

CARL H. STRANDBERG
2114 Olive Avenue
Fremont, Calif. 94538

The Pig War

An archaeological study applied color and color-IR photos on San Juan Island in Puget Sound.

INTRODUCTION

ALL HELL broke loose on the morning of June 15, 1859; and when it did, it set the stage *very indirectly* for one of the most fascinating photoarchaeological projects I've been involved in. The project is one which was launched almost 112 years after the fatal shot was fired, but is a step forward in establishing the San Juan Island National Historical Park, which I hope all readers will be fortunate enough to visit some day.

Events on that spring morn in 1859 may have been a prelude to the Civil War. If they were, they were soon submerged in the thun-

General, U. S. Army (a position similar to the current Chief of Staff, U. S. Army) and Rear Admiral R. Lambert Baynes, Royal Navy, thwarted the efforts of politically selfish citizens of both the United States and Canada. In so doing, they prevented our respective nations from blundering into a world war. Had it not been for these cool heads *and poor communications*, a major conflict could have erupted. Had either of these two commanders slipped on the diplomatic tight-rope in which they found themselves, politicians on both sides of our now peaceful northern frontier may have succeeded in starting a

ABSTRACT: *A photointerpretation study sought land scars that might remain after historical activities circa 1859 on San Juan Island in Puget Sound in Washington State. The value of low-level, convergent oblique, stereo, natural-color photos taken with a narrow-angle lens was reconfirmed. Also the value of a correlation of features imaged on black-and-white vertical photos with their color stereo obliques was reconfirmed. The value of stereomultiband photos obtained using natural-color film where only a slight difference exists in the transmission of the two filters appears to have significant potential. The value of oblique hyperstereoscopy was also reconfirmed.*

der of cannons which roared from Sumpter to Gettysburg and beyond. Much of the tragic story of the Pig War remains a mystery to citizens of both the United States and her adversary, England.

Remote-sensing techniques employed in this project were not of the hypersophisticated *black box* variety. Time-tested and proven methods were used and they proved themselves, once again, to be very effective and valuable.

More will be said later about the methods which were employed. First let's take a look at the history involved. It casts new insight into the great history of our Nation, and may provide guidance in the solution the present, and God forbid, future wars.

Two cool-headed diplomats in uniform, Major General Winfield Scott, Commanding

world war. All this is now history; the science to which wise men turn to when they seek a path toward wisdom in the resolution of current challenges.

THE PIG WAR

1859 dawned at the end of a sleepy decade. Before the year ended, a *war* has flashed and flared, one which could have seared history with the death of either the United States or England, or both. The *war* is called the *Pig War* because the only casualty was a pig. However, the history of the one armed confrontation is laced with international power politics. At stake was the precise location of a section of the international boundary between Canada and the United States. This location decided ownership of the 472 islands in Puget Sound and

the vast wealth of a large part of the Pacific Northwest.

Related to these events ran the challenge which clouded our history from Fort Sumter, through Gettysburg and beyond to Appomattox Courthouse. The story of the Pig War is filled with some of the dash and daring of great men in history. Best known of these men was Captain George E. Pickett, U. S. Army, who, as Lieutenant General Pickett, CSA, directed the charge at Gettysburg which bears his name less than four years later—a charge which I consider a futile tactical movement in which thousands of young Americans were sacrificed needlessly. Almost as well known as Pickett was Brigadier General William S. Harney U. S. Army, after whom Harney Peak in South Dakota is named. Harney was known in Texas, too. Years earlier, he unilaterally declared war on Mexico. This rash action, which included invading Mexico with a force of Texas Volunteers, almost ignited the Mexican War before its' place in history.

The Pig War, in the eyes of some historians reeks a stench of treason; or was it a *patriotic conspiracy*? Now, 112 years after the tragicomic events which led to the *Pig War*, a U. S. National Historical Park is being established on the *battlefield*, creating a site which all tourists to the Pacific Northwest should see. Readers are urged to order a copy of the fascinating book, *The Pig War*, from the Washington State Historical Society, Tacoma, Washington, and explore this fascinating period further, too.

