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FORT ROSS

A Study in Historical Archaeology

by

Adan E. Treganza

Report on archaeological investigations at Fort Ross State Monument in the summer of 1953 carried out by the Department of Anthropology, University of California, under a contract with the California State Department of Natural Resources, Division of Beaches and Parks.

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PREFACE

By Robert F. Heizer and T. D. McCown

The main body of this report, written by Dr. A. E. Treganza who was in immediate charge of the excavation crew at Fort Ross State Monument, stands as another contribution to the slowly, but steadily accumulating body of reports on the archaeology of historic sites in California. The main published papers on this subject concern excavation of sixteenth century Indian mounds yielding evidence of the Cermeno shipwreck of 1595 on the shores of Drakes Bay (Heizer, 1941; Weighan, 1950; Weighan and Heizer, 1952); the Monterey Custom House flagpole where the American flag was first officially raised in California (Beardsley, 1946); the sawmill of Capt. Sutter where Marshall discovered gold in January, 1848 (California Gold Discovery, 1947); and the excavation of the Sanchez Adobe, San Mateo County (Drake, 1952).

 The very high spectator interest in excavations of this sort by the public can be attested to by each of us who has taken part in such fieldwork. The sightseer's interest which brings him to such spots as Fort Ross is basically a sense of history (though he may be woefully ignorant of facts) and when he views old foundations, posts or artifacts in situ it is with a sense of awareness and appreciation that here is something old, original, unreconstructed and altogether fascinating. In no small part the archaeological interest can be preserved indefinitely by sheltering some of the better exposures of foundations or other structural features and making them outdoor exhibits which can be adequately explained by signs and diagrams.

To our knowledge Fort Ross is the only establishment founded by Russians to be excavated in North America (the important sites at Sitka and on Kodiak Island have not been dug).

Excavation of historic forts, whose locations mark the former frontiers of European settlement, is not new. A cursory search of the literature has produced a number of reports on such investigation, and these are cited here in the belief that they may, in some manner and at some time, be useful in the continuing program of exploring California's historic sites. The site of the 1585 North Carolina settlement, Fort Raleigh, has been excavated by J. C. Harrington (1949a, 1949b). A seventeenth century fort on Long Island (Fort Corchaug) is reported on by Solecki (1950). In Georgia Fort Woodstock (Caldwell, 1950), Fort Frederica (Fairbanks, 1948) and a stockaded post near Macon in Ocmulgee Nat. Mon. (Kelly, 1939) have been carefully excavated and the results published. In Florida, which like California was the scene of early Spanish settlement and missionization, at least two forts have been excavated--Fort Pupo (Goggin, 1951) and Fort San Luis (Boyd, Smith and Griffin, 1951). From later times in the same area are Fort Gadsen (Griffin, 1950) and the Addison Blockhouse (Griffin, 1952). In Minnesota, Smith (1939) excavated Fort Ridgely, a U.S. Army post, and in the northwest there are excellent reports on Fort Clatsop (Caywood, 1948a), Fort Vancouver (Caywood, 1947, 1948b, 1948c), and Fort Walla Walla (Garth, 1952).

The most explicit statement on historic site archaeology in the United States has been published recently by J. C. Harrington (1952). This paper contains numerous citations, as do the publications of Stauffer and Porter (1943) and Harrington (1953).

In our opinion Dr. Treganza's demonstration of how much objective information can be acquired through excavation is, in itself, strong support for the recommendation that careful subsurface exploration be carried out before any rebuilding, alteration or addition is performed at historic sites now owned by the State of California.

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FOREWORD

The excavation reported here was carried out under a contract between the California State Division of Beaches and Parks and the University of California. The proposal was initiated by Dr. Aubrey Neasham, the Historian, State Division of Beaches and Parks, and details were discussed in conference between Dr. Neasham and Drs. Heizer and McCown, Department of Anthropology, University of California. Equipment and facilities of the University of California Archaeological Survey were utilized in the project, so that the work may be considered, in a literal sense, a cooperative venture.

The author wishes to express his appreciation to Mr. R. S. Coon and Dr. A. Neasham of the State of California, Division of Beaches and Parks, for their interest in stimulating this project and their valued suggestions during field operations, and to Drs. R. F. Heizer and T. D. McCown, the University of California, who functioned in a supervisory capacity and provided helpful field assistance.

I am indebted to Mr. J. McKensie, Curator at Fort Ross, for his hospitality, suggestions, and for the use of his original excavation notes.

The digging crew consisted of Richard Brooks, Bernard Pierce, Thomas Thorp, and Kenneth Kennedy. Without their willingness to work long hours and several extra days this project could not have been satisfactorily concluded in the time originally allotted.

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INTRODUCTION

In the past decade, and more so within the last few years, California has become more cognizant in a scientific way, of the value in preserving her inherited wealth of colorful historical sites and landmarks. Much of what is California's real story still awaits the scrutiny of the historian, the archaeologist's spade, and a planned program of restoration and preservation.

Fort Ross provides a special interest, for, with the exception of Bodoga, it represents the only serious penetration of Imperial Russia into Alta California. Though geographically isolated on the fogbound coast some 80 miles north of San Francisco, it was in no sense isolated from the social and political affairs of that day. The stories of Vallejo, Sutter, and Sonoma Mission are incomplete without the inclusion of the twenty-nine years of Russian occupation at Fort Ross.

Over a period of years, following the Russian withdrawal from California in 1841, the site of the Fort has passed in ownership through numerous hands. Aside from a few early illustrations and incidental written records there remains little tangible evidence of what was once a firmly founded settlement. Johan Sutter's purchase of equipment started a program of strippling Fort Ross of its material possessions which persisted until its acquisition by the California Division of Beaches and Parks.

Ever since the time of partial reconstruction there has remained some doubt as to the correct location and construction of many of the main features of the Fort. Now with rebuilding certain structures because of termite infestation and with additional funds for added construction, it was considered

advisable on the part of the Division of Beaches and Parks to conduct first a thorough investigation into the matter of original landmarks insofar as they pertained to anticipated plans for reconstruction. The present paper is limited in scope, since time and expenditures were designed to accomplish specific objectives.

The primary objective was to relocate, if possible, the four original stockade walls. This being accomplished, it was then desirable to check all the reconstructed features for accurate locations in respect to the original stockade walls. In addition, we were to relocate the original Russian well, the site of which had been forgotten. The excavations were favored in that the objectives were realized even beyond our anticipations.

So completely has Fort Ross been altered in past years, it was difficult to select a starting point for excavations. The Commandant's house supposedly occupies its original location but stands in little reference to the features which were sought. The only original permanent datum was the northwest Bastion, though reconstructed, was done so in situ. The east, west, and south stockade lines had all been subjected to subsurface disturbance; therefore, we selected as a starting point the north wall which would connect the Chapel to the northwest Bastion. Earlier, Mr. John C. McKenzie, curator, had made a rather intensive survey of this line and validated the presence of the original stockade. By following McKenzie's notes, but by digging deeper and wider, it was possible to expose in some detail a large section of the original construction. McKenzie, unlike his predecessors, had both the training and foresight to record but leave the material remains in position. Had this not been done, much would have been lost. With the north wall established, it was not too difficult to trace out the remaining walls such as they were preserved.

