

Romancing the stones

New methods record walls and buildings at Dockyard Keep



CHARLOTTE ANDREWS

WLU students gather data from the Keeps' stonework structure

By Dr. John Triggs

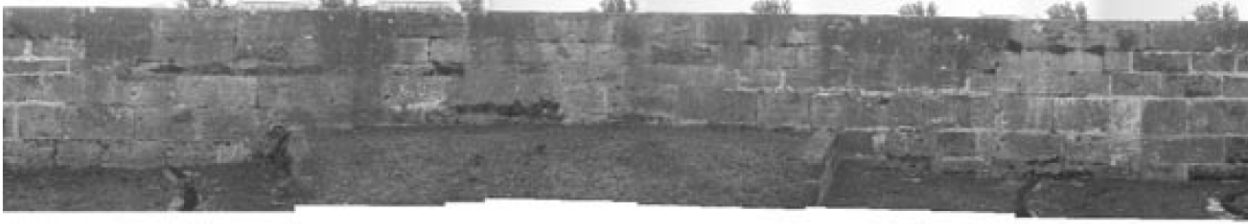
For the past 20 years the fortifications of Bermuda have been the subject of intense interest for archaeologists. Excavations have been carried out under the auspices of several institutions, including the Bermuda Maritime Museum, the Department of Agriculture and Fisheries, Bermuda, the Bermuda National Trust, the College of William and Mary, Virginia, Earthwatch, and most recently, Wilfrid Laurier University, Waterloo, Ontario. This latest project took place in January, 2001 when a team of archaeologists led by Dr. John Triggs initiated a programme of study at the Dockyard Keep. This undertaking represents the first such collaborative effort between the Bermuda Maritime Museum and Wilfrid Laurier University and the beginning of a partnership that will continue the scholarly study of Bermuda's historical monuments.

The long-term goals of the project are to record the evolution of Bermuda's largest fortification, the Dockyard Keep, by archaeologically recording the standing architecture and by conducting a detailed analysis of primary

documents. Sources such as maps, plans, sketches, watercolours and photographs, together with historical accounts describing the progress of the works, are to be compiled for information related to the development of the Keep fortifications. In many situations, these two types of information, archaeological and historical, are often complementary. It is through the analysis of both sources of information that a more complete understanding of the evolution of a fortification can be gained. However, in many instances the historical and archaeological evidence diverge and it is this incongruence that often leads to new directions for further investigation. The historical record is scarcely ever 100 percent reliable, as it represents a perspective of the past that is often biased—filtered as it is through the social, cultural, and political beliefs of the time in which it was composed. The archaeological information, on the other hand, is an unbiased record of the physical remains left behind by the society that produced it.

One of the goals of the work this winter was to record the standing architec-

On Site



An overlapping photogrammetric recording of a wall section of the Dockyard's citadel Keep

ture of selected areas of the stone masonry in the Keep. This was achieved through measured scale drawings and photogrammetric recording using a digital camera. The other goal was to compile a collection of primary documents that showed the development of the Dockyard Keep throughout the 19th and 20th Centuries.

To produce a scale drawing of a masonry wall is no easy task, as the students quickly discovered. Thirty-metre-long tapes must be attached to the walls for horizontal reference and additional tapes must be suspended from the tops of the walls for vertical reference. The height of the interior rampart walls was 7.6 metres—almost exactly 24 feet. Each stone was carefully drawn in its location at a scale of 1:50 and details such as chisel marks, ghost lines from former buildings, plaster and timber inserts, were recorded. This type of detail provides a document of sorts that cannot be produced by any other means. Quite often it is the details on the stones, not visible photographically, that provide evidence for subsequent alteration, repair and modification. It is by matching these details with the historical record that a more complete chronology of construction than is available on maps can be produced. Particularly the areas of



Overlay of original plan showing investigated areas of Keep walls

modification and repair quite often represent unrecorded events that were carried out on an *ad hoc* basis by the officers or engineers in charge at any given time. In all, a total of 60 linear metres of wall, in three separate areas, was drawn in this way for a total area of about 460 square metres (close to 5,000 square feet).

