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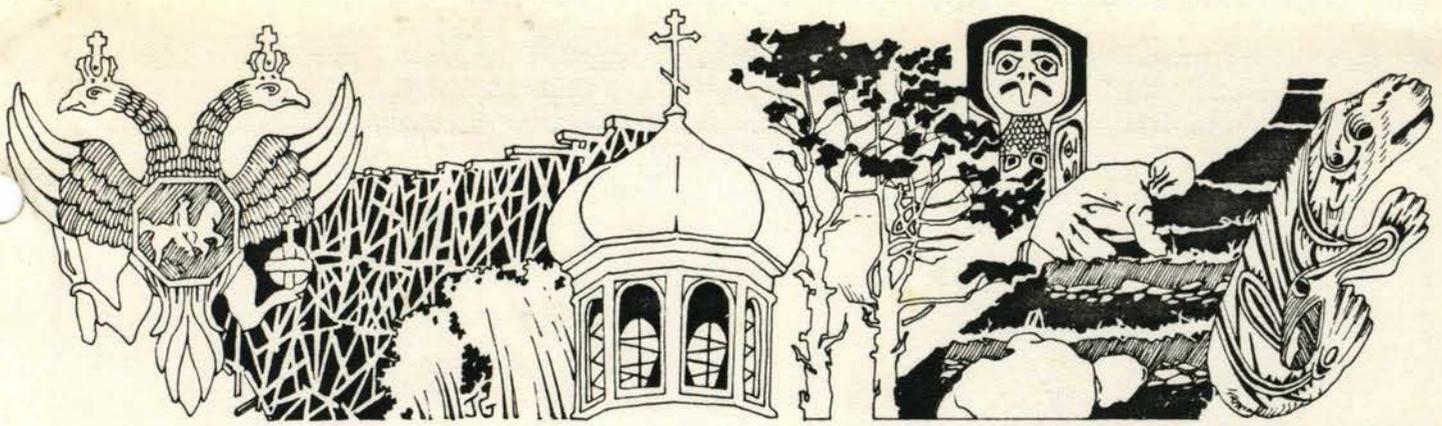
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Division of Parks

monthly newsletter of the alaska office of history and archaeology

# HERITAGE

Number 4, January, 1983

## INVESTIGATING BRICKMAKING IN RUSSIAN AMERICA

Compared to our knowledge of the English, French, and Spanish colonies in the New World, much remains to be learned of Russian America. Dr. Richard Pierce, an internationally recognized scholar on this subject, has noted previously that "In North American terms the history of this region and period resembles what was known of French Canada and the Spanish Southwest a century and a half ago..."

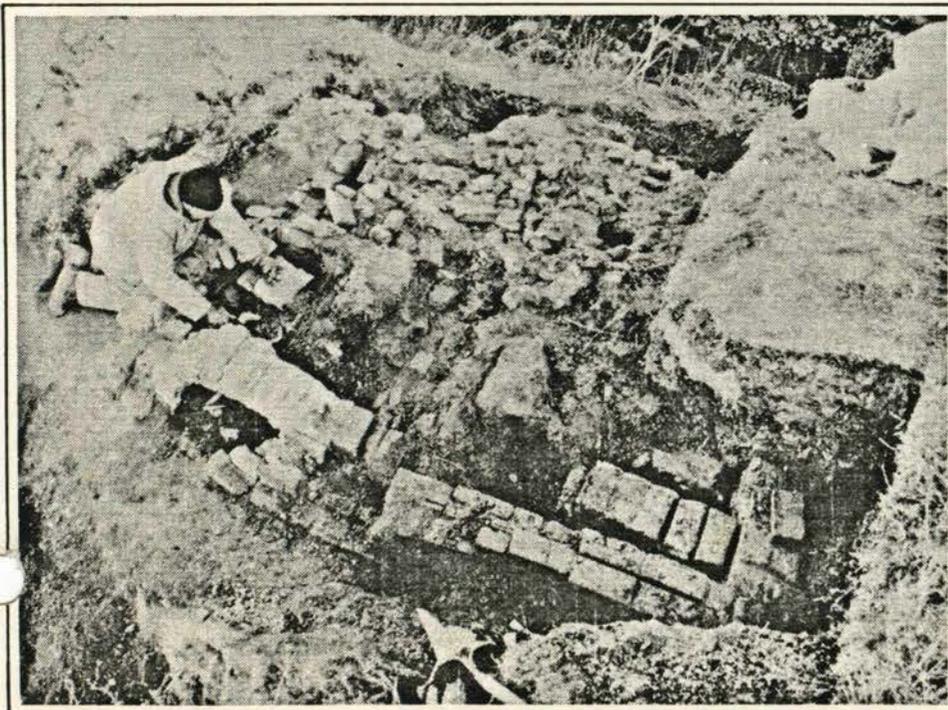
Pierce 1979). Brickmaking in Russian America, although an important subsidiary industry, has long been a poorly understood facet of that period.

Since November 1979, and continuing to the present on an intermittent basis, research has been conducted by the Office of History and Archaeology (OHA)

on this topic, with Ty L. Dilliplane as the principal investigator. The research has involved four phases of fieldwork and a large-scale literature search. The project was initiated as the result of a call for help from the Kodiak Historical Society: a brick arch at a site (49KOD011) reputed to have been the location of a Russian brick kiln was eroding from a bluff face. OHA agreed to investigate KOD-011 (located on the shore of Middle Bay), and this first phase of work took place from November 8-11, 1979. The second and third phases took place during 1980 and the most recent fieldwork was conducted last fall. The Kodiak Historical Society has provided both financial assistance and volunteers for the project, and this support has proven to be invaluable.

Documentary research has shown that brickmaking in the Russian colonies was not regarded lightly. Bricks were in demand for the building of house stoves and ovens. At one point, an order was actually penned (February 24, 1823) by one of the colonial governors, Governor Muraviev, to have unfired "but well dried" bricks shipped from an unspecified kiln site on Kodiak (Muraviev 1823). In another letter (dated December 18, 1823), Governor Muraviev wrote:

Our need for bricks here in Sitka is very great. Presently, we received from Kodiak 3500 bricks, but in view of extensive construction going on here, this quantity is far from sufficient, I hope to receive the same or even greater quantity with the next transport out of Kodiak.



