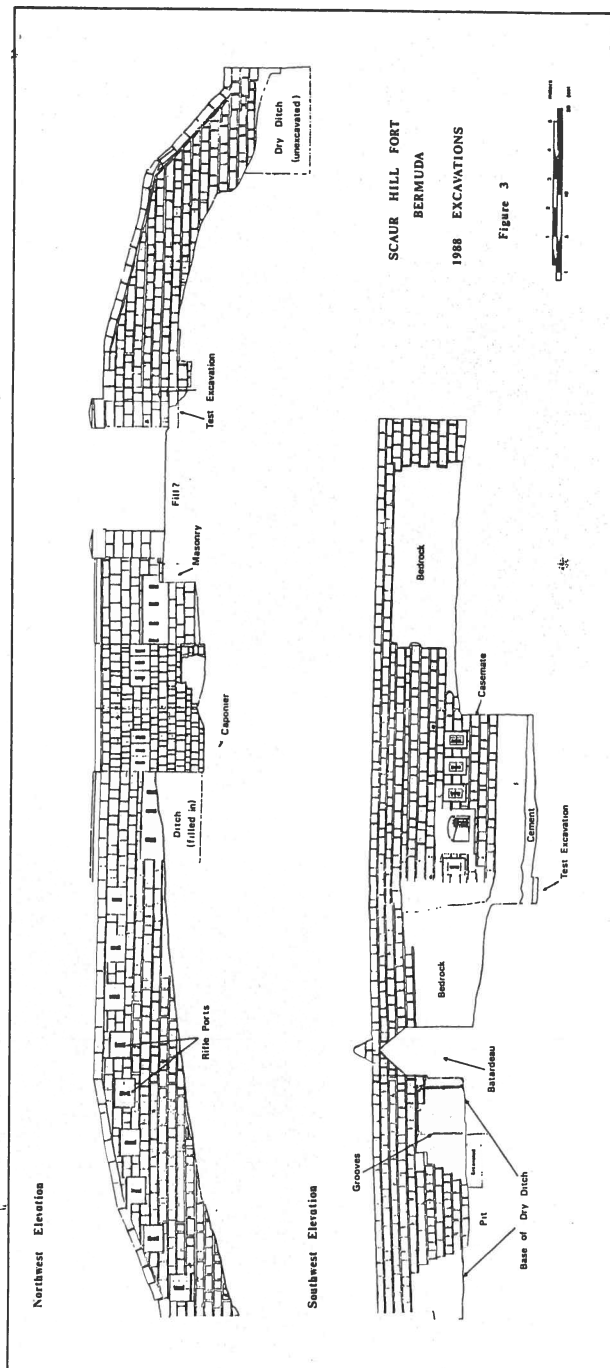
Before commencing the excavation of the ditches, it is desirable to know how deep they can be made: pits should therefore be sunk where the ditches are to be excavated, in order to ascertain the nature of the soils, and whether rock or water will prevent the ditches going beyond a certain depth: the nature of the soil in these pits will enable the officer charged with the construction to determine upon the proper depth for the ditches.⁴

If the feature exposed is analogous to the above, it stands as another reminder of adherence to a strict orthodoxy of fortification design.

Another feature exposed in the dry ditch concerns a series of grooves let into the *escarp revetment* (FIG. 3). These clearly outline a small structure, five feet high by about five feet wide, erected in the dry ditch adjacent to the *batardeau*. The roof was apparently supported by three horizontal beams, possibly two by four inches, while the sides may have consisted of planks one to two inches thick. Since similar grooves do not appear on the *batardeau* or the counterscarp revetment, it is not known how far the structure projected into the dry ditch. Such a structure was not an integral feature of fortifications and so it probably represents a temporary shed or hut. Viewed in another way, its presence here may reflect the non-functional role the dry ditch played in the later stages of the fort's occupation. In view of the fact that the vertical grooves do not extend all the way to the bedrock floor, it appears that the erection of the structure did not take place until after the infilling of the dry ditch had already begun. By this time, the strategic importance of the ditch as a defensive element would have been of minor importance.

On the counterscarp side of the ditch is another series of as yet unexplained features. In this area, efforts had been made to chisel a shallow recess in the bedrock forming the counterscarp revetment. This occurs on either side of a breach in the counterscarp where the bedrock has been removed to form a tapered opening. Furthermore, these occur adjacent to the *batardeau* where a narrow slot is found at the base. The occurrence of these features in close proximity suggests that they are integral parts of a single structure (FIGS. 4 & 5). Further excavation or documentary research may provide an explanation, but to date they remain somewhat of a mystery. The absence of analogous situations in other fortifications may simply indicate that these are modifications made to the dry ditch when it was no longer functioning as a defensive element. As such they represent a non-standardized alteration, and they may simply be vestiges of a temporary structure much the same as the hut/shed on the other side of the dry ditch.