Aerial Photographic Interpretation, *Remote Sensing*, was used to locate the key features marking critical events in the Pig War, many of which will be featured in the Park when it is completed.

BACKGROUND

To give readers a better idea of the events which were confirmed using pictures taken from the air more than a century later, though, let us return to history for a moment.

Desperate events marked the end of the 18th century. About the time that George Washington assumed office as our first President, Spanish and British explorers sailed north into Puget Sound. In the year 1792, Captain George Vancouver, Royal Navy, met with the famed Spanish explorer Juan Bodega y Quadra on the island we now call Vancouver. The meeting was very formal and official. The meeting extended from the arrest of British fur poachers by Spanish officials, an event known as the *Nootka Sound Crisis*.

When it was over, British power was established firmly in the area. Pressures from the fledgling United States began to grow after the Louisiana Purchase and these pressures mounted following the voyage of Lewis and Clark. The treaty of 1818 established the boundary between Canada and the United States as the 49th parallel from Lake of the Woods west to the Continental Divide.

American settlers moved westward. The British, through their trading monopoly, the Hudson's Bay Company tried by persuasion and direct pressure to confine American settlement to the Willemette Valley and along the tributaries of the Snake. By the 1840's it was clear that American expansionist pressure could not be confined, and settlement was established on some of the islands offshore in Puget Sound. By the terms of the Treaty of Oregon in 1846, lands north of the 49th parallel remained British; those to the south were ceded to the United States. They only major exception was Vancouver Island. Although partially south of the 49th parallel, the entire island was granted to England. This was done because the Hudson's Bay Company had moved their headquarters, Fort Vancouver, from the Columbia River north to Victoria, on the southern tip of Vancouver Island.

About this time (actually sometime between 1843 and 1845), the Hudson's Bay Company established the Puget Sound Agricultural Farm, a large farm specializing in raising sheep (for weaving the famed Hudson's Bay blankets) on San Juan Island (Figure 1). This island is the first island east of Vancouver Island. Several American settlers had become well-established in the islands, living as friends near their Canadian neighbors. In good fellowship, all believed that the exact location of the boundary would be resolved with no problem (Figure 2). By the terms of the Treaty of Oregon, the center of the *main channel* between Vancouver Island and the mainland was to be the boundary. The language used was not precise, however, and key officials on both sides of the issue could not agree which channel, de Haro or Rosario, was the main channel. The difference of just a few miles here dictated ownership of most of the islands in Puget Sound!

The boundary problem was settled, finally, by an International Agreement. The United States and England agreed to let an International Tribunal headed by the Emperor of Germany, Wilhelm I, resolve the thorny problem of deciding *which* was the *main channel*. An early form of very acceptable

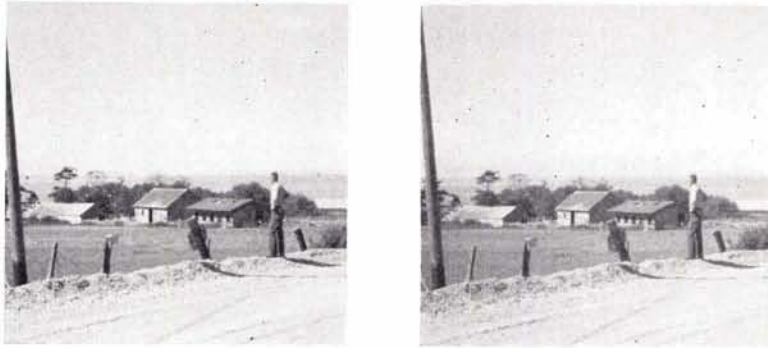


FIG. 1. Many of the tragic events that led to the 1859 "Shot Heard Round the World" took place in these buildings. Not much remains of the Hudson's Bay Company Northern Agricultural Farm. Ranger Marvin Sharpe of the San Juan Island National Historical Park staff is shown here as he points out key features.

hydrological science was used. Noted pioneer geographer/hydrographers Drs. Grimm, Kiepert, and Goldschmidt spent extensive time studying surveys of water depth and the ebb and flow volume in the various channels. Their findings were forwarded to the Emperor, who decided in favor of the position held by the United States (that de Haro Channel was the main channel) (Figure 3). The Emperor's decision was published on October 21, 1872, and the Pig War was over.