Seldom in historical archaeology are all the data present to provide answers to the problems which arise. Even with evidence at its best, logic and imagination fortify the conclusions and establish continuity. It is important, however, that imagination remain within the realm of possibility. The Russians occupying Fort Ross were excellent craftsmen in rough woodwork as attested by the recovered remains. The reconstructions presented by the author do not go beyond the known scope of Russian ingenuity.

ARCHAEOLOGICAL FINDINGS AT FORT ROSS

Presented here is a description of the actual digging in the order that the excavations were made. For convenience, each test pit or trench was given the name "section" and further designated by a letter (e.g., Section A). Each section has been plotted to scale on the accompanying map (scale: 1/30" = 1'). Within most sections specific structural remains were recorded and will be referred to as feature, post, stringer, sill, etc.

Along with this detailed running account will be remarks relative to the problems at hand. In a following section an attempt will be made to isolate and discuss architectural and structural remains where they pertain directly to a program of future reconstruction.

Section A - North Stockade Wall (pl. 1, fig. a; fig. 2).

Excavations were initiated at the most eastern end of the four upright redwood posts which stand on the line between the northwest Bastion and the Greek Chapel. It can be stated at the outset that, though these four posts had earlier been considered as representing remnants of the original stockade line, there is no evidence to support such a thesis. They are off the original stockade line as established by excavation and the bases of the posts examined fall far short of making any contact with the original structure. As judged by the surface appearance and the mortise holes these posts could originally have been of Russian origin. A local resident offered the information that within his time they constituted the rear of a chicken coop. We assume they are original posts but have been reset by coincidence near the original stockade line.

Section A, as well as Section B, follows the area excavated earlier by Mr. McKenzie, but being favored with more help, we were able to extend our operations over a wider area and thus expose several new features, which collectively provide a rather definite pattern of stockade construction (fig. 1).

Post 1: (pl. 1, fig. b). This post consists of the remnants of a redwood post 10" x 11" set in a circular pit which extends into the yellow sandstone bedrock for an unknown depth. In cases where wood remained no attempt was made to ascertain depths in order to avoid disturbing any of the original features of construction.

The circular pit is 24" in diameter with the post being firmly packed into position by a rock and brick fill deposited in random order but suggesting some attempt at hand-packing. On the south side of the redwood post and at a point intersecting about the middle of the pit line may be noted a well defined trench averaging about 18" in width and cut into the soft upper bedrock.

Fortunately Section A traversed an older refuse midden of Indian origin, so wherever features penetrated the bedrock, the fill consisted of dark mound soil, thereby sharply defining the original Russian construction. The trench just mentioned can be traced in a continuous line to the rear of the Chapel (pl. 4, figs. e, f). Remnants of redwood were found at intervals along this line giving all the indications that this was once the wooden base of the stockade into which the upright puncheons were set. This line was recurrent throughout all the excavations and the horizontally laid redwood timber will be referred to as the sill (pl. 1, fig. d; pl. 4, figs. b, d). With the original topography having been subjected to considerable alteration/ⁱⁿpost-Russian times, it is difficult to determine the exact depth from the surface

of the sill; however, at a point near the present road where the bedrock tends to rise and the Indian mound seems relatively undisturbed the depth from the ground surface to the bottom of the sill measured 30".

At a point 3'8" east of the center of Post 1 there is a remnant of redwood 6" x 4" and 1'8" long. Originally the dimensions were probably greater, but the present condition prevented accurate measurement. The relationship of this board to other features and its recurrent pattern at various points is such that it has been called a "sleeper" or stringer (pl. 1, fig. d). In respect to the wall its position would have been on the outside of the stockade and about 18" below the surface of the ground. Presumably it was doweled into the puncheons at various intervals. A 1 1/2" break occurs and then this stringer continues for another 5'10" where it intersects the hole for Post 2.

In several places along this line there are small sections of 4" x 4" redwood posts set in upright position. Since these posts rest on top of, and in some cases cut through the stringer, rather than rest behind it, I presume they are intrusive and can best be related to a post-Russian structure which was known to have occupied this spot. These posts are referred to in McKenzie's report as Feature 67.

Feature A: This was designated as a feature because of its unusual nature. It consists of a circular hole 24" in diameter and sunk 36" into the bedrock. Its center is located 8'5" east from the center of Post 1 and 5' west from the center of Post 2. It is immediately adjacent to the sill or stockade line but would be on the inside or south side of the wall. Unusual was the fact that this hole formerly served the purpose of a privy, probably during early American occupation. It contained a thin walled, white chamber pot, an Imperial quart, hand blown green glass bottle, a drinking glass, five immature seal phalanges, and numerous mixed ceramic and metal fragments.

A somewhat comparable situation, minus the same content, may be observed in Features B and F where large post holes are located adjacent to, but outside, the stockade wall. It is presumed that Feature A constitutes a portion of the original stockade and because of its convenient location to a later structure underwent secondary use. It would not seem logical to dig a privy hole in solid bedrock when the area abounds in less resistant spots.

Post 2: (pl. 1, fig. c; pl. 4, fig. a; fig. 2b). The center of this post is 13'3" from the center of Post 1. The greatest dimensions of the remaining redwood are 13" x 15" with one side being curved like a quarter round section of tree. Of interest here is the presence of a notch and a dowel hole. On the northeast corner of the post about 12" above the bedrock surface there is a circular hole 4" in diameter which extends clear through the post. The hole shows evidence of having been cut rather than drilled and probably served the purpose of attaching the main post to the stockade wall or in some manner was used to attach an outside brace. This hole is also on the same level as the stringer. However, the precise relationship of the stringer and hole is not clear since the stringer intersects the mid part of the post rather than being flush with the outer surface. Possibly some sort of wooden brace was notched around the outer margin of the post and doubled back into the stringer on both sides of the post; however, such speculation finds no basis in fact. Inside or on the south side of the post and on the same level as the dowel hole there is evidence of a remnant notch cut on a slight upward bevel. Its position suggests an inner brace set at right angles to the wall and on a downward tilt. It should be noted at this point that the entire north wall where we excavated had been reinforced both on the inside and out with rock fill, the chunks varying in weight upward to a hundred pounds or more. The bulk of the

reinforcement was against the inner wall.

At the top of the rotted post was found a square iron spike 7" long which may have been in the original association. It was not actually imbedded in the redwood.

The post hole is similar to that described for Post 1, being 30" in diameter but having a better defined brick fill around the base of the post (pl. 1, fig. c). The sill line at this point is well defined, being similar in its location as that noted for Post 1.

