

THE HOFF STORE SITE AND GOLD RUSH MERCHANDISE FROM SAN FRANCISCO, CALIFORNIA

ALLEN G. PASTRON AND EUGENE M. HATTORI, *Editors*



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FRONT COVER. Long Wharf where the *Oregon* docked. The American flag (left) flies above Hoff's store. Artist, Alonzo Delano. (Courtesy, National Maritime Museum, San Francisco.)

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PREFACE AND ACKNOWLEDGMENTS

This volume presents selected material culture studies from the various artifact assemblages recovered from the Hoff Store site, an 1851 California Gold Rush deposit located in San Francisco's Financial District. Excavated in 1986, the site yielded a moderately extensive collection of artifacts consisting of approximately 29,000 items. Only about half of this collection is discussed in this volume. The following papers were selected for inclusion because they satisfy one or more of the following conditions: the materials discussed are among the most prominent components of the collection recovered from the Hoff Store site; analysis of the material is necessary in discussing some facets of the Gold Rush; or the paper presents the readership of the SHA with useful baseline data applicable to their own research interests.

The materials recovered from the Hoff Store site are varied and range from single specimens to collections of related objects. Indeed, much of the collection consists of numerous identical, or nearly identical, items, reflecting the single event that led to the formation of the archaeological deposit—namely, the destruction of one or more commercial establishments along the waterfront by the Great San Francisco Fire of May 3–4, 1851. In addition to the artifacts described in the following papers, numerous items and some significant assemblages were recovered but are not addressed here. Among these are the following: Chinese brownware and Euro-American ceramics; wooden barrels and kegs; machinery; clothing and textiles; furniture; stoves; boxes; cans and other artifacts fashioned of sheet iron; hair brushes; a barrel of tallow; bowling balls and bowling pins; jewelry; boxes of canned snuff; and a box of firecrackers.

While the editors assume sole responsibility for the contents of this volume, the time, effort and expertise needed to complete such an undertaking was, needless to say, a collective enterprise. Numerous individuals contributed greatly to the re-

search. First, the editors gratefully acknowledge the contributions of the team of researchers at Archeo-Tec, many of whom labored on the Hoff Store site archaeological project from its inception to completion. These individuals are: Richard D. Ambro, Ph.D, Stephen G. Botkin, Margaret Brown, Barbara Bucciarelli, Ron Chambliss, Gerald Doty, Janice Narita, Robert Sheets, Samantha Walker, and William Wihr. All artifact photography and printing was by Ms. Jerre Kosta of Archeo-Tec. Susan Bradley provided editorial assistance.

Archaeological research conducted in an urban setting, particularly when associated with an impending construction project, necessarily requires extensive coordination with a variety of individuals whose primary interests are often not even tangentially concerned with scientific research. Yet without the active cooperation, expertise, understanding and, in many cases, tolerant forbearance of these people, the work could not possibly succeed. With this in mind, the editors acknowledge the participation of the following individuals at Embarcadero Center Ltd., the organization which sponsored the research in its entirety: Mr. James Bronkema, Mr. Bruce Jones, Mr. Tom Griffith, Ms. Kathleen Early, Mr. Peter Franklin, Mr. Jose Gomez, Ms. Mim Ferguson, Ms. Brenda Lewis, Ms. Karen Magnuson, Mr. Dan Rice, and Ms. Kelly Squire. The help and support rendered by all of these people was truly above and beyond the call of duty.

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vided invaluable assistance in helping the authors to reconstruct the historical development of the project site. Mr. Al Sanchez, in addition to being a consistently first-rate breakfast companion, assisted the archaeological research team in countless ways. Thanks are offered to Ms. Maria Lauzardo for her time and support, as well as her patience and good humor. Furthermore, the editors offer most heartfelt thanks to Mr. Mark Solit, project manager for Embarcadero Center West Ltd. Mr. Solit's contributions and unflagging support, if enumerated fully, would justify a separate volume of the following monograph.

Finally, the following institutions and organizations provided research materials for the various studies: The Bancroft Library, The National Maritime Museum Library, The Sutro Library, The California Historical Society, and Special Collections, San Francisco Public Library.

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The Hoff Store Site: An Introduction

At some future period, when the site of San Francisco *may be* explored by a generation ignorant of its history, it will take its place by the side of Herculaneum and Pompeii, and furnish many valuable relics to perplex the prying antiquarian. Buried in the streets, from six to ten feet beneath the surface, there is already a stratum of artificial productions which the entombed cities of Italy cannot exhibit. Knives, forks, spoons, chisels, files, and hardware of every description, gathered from the places of several conflagrations. Masses of nails exhibiting *volcanic* indications, stoveplates and tin-ware, empty bottles by the cart-load, and hundreds of other miscellanies lie quietly and deeply interred in Sacramento Street, and perhaps will be distributed over the world as precious relics [emphasis original] (*Evening Picayune* 9/30/1850).