In 1965 the National Park Service became interested in the story of the Pig War. In 1966, President Johnson signed the bill which

elevated the area to National Park status and named the area *San Juan Island National Historical Park*. In so doing, to quote the final words in the book titled *The Pig War*, "Thus, this tiny dot of earth on the beautiful bay will always be a reminder that senseless wars over insignificant causes do not need to happen."

In the spring of 1859, though, things almost exploded. A farmer named Cutler cleared a field and planted potatoes just outside the Hudson's Bay Company farm, near Cattle Point. The Hudson's Bay Company raised pigs as well as sheep. The pigs were allowed

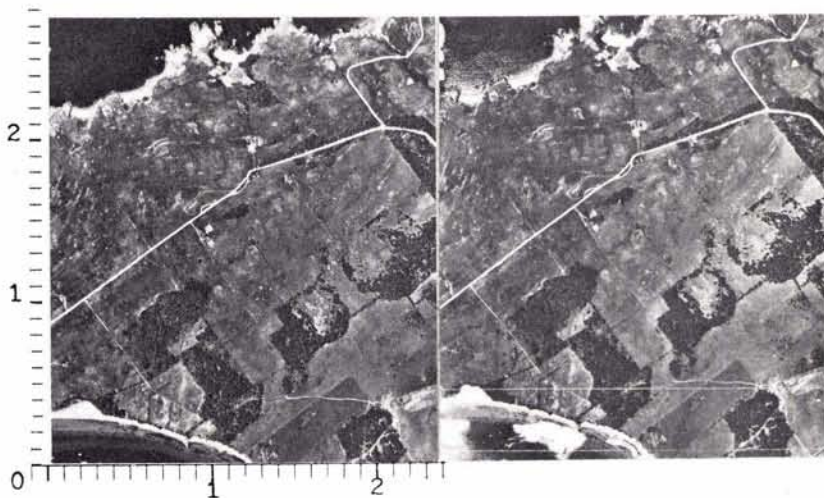


FIG. 2. The HBC post is located at coordinates 110/195 (explained below). The bastion in which Pickett's forces emplaced their artillery is located at 110/160. The American Camp was located just across the road from the bastion. Captain Pickett established his headquarters in the farmhouse at the end of the road across American Camp Road from the HBC post. Cutler's farm is still occupied. It is located on American Camp Road just off the right of the stereogram. San Juan City was located just off the left edge. The coordinates are like Eastings and Northings, referring to the scales, and stated in hundredths of inches (before reproduction). Thus, 1.0 is 1.10 units to the right of the origin.