At a point 4'4" on line and east of the center of Post 2 the stringer picks up again and continues for some 4'8". This redwood plank appears to have been about 4" x 6"; however, the poor condition prevented accurate measurements. Directly behind the stringer the trench in which the sill rested is well defined, having been cut into the yellow bedrock and subsequently filled with dark midden soil (pl. 1, fig. d).

Post 3: (pl. 1, fig. e). This post is located 12'6" from the center of Post 2 to the center of the present one. All that remained of the original wood were a few fragments in the bottom of the hole. The pit is mostly brick filled and clearly shows two sides of a rectangle where the post originally stood. As judged by the compactness of fill, an earlier road must have traversed this spot. The removal of bedrock at right angles to the stockade wall also suggests the presence of an old road bed. Photographs taken about 1900 show an entrance somewhat west of the present road, but, in any event, such a feature would be of post-Russian origin.

Section A ends 28" east of the center of Post 3 where the present road runs through Fort Ross. Section B is immediately across the road and runs toward the Greek Chapel.

Post 4: Nothing remains of this post or its hole, all evidence having been destroyed by the lowering of the present road bed. Measurements between Post 3 and Post 5 would indicate a post should have been located in about the middle of the present macadam road.

Section B: (pl. 1, fig. f; pl. 4, fig. b; fig. 1).

This section runs from the east side of the modern road to the rear of the Chapel. The purpose here was to establish a continuation of the stockade line to the rear of the Chapel. This being accomplished, a transit line could be shot back to the permanent datum on the northwest Bastion and thereby establish the original position of the Chapel prior to its reconstruction.

Post 5: (pl. 2, fig. a). From the center of this post to Post 3 is 25'4". Halving this distance, one may compute this post as situated 12'8" from Post 4 (already mentioned as being missing due to road construction). The post hole produced only a few wood scraps and evidenced brick and rock fill. From the center of the post hole to the edge of the present road is 24".

Feature B: (pl. 2, fig. b). Located 12" west of Post 6 and 14" north of the outside of the sill line. The precise function of this feature cannot be fully determined. It consists of a redwood post approximately 10" x 12" set in a hole 27" in diameter. The hole is cut into solid bedrock representing one of the best examples of bedrock penetration. Full depth could not be determined because of the post but it must have exceeded 24". This post occupies a position outside the stockade wall but from all appearances must be of Russian origin. Feature A, mentioned earlier, is in a similar location in respect to the sill line but is inside the wall. Possibly these large posts were placed in an inside-outside position at various points for added support along the stockade line. We were unable to determine whether they follow a definite

pattern, as time did not permit the full excavation of the north wall. The positions are such that they could have been tied into the main stockade through a series of lateral braces.

Post 6: (pl. 2, fig. b; pl. 4, fig. d). Located 12'9" from the center of Post 5 to the center of the present post. The latter consists of a redwood post 10" x 12" whose remnant rises 24" above the surface of the bedrock. This hole 30" in diameter is well defined as it cuts into the bedrock and contains a considerable amount of stone packed around the base of the post. At this point the sill line remains the same as that described earlier.

The base of a heavy green glass bottle was found as part of the original fill and is assumed to be of Russian origin.

Feature C: This feature is located 2'0" south of the center of the sill, 6'4" east of Post 6, and 6'7" west of Post 7. It consists of a post hole 24" in diameter extending 24" below the surface and barely penetrates the bedrock. Scraps of redwood post were still present. The position and nature of this feature is such that it could best be related to some structure of post-Russian occupation.

Photographs taken prior to and following the 1906 earthquake show several different rail fences and heavy posts between the Chapel and the road. Presumably these were on or near the stockade line and it is to be expected that some evidence of these more recent posts should remain. The main problem here is to distinguish between them and the original Russian stockade features.

Post 7: (pl. 2, fig. e). This post is located 12'11" from center to center of Post 6 and is similar to the other posts described. In this instance we left the tamped earth fill around the post in position to a point where it rises 8" above the bedrock and sill line. This was done for illustrative purposes as

normally this material was removed to examine the rock and brick compaction near the post base. Only fragments of wood remained, but the imprint of an 8" x 8" post could clearly be seen. Diameter of the pit could not be determined since the original fill was left in position, though it would probably conform to measurements taken on other posts. A bent, square nail 5" long was found in close association with this post and is similar to some recovered by Mr. McKenzie during his excavations.

Feature D: In structural respects this feature, a redwood post approximately 8" x 8" set in a 24" hole which penetrated the bedrock 18", conforms to the main posts already described; it does, however, differ in its measurements as to distance between the main posts. The fill around the post consisted of bedrock rubble and brick fragments similar to those noted elsewhere.

From the center of this post to the center of Post 7 is 4'6" and to the center of Post 8, 8'6". There is a tradition, not fully confirmed by the author, that on certain occasions it was orthodox custom to walk around the Chapel as part of the specific service being held. As judged by pre-1906 photographs and confirmed by the present excavations, the original stockade wall was attached directly to the Chapel at the northwest corner with the Chapel wall constituting a continuation of the stockade. There are no references or indications that a Sally Port was ever located along this north wall; therefore, if this custom of circling the Chapel was practiced during Russian occupation, some entrance through the stockade wall must have been present. The measurement of 4'6" from Post 7 to Feature D suggests the proper dimensions for a gate or doorway. Entrance back into the stockade could have been made through the east Sally Port. However, Father Ivan Veniaminov reports the following at Fort Ross in 1836: On August 1 "After instructing and confirming two adult Indians, I celebrated the holy liturgy . . . After the

liturgy I went to the river, where I blessed the water and then went around the stockade with a religious procession." Whether Father Veniaminov went around the stockade merely blessing or whether he literally went around the stockade is not clear. If it was the former, then no door seems to be implied.¹ Mr. McKenzie, curator, informs me that recent Greek services held in the present Chapel on Easter and New Year's day follow the practice of walking around the church and re-entrance through the Sally Port.

Post 8: (pl. 2, fig. f). This post (Feature D) is located 13' from the center of Post 7. It conforms to other posts, though the rock fill around the post appears somewhat larger than usually noted (12" dia.). Only the very upper portion of the wood remained.

Feature E: (pl. 2, figs. m, d; fig. 2a). As earlier noted, this feature is similar in every respect to Feature D and is likewise difficult to place in the general plan of original stockade construction. The location relative to the sill and the nature of the fill around the post would almost preclude any assumption that this feature is of post-Russian origin. Offered as a suggestion is the idea that since the sill could not have been a continuous plank, then Features D and E may represent points where the sill was spliced. Rather than joining simply as butt ends, which would be structurally weak, the ends may have been notched around such uprights as represented by the present features. This possibly being the case, then Features D and E actually represent upright punches which would pass through the sill line where they were spliced rather than rest upon the upper surface of the sill as would the other uprights. This in no way would place the post out of line with

¹ Original "Travel Journal" to be found in the Alaska Territorial Library at Juneau. Cited from "The Russians in California: The Russian Colonies in California, a Russian Version." California Historical Quarterly. Spec. Pub. 7, Vol. XII, No. 3; Footnote 44, p. 12. 1933.

the other puncheons (fig. 2a).