Russian brick kiln, Kodiak Island

At least nine different kilns were in use at various times throughout the colonies. Of these, one of the most important was the brickyard at Nikolaevsk Redoubt (where modern-day Kenai is located). In 1865 30,000 bricks were being made there on a yearly basis, although imported bricks from Victoria on Vancouver Island were preferred due to their higher quality and lower price (Gibson 1976). It is interesting to note that bricks were also imported from Russia (Khlebnikov 1979), although the quantities are not yet known. It is likely the shipping of bricks from the home country was infrequent. The cost of transporting anything from Russia, regardless of the mode, was prohibitive, the needed bricks could either be obtained in the colonies or at nearby locations, the shipping space was needed for other commodities, and the transport of bricks in ships' holds would have been dangerous. Poorly-fired bricks could absorb moisture, thus threatening the balance of the ship (Noel-Hume 1976).

(Continued page 2)

## BRICKMAKING (Continued)

The documentary record has revealed that the Middle Bay Brick Kiln was constructed by August 29, 1823, and that the kiln itself had a post and roof structure to protect it from the elements. A barn and workers' quarters had also been built (Muraviev 1824). An 1849 Russian map shows that the kiln was at the head of the bay. Such a location would have permitted the transportation of the bricks by ship to St. Paul's Harbor (modern-day Kodiak) or to other points in Russian America. Eventually, this kiln was relegated to second-string duty because the bricks made there were of inferior quality (Tikhmenev 1978).

Excavations at KOD-011 have uncovered the remains of a small brick kiln complex situated on a bluff edge overlooking Middle Bay. The kiln itself is roughly 4m x 4m, and is of the Roman type. A kiln of this style was also excavated in England; both the English and Alaskan examples consisted of arches used to both support the kiln floor and house the fires, the floor itself (having vents to allow the heat to flow upward and thus bake the brick forms), and four walls. Once the green or unfired bricks were placed in the kiln, brick detritus or other materials would have been used to cover them in order to contain the heat. Unlike the kiln found in England, there is no evidence that KOD-011 had a fire tunnel. The Middle Bay kiln had two parallel rows or arches, one arch of which was on the edge of the constantly eroding cliff face. Because of the threat to this feature, it was photographed and studied in detail by OHA's historical architect, Mr. Robert Mitchell, and then carefully dismantled under his supervision. Each arch segment was tagged for reconstruction purposes, and the Kodiak Historical Society hopes to rebuild it as part of its museum display some time in the future.

Test excavations in an area adjacent to the kiln revealed the remnants of a wooden structure which may have been used as a work shed for the molding of the clay into brick forms. A part of this structure may have been destroyed by bluff erosion (indeed, one cannot help but wonder if such erosion has obliterated remnants of other kilns which may have been part of the factory complex). Situated nearby, and showing very clearly in the profile of the cliff face, is an accumulation of large-sized gravel. The gravel found up to that point is noticeably smaller, and it is possible that the location of the larger gravel was where the clay was sifted for such material before being molded into brick forms. The fieldwork also uncovered what may have been a pit used for the mixing of the clay. Unfortunately, surveys throughout nearby areas failed to uncover any trace of the living

quarters and barn. It is possible that the survey simply missed these activity areas; it is also possible that their remains have been destroyed by bluff erosion.

Among the artifacts found at the site, one of the most unique is a brick fragment inscribed with Russian handwriting. Unfortunately, too much of the brick is missing to be able to understand what was written. Other items recovered include hand-wrought iron nails and spikes, along with shards of ceramics and window glass. However, it should be noted that the number of non-brick artifacts found at KOD-011 is not large.

If funding permits, it is hoped that a fifth phase of excavations can be conducted at the site sometime during 1983. Additional excavations could be profitably conducted at both the kiln itself and in the area next to the kiln where the wooden structural remains were found. In addition, much archival work remains to be done, both with regard to the KOD-011 site, as well as on colonial Russian brickmaking in general. Although oral histories have thus far proven elusive, this facet of the work must also be pursued. It is only through such detailed systematic research that we will be able to clarify as much as possible about this important, but neglected, part of Alaska's heritage.

*(Editor's Note: The references and some of the information given in this article are found in a paper given on brick-making in Russian America by Ty L. Dilliplane. The paper was presented to the 1981 Alaska Anthropological Association Conference; contact Mr. Dilliplane for further information.)*

## REPORT OF THE SENIOR ARCHAEOLOGIST . . .

I trust you all had a pleasant New Year's celebration. Speaking strictly from an archaeological point of view, on New Year's morning I felt several millennia removed from the normal time-space continuum and experienced incipient bipedalism. Just goes to show that prehistory is where you find it.

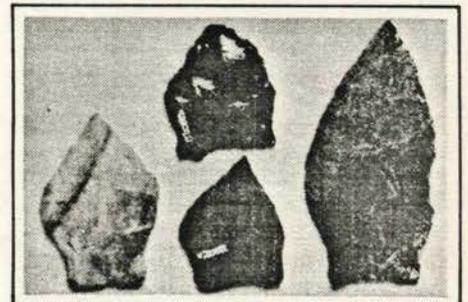
Speaking of locating prehistory, last month I gave the history and basic mechanics of the Alaska Heritage Resources, Survey or AHRs. This month I will describe the criteria for inclusion in the AHRs and how survey cards are filled out.

Criteria for inclusion are not strict and well codified. The National Register, on the other hand, has specific requirements for inclusion. National Register properties are districts, sites, buildings, structures, or objects that have integrity of location, design, setting, materials,

workmanship, feeling and association and (A) are associated with significant events in the broad pattern of history, or (B) are associated with the lives of important historical figures, or (C) represent outstanding examples of period architecture or art, or (D) are properties that have yielded or are likely to yield important information in prehistory or history (paraphrased from 36 CFR 60). The AHRs is much more inclusive. Since so little of Alaska has been intensively surveyed for cultural resources, we are compelled to list many sites that may or may not be of National Register quality. The basic questions are (1) is any verified cultural material known to be at a precise location? or (2) is it likely that presently unverified cultural material may exist? For example, in the early days of the AHRs, quite a few sites were generated from Orth's *Dictionary of Alaska Place Names*. A case in point is Dalzell, AHRs #MCG-003 (McGrath quadrangle). "A cabin was reported there in 1949 by U.S.G.S." is all the information we have. The cabin and place name do not appear on recent maps.