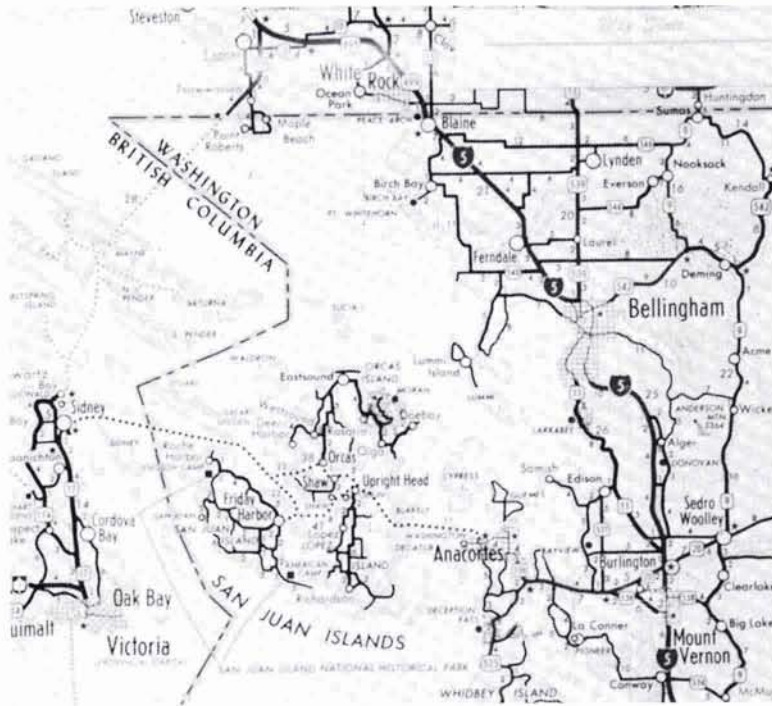


FIG. 3. Puget Sound is a fascinating region. The map indicates the vast region that was at stake. There are 472 islands in the Sound and the ownership of all of them hinged on which was the *main channel*, De Haro or Rosario.

to roam free. On the morning of June 15, 1859 the fuse was lit: Cutler came to the edge of his potato patch, rifle in hand, and saw a pig rooting among the rows. He shot the pig. This shot, akin to the one at Sarajevo in 1914 was *heard around the world*. Both national and international politics clouded the horizon in the smoke of Cutler's rifle.

Brigadier General William S. Harney was the Commander of American forces in the Northwest. Harney, who was from Tennessee, had serious political ambitions, reportably. He and his family had been active in the Democratic Party since the days of Andrew Jackson (who had been Harney's *sponsor* in his climb to power in the Army). Some historians claim that Harney hoped to inflame a National incident extending from Cutler's act by his actions in the weeks which followed. This school of thought contends that he hoped to gain national prominence and capture the Democratic Party nomination for President in 1860, a tactic also reputed to Custer in his massacre (which backfired) at Little Big Horn in 1876. Another school of thought contends that Harney hoped that, by creating a war with England he could offset the internal conflicts which led to the cessation of the south and the start of the

Civil War (this is the *Patriotic Conspiracy* theory held by General George B. McClellan).

Harney organized an invading force which included substantial parts of both the 4th and 9th Infantry, supported by several Batteries of artillery. This force landed on San Juan Island. British forces responded, and a force of Royal Marines supported by several warships was mustered.

Captain George E. Pickett (USMA 1846), who was from Virginia, was Harney's *fair haired boy*. Pickett was placed in command of several officers of higher rank and placed in charge of operations on San Juan Island. Harney's excuse for moving military forces to San Juan Island was that he did so "to protect settlers from Indian raiders from British and Russian territories to the north", referring to Canada and Alaska.

Whatever the motivation, it culminated in the establishment of a substantial "American Camp on one end of the island on Griffin Bay (Figure 4), and a large English Camp at Garrison Bay on the other end of the island." A military road, which may have been a *plank road*, at least in part, connected the two camps. A substantial settlement, San Juan City, was founded just outside the American Camp.



FIG. 4. San Juan Island lay at the end of the American pioneer's march westward. English Camp was located at the north end of the island on Garrison Bay. American Camp was on the south end of the Island near Eagle Point, across from Griffin Bay. The military road extended for 12 miles past False Bay, Little Mountain, Mount Dallas, Cady Mountain, Mount Young, and on to English Camp; a dashed line shows its approximate location.

ENTER CARL STRANDBERG ASSOCIATES

We learned of plans to establish San Juan Island National Historical Park and undertook a project to locate all traces of the military camps and the road connecting them. Precise location of the sites where each building, gun emplacement and military storage facility existed was required. Much history is confirmed or denied by the location of artifacts. Restoration of the military encampment might be undertaken also. The key feature to be located was the road which had extended between the American and English Camps. Secondary features were the Hudson's Bay Company facilities, the City of San Juan, Cutler's farm, a *soldier's cemetery* and Cutler's potato patch.