The location and dimensions of Feature E are as follows: the well preserved post imprint is 9" x 8", the hole is 21" in diameter, and situated 7' from Post 8 and 6'5" from Post 9.

Feature F: (pl. 2, fig. C). This consists of a semi-circular hole 15" in diameter and cut into solid bedrock at a point where the base material tends to surface. It provides an excellent example of the Russian ability to penetrate difficult subsurface deposits. The location is just a few inches north of the sill line and 4' west of the center of Post 9. The position is similar to Features A and B already discussed.

Post 9: (pl. 3, fig. a). This post is located 13'5" from the center of Post 8 and 12'3" from the northwest corner of the cement pier supporting the reconstructed Chapel. The hole dimensions are difficult to define as large rocks about 24" in diameter occupy the sill line. Some of the very large rocks appear to have fallen into the main trench, possibly during the 1906 earthquake which was very severe in this local area.

The redwood post which remains measures 11" x 11" and shows definite evidence of being quarter round as if split from a large log. In other respects Post 9 is similar to others described.

Feature G: (pl. 3, fig. a). This feature consists of a fragment of 4" x 6" redwood post 9" long located 2'4" east and 8" south of the center of Post 9. The position of this fragment being directly above the sill suggests that it may represent the lower portion of one of the original puncheons. It may be related to later structures, but a similar occurrence may be noted in Sections I and K where original puncheons are almost assured.

Russian Chapel: (pl. 4, figs. e, f). The center of Post 9 lies 12'3" from the northwest corner of the cement pier supporting the Chapel. Apparently during reconstruction when this concrete pier was set, the excavators removed the original post, which, from pre-1906 photographs, shows it to be a portion of the Chapel corner and the terminus of the stockade proper. What might be called Post 10 was actually the northwest corner of the Chapel. At this point the only tangible evidence remaining were two wedge-shaped pieces of driftwood, which, as judged by their relationship, might have served as shims in the original construction of the Chapel.

Fortunately at this northwest corner the sill line is well defined providing a clear evidence of the degree the Chapel is off its original line. Assuming, on the basis of early photographs, that the north wall of the Chapel was a continuation of the stockade wall, and like the puncheons, was flush or nearly flush with the outside of the sill line, then the present northwest wooden corner of the Chapel where it rests on the concrete pier is 16" south of the outer edge of the original sill line (pl. 4, fig. e). In other words, the Chapel is 16" out of line at its northwest corner. To bring it in line would involve moving the Chapel 16" to the north.

At the rear of the Chapel (northeast corner) the sill line could be traced to a point where it made an angular turn to the south which would begin the eastern side of the Chapel and stockade wall. Here it was noted that the northeast wooden corner was 8" west of the outer edge of the east sill line and 6" south of the outside of the north sill line. To bring the Chapel into line at this point would involve moving it back or to the east some 8" and to the north 6".

The Chapel is so constructed that its back (i.e., east side) is not parallel to the reconstructed east stockade wall. This is understandable since the

stockade forms about a ten degree parallelogram and the Chapel is constructed on a right angle rectangle. If the Chapel were reset as indicated, it would thrust it in at even a greater angle. Our evidence, however, indicates that where the original Chapel stood about a ten degree deviation can be expected where the southeast corner of the Chapel joins with the east stockade wall. This specific point of juncture could not be determined since the recent reconstruction of the east stockade wall has effectively removed all original reference points.

Section C: (pl. 3, fig. b).

This section is on the north-south line which would constitute the west stockade line. The area exposed by us is in a trench 5' wide, 30' long by 3' deep, with the north end extending 12" under the cement foundation supporting the reconstructed seven-sided Bastion. Revealed in this trench is the clear-cut sill line of the original stockade trench. As along the north wall the sill was cut into yellow bedrock and had been outlined with dark midden soil. The location of this sill with respect to the Bastion corner (pl. 3, fig. b) offers definite proof that the northwest Bastion has been correctly restored and may constitute one of the very few accurate original datum points to be found at Fort Ross. Curator McKenzie's 1952 work on the west end of the north wall illustrates the same features as were observed by us. The correctness can probably be attributed to the fact that Mr. Coon was foresighted enough to employ a trained engineer to plot the proper structural landmarks accurately prior to the removal of the original notched timbers which still marked the ground plan of this seven-sided Bastion. It is gratifying to note that archaeology can confirm as well as disprove points in question.

Of interest were the remains of the original redwood post still in place under the Bastion corner along with two fire-hardened, pointed oak dowel pins

(3 3/4" long by 3/4" dia., and 5" long by 3/4" dia.)

Of this west wall only the last 15' near the Bastion where we excavated has remained undisturbed since Russian times. Mr. W. Turk, former curator, had independently undertaken the job of excavating the west wall for purposes of future reconstruction. Though his activities were not carried deep enough to obliterate completely all of the original sill line, the lateral extension was sufficient to make obscure the desired data on post construction. We found the remains of but a single post located 10'5" south of the corner of the Bastion. Some rock fill was noted inside the wall near the Bastion but was largely lacking as contrasted to the entire north sill line. Since the bedrock is deeper here, it is possible that also the sill line could have been set at a greater depth and did not require the added rock post hole fill. The rear of the barracks, which lay along this line, may have served as an inner brace. Although much of this original west wall is lost to us, it can probably be assumed that its construction followed roughly the pattern set in the well preserved features of the north stockade line.

Section D:

This section is located 158' south of the seven-sided Bastion and extends to 198' south. Excavations were made on the line of Mr. Turk's earlier work but carried deep enough to detect possible features not encountered and disturbed by him. The entire length of this 40' trench clearly exposed the very base of the sill line. No definite post holes were observed, their absence being difficult to explain otherwise than by assuming that the original barracks known to have occupied this area may have functioned as part of the stockade wall. A similar situation has already been noted for the north and east side of the Chapel.

Width of the sill trench in this section is broader than observed elsewhere, being here about 24". At one point a cross-section made through the bedrock shows the depth of sill into bedrock to be 12". The depth from the top of the bedrock to the present surface is 20", though it should be noted that this particular area may have been subject to considerable post-Russian alteration. Much of the present excavation had formerly served the purpose of a refuse dump and produced cultural debris ranging from possible Russian date to the period when the Call Hotel used the Commandant's house as an auxiliary building. These artifacts, along with others, were deposited with Curator McKenzie for safekeeping and future study.