Some AHRs sites are not well reported, very small, or not precisely located. For example, AHRs #ANC-007 (Anchorage quadrangle) is "at the northwest end of Memory Lake." It consists of a biface found on the surface. Nothing else is known about it at the present time.

At first glance, it appears that these are "bad" sites and should not be in the AHRs. They are left on so that during the proposed project review process (see Developmental Planning Assistance, *Heritage* No. 1, October 1982), they call our attention to the higher probability that cultural resources will be present. In the two cases mentioned above, the sites are located in areas with moderate to high cultural resource potential and we probably would have recommended that a preconstruction survey be done; the AHRs record indicates that some activity occurred in the past and strengthens the survey recommendation.



Dry Creek (AHRs #HEA-005) artifacts, circa 4,000 B.P.

Of course, the AHRs also contains hundreds of highly significant, well-documented sites (e.g. Beluga Point, ANC-054, and Dry Creek, HEA-005), both on the National Register.

The available information concerning a site is recorded on AHRS cards. The cards have spaces for the name of the site, AHRS number, precise location, description (dimensions, condition, environmental features, etc.), significance, danger of destruction, relevant references, and property owner. All this is basic information found in any excavation or survey report. This portion of the card may be filled out by the investigator or OHA if necessary. The right margin of the card contains spaces for various computer-coded data, such as exact latitude and longitude, theme (Asia discovers Alaska, Cultural Evolution, European discovery, etc.), resource nature (age, site, structure, object, district, etc.), ownership, size, preservation status, bibliographic references, reliability of site data, site condition and environment, repository of artifacts, and date entered in the AHRS. This portion of the card is filled out under the supervision of the Keeper of the AHRS, Greg Dixon (currently with DGGS).

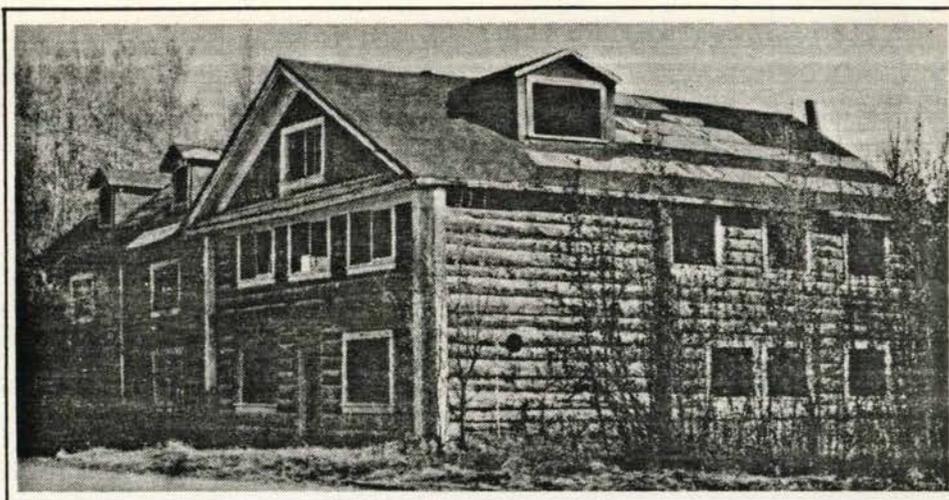
I resolve not to write any more columns about the AHRS.

Tim Smith

#### REGISTER PROPERTIES ANNOUNCED

Two Alaska properties recently entered on the National Register of Historic Places are the Fourth Avenue Theatre, Anchorage, and Clay Street Cemetery, Fairbanks. The *Fourth Avenue Theatre* was planned and initiated as his "Crown Jewel" by pioneer Alaskan entrepreneur Austin E. "Cap" Lathrop in the late 1930s, but was not completed until the end of World War II. It is considered among the most exquisite Art Deco style buildings ever crafted by leading West Coast architects and builders. The *Clay Street Cemetery* was the principal burial ground for Fairbanks and interior Alaska from 1903 until the 1950s. The grave markers constitute a Who's Who of prominent pioneers. The 3½-acre, park-like cemetery is at the end of 5th Avenue, adjacent to the Steese Highway.

The *Wendler Building* has just been ruled eligible for the National Register of Historic Places by the Secretary of the Interior. The *Wendler Building* (known in later years as "Club 25") was built on an original townsite-auction lot in the first year of Anchorage's founding by pioneer grocers Larsen and Wendler. Unlike other structures which replaced the 1915 tent camp, this classic building had an ornate two-story victorian tower and plate glass frontage. It has survived fires, earthquakes, and high-rise towers to become one of the most photographed tourist attractions in downtown Anchorage.



*Rika's Roadhouse*

#### RIKA'S LANDING PRESERVATION PLANS

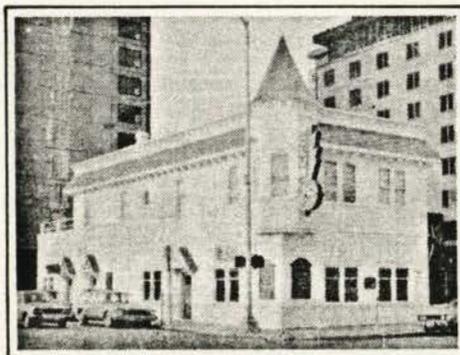
Construction plans and specifications prepared by Alaskan Preservationists for Rika's Landing State Historical Site at Big Delta are now in final review. These documents will be the basis of the first phase of preservation construction, to start in 1983, and will include extensive stabilization and rehabilitation of the roadhouse and barn, and the dismantling and reconstruction of the blacksmith shop.