OPERATION PLAN

Background study material included copies of maps which had been compiled in 1860 and 1874 (Figures 5 and 6). These maps showed

shore features with amazing accuracy. However, we found a variation of almost 5° in the location of magnetic north on the old maps compared with its direction on recent USGS $7\frac{1}{2}$ minute quads.

Two sets of U. S. Coast and Geodetic Survey vertical aerial photography, scale 1/36,000 and 1/20,000 were located which imaged the area. Much has happened in the last 100 years, of course. Whole generations of trees have been cut, regrown, and cut again. Stereo study proved vital for all but a crude basic analysis of the available photography. Many of the significant, but very subtle, tonal variations upon which good photoarchaeological analyses depend were lost in the gray tones of the black-and-white photographs. Large features such as the major gun emplacement, the remains of the HBC farm and the houses where Cutler and Pickett, lived could be located with little difficulty. Other features, including

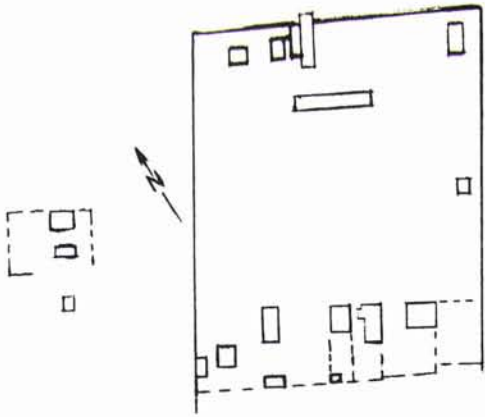


FIG. 5. Several permanent buildings were built in the American Camp. The original of this map was drawn in 1874. It shows the locations of several of the buildings that were in use as of that time. Traces of many of them can be seen on the ground, and most of them can be located through careful study of natural color and color-infrared stereo photographs. Convergent oblique photographs proved to be very valuable. The lower edge of this map fronts on American Camp Road.

foundation scars from major structures had been masked or obliterated over the years.

Convergent oblique natural color, color-infrared, and both natural color and color-infrared stereomultiband photographs were obtained from 1,500 and 3,000 feet. Coverage

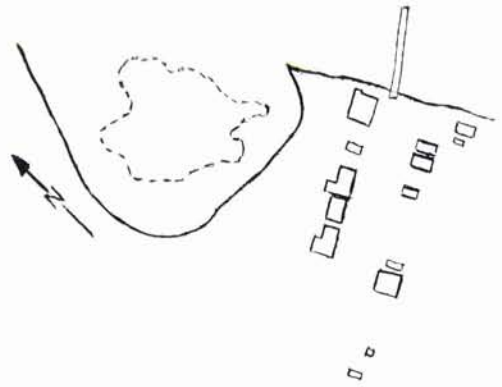


FIG. 6. San Juan City was a bustling place in spite of its small size. Military supplies were brought ashore at the pier. Cutler's store, warehouses and the inevitable saloon complex catered to the soldiers' needs.

was obtained from the four cardinal directions imaging both the American and English Camps. The suspected route of the military road was studied in stereo, examined visually from the air, and photographed using convergent oblique stereo techniques parallel with the long axis of the route. This was done to penetrate under the edge of the tree canopy and to assess continuity of irregular growth habit in the vegetation. Two expected routes for the military road out of American Camp were located (Figures 7 and