At this point attention may be turned toward the question of the Sally Port or Sally Ports, since from the present author's point of view there remains the possibility of considerable error concerning not only the present east Port, but the additional likelihood that two more Ports were involved in the Fort at the time of Russian occupation. The contention that an error exists is drawn from examination of early photographs, original drawings, and from our own excavations. Two problems are involved: the number of Ports present and the nature of their construction. In a very detailed and accurate original drawing made in 1843, two years after the Russian withdrawal, by G. M. Waseurtz af Sandels,² there is shown in clear detail the presence of three Ports. The Waseurtz drawing must have been made from the top of the hill directly behind the Call ranch house and fortunately provides a three-quarter perspective of the Fort from a side which is rarely illustrated. Such details as relationship and proportions of the buildings, the windmill,

² From the MS in the Collection of the Society of California Pioneers. Quarterly of the California Historical Society. Spec. Pub. 7, Vol. XII, No. 3. 1933.

pump, cattle corral, burial ground, etc., provide every evidence that the artist sketched the Fort in situ and not from memory. Not only does Waseurtz show a definite port in the south wall and in the west wall, but he also shows a definite road leading up to these ports. All three ports illustrated are denoted by dual ornamentals as part of their superstructure.

As to the details of construction, it is my understanding that the present reconstruction was based upon Russian forts in general of that period, rather than being based upon any actual evidence present at the site. As now constructed the east Sally Port is arranged so as to have an outer door flush with the stockade wall, an inner stockaded alley, with a second door hinged at the end of the alley. I can find no evidence to support the latter type of construction even though it might have been conventional in Old World forts of that time. The Waseurtz drawing provides a view looking down into the compound and in no instance does he indicate the presence of an inner alley and second door. The Duhaut Cilly drawing of 1828 unfortunately is a view of the east and north walls made on an eye-level perspective and shows only a single exterior port. Our excavations were so executed that had an inner stockade alley turning at angles from the main wall been present, we would have certainly detected its presence. No such evidence was noted but admittedly a more extensive examination could have been made had time permitted. The detail features of the outer Port door also offer a point in question. Two photographs possessed by Mr. McKenzie provide views inside and outside the eastern Sally Port. These illustrate a low picket arch extending over a pair of single doors suspended on heavy strap iron hinges. The Duhaut Cilly drawing, made during Russian occupation, likewise shows the doors terminating before reaching the top of the stockade wall but, on the other hand, the Waseurtz sketch suggests the doors as being full stockade height. I would incline to believe that the

arch detail shown in the McKenzie photographs represents original Russian construction. The history of Caucasian occupation of the Fort indicates no attempt at elaboration especially related to the non-functional structures. The pattern from Johan Sutter down to the last private owner has been one of removal of Russian features rather than their preservation.

I would suggest that prior to reconstruction the entire question of the Sally Ports be examined with some care by Dr. Aubrey Neashaw to provide the value of a trained historian's point of view. The author has simply presented his factual findings. It would seem, however, quite plausible that with so many structures located outside the Fort proper, more than just a single access would be useful if not, indeed, necessary. The story of Fort Ross creates the feeling it was a sprawling semi-protected agricultural and hunting center rather than being a heavily fortified military outpost. No element of force ever actually faced the Russians during their stay on the California coast.

Section E:

This is located from 262'7" to 266'7" south of the seven-sided Bastion at a point near the southwest corner of the Commandant's house. Here previous excavations had destroyed the original sill line, and a cement pier from later reconstruction was noted. This pit was extended in a lateral direction toward the present west fence line in order to determine whether there could have been some deviation in the original line. Nothing of this nature was found. It is in this trench that the reconstructed stockade begins to diverge from the original line and presumably that is why rebuilding halted at this point.

Section F:

Nothing of significance was noted here other than remnants of the reconstructed stockade.

Section G:

This section is "L"-shaped as it angles around the southwest corner of the Fort. Here a critical note on construction can be made as the original sill line forms a corner in respect to the present reconstructed stockade line (fig. 2e). Evidence would indicate that in restoration the south wall at the corner should be moved 18" to the west and 8" to the south in order to bring the southwest corner in position with the original corner. Some alterations may be noted for the other end of the south wall and will be discussed under Section K.

Section H:

This is located where the present highway cuts through the south stockade wall. The outer edge of the original sill was located at a point 1'7" south of the reconstructed wall. At this point, three redwood planks containing square, machine cut nails were found occupying the old sill deposit. The planks predate the reconstructed wall as they extend under it and postdate the Russian construction by virtue of the type of nails. Possibly they represent the old saloon steps reported to have been near this spot.

Section I:

This section is directly across the road from Section H. Here the original south sill line is well defined as is a remnant of one of the puncheons (pl. 4, fig. c). The distance from the stockade wall to outside of sill was 24".

Section J:

Little is revealed other than the stub ends of puncheons over a poorly defined sill line.

Section K:

This marks an important point in locating the exact position of the south stockade wall and the eight-sided or southeast Bastion. The sill line being well defined could be traced directly under the cement foundation of the corner of the restored southeast Bastion (fig. 21). The entire floor of the Bastion was removed in anticipation of finding the original contact between the sill and the Russian Bastion. The effort was unrewarding since during reconstruction the entire area under the blockhouse had been cleaned down to near bedrock, destroying the original points of contact.

Outside the Bastion a fragment of the original sill 27" long still rested in the old trench. At 64" west of the Bastion and directly over the sill line were parts of the upright punchons.

An earlier dubious point to be settled here involves which corner of the Bastion originally made contact with the stockade line. Failure to place a gun port on the face of the Bastion which runs parallel to the south wall has led to the belief that the wall must have run to the outer edge of the Bastion in order to eliminate a vulnerable spot on the fortification. Early photographs, now at the Fort, show a definite gun port to be present and indicate that it was merely failure in the reconstruction to include it. Also, our identification of the original sill line would indicate that the present corner where the stockade meets the Bastion is the correct one. The only error, other than the absent gun port, is that the entire Bastion should be shifted 26" to the south to bring the outer stockade wall to a line where it joins the Bastion flush with the original sill line. In all other respects this southeast Bastion appears to be correctly located, especially on its north-south axis which, if extended, would constitute the east stockade wall.

Sections L, M, and N:

These consist of 24" slit trenches cut from the face of the present east stockade wall toward the existing fence in order to make certain that the original sill line did not pass in that area. Section N was cut through the present Sally Port, and since the absence of a sill line at this point would also indicate a break in the sill, it is assumed that the east Sally Port is in or nearly in its original location.

Sections O, P, Q, and R:

This series of slit trenches was cut from inside the Fort up to the inner face of the east wall. Again we found no trace of the original sill and our archaeological evidence, or negative evidence in this case, would lead to the assumption that the reconstructed east stockade stands on its original location. Mr. W. Turk could recall that during reconstruction many of the original post stubs were present and removed as work progressed. He did not remember or have records about any of the details of the post holes or the distance between the main posts.

Some slight deviation may be expected toward the north end of this east wall where the stockade meets the Chapel, providing the Chapel is brought into line with the sill as was established for the north wall.

In Section P a large post 12" x 14" located 24" west of the present water pipe may mark one of the main posts of a large barn known to have occupied this area. Time did not permit tracing out other possible associated features.

Section S:

This was cut from inside the Fort up to the face of the south wall. It provided a good profile of the reconstructed wall showing the rough gravel fill, the base of the sill line, and the degree of termite destruction. As

noted earlier, the original sill was found opposite the wall in Section K. This was made merely as a positive check against our earlier observations.