Work on the roadhouse and barn will include lifting the buildings and constructing new concrete foundations, replacement of deteriorated wall logs, and new floor and roof structures. The original section of the roadhouse will be restored to its original room layout. "Ghosts" of missing original partitions, which show on floors and ceilings, have provided the clues for locating new partitions. The east-west addition, which seems to have been less-well-constructed and is in poorer condition, will be rehabilitated to contain some larger rooms which could be used for meetings, displays or office space. Wall finishes, finished hardware and lighting will be done in a later phase of construction.

New upgraded flooring will be provided in both the barn and roadhouse due to the condition of the deteriorated or missing original floors.

The blacksmith shop, which was originally scheduled for rehabilitation, will be documented, taken down, and replaced with a reconstruction which will be historically accurate on the exterior. The interior will house fuel storage and a mechanical plant to provide heat to the barn and roadhouse through underground utilidors. The heat level in both structures is intended to maintain non-freezing temperatures for soil stability rather than occupant comfort, although comfort heating would eventually be possible if and when higher use levels and operating budgets call for it. Using the reconstructed shop to house the heating plant has the distinct advantage of providing heat to the two largest historic structures on the site without exposing them to the fire danger of separate internal furnaces. If the reconstructed shop were to burn, it could again be reconstructed, with no additional loss of historic building fabric.

Other structures on the site are still being documented and evaluated for future preservation. At the same time, Mr. David Stephens of the Planning Section, Alaska Division of Parks, is beginning development of a master plan for the entire site, which will provide overall long-range direction for park management, and will identify all the various elements and alternatives which will require operational choices and administrative policy decisions. Some of these will influence the choices we make in preservation strategy. The master plan will also provide a balanced statement of needs and decisions regarding other recreational uses of the site, types of interpretive programs, treatment of archaeological aspects of the site, visitor handling (including parking and sanitation), continuous preventive maintenance, on-site staffing levels, public information and promotion programs, and annual budgeting requirements for yearly and long-range operation of the park. Mr. Stephens encourages interested people to contact him at the Division of Parks, 264-2113.



*Wendler Building, Anchorage*

Michael Carberry

## FROM THE SHPO. . .

With the beginning of the New Year, it is both appropriate and important that we consider the past and the future of historic preservation in Alaska. We especially need to critique our own personal efforts, and the efforts of the historical and anthropological societies and agencies to which we belong, and then to use the results of those critiques to help plan for 1983.

This kind of evaluation and planning is critically important if the historic preservation movement in our state is to move ahead in a meaningful way. In line with this, the Office of History and Archaeology has decided to improve its public education efforts by committing itself to three new programs: a monthly newsletter (this issue is the fourth in the series), a speakers program (by which the expertise of the office will be available to public and private organizations/agencies), and a brochure series (focusing primarily on the protection and enjoyment of Alaska's heritage sites). It is hoped that these new projects will permit an increased understanding of what OHA does *and of the various ways it can enhance the efforts of individuals and organizations in historic preservation.*

Enhancement of historic preservation in Alaska is the reason that our office exists, and we would very much appreciate hearing any ideas that you might have on how we might improve our efforts in this regard. A letter will soon be mailed to all *Heritage* readers asking for such input, and we look forward to receiving a sizeable response.

All of us here at OHA wish you a most happy and productive 1983!

Ty L. Dilliplane

## ANTHROPOLOGY MEETINGS SCHEDULED

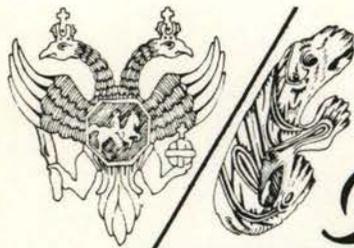
The 10th annual meeting of the Alaska Anthropological Association will be held March 11-12, 1983, at the Anchorage Westward Hilton. This year's conference promises to be an exciting one. A special symposium on the 1982 Utkiavik (Barrow) Archaeological Project is planned, and will feature a luncheon address by Dr. Michael Zimmerman on the frozen human remains recovered this past summer. The keynote address will be by Dr. Margaret Lantis (Professor Emeritus, University of Kentucky). Conference coordinators will be accepting abstracts of papers for consideration until mid-February. Anyone wishing further information may contact Tim Smith at 264-2139.

## SPEAKERS BUREAU UNDERWAY

As part of its efforts to inform the public about the state's historic preservation program, as well as to share staff expertise, the Office of History and Archaeology is developing a Speakers Bureau and is actively seeking new speaking opportunities. The office staff is prepared to speak on the following topics:

Robert Mitchell, Historical Architect—  
Historic Preservation in Alaska  
Historic Preservation in Alaska State Parks  
Tim Smith, Senior Archaeologist—  
Introduction to Alaskan Archaeology  
The Bering Land Bridge and the Peopling of Alaska  
Stephanie Stirling, Historian—  
Independence Mine Territorial School  
The History of Rika's Roadhouse and the Richardson Highway  
Diana Rigg, Archaeologist—  
State and Federal Laws Regarding Cultural Resource Management  
Women in Archaeology  
Ty Dilliplane, Historical Archaeologist and Chief, OHA—  
The History of Russian America  
The Archaeology of Russian America  
Mike Kennedy, State Historian—  
Historic Trails of Alaska  
An Overview of Alaska's History

Anyone wishing to schedule a talk should contact Ty Dilliplane at 264-2136.



# HERITAGE

OFFICE OF HISTORY AND ARCHAEOLOGY  
619 Warehouse Avenue, Anchorage 99501 (264-2138)

BRICKMAKING IN RUSSIAN AMERICA: RESEARCH RESULTS

THROUGH MARCH 18, 1981

Timothy (Ty) L. Dilliplane

INTRODUCTION

In November of 1979, test excavations were undertaken by myself and Ted Nelson at a Russian brickkiln on Kodiak Island (Alaska Heritage Resources Survey site no. KOD-011). Documentary research into the brickmaking industry of Russian America accompanied this fieldwork. A paper presenting the results of both the field and records investigation, as well as reviewing the 1974 survey report by W. Hanable and K. Workman on a Russian brickkiln on Long Island (KOD-207), was given to last year's Alaska Anthropological Association conference. Since then, research into the brickmaking enterprise of Russian America has continued, to include substantive excavations at KOD-011 during the 1980 field season. This paper will present the results of the research through March 18, 1981, along with pinpointing future objectives of the project.