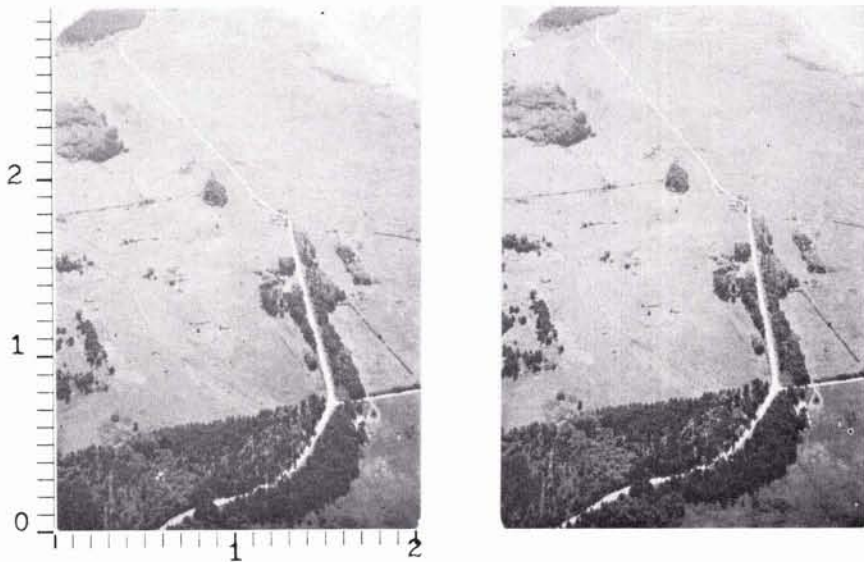


FIG. 7. Looking south from American Camp. The convergent oblique stereogram was assembled from natural color originals taken from 3,000 feet. The HBC post is located at coordinates 155/170 and Pickett's monument and bastion at 100/201. Rectangular traces such as those centered at 090/110 are foundation scars.

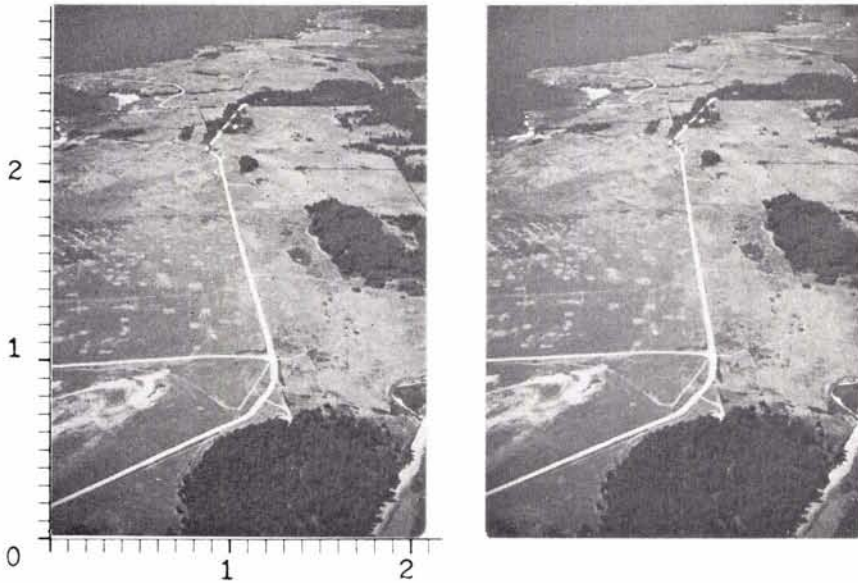


FIG. 8. Looking north from American Camp from 1,500 feet. Earthscar patterns can be seen in the camp area. The barracks were located in front of the woods at coordinates 110/210, across from the bastion. The HBC post is located at 060/220. The head of the San Juan City pier is at 200/030.

8). A major problem was that, as the area has been logged extensively, logging trails and skid roads criss-cross the area. The dominant characteristics searched for in looking for the military road were those indicating continuous use and evidence of special construction. All possible stream crossing sites were examined closely for evidence of reinforced bridge footings and paved fording areas and ramps (Figure 9). One section of the old roadway was spotted from 750 feet

which appeared to be a *plank road*. As any combat aerial observer can confirm, this sighting was made at the "usual time"—just after I ran out of film. We landed, I got more film and went airborne again, but couldn't find the critical area the second time from the air! (It was found on the ground later, though).

Conditions in the English Camp are in much better repair than they are in the American Camp (Figure 10). When the

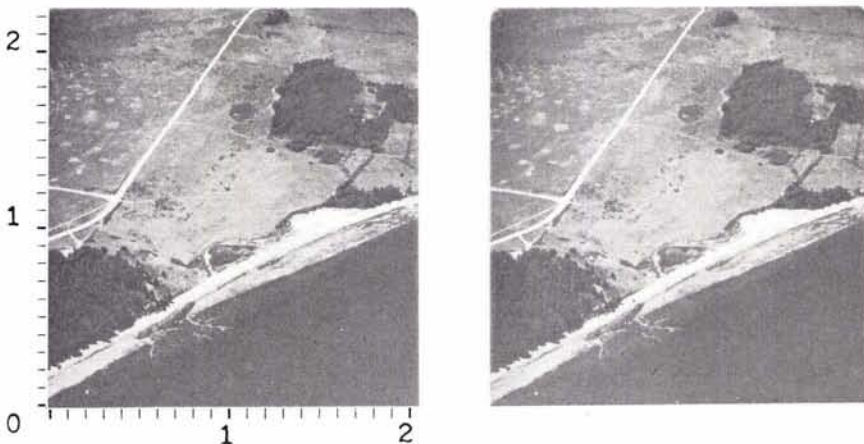


FIG. 9. All that remains of San Juan City that can be seen clearly from the air are scars of the pier head (070/050). The natural color originals used to assemble this stereogram were taken from 3,000 feet. Most of the foundation scars are masked by the trees.

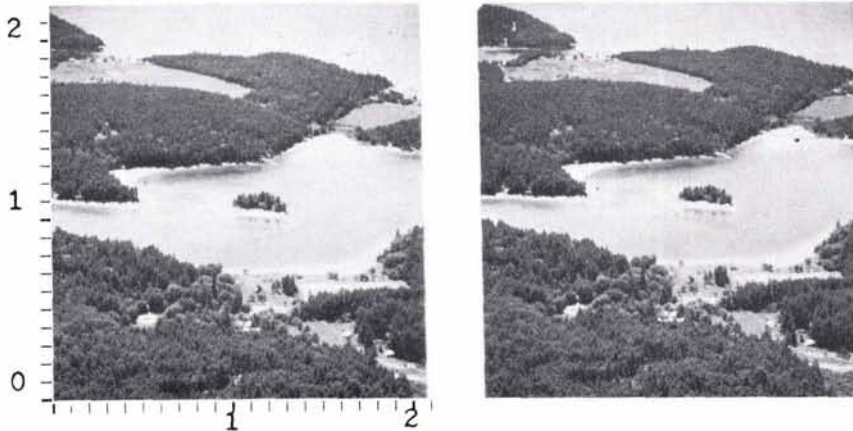


FIG. 10. One hundred Royal Marines were stationed here from 1859 to 1872. Their blockhouse, at 115/080, is in good repair (Figure 12). The barracks still stands and the cemetery is tended regularly. This stereogram was assembled from convergent oblique natural color photos taken from 3,000 feet, looking west.

English Camp was evacuated in 1872 it was purchased by a Mr. Crook, a gentleman of Canadian ancestry. He maintained the area, including caring for the cemetery in which several Royal Marines are buried. The American Camp was abandoned in 1874, many of the buildings were destroyed, and in time all were gone. (Figure 11).

FINDINGS

Subtle differences in the height of vegetation and minor variations in surface configuration sometimes mark archaeologically important sites and features within sites. Several such sites were located within the

American Camp area and in the site of San Juan City. Foundation scars were located at each site where buildings appear on the 1874 map, plus several other areas. One row of apparent foundation scars at the foot of a rise may mark the area where Pickett's men pitched their tents when they first arrived.

Several linear breaks in the forest cover could be interconnected. These appear to follow the most feasible route for the military road. (Figure 12).

Low-level, convergent, oblique stereo photographs taken so that one could examine the ground under the edges of the overhanging tree canopy were very valuable. Hyper-



FIG. 11. English Camp, looking east from 3,000 feet. The blockhouse is located at coordinates 105/120.



FIG. 12. The wooden blockhouse that the Royal Marines manned is a classic historic monument. It is one of the few still standing.

stereoscopy was obtained by convergence of optical axes 10° . This was very effective in detection of vegetative anomalies in grassy areas. Many of these sites were so subtle that they were almost invisible from a distance of 30 feet on the ground.

Color-infrared photographs were not as effective in this project as in previous photo-archaeological analyses undertaken by the author. Color-infrared was obtained using a Wratten 16 filter. This filter has been the most effective one used in analyses in Maryland, Virginia, South Dakota, Pennsylvania, Minnesota and California. Stereomultiband photographs were obtained using my personal multiband camera. Color-infrared stereomultiband photographs were obtained using a Wratten 16-61 combination. This combination has been good for archaeological support in the San Francisco Bay region.

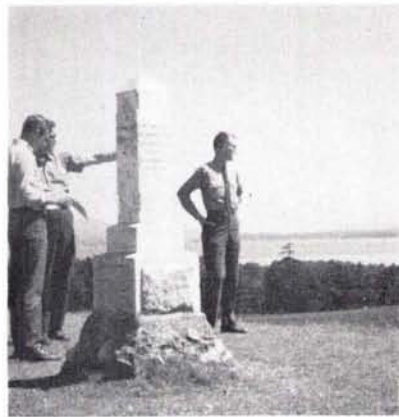


FIG. 13. Park Superintendent Carl R. Stoddard and Ranger Marvin Sharpe on top of the bastion pointing out the Park features to a visiting archaeologist. The inscription on the monument reads, "First Officer in Charge was Captain George E. Pickett of Ninth U. S. Infantry."

Natural color stereomultiband photographs were obtained using Wyatten 2A/2E and 8/9 filter combinations. Notable differences were noted between imagery in the frames even though only minute differences exist in spectral transmission. Taking advantage of these differences may prove valuable in other regions; however, they were of only minor value in this project. Had we been searching for crop marks it is likely that these special photographs would have been very valuable.

CONCLUSIONS

This project was significant for several reasons, the most important reason, of course, being that it may play a part in preserving our national heritage for the knowledge, enjoyment, and benefit of future generations.

From a remote sensing standpoint, four valuable findings were:

- The value of low-level, convergent oblique, stereo, natural-color photographs using a narrow-angle lens was reconfirmed.
- The value of correlation of features imaged in black-and-white vertical photographs with their images as recorded in the color stereo obliques was reconfirmed.
- The value of stereomultiband photographs obtained using natural color film where only a slight difference exists in the transmission of the two filters appears to have significant potential.
- The value of oblique hyperstereoscopy was reconfirmed.

ACKNOWLEDGMENTS

Several key persons in the National Park Service deserve commendation for the assistance which was given. Chief Archaeologist Paul J. F. Schumacher and Miss Astrid

Willsrud, Archaeologist, provided invaluable technical guidance. Mr. Carl R. Stoddard (Figure 13), Superintendent, San Juan Island National Historical Park, and Ranger Marvin Sharpe provided valuable assistance in the field. Lieutenant Commander Charley Chapman (CEC) USN, USNAS Whidbey Island, Washington, volunteered his services as a pilot and flew with me on his own time in a light aircraft to obtain the hand-held photo-

graphs which were taken.

My long time friend, fellow Marine and associate, John T. Smith, helped me locate the USC&GS file aerial photography of the area. Special help was provided by my associates C. W. Salisbury, Masao (Bud) Uyeda, and Steve Whitmer. We worked together as a team in both the interpretation and in preparation of the project report.

International Archives

The *International Archives of Photogrammetry*, Series XVII, Volumes 1 to 10 (which constitute the proceedings of the Eleventh International Congress of Photogrammetry in Lausanne in 1968) may now be ordered. Briefly, the Contents are: Vol. 1: Congress Affairs. Vol. 2: National Reports and Commission Reports. Vol. 3 and 4: "Invited" Papers. Vol. 5-10: "Presented" Papers.

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