Russian Well: (pl. 3, fig. c, d).

Mr. Carlos Call, former owner of Fort Ross, was largely responsible for our success in finally locating the site of the original Russian well. In prior years Mr. Call had closed up the well, and in the subsequent time surface debris and grass had obliterated all traces of its location.

Excavations indicate the well has had at least two separate histories. At present the well contains an inner cribbing 40" x 40" composed of horizontal rough split redwood arranged in no regular order but being held in position by being nailed to four corner moldings. The horizontals are on the order of what we call "grape stakes," only being more irregular. The corner moldings, though weathered, are about 3" x 3" redwood and appear to have been cut by a saw.

The cribbing was nailed from the outside into the molding, thus indicating it was made in sections on the surface and lowered into the shaft. The nails were tapered angular, machine cut and not of the hand-forged type, which would indicate a post-Russian origin for this section of the well.

Not being equipped to dig a well, operations were stopped at 12' as a safety precaution. At 11' water was freely flowing through the cribbing, and without a pump work became difficult. With a one-inch auger we probed to a total depth of 18'7" without reaching bottom. Mr. Call suggested a depth of 25 or 30 feet for the well hole.

What is probably the original Russian well is the oval dark earth filled impression of a pit which surrounds the wooden cribbing (pl. 3, fig. d). This original pit has an average diameter of 6'6". Whether this original well had a casing or cribbing could not be determined for danger of disturbing the inner wood structure.

Much speculation has been ventured as to the source of water supply used by the Russians as even today a good water resource broaches a vexing problem. Doubt has been expressed that within the Fort there was any permanent water supply and that the well functioned merely as a cistern to be drawn upon in case of a siege. Our present excavations, in part, clarify this problem. Not only is there water in the Russian well, but in August, one of the drier months, there is an ample flow at a depth of only 11'. The fact that the well had been cribbed in post-Russian times is indicative of its persistent productivity. Whether or not in Russian times the well provided enough water to supply the entire Fort personnel cannot be answered. The idea does not have to be excluded that the upper regions of the adjacent creek were diverted into a wooden flume to provide a steady flow not only into the Fort but also for pasture irrigation and stock water.

Wells are notorious in their ability to collect mythical stories as to their content. Fort Ross does not provide any exception. However, here there exists some basis of truth. At an early date it is reported one of the Call sisters deposited a number of objects in the well which she considered hazardous as children's playthings. As to exactly what these objects were there remains no record. Also, another well existed near the old Call Hotel and a third may be observed in the 1843 drawing by Waseurtz. Mr. Carlos Call had but a faint recollection of his sister's activities but presumed they involved the present well. In any event, a well of this depth and in such a location would be worth excavation to bottom as in the course of time it could have collected a variety of cultural items. The fill used by Mr. Call was drawn from earth within the Fort and from the Indian midden. The artifacts recovered by us were of both Indian and Caucasian origin, none of which are of any particular significance.

"Russian Bricks":

During excavations, especially along the north wall, numerous fragments of fired red bricks were recovered. That these bricks were contemporaneous with the building of the Fort is obvious as the more nearly perfect bricks were used as rubble pack around the base of the original posts. The exact origin of these bricks is unknown. Some suggest they arrived as boat ballast, that they were sent down from Russian holdings in Alaska, or that they were salvaged from an earlier Spanish fortification supposedly located at Bodega Head. Fired tile and brick were present at Sonoma Mission, but it is doubtful they would be transported to Fort Ross to be used only as rubble fill where any stone would have served the same purpose. The old kilns at Olema are in no way related to any part of Fort Ross as these kilns were not constructed until 1850, and used for the production of lime.³

The style of north Russian architecture is confined almost exclusively to intricate patterns of wood notching with stone and brick representing complete foreign elements. However, no data remain concerning fireplaces, cook shacks, or the blacksmith shop. The last two do not necessarily require brick or stone as earth confined in a wooden frame may serve the same purpose.

Indian Occupation:

Ample evidence is present indicating California Indians were living in the immediate area of Fort Ross before, during, and after Russian occupation. There are no less than five sizeable village sites all within a half mile of the Fort.

Any one or several of these villages could have housed Indians while the Russians were present, and excavation of these sites could produce valuable information.

³ Treganza, 1951.

Indian Site No. 1: This is immediate to the entire north wall of the Fort, extending back of the Chapel and including the two white cottages owned by Mr. Call.

Indian Site No. 2: This occupies a small knoll 100 yards west of the west stockade line and now supports a rectangular white barn on the northeast side of the Call ranch houses.

Indian Site No. 3: This is approximately one-half mile northwest of the Fort near the timber margin and to the right of the Castella road. Here may be noted house pits and historic artifacts.

Indian Site No. 4: This overlooks the sea from a high bluff directly above the cove which formerly contained a landing pier supported on large boulders.

Indian Site No. 5: This is located in the rear of the cove directly below the southeast Bastion. Early illustrations suggest that the Russian boat house and tannery must have been built over the surface of this site.

Site 1 was tested by a 5' x 10' pit and showed but 18" of Indian deposit and a small artifact yield. The deeper areas of this site would probably prove to be of more interest. Pendants made from fragments of European porcelain suggest this site was used in post-Russian times as well as being occupied when the Russians arrived. It is doubtful if the Indians lived here when the Fort was occupied, for the north stockade wall cuts directly through the village.

No attempt was made to locate the area which housed the Aleut otter hunters and their families. This will make an interesting study for the future.

SUMMARY AND SUGGESTIONS ON RECONSTRUCTION
OF FORT ROSS STOCKADE

This summary represents the factual data derived from visual observations. Interpretation is open to alternative expressions. The suggestions are the inclinations of the author as a first-hand observer; they do not necessarily represent recommendations.

At no point in the excavations were any appreciable errors detected in the original ground plan as opposed to existing structures, and in most cases where errors do occur, they will be self-correcting during reconstruction. The Chapel and the southeast Bastion offer the two points of main concern since extensive cement foundations are involved. The feasibility of any changes will have to rest with those involved in the program of rebuilding.

Of historical value has been the discovery of original structural features heretofore unknown, which, if utilized, will do much to create an air of authenticity of the reconstructed Fort. During the excavations, public interests centered around those things which were of original Russian construction rather than the obvious facsimiles. In the cases where hidden features are involved such as wood notching and subsurface construction, open scale models might provide an interesting attraction. As an example, a full scale, separated model of the Alley Bowen description of the stockade wall (fig. 3) could be erected at some point along the present reconstructed wall, as in the case of the latter over fifty percent of Russian ingenuity is lost from view in the assembly. Small scale museum models fail to create the same effect.

Stockade Walls: The general notes are derived mainly from the north line which runs between the northwest Bastion and the Chapel (fig. 1). The sill

which was detected on all four sides of the Fort ranged in width between 18 and 20 inches, averaging 30 inches below the ground surface (pl. 1, fig. d). Attempts by the Russian builders to maintain a level sill base may be noted along the north line where bedrock tends to surface and a trench had to be cut into the resistant yellow sandstone. Only rarely were fragments of the wood sill still present. Its horizontal position and frequent mortise holes for the puncheons have not been conducive to preservation. To support the super-structure the size of the sill must have been at least 8 x 16 inches. There are no positive data on this point. Bowen refers only to a "strong girder."