FIG. 3 (opposite): 1988 excavations at Scaur Hill Fort



is desir-
should
ated, in
er rock
ertain
ible the
pon the

ls as another
on design.
ns a series of
rly outline a
ted in the dry
upported by
ile the sides
Since similar
p revetment,
y ditch. Such
o it probably
vay, its pres-
played in the
t the vertical
appears that
e infilling of
importance
minor impor-

ries of as yet
e to chisel a
etment. This
the bedrock
, these occur
he base. The
hat they are
xcavation or
to date they
situations in
odifications
s a defensive
eration, and
the same as



FIG. 4: *View of dry ditch on gorge side of batardeau. Modifications to counterscarp revetment are indicated. Masonry on right marks the end of the banquette.*

FIG. 5: *View of the tapered breach in counterscarp revetment adjacent to batardeau.*



tic e
exca
tatio
impr
usua
on th
Fort
purp
wou
acce
to d
furtl
Hill
sma

ram
mar
Arti
ceut
incl
grac
its c
aver
dry
out
dite
area

con
be a
sect
am
of t
of r
ran
ero
ear
of s
ran
yea
shi
tim
atta

Mention has been made of the batardeau, itself an anachronistic element at the time of the fort's construction (FIG. 2). Prior to excavation, the batardeau was obscured from view by the dense vegetation surrounding it. Now that the area has been cleared, the strategic importance of this feature may be readily discerned. Although the usual purpose of the batardeau is to act as a dam, keeping back water on the wet side of the ditch from the dry side, the batardeau at Scaur Hill Fort served a different purpose. As all the ditches at the fort are dry, the purpose here was to act as a barrier against which an attacking force would be confronted once inside the dry ditch. Effectively preventing access to the gate side of the fort, the batardeau face was also exposed to direct fire from the counterscarp galleries located some distance further along the ditch (FIG. 2). Apart from this, the batardeau at Scaur Hill Fort is classic in form, exhibiting the peaked upper surface with a small masonry tower preventing passage across its top.

Excavation in the ditch below the *casemate* on the southwest rampart indicated that this area had been infilled in much the same manner as the dry ditch on the other side of the batardeau (FIG. 2). Artifacts recovered include 19th century ceramics, wine and pharmaceutical bottles, together with a collection of more recent material, including modern beer bottles and a hoard of D-cell batteries. Thus the gradual infilling of the ditch appears to have taken place shortly after its construction in the 1870s and continued to the present day. The average depth of this ditch is about five feet below the floor of the great dry ditch, which effectively placed the casemate rifle ports and gun port out of the reach of an attacking force. Rifle ports facing into the small ditch from a flanking gallery added further to the defensibility of the area (FIG. 2).

While much of the fill in the dry ditches reflects their use as convenient refuse disposal pits, some of the loose sand and rubble may be attributed to the natural erosion of earth from the *parapet*. A small section excavated on the top of the rampart indicated a substantial amount of sediment accumulation (FIG. 2). Particularly along the foot of the rampart or *berm*, the depth of soil exceeded two feet. Fragments of rounded base 'torpedo' bottles found in the fill at the top of the rampart and similar bottles found in the ditch below suggest that this erosion has been taking place over the last 60-100 years. During the early years of the fort, this process may have been arrested by a covering of sod on the parapet, which would also have served to make the rampart more shot-proof. However, the erosion of this material in later years indicates neglect, perhaps prompted by a realization of the fort's shift from a defensive position to a purely offensive one. Since by that time a masonry fort would have been unable to withstand a direct attack against rifled artillery, such a protective earthen covering and the

y ditch on
deau. Modi-
rscarp
cated.
marks the
te.



energy needed to maintain it would have been superfluous shortly after the fort's completion.

Such a realization may have also been responsible for apparent modifications made to the fort entrance. A small test excavation in this area suggests that a drawbridge may have been present originally, but that this was later removed and the current roadway built in its place. The presence of a ditch across the gate is indicated by a masonry wall built where bedrock has been removed (FIG. 2 & 3). However, the ditch was apparently filled in shortly after its excavation, since it is not indicated on an 1895 plan of the fort. In the decades immediately preceding Scaur Hill Fort's construction, horizontal drawbridges were a common fortification feature. Test excavations at the Bermuda Dockyard this summer revealed such a drawbridge was in use during the late 1820s.⁵ It may be that in light of the changing role of the fort, this defensive element may have been initially intended, but never actually completed. Additional excavation in the area directly in front of the gate would provide the information necessary to assess this question.