In order to have a better understanding of the brickmaking process in Russian America, one should first understand the industry as it existed in the western world in the seventeenth, eighteenth, and nineteenth centuries. Bricks could be fired in either clamps or kilns, clamps being temporary

structures and kilns permanent. Clamps were typically constructed of "green" or unfired bricks, and then dismantled following the firing.

Noel-Hume notes that

"It would seem from what little available information we have that most bricks made in 18th-century Virginia were fired in clamps rather than in permanent kilns, so were totally taken apart when the burnt bricks were moved out" (Noel-Hume 1980).

On the other hand, permanent kilns were just that, having at least permanent walls, and sometimes floors. Updraft kilns, whether temporary or permanent in nature, were heated by hot air circulating upward from the kiln fires placed at the base of the kiln. Heite tells us that many permanent kilns were constructed underground, while clamps were often built above ground. He also mentions that clamps equipped with brick floors were rather rare (1970: 44).

Brickkilns of the period concerned, regardless of kiln type, were constructed with bricks and were generally characterized by the absence of regular building mortar (Heite 1970: 46). Moreover, the stockbond style of laying bricks was utilized during the construction of some kilns (i.e., the bricks being stacked one on top of another in a non-alternating way; Mitchell 1980).

According to Costello:

The stockbond style of bricklaying. . . is typical of the Spanish-kilns and Mexican kilns I have seen. The continuous vertical seams allow the kiln to expand and contract slightly as they heat up and cool (1981).

Archaeologically speaking, another general characteristic of brickkiln sites is the relatively low number of artifacts found in association with them (Heite 1980).

There were evidently at least two types of permanent kilns. This is indicated by Stephen Cox, quoting from Edward Dobson's A Rudimentary Treatise on the Manufacture of Bricks and Tiles (1850). Dobson's definition of a brickkiln is:

. . .a chamber in which the green bricks are loosely stacked, with spaces between them for the passage of the heat; and baked by fires placed either in arched furnaces under the floor of the kiln, or in the fire holes found in the side walls (Smith et al. 1977: 68).

Because the Middle Bay Brickkiln Site appears to have had sub-floor arches, it is this particular kiln type which will be discussed here. Again taking his information from Dobson, Cox lays out more details about this kind of kiln:

The second class of brick kilns according to Dobson (1850: Part I, 38-40) is comprised of the rectangular kilns with arched furnaces. These differ from those comprising the first class or type because they have two arched furnaces under the floor and a door at only one end. The floors of these kilns are also constructed in a lattice fashion so as to allow the heat to rise from the furnaces. Finally, the tops of these kilns have removed wood roofs (Smith et al. 1977: 70).

John Woodforde describes a kiln type having sub-floor arches which was built by the Romans:

Roman brick kilns had several flues beneath the oven floor and were similar to kilns that had been in use two thousand years previously--and to some kilns of the Middle East today. In 1932 Dr. Norman Davey excavated a Roman kiln at St. Albans and gave this account of it:

The structure, composed of pieces of brick and tile bonded with clay, was built below the natural level of the ground. In this way the structure was solid and better able to withstand the stresses set up in it by the great heat, and the heat losses were greatly reduced. As the level of the oven floor was approximately the same as that of the ground, the stacking of bricks in the oven was easy. The kiln, as was usual, was built on the windward slope of the hill and the fire tunnel was lengthened to increase the draught. . .the products to be fired would have been surrounded and covered by pieces of burnt brick and tile smeared with clay to protect them from the weather and to prevent the heat escaping too quickly (Woodforde 1976: 38-39).

It is appropriate to note that kilns of this style according to Costello, were frequently used by the Spanish colonists throughout the Americas (Costello 1981).

Wood was commonly used as fuel in brickkilns, as was coal when wood became hard to find and more valuable. \* If we can believe Tikhmenev's statement that there was an annual output of 3000-6000 bricks on Kodiak Island, then the procurement of wood to fuel the kilns may not have been a major chore. A quote from R.B. Morrison's Selections from Brickmakers' Manual: An Illustrated Handbook (1890) indicates that "As a rule, brick can be burned at the rate of two thousand to a cord of wood. . ." (Smith et al. 1977: 74).

\* why not ?

## BRICKMAKING IN RUSSIAN AMERICA:

## GENERAL INFORMATION

Unlike the English settlers in North America, the Russian colonists did not put any major emphasis on constructing brick buildings. Almost all of their structures were primarily built with wood. As Lowery points out in his general article about American brickmaking:

Wood enjoyed an advantage over brick in that houses of timber and clapboard could be constructed more easily than those of stone or brick, especially in areas where lime for mortar was unavailable. . . Moreover, there was a widespread prejudice in many parts of the country against houses made of stone and brick, it being feared, as Thomas Jefferson observed in his Notes on Virginia, that they harbored dampness and were consequently less healthy than houses of wood (1978: 123; my emphasis).

Moreover, Tikhmenev (1978: 87) notes that there was a lack of specialists in Russian America who were "familiar with building arches and with other stone work. . ." This situation was a reflection of the major emphasis placed on fur acquisition activities by the Russian-American Company.

Having said this, however, brickmaking in the Russian colonies was nonetheless considered a most important enterprise. Bricks were needed for chimneys, ovens, and building foundations. Furthermore, it is clear that Shelikov was interested in the idea of brickmaking in Russian America not only to support the requirements of the colonists, but also to provide some of the bricks needed in Russian Asia as well (Tikhmenev 1979: 71, 84). Bricks came to be a highly prized commodity in the American colonies. In a letter dated

*Stoves (under chimneys)*

September 3, 1824, Muraviev speaks of Sitka as having a "critical" need for bricks (Muraviev 1824b). Indeed, the Russian-American Company was so concerned about supplying its settlements adequately with bricks that it authorized one of its brickmakers to go to Ft. Vancouver (in present day Washington State) to learn how that Hudson's Bay Company post manufactured this commodity (Johnson, S. 1980).

Within Russian America, bricks were produced at/on Kodiak Island, Long Island, Unalaska, the Kenai Peninsula, Ft. Ross, Atka, Nushagak (Novo Alexandrovsk Redoubt), and St. Michael (Tikhmenev 1978: 87; Fedorova 1973: 193, 194, 195; Khlebnikov 1976: 122; Black 1980; VanStone 1972: 68). A brickmaking site has also been reported at Nuchek (Redoubt Konstantin and Elena) (Ketz 1980; Johnson, J. 1981). With reference to the Kodiak Island enterprise, Tikhmenev writes:

Every year from three to six thousand bricks were made on Kodiak Island, and their production might have been increased to fifteen thousand, if there had been more lime, which had to be burned from shells, and clay suitable for brickmaking. The lack of men familiar with building arches and with other stone work was also acutely felt (1978: 87).

Ten thousand bricks were made on Kodiak Island in 1831 (Gibson 1976: 41). The importance of Kodiak as a major brick manufacturing center in Russian America is hinted at by Khlebnikov when he writes:

Stone masons work all the time making and repairing stonework in the homes. Bricks are brought from Kodiak and sometimes from Russia. The clay here is insufficient and of poor quality, and can be obtained only with considerable difficulty in a few places near the settlements (1976: 76).

The brickkiln at Nikolaevsk Redoubt on the Kenai Peninsula also became an important facility. Constructed in 1841, Tikhmenev notes that the bricks produced at the latter place were "of good quality," and that they were primarily shipped to New Archangel, although some went to Kodiak (Gibson 1976: 41; Tikhmenev 1978: 416).

Gibson tells us that:

In 1847 Governor Michael Tebenkov (1845-50) rated St. Nicholas Redoubt's brickworks the best in the colonies, for it had the necessary timber, clay, sand, and water nearby. By 1865 it was producing 30,000 bricks yearly--enough to meet Russian America's annual needs--but the bricks were high in cost and low in quality. Bricks from Victoria on Vancouver Island were better and cheaper (1976: 41).

The brickyards on Atka and at St. Michael existed to fill local demands (Black 1980). Bricks manufactured at the Novo Alexandrovsk Redoubt were reported as being sub-standard (Gibson 1976: 41).

Khlebnikov's report that bricks were, at times, shipped from Russia is interesting. Given the fact that brickmaking clays were obviously available at a number of sites in Russian America, and the fact that the shipment of goods from Russia to her colonies was an expensive proposition regardless of the mode selected, it is almost certain that the Russian-American Company stockholders would have declined to send bricks from the motherland in any large quantities. They would have likely viewed any idea for such shipments as being wasteful of cargo space that could be used for transport of other, more needed goods. Moreover, as pointed out by Noel-Hume (1976:

82), wet bricks in the hold of a ship could threaten that ship's safe passage (although this had to be risked when shipping bricks within Russian America).

Finally, it is interesting to note that raw clay was also needed. In a letter dated October 20, 1820, Governor Muraviev requests that the Kodiak Office send clay to Sitka (Muraviev 1820). It is known that clay was used in iron and copper smelting, and possibly in oven construction (Tikhmenev 1978: 86; Muraviev 1823b, 1822c).

Research thus far has uncovered only scanty information about the brickmaking process in Russian America. One interesting reference to this can be seen in a letter dated May 18, 1795 written by the Archimandrite Ioasaf to G. Shelikov:

I would not advise you to ship bricks from here because it is unprofitable. The discontent comes mostly from Russians and not from Aleuts. The Russians, especially the ones who do not like you, say that this work is a cruelty towards the native workers. And it is true that even for local needs the bricks are made with great difficulties. The clay has to be brought from an island, dried, and sifted before bricks can be made. The native workers have lots of work to do besides this. They, together with Russians, are very busy with construction work (Tikhmenev 1979: 84).

Two days later, Baranof wrote to Shelikov and Polevoi and mentioned brick-making activities on Kodiak in the following way:

I have shipped to you 1,500 bricks manufactured here. They are not very good because they were made last year by natives without Russians helping them. They made 7,000 but did not separate the stones from the clay. Your orders to make bricks everywhere could not be obeyed. Bricks cannot be made in wintertime and there is no good clay in these parts. The clay here is mixed with stones and half of it is mud (Baranof 1979: 71).

Besides native workers, some of whom were slaves according to Okun (1951: 206), Russians may also have worked at the brickkiln sites. Fedorova (1973: 195) notes that "A very small number of settlers was engaged in working mica on the Kenai Peninsula and clay for the brickworks on Kodiak and Unalashka." Tikhmenev notes that part-time employees drawn from the native population assisted in the production of bricks made at Nikolaevsk Redoubt (1978: 416).

#### THE MIDDLE BAY BRICKKILN SITE:

##### DOCUMENTARY INPUT

There is no doubt that bricks were in high demand in Russian America. As we have seen, for a time Kodiak Island was one of the primary places for the manufacture of bricks in the colonies. Governor Muraviev placed considerable emphasis on the industry there. In a letter to Kodiak Office Manager Nikiforov dated April 22, 1822, he writes:

The brick factory ought not to be neglected, I shall have need of bricks, quite alot; I expect a report from you, and it ought to be detailed and frank (Muraviev 1822a).

One month later, Muraviev ordered his Kodiak Office to "Send to Novoarkhangel'sk as many bricks as are on hand and do not interrupt manufacture thereof" (Muraviev 1822b).

On February 24, 1823, Muraviev wrote this message to the Kodiak Office:

As many bricks as are on hand, that is all bricks without exception, are to be loaded onto the brig Golovnin, even those that have not been fired, but well dried. I instructed the commander of the Golovnin Fleet Ensign Khromchenko to inspect the works, on Kodiak, and therefore the Manager of the Office will not only show all the works to him, but also outline his plans for the future (Muraviev 1823a).

Given the relatively low numbers of brick that were being produced on Kodiak, it is conceivable that there was only one kiln in operation there at any one time. This possibility is implied in a letter dated December 18, 1823, written by Governor Muraviev to the Main Office in St. Petersburg:

I have renewed and enlarged the brick factory on Kodiak and ordered to transfer the same to a better and more convenient location. Our need for bricks here/in/Sitka/ is very great. Presently, we received from Kodiak 3500 bricks, but in view of extensive construction going on here, this quantity is far from sufficient, I hope to receive the same or even greater quantity with the next transport out of Kodiak (Muraviev 1823c).

While the location from which the brickkiln was to move is not mentioned here, I wonder if it might have been the KOD-207 site on Long Island. At any rate, the new location for the brickkiln was at Middle Bay. Muraviev reports:

The Manager of the Office, the Titular Councillor Nikiforov, has informed me in a dispatch of 29 August of the past, 1823 year, no. 15, that the brick factory has been transferred to Sredniaya Bukhta (Middle or Central Bay) and that by the above mentioned date the barn and roof on posts to house the firing oven, as well as housing for the workers, have been erected. The factory has been in operation since that time.

Herewith I express my official gratitude to Mr. Nikiforov for such efficient implementation of my orders. Here in Novoarkhangel'sk in the process of construction we experience extreme need for a large quantity of brick.

Therefore I propose that your office dispatch with this transport 10 thousand/bricks/or any quantity that is on hand and ready (Muraviev 1824).

The location of the brickyard is noted on a Russian map dated 1849 as being at the head of the bay (Pierce 1980). Certainly the position of the site close to the shore of the bay would have been advantageous: despite the rocky reefs immediately offshore, a feasible means may have been found by which to ship the bricks by sea to St. Paul's Harbor or other points. Indeed, a long-time resident of the area, Mr. Jim Barrett, mentioned to me that some years ago the remnants of an old dock stretching away from the site could be seen at low tide (Barrett 1980). This may have been the remains of a Russian dock built to facilitate shipping to and from the site.

The Governor who succeeded Muraviev, Petr Chistiakov, also regarded brick-making as an important colonial enterprise. In an 1828 letter to Nikiforov he orders that:

The brick factory is to be enlarged as besides producing bricks for 10 stoves/ovens/to be installed in the new building/on Kodiak/, 6,000 bricks are to be shipped to Sitka this Fall (Chistiokov 1828).

If the brickkiln that is mentioned here is the one established at Middle Bay, and if these improvements actually occurred, then it would appear that this facility was enlarged at least twice in a five year period.

The Middle Bay Brickkiln was eventually relegated to second-string duty due to the quality of the bricks made there. Tikhmenev notes that:

Bricks are made from local clay at a brick factory at Middle Bay. Mr. Tebenkov remarks that the seawater penetrating the clay probably makes the bricks porous. They crumble easily and so are used only in extreme need (1978: 411).

The closure date for on-going operations at the kiln is not as yet known, although there is some evidence that the Middle Bay site was not a viable entity by October 18, 1840. In a letter under this date written to the Kodiak Office, Governor Etholen orders that the brickkiln operation at Nikolaevsk Redoubt be expanded due to the loss of the brickworks at Ft. Ross and Redoubt St. Dionisius. No mention is made of the Middle Bay endeavor and, given Tikhmenev's statement that the bricks made there "crumble easily and so are used only in extreme need," it is possible that this kiln had been closed. It is also possible, of course, that it continued to operate as it had before (Etholen 1840; Tikhmenev 1978: 411). Another piece of inconclusive but tantalizing evidence is a letter written by Governor Rosenberg dated October 30, 1851. Rosenberg chides the Kodiak Office for the small quantity of bricks received at Sitka, and requests that the brickkiln at Nikolaevsk Redoubt (under the jurisdiction of the Kodiak Office) produce at least 12,000-15,000 bricks yearly (Rosenberg 1851).

The Middle Bay Brickkiln was evidently out of business no later than sometime in 1861. A map from Tikhmenev's work (1861) which was republished in Liapunova's and Fedorova's 1979 work, has an entry off to the side of Middle Bay which says "Byv. Kirpichn zavod," or "former brickkiln" (Khlebnikov 1979; Pierce 1980b).

#### THE MIDDLE BAY BRICKKILN SITE:

##### ARCHAEOLOGICAL INPUT

KOD-011 may be reached by driving south of the city of Kodiak to Middle Bay. The driving distance from the Kodiak Coast Guard Base is approximately 15 miles. KOD-011 is situated on the southeastern shoreline of Middle Bay, and is currently eroding from a 20 to 30 foot high bluff overlooking the beach. The site is bounded on the north and west by Middle Bay and on the south and east by Chiniak Road. The road itself is located no more than 200 feet to the southeast. Vegetation in the immediate area includes grasses, willow, and spruce. The surrounding terrain is rolling and hummocky, with steeply rising mountains in the distance. The eroding face of the cliff which contains the site faces northwest. Immediately adjacent to the site on its eastern flank is a small, rapidly-running stream which may owe its current bed to previous road construction activities. The stream bed is characterized by sharply-protruding slate deposits. The beach is noteworthy for its slate outcroppings as well. Reefs may be seen near the shoreline at low tide.

Under the sponsorship and with the assistance of the Kodiak Historical Society, I have conducted excavations at KOD-011 on three different occasions. Phase I of the fieldwork involved an archaeological survey and limited excavations, and took place from November 8-11, 1979. Phase I work uncovered a portion of a brick floor, remnants of two brick walls, and a small standing brick arch. The wall remnants were situated on the northwestern and northeastern edges of the platform, while the arch had been built within the walls. The orientation of the arch was northeast-southwest, its northeastern leg being anchored in the northernmost wall. The arch resembles the Greek letter "omega" in shape. Both of the above-mentioned walls as well as the floor extended into the cliff face for an unknown distance. Most of the arch was excavated. A gummy, grayish-blue clay was used as a mortar at the site. This seems to have been extremely effective. The source of this clay may have been immediately adjacent to the site; however, its consistency differs in two ways from that of the mortar. First, the clay deposit is not as gummy as the mortar, and second, it appears to contain a higher percentage of gravel. It is possible that this clay was put through special processing before it was used as mortar.

It is noteworthy that, for no apparent reason, large and small bricks were used in the construction of at least two of the kiln's walls. Perhaps the explanation lies in the possibility that bricks were taken from the previously used brickkiln and used to build the Middle Bay facility, with a lack of total attention to the consistent use of bricks of a set size. The preponderance of gravel seen in the composition of the bricks used at the site is also interesting. This fact appears to at least partially account for

the brittle nature of the bricks. It is pertinent to note here that the gravelly nature of the KOD-011 bricks seems to be similar to that of an incomplete brick recovered by Frederick Hadleigh-West during excavations at the Sitka National Monument in 1958. He notes that this piece of brick "includes relatively heavy gravels. . .The specimen with the heavy tempering resembles the majority of those taken from Old Sitka, some of which may have been made at Kodiak" (Hadleigh-West 1959: 75). Finally it is important to note that the brick bond used in the construction of the features appears to be the stockbond style (i.e. the bricks being stacked one on top of another in a non-alternating way; Mitchell 1980).

The stratigraphy within the kiln itself consists of four levels. A layer of humus is the topmost level, followed by a thick layer of ash from the 1912 Mt. Katmai eruption. This ash lies directly over a stratigraphic unit composed of a humus-clay soil intermixed with brick fragments and pebbles. The structural features of KOD-011 intrude into this zone. Finally, the next level down consists of decomposed brick intermixed with the bluish-gray clay noted above. At least one pocket of fine, black sand was noted to be in association with the latter. The structural features of KOD-011 were constructed on top of this last level. The undisturbed Katmai ash serves as a clearly defined terminus ante quem for the site: the brickwork could only have been built prior to the 1912 Mt. Katmai eruption. No non-brick artifacts were recovered during the initial phase of excavations at KOD-011.

The Phase II excavations were oriented toward continuing the work begun during Phase I. A 13 square meter area was opened up, with the assistance

of volunteers, in the immediate vicinity of the arch and, consequently, more of the physical remnants of the kiln were exposed. At the end of Phase II, a total of one non-brick artifact had been recovered: a handmade iron spike. During this phase Mr. Robert Mitchell, State Historical Architect, came out to the site and began an intensive documentation of the features via drawings and photographs.

As a result of the Phase III fieldwork a better feel for the extent of the site to the west and south was obtained, along with further feature excavation. Again volunteers assisted with the excavations. Eight non-brick artifacts were also found, the paucity of items being typical, as mentioned earlier in this paper, of brickkiln sites. The collection thus consists of a total of nine items: two handmade iron spikes, one square-cut iron spike, one handmade nail, two sherds of hard whiteware, one copper object of unknown function, and two sherds of window pane glass. This window glass was found in an undisturbed context, and its presence is a mystery. The hardware items may have been used in the roof-and-post structure which is reported to have been built over the brickkiln.

In summary, fieldwork at KOD-011 has thus far uncovered: (1) the remaining part of the brick arch (2) a portion of a brick floor lying on several sides of the arch, (3) remnants of what may have been three containing walls, (4) another wall stretching in an east-west direction from the southern base of the small standing arch (this base is actually anchored in the latter wall), and (5) evidence possibly pointing to one or two collapsed arches. Consideration of these features in light of Woodforde's illustration

of a Roman brickkiln (1976: 38) indicates that KOD-011 may be of the latter type. The standing arch, for example, could have been one of a number of arches constructed to house the kiln fires. That this was the case is strongly hinted at by the highly glazed nature of the bricks on the underside of the arch. If a portion of the kiln fires were located directly under the arch, the glazed nature of the bricks is easily explained. Another hint that the arch may have been a component of a Roman brickkiln comes from the fact that two bricks lying parallel to and abutting each other are found directly on top of the arch. If KOD-011 was a Roman type of brickkiln, it is conceivable that these two bricks could have been part of one of the supporting walls for the kiln floor (i.e., the one on which the green bricks would have been stacked). The east-west trending wall in which the southern leg of the KOD-011 arch is anchored fits in nicely with the Roman brickkiln hypothesis: it may have served as an anchor for other such arches. Supporting the arch as it does on the other side, the same can be said for what appears to be the kilns' northern wall.

The KOD-011 site has a number of other features which should be mentioned here:

- (1) A tough, sticky clay mortar was found along the western side of some bricks in the kilns' western wall. A similar phenomenon was seen along the north side of the north wall. Perhaps this mortar was used to insulate, protect, and stabilize the brickwork.

- (2) No structural features belonging to the kiln were found directly to the north of what is called the north wall. Given this fact, and also given the presence of what may be clay insulating material on the northern side of the wall, it is quite possible that this feature is the true northern containing wall. However, further excavations are needed to confirm this.
- (3) It is interesting to note that, as the excavations proceeded, native rock was seen to have been deliberately used in the construction of the kiln. For example, stone was used in the kiln's northern wall. This practice may indicate that there was a shortage of bricks during the building of the facility.
- (4) The containment walls and arch of the site appear to have been built on brick flooring for support purposes. The northern wall is under five meters long, while the western wall is about 4 meters long. The length of the arch is over 87.5 cm.
- (5) Charred wood was found at the site, and this probably indicates that wood was used as fuel. However, it is possible that coal was also used: coal fired brickkilns may have undergone experimentation in Russian America in the 1820s (Kramer et al. 1820).
- (6) It is clear that the Middle Bay Brickkiln Site was dug into the hillside. As has already been noted with regard to the Roman kiln excavated in England, one of the benefits of a semi-subterranean facility was more efficient heat conservation (Woodforde 1976: 38-39).

## CONCLUDING REMARKS

Much work remains to be done before this research project will be completed. A thorough search of the Russian American Company records in the National Archives is mandatory, as is continuing to request assistance from those officials and scholars in the Soviet Union having access to historical documentation. Moreover, the collection of oral history will be given major emphasis. Last, but certainly not least, fieldwork should continue at KOD-011 just as soon as possible. The brickkiln proper should be totally excavated and intensively documented via measured drawings and detailed photography. A joint request for funding to support additional fieldwork at the site has been submitted by the Kodiak Historical Society and the Alaska Office of History and Archaeology to the State Legislature for consideration.

It is hoped that data generated as a result of this research project will enable the following questions to be answered: (1) Given that brickworks in Russian America utilized native labor, to what extent, and how, did this industry affect traditional native political, religious, economic, and social values? (2) What were the technological processes used during brick-making in Russian America? What were the differences noted between these processes and those followed in Russia? (3) To what extent were brick sizes standardized in Russian America? The resolution of these questions would indeed be a significant contribution to the history of Russian America.

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