The precise way in which the sill contacted the main posts is not clear. The Bowen account (fig. 3a) states that the sill was mortised into the post and speaks of the posts as being only 6 x 10 inches. Our data, derived from eight posts along the north wall, show very definitely that the rear of the posts makes contact with the sill at about its midpoint and the outside of the posts protruded beyond the outer edge of the sill as much as 8 inches. Figure 2c diagrammatically illustrates this point and plate 2, figure e, shows it in reality. In one case (pl. 1, fig. e) the entire post lies beyond the outer edge of the sill. Those who observed the relationship in situ concluded the sill notched around the post being held firm with a dowel (fig. 2c).

Speculation may be ventured as to how individual sections of the sill were joined to obtain maximum strength. Features D and E necessitated some explanation and it was suggested they represented points where the sill was spliced (fig. 2a) around selected 8 x 8 inch puncheons which, instead of resting on top the sill, extended clear through it into a pit at the point where the splice was made.

The main posts vary in size, though often accurate measurements of the preserved wood were not possible. The post hole impressions around which the tamped earth had been packed gave the best figures. The main posts varied in size from 10 x 11 inches to 13 x 15 inches. Rough split timbers were used as in two cases the curved outer portion of the tree constituted one side of the post. The distance between the main posts varied from 12 feet 3 inches to 13 feet 5 inches with an average distance of 12 feet 7 inches.

The post holes ranged from 25 to 30 inches in diameter. In some cases holes were cut as deep as ~~2-29~~²⁴ inches into bedrock. The average depth from surface to the bottom of the post was about 36 inches. This could not be checked in every instance because of the wooden post and undulating land surface. The method of cutting these holes into bedrock, at least in part, was with the aid of a chisel or bar with a three inch flat blade, as in many places the marks were still clearly defined on the sidewalls.

Once the post was set, rocks and bricks were placed around the inner margins of the hole and against the post. Earth was then tamped in around the rubble so that the entire compaction extended above the base of the post about 25 inches (pl. 1, figs. b, c, and e; pl. 2, fig. e).

At this point in stockade construction, as also noted in the Bowen account, a considerable amount of rock fill was placed against the wall from the sill line almost to the surface with the largest stones occurring on the inside (pl. 1, fig. f). A fill of this type was not so obvious along the east, west, and south line where the bedrock tends to be much deeper.

The outside stringer (pl. 1, fig. d) as observed in the excavations finds no mention in the Bowen account. Along the north wall the recurrence of this board was so consistent it must have featured as part of the original construction. The best preserved sections measures 4 x 6 inches and located 18

inches below the present ground level. This stringer was probably doweled into the puncheons rather than being nailed to it since very few nails were recovered in the excavations and none in a position which would suggest their use in connection with the stringer. In the remains of the two posts which were still high enough to have contacted the stringer (pl. 1, fig. c; pl. 4, fig. d) there remained no evidence of a mortise hole, so it is assumed this board merely butted up against the posts so that its outer surface was about flush with the outer edge of the post.

Auxiliary posts presumably used as added fortifications were noted along the north wall in Features A, B, and F (pl. 2, figs. b, c, and d). Their locations do not appear to conform to any definite structural pattern other than that they were placed both inside and outside the stockade wall. They differ from the main posts only in that their holes are beyond the outer limits of the sill so that the post would face the stockade rather than be an integral part of the repetitious construction.

That portion of the original stockade line situated above the surface of the ground is completely lacking. Early illustrations provide but gross features in comparison to other structural remains. The Alley Bowen account of 1880 appears to be the only detailed reference to this portion of the Fort. In the instances where the stub ends of puncheons still remained (pl. 4, fig. e) they were noted to vary in size across their face but were consistent in depth (ca. 8 inches). The Bowen account confirms this latter point. It can be assumed, then, that the puncheons were rough split redwood of various widths but consistent in depth in order to maintain a fairly even stockade face and to permit proper attachment to the upper and lower sills. This being the case, any reconstruction along the lines of rough split posts and puncheons

would present a more rustic and far less formal appearance than the existing stockade walls. Presently there exists a stiffness not wholly in keeping with the features of north European wood architecture.

In considering the reconstruction of the stockade line, Mr. R. Coon and Dr. A. Neasham were inclined to believe that a portion of Section B (fig. 1) near the road might be left open to illustrate some of the original Russian construction. During the period of excavation the general public expressed considerable interest in anything that denoted original features. This particular section could easily be adapted for an outside display as both the sill line and the post holes are cut into the yellow sandstone. The dirt walls of the excavation could be capped and faced with cement, a low protective fence erected in front, and a shed roof placed over the top to protect against the elements. The wood posts now present will remain but for a short time, but stained cement facsimiles could replace them without the feeling that originality had been lost.

As the reconstruction of the complete stockade will involve some time factor, it is suggested the north wall remain until last. It would be most desirable if some competent person could extend our present excavations in Section A so that it would join the northwest Bastion. This section holds the last bit of evidence of original Russian construction and, as judged from McKenzie's preliminary but detailed report, it still contains a quantity of recoverable information. The loss of such data can be avoided since we know it is present.

The three remaining walls can be traced only in vestigial form providing but a key as to their original locations. If some care is taken during excavation for the reconstruction, it is possible the west wall may still produce

post holes and certainly some attempt should be made to detect any evidence of a Sally Port.

The accompanying map, compiled by Raupp in 1948, employs true north for directional references. Our survey on this same base map uses magnetic north with a declination of 15 1/2 degrees. As based on the original stockade lines as were excavated by us, the following observations were made: The Fort is almost a perfect parallelogram. The compass readings for parallel sides are, East wall 6 degrees east of north - West wall 8 degrees east of north and South wall 10 degrees south of east - North wall 10 degrees south of east. The 6 degree variation on the east wall may be the result of making contact with the right angle corner of the Chapel.

As shown in Figure 2d, e, f, three changes can be made at the time of reconstruction. The south wall (fig. 2d), as now constructed, if moved 26 inches to the south, would bring the face of the wall flush with the outer edge of the original stockade line. The Bastion would also have to be shifted 26 inches in the same direction. Figure 2e, the west end of the south wall, should be shifted 8 inches to the south and extended an additional 18 inches to the west. Correspondingly this extension would also move the face of the west wall the same distance and direction. With these moves made, the face of the west wall and the south wall where they meet at the southwest corner would be directly on line with the original corner. The corner posts extend 6" beyond the actual wall line.

The east wall as now constructed is very close to being on the original line save for a slight error where it joins the Chapel. The northeast Bastion is correct in its location and the north and west stockade lines, when reconstructed, should contact the corners alternate to the door entering the

Bastion. Plate 2, figure b, shows the original sill line at the point where it contacts the southern corner of the Bastion.