This passage affords an uncannily accurate, almost prescient characterization of this volume's central theme, the Hoff Store site—an extensive, deeply-buried archaeological deposit from the height of the California Gold Rush, located in what today is the heart of San Francisco's financial district. What makes this quotation noteworthy is the fact that it appeared in the September 30, 1850, edition of the San Francisco *Evening Picayune*, fully 135 years before the discovery and excavation of the Hoff Store site and nine months before San Francisco's Great Fire of May 3–4, 1851, the event that resulted in the formation and interment of the archaeological remains.

As the passage from the *Evening Picayune* graphically demonstrates, the potential existence of ubiquitous and significant archaeological deposits beneath the streets and buildings of a future San Francisco was clearly anticipated during the Gold Rush itself—a time when a diverse, dynamic assortment of recent immigrants from every quarter of the globe was vigorously engaged in the process of transforming a chaotic, explosively expanding frontier boomtown into a major American metropolis.

Like most American cities, San Francisco has changed almost beyond recognition since the time

of its formative development. Even though they may not be readily apparent today, the complex processes of urbanization during the early Gold Rush period (1848–1851) shaped the essential social, economic, and demographic patterns of modern San Francisco; and by extension, historical events in Gold Rush San Francisco had a profound impact upon the development of the vast 19th-century western frontier.

In the mid-1980s, when the Hoff Store deposit was initially encountered at the southwestern corner of Battery and Sacramento streets, the site and its immediate surroundings bore little, if any, resemblance to the brawling waterfront that existed on the same spot at the height of the Gold Rush. The Hoff Store site was surrounded on all sides by new high-rise office towers. The edge of San Francisco Bay was more than a quarter mile to the east, largely hidden from view by a solid wall of modern buildings.

This image of late 20th-century urban modernity stands in striking contrast to the appearance of the same area in mid-1851. At that time, the cluster of building that would become the Hoff Store site was situated near the foot of Howison's Pier, in the center of San Francisco's bustling, often chaotic waterfront district (Hattori and Brigham, this volume, Figure 5–1). Built in 1850, the 40-ft.-wide pier quickly became one of the city's principal wharves: it stretched eastward along the line of present-day Sacramento Street for 1,100 ft., from the original shoreline near Montgomery Street into the waters of the Bay stream. The edge of San Francisco's expanding waterfront lay only about 150 ft. to the east of the Hoff Store site. Not until the 1860s, after more than a decade of intensive landfilling and development, would the relentlessly advancing city front cease its encroachment into the diminishing waters of Yerba Buena Cove at the line of the modern Embarcadero, which today marks the edge of the Bay.

At the height of the Gold Rush, San Francisco, in its third year of uninterrupted growth and explosive population expansion, presented first-time visitors with a potpourri of intriguing vistas and incongruous contrasts. The city's principal commercial thoroughfares were lined with an assort-

ment of hastily erected, rough-hewn frame buildings, occupied by theaters, gambling halls, saloons, restaurants, brothels, and smoky waterfront dives.

It was a time of constant change. Real estate speculation was rampant and land prices soared with giddy rapidity. As a result, new structures appeared every day, and more venerable buildings, some no older than one or two years, were demolished with equal speed. The diminishing number of clapboard, tar-paper and canvas shanties that had been built by the first wave of immigrants stood adjacent to new, more substantial edifices of brick and stone. Along the waterfront, dwellings and stores had been erected on piles and wharves for nearly half a mile beyond the original Bay shoreline. To one foreign visitor, San Francisco's unique appearance suggested "... a Venice built of pine instead of marble ... a city of ships, piers, and tides. ... The whole central part of the city swayed noticeably, because it was built on piles the size of ships' masts driven into the mud" (Beilharz and Lopez 1976:194).

With every high tide, a seemingly endless multitude of polyglot argonauts sailed through the Golden Gate in search of instant wealth. The city was filled with newcomers from every populated continent on earth representing every conceivable walk of life: elegantly dressed businessmen, speculators, and travelers rubbed shoulders with a motley assortment of miners, drifters, and sailors. Rats and fleas swarmed everywhere, bedeviling rich and poor alike: heaps of rubbish were piled on every street, and a seemingly inexhaustible supply of empty liquor bottles floated in the miasma of the city's numerous open sewers and cisterns.