CONCLUSIONS

When all the information is assembled, the image that emerges is one of compromise between outdated ideas of defence and modern concepts of offensive warfare. Scaur Hill Fort can perhaps best be seen as representing an effort to cling to tradition in the face of a rapidly changing armaments technology. Conservatism appears to have gradually given way as it became evident that the new developments in armaments had irreversibly altered established military tactics. In this sense, Scaur Hill Fort is a unique monument representing the end of one era and the beginning of the next. In the words of Furbert and Harris:

It is perhaps this combination of the old 'fort' and the new 'gun emplacement' which makes Scaur Hill Fort an interesting historic monument and would justify expense to enhance and exhibit its various features to better public view.⁶

For this reason, the initiation of projects such as those conducted in the summer of 1988 are to be lauded as attempts to retrieve those aspects of Bermuda's history that might otherwise be forgotten.

GLOSSARY OF TERMS

(after *Straith, 1849; Hogg, 1941*)

Banquette A raised step of earth on the interior of the parapet sufficiently high to allow the defenders to fire over the crest of the parapet.

Batardeau A strong wall of masonry built across the ditch to sustain

the p
preve
up to
maso
closir
(Strai
Berm
ramp
stopp
Capo
with
lengt
Case
ramp
Coun
Coun
looph
Dry I
defen
Escar
Gorg
Parap
ramp
Poste
mass
ditch
Ramp
to giv
Revet

¹ Chris
(197)

² Ian F

³ L. Fu
The I

⁴ Hec
Offic

⁵ F. Al
Mari

⁶ L. Fu

the pressure of water when one part is dry and the other is wet; to prevent this wall from being used as a passage across the ditch, it is built up to an angle on top...and to render it still more difficult, a tower of masonry is built on it; in the batardeau is the sluice by the opening and closing of which the manoeuvres of the water can be regulated.' (Straith)

Berm A cleared space between the top of the escarp and the foot of the rampart serving as a communication path around the work and also stopping debris from the rampart falling into the ditch.

Caponier A work defending a ditch by extending into it or across it, with firing ports which permit gunfire to be brought to bear on the length of the ditch.

Casemate A vaulted chamber with a firing port, usually set within the rampart of a work from which artillery can be fired under protection.

Counterscarp The side of the ditch next to the country.

Counterscarp Gallery A gallery behind the counterscarp having loopholes looking into the ditch to defend it by reverse rifle fire.

Dry Ditch The excavation in front of a rampart or surrounding a defensive work; it may be wet or dry.

Escarp The side of the ditch next to the fort.

Gorge The rear face of a work; i.e. where the entranceway is located.

Parapet The covering of shotproof earth on the exterior edge of the rampart.

Postern Vaulted passages of masonry constructed underneath the mass of the rampart to communicate from the interior of a work into the ditch before it.

Rampart The great mass of earth excavated from the dry ditch in order to give the defenders a commanding surface.

Revetment The sides of ditches supported by masonry.

REFERENCES

- ¹ Christopher Duffy, *Fire and Stone: The Science of Fortress Warfare 1660-1860* (1975).
- ² Ian Hogg, *The History of Fortification* (1981), 173.
- ³ L. Furbert and Edward Harris, 'The Defence of Bermuda: Scaur Hill Fort', *The Bermudian*, May 1984, 55.
- ⁴ Hector Straith, *Introductory Essay to the Study of Fortifications for Young Officers of the Army* (1849), 24.
- ⁵ F. Aldsworth, 'Excavations at the Bermuda Dockyard', *The Bermuda Maritime Museum Quarterly* (1988), 4-6.
- ⁶ L. Furbert and Edward Harris, op. cit.

ACKNOWLEDGEMENTS

Thanks are extended to the following individuals for their support and encouragement throughout the project: Mr. Edward Manuel, Director of Agriculture and Fisheries; Mr. John Talbot, Chairman, National Parks Commission; Mr. George Ogden, National Parks Commission; Mr. Jeff Tiberi, Chief Park Ranger; Dr. Edward Harris, Director, Bermuda Maritime Museum.

Special thanks are also extended to those actually involved in the day-to-day excavation, on whose help the success of the project ultimately depended: Kenny Cann and Lynn Charlton, Park Rangers; Peter Casson, Ray Charlton, Peter Johnson, Sherri Solomon-Triggs, Volunteers, and the members of the Thurrock Duke of Edinburgh Award Club, England.

T
M

ABSTR.
yielding
archival
respect to
of fresh n
on Berm
of such f

Underv
sufficien
based a
faunal
animal

investig
Cattewa
gists cu
Coy, Fa
port on
publish
into the
of Aber
Indiam

of Natu
from th
Labrad