Photogrammetric recording of the fortification walls was carried out over the 10-day period using a digital camera. This type of photog-

raphy, where there is at least 50 percent overlap between adjacent pictures, provides a relatively quick means of recording standing architecture when there is simply insufficient time for measured drawings to be completed. Using this technique, the author photographed the entire inside perimeter of the parapet walls (the walls on top of the rampart), curved wall architecture associated with the Commissioner's Residence, the exterior of the south rampart, and the 1837

and 1850s powder magazines and stores on the lower parade level of the Keep. These data will be statistically analysed to detect differences in construction technique by looking at variations in stone size. The advantage of using the digital camera for this purpose is that long panoramas can be stitched together and, because of the 50 percent overlap, with a minimum of optical distortion. This type of archaeological recording using digital technology greatly facilitates later analysis by making accessible over 1,000 images in a few dozen stitched panoramas. Aside from the puzzled looks of museum visitors who witnessed the strange spectacle of a person photographing walls—very methodically—the technique was a complete success.

The other aspect of the work, the compilation of primary historical sources, was carried out at the Bermuda Maritime Museum and the Bermuda National Archives. At the museum dozens of original plans and contemporary depictions of the Keep and Dockyard were digitally photographed over a two-day period. These documents depict the development of the Dockyard and Keep from the early years of the 19th Century up to the present day. Subsequent analysis will involve the arrangement of the plans into a chronological



order as one means of systematically charting the development of the fortification through time. The intention is to examine the density of built architecture and to use this as a measure of the perceived importance of the Keep as a naval base fortification at various times in its history. These measures will then be compared with the primary historical documentation for correspondence, or perhaps, dissonance. One of the questions of interest will be, How well is imperial defensive policy at various periods reflected by the periods of construction activity? Maps and other documents located in the Bermuda Archives will prove useful to this end. These 'other documents' contained in the archives relate to the use of convict and, before Emancipation, slave labour used to build the Dockyard and Keep fortifications. These are unexplored areas archaeologically, and ones that prove to offer a wealth of information about the organisation of labour by the British government for the construction of imperial defenses in Bermuda.

Another aspect of the analysis will be the reduction of all plans to a common scale to produce a series of overlays that show the location of every structure ever built within the Keep. The comparison of maps in this way will serve to point out

not only inaccuracies between maps but it will also indicate the location of structures that may now be only archaeological—that is, below ground. By plotting the precise location of each structure that

includes the use of infrared video technology to conduct a survey for buried archaeological features. This technique has met with success in other archaeological studies and holds promise for remote

a fruitful one of interest not only to archaeologists but also to historians. In the long term, the work carried out by the Wilfrid Laurier research team will undoubtedly shed new light on the 19th-Century colonial period in Bermuda, long-recognised as a strategic cog in the British imperial network of fortifications. ■

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The author wishes to acknowledge the support and assistance of the following people: Dr. Edward Harris and Charlotte Andrews of the Bermuda Maritime Museum; Karla Hayward, Archivist at the Bermuda National Archives, and Jane Downing, Archival Assistant; and the administrative staff at the BMM. Financial support for this research was received from a grant partly funded by WLU Operating funds, and partly by the SSHRC General Research Grant awarded to WLU. Additional support was also made available by the Bermuda Maritime Museum. I also wish to thank the student participants on the project: Rachel Brooks, Kim Finch, Paul Perrault, and Bjorn Waters. Their dedication to the work and their steadfast endurance of the hardships that go hand-in-hand with working in a subtropical paradise were greatly appreciated. Lastly, the expertise and assistance brought to the project by my friends Trevor Carter and Genevieve (Brusellers) Carter were instrumental in the completion of the work.



The Wilfrid Laurier University field team (from left): Trevor Carter, Kim Finch, Paul Perrault, Bjorn Waters, Dr. John Triggs, Rachel Brooks, and Genevieve (Brusellers) Carter

was ever built, the resulting document can be used as a tool to manage the archaeological resources within the Keep grounds. This will ensure that the remains of earlier buildings will not be jeopardised by construction activity or other types of modern ground disturbance.

Future work at the Keep

sensing at the Keep. Key target areas identified during the analysis of information retrieved this winter will be tested in the upcoming season.

Although the work was conducted over only 10 days, the amount of information recorded by the team exceeded expectations. The current study promises to be