In the winter of 1849-1850, heavy rains had turned the unpaved dirt streets into quagmires, prompting people to throw all manner of trash, and sometimes even stores of merchandise into the streets in an attempt to secure safe footing (Soulé et al. 1855:245). Throughout 1850, with the memory of the previous winter's deluge still fresh, San Franciscans were hard at work grading and planking the main thoroughfares: yet, in mid-1851, many of the city's smaller or peripheral streets remained unimproved dirt tracks, either choking

passersby with dust in the summer of miring them in mud during the rainy season.

In the midst of this setting, a number of commercial emporiums, selling a wide range of foodstuffs, beverages, medicines, arms and ammunition, clothing, hardware, tools, ship chandlers' goods, and sundry other merchandise, lined Howison's Pier. Perched atop a stout foundation of pilings, these mercantile establishments were ideally situated to receive cargo from the fleet of merchant vessels anchored in the Bay and to cater to the diverse needs of both San Francisco residents and transients alike, including the thousands of mariners and miners who passed through the city in search of supplies and recreation.

Of the stores situated on Howison's Pier, one of the best known was an establishment operated by William C. Hoff (Barry and Patten 1947:7) who, like the majority of his clientele, was himself a recent immigrant, having arrived in San Francisco from his native Johnstown, New York, on board the ship *Tarolinda* on July 6, 1849. Upon landing in San Francisco, Hoff soon established himself as a waterfront merchant. By mid-1850, he was operating a store near the foot of Howison's Pier.

On the night of May 3, 1851, the young city of San Francisco suffered a devastating, if not unprecedented, catastrophe when fire broke out at a paint store on the south side of the city's central plaza. Fanned by a brisk northwesterly breeze, the flames soon raced out of control (Soulé et al. 1855:330; Hittell 1878:169). By the next afternoon, the conflagration—which could be seen as far away as Monterey, some 85 miles to the south—had consumed most of the city's central business district. Hundreds of commercial establishments and private dwellings alike perished in the blaze, including the stores situated on Howison's Pier near the intersection of Sacramento and Battery streets.

The "Fifth Great Fire" of May 3-4, 1851, was by far the worst of the six major conflagrations that ravaged the city between December, 1849, and June, 1851, and was universally considered to be the worst disaster to befall San Francisco during the 19th century. Along the waterfront, as the bottom of the wharves caught fire and blazed up, many of the structures that had been erected over

the water collapsed and, along with their contents, cascaded into the Bay below. Such was the case with W. C. Hoff's store and the other commercial establishments situated along the south side of Howison's Pier.

In the aftermath of the conflagration, San Franciscans began to rebuild their ravaged city. Near the waterfront, heaps of rubble were cleared away and dumped into the Bay as fill. Landlocked structures soon stood at the southwestern corner of Battery and Sacramento streets, and, with the relentless expansion of the city front, the Bay shoreline continued to move ever eastward from the former foot of Howison's Pier. San Francisco's growth and prosperity was barely interrupted by the great conflagration of mid-1851, and the remnants of the former Gold Rush waterfront emporiums were buried and soon forgotten.

These, then, are the salient historical events leading to the formation and deposition of the Hoff Store site. Before proceeding further, it is appropriate to briefly outline the parameters of the program of archaeological excavation and analysis undertaken at the site.

The Hoff Store site was first encountered during testing in November, 1985. Intensive field research commenced in January, 1986, and continued through April, with additional data recovery procedures taking place intermittently throughout the remainder of the year. Laboratory analysis and interpretation of the extensive cultural assemblage from the Hoff Store site took place throughout 1987 and 1988. The present volume is a collection of selected research papers from the project. This work does not purport to be a comprehensive site report; nor is it the final word on the extensive assemblage of material culture recovered at the Hoff Store site.

The archaeology of the Hoff Store site was conducted by the staff of Archeo-Tec, a cultural resources management firm based in Oakland, Cal-

ifornia, under the direction of this volume's senior editor. The work was undertaken as part of the City and County of San Francisco's formal environmental review process. The archaeological study represents one aspect of compliance with the California Environmental Quality Act (CEQA) required in preparation for construction of the 34-story Embarcadero Center West office tower that now occupies the southwestern corner of Battery and Sacramento streets. The research was sponsored and funded in its entirety by Embarcadero Center Limited, the owner and developer of the Embarcadero Center West office building.

As shall be shown in the papers which follow, the Hoff Store site yielded what is probably the most diverse and extensive assemblage of Gold Rush material culture yet recovered archaeologically in San Francisco. Much of this cultural assemblage was remarkably well preserved as a consequence of having fallen into the waters of the Bay before bearing the full brunt of the raging flames, and then being covered with landfill within the year. Here, these materials became mired in Bay sediments and remained sealed in an anaerobic environment for 135 years.

In part, the significance of the Hoff Store site derives from the fact that the vast majority of the deposits represent a single depositional event that occurred within a brief identifiable time frame—May 3–4, 1851. As such, the Hoff Store site and its assemblage of material culture provides a vivid image of a thriving San Francisco mercantile establishment on a single day at the height of the Gold Rush. The deposit affords a glimpse into what Gold Rush San Franciscans ate, what they wore, how they stocked their stores, what medicines they favored, the types of firearms and ammunition they sold, and the sorts of tools and hardware they stocked for use at sea, in the gold fields or put to use building their city.

Historical Background of the Hoff Store Site and an Overview of Gold Rush Archaeology in Downtown San Francisco

INTRODUCTION

This paper endeavors to place the Hoff Store site and its assemblage of Gold Rush material culture into a coherent, focused historical context. Throughout this presentation, emphasis is centered on specific historical events and demographic patterns that are either relevant to the interpretation of San Francisco's archaeological record, or which played a significant role in its formation during the mid-19th century.

Hence, while a brief historical overview of San Francisco's stunning transformation from hamlet to metropolis between 1848 and 1851 is of value, this paper does not purport to provide a comprehensive discussion of the city's rapid development during the Gold Rush. This subject has been addressed elsewhere by numerous first-hand observers and subsequent historians, and interested readers are referred to these sources (e.g., Marryat 1855; Soulé et al. 1855; Barry and Patten 1873; Hittell 1878, 1882; Bancroft 1888; Davis 1889; Eldredge n.d.; Lewis 1966; Averbach 1973; Lotchin 1974; Olmsted et al. 1977:265-278; Lockwood 1978; Olmsted et al. 1979:59-71). Rather, the following data are presented with the aim of capturing the era's essential *zeitgeist*, thereby enabling the reader to place the Hoff Store site within the larger context of the momentous, often chaotic, panorama of the Gold Rush, a phenomenon that spurred the formative development of the vast western frontier and which, from beginning to end, was centered in San Francisco.

As part of this background, this paper presents a summary of recent archaeological investigations of the rich and varied cultural record buried beneath

the streets and buildings of modern San Francisco. Despite more than a century of intensive development and massive topographic modification, metropolitan San Francisco—encompassing the Financial District, South of Market region, North Beach, Chinatown and the Embarcadero—has proved a fruitful setting for archaeological study (Fig. 2-1).

Recent archaeological inquiry, which commenced in earnest during the 1970s, has been a direct result of the formulation and implementation of a series of increasingly focused local regulations, emanating from the San Francisco Planning Department and based on CEQA, regarding the investigation, interpretation and disposition of cultural resources. Impelled by these municipal guidelines, archaeologists have, within the past decade, encountered a wide range of deposits in the heart of the city; these sites range in age and character from prehistoric shell-mounds dating from the beginning of the Christian era to the artifact-laden remnants of waterfront saloons and boarding houses destroyed by the Great Earthquake and Fire of 1906. A substantial percentage of these deposits can be attributed to the era spanning the late 1840s through the early 1850s, the time of San Francisco's formative development immediately prior to and during the Gold Rush.

EVALUATING SIGNIFICANCE OF HISTORIC PERIOD SITES IN SAN FRANCISCO

The historical importance of the California Gold Rush to San Francisco's early development is well established. So too is San Francisco's central place in this widespread historical drama. Accordingly, when evaluating the significance of archaeological sites in San Francisco, any deposit dating to the Gold Rush period is generally deemed to have the potential of yielding valuable information. The potential significance of Gold Rush deposits in general, and the Hoff Store site in particular, as an important data base is further enhanced by several factors:

First, while a number of Gold Rush archaeological sites have been encountered in downtown San Francisco during

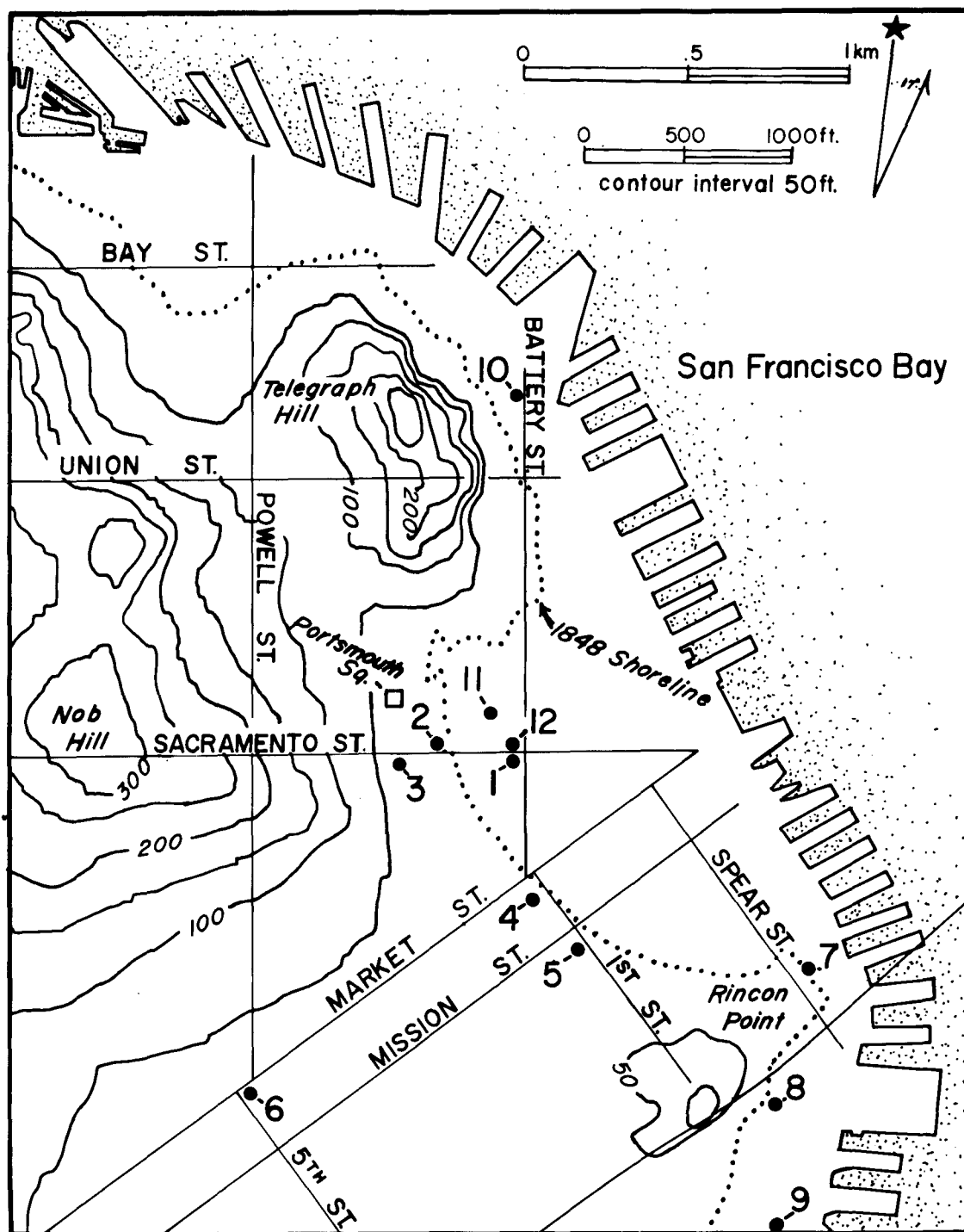


FIGURE 2-1. San Francisco archaeological sites: (1) Hoff Store site; (2) 505 Montgomery Street; (3) 600 California Street; (4) CA-SFr-112; (5) 100 First Plaza; (6) CA-SFr-113; (7) Hills Plaza; (8) Rincon Point Fishing Village; (9) Whaler Lydia; (10) William Gray at Levi's Plaza; (11) Storeship *Niantic*; (12) Storeship *Apollo*.

the past decade, relatively few of these deposits are characterized by a high degree of stratigraphic and/or contextual integrity. Rarer still are subsurface Gold Rush architectural remnants.

Second, a vast body of archival documentation from San Francisco's formative era was destroyed in the six major Gold Rush fires and later by the Great Earthquake and Fire of 1906. Thus, archaeology provides an important means of obtaining new data and/or supplementing or correcting the archival record.

Third, while deeply buried Gold Rush archaeological remains were once relatively common to the downtown area, this data base has been severely eroded since the early 1960s by almost continuous development of high-rise structures with deep foundations that encroach upon cultural deposits.