The Chapel, if restored to its original position, will involve the following shift. The northwest wooden corner (front) will have to be moved 16 inches to the north, the southeast wooden corner (back) will move 6 inches north, and the entire Chapel will have to be moved 8 inches east or back from its present position (fig. 2d).

The well (pl. 3, fig. c, d), as noted, has had two distinct histories presented as Russian and post-Russian. The latter is to be seen in the present inner redwood cribbing. The original Russian portion is represented by the dark soil area about 6 feet in diameter which encircles the cribbing. With its central location the well could provide an interesting tourist attraction. If water is desired for the present occupants of Fort Ross, I would suggest a second well be drilled in the near vicinity rather than disfigure this interesting feature. If a false bottom were placed in the well and pipes brought in below this bottom or eye-level, the present well might still serve the dual function of display and current water supply.

The archaeological resources as directed toward historical reconstruction are far from exhausted at Fort Ross. Considerable can still be done within the present stockade wall and in the event that State ownership is extended, the potentialities of further research are vastly increased. The present paper exemplifies the possibilities which can be realized through archaeological techniques.

APPENDIX I

The Alley Bowen Account of Fort Ross in 1880¹

So detailed is the description of the stockade, as given by Alley Bowen, that it warrants inclusion and discussion in the present paper.

"The stockade was constructed as follows:² A trench was dug two feet deep, while every ten feet along the bottom of the trench a hole was dug one foot deep. In these holes posts about six by ten inches were inserted, and between the posts and on the bottom of the trench there was a strong girder (lower sill) firmly mortised into the post, and fastened with a strong wooden pin (fig. 3a). Slabs (puncheons) of varying widths, but all being about six inches thick were then placed in an upright position between the first posts and resting on the girder in the trench, being firmly fastened to them (fig. 3b). At a distance up the posts of twelve feet from the lower girder (lower sill) there ran another girder (upper sill) which was also mortised into the posts and made fast with pins (fig. 3c). These girders rest on the tops of the slabs mentioned as being placed between the posts. These slabs (puncheons) were slotted at the top, and a piece of timber passed into the slots (fig. 3d), then huge wooden pins were passed down through the girders (upper sill) and the piece in the slots and well into the body of the slab (fig. 3e). The main posts extended about three feet higher, and nearer the top a lighter girder

¹ History of Sonoma County, Including its Geology, Mountains, Valleys, and Streams. San Francisco, 1880, p. 717.

² Figure references are to the author's reconstruction shown in Figure 3. Parentheses refer to terms used in the present paper.

(truss) was run along (fig. 3f) and between the last two mentioned there was a row of light slabs (pickets), two inches thick and four inches wide, pointed at the top like pickets (fig. 3g). It may well be imagined, that when the main trench was filled up with tamped rock and dirt that this stockade was almost invulnerable with the instruments of assault likely to be brought against it in those days of rude weapons of war. All around the stockade there were embrasures suitable for the use of muskets and carronades, of which the latter, it is said, there were several in the fortress."

The reconstruction presented in Figure 3 employs only relative dimensions as full data are lacking in the verbal description. With but two minor additions, the drawing is as correct as is the account. The author has added a back strip on the surface of the upper sill to provide a ledge to which the base of the pickets could be fastened and added dowel holes at the top and bottom of the pickets. Nails could have been used to attach the pickets just as well as dowels, but iron must have been rather scarce, and a very large number of nails would have been required, and it seems probable that the pickets were attached with wooden pins.

The description by Bowen both confirms and differs with our present findings. There are several factors to consider. There is no assurance that all four stockade walls were constructed in a similar fashion. Our data, referring primarily to the north wall, may not necessarily correspond to the same section given in the description, or the description may be composite. How much of the stockade was examined at first hand by Bowen is not clear. Apparently considerable information was obtained from Major Ernest Rufus, who, with William Benits, leased the property from Sutter in 1845. It does not seem likely that a historian of that date would have excavated to a depth of

24 inches to examine the subsurface construction. I would assume such information came from Rufus who may have had cause to perform alterations on the stockade. Much of the surface structure was still present in 1880, and I would be inclined to accept that portion of the description as being accurate.

Mention in the Bowen account of the sill, the main posts, the slabs (puncheons), and the rock fill against the stockade are all in accordance with our observations; however, the size of timbers, the distance between posts, and the nature of contact between the posts and sill stand in some difference. Throughout, the timbers observed by us appear to be several inches greater in dimensions. The observed distance between main posts averaged about 12'7", and the position of the sill in respect to the posts suggests that it was notched around the post rather than being joined by mortise and tenon joints (fig. 2c). It is emphasized that our data drawn from one section of a single wall where bedrock nears the surface may therefore be atypical of the over-all construction. On the west wall (Section C) we did note a smaller post some 10'5" from the Bastion corner and more centrally located in respect to the sill. This would conform more closely to the Bowen description. It is most unfortunate that the remaining walls had earlier been subjected to crude examination.

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Explanation of Plates

Plate 1

- a- Section A looking west toward northwest Bastion. Post 3 and sill line exposed at road cut.
- b- Post 1 showing remains of original post, post hole, and brick and rock fill around post.
- c- Post 2 shows remnant of dowel hole on left side. Note well defined post hole and arrangement of bricks at base of post.
- d- Post 3 showing sill line intersecting post hole with a remnant of stringer along the edge of the sill.
- e- Detail of post 3 showing sill line, post impression, and rock fill.
- f- General view of Section B looking down the sill line from the Chapel to the northwest Bastion. Note the large rock fill on the inner side of the sill line.

Plate 2

- a- Post 5.
- b- Post 6 and Feature B cut into yellow sandstone bedrock.
- c- Feature E located in middle of sill line. Feature F to the right.
- d- Feature F cut into solid bedrock. Note compaction of original fill around Feature E to the left.
- e- Post 7 with the original earth fill left in position in the rear and the rock fill exposed in the foreground.
- f- Post 8 with some rock fill still left in position.

Plate 3

- a- Post 9 and Feature G.
- b- Section C showing original sill line extending under corner of the northwest Bastion.
- c- Detail of the redwood cribbing in the well.

- d- View of well showing post-Russian cribbing and the dark area around the cribbing representing the original Russian well.
- e- General view of Fort Ross showing cove which contained boat building house and tannery. Indian site 5 located in the rear of cove.
- f- Second cove at Fort Ross. Indian site 4 on distant bluff.

Plate 4

- a- Post 2 showing dowel hole, notch, brick fill around post, and edge of sill line.
- b- General view of Sections A and B looking from the corner of the Chapel directly down the sill line.
- c- Section I showing original sill line and fragment of puncheon in reference to the reconstructed south wall.
- d- Post 6 showing the relationship between post and sill line.
- e- View along the north wall of the Chapel showing error in respect to the outer edge of the stockade.
- f- View looking west along north side of the Chapel showing original line to right and northwest Bastion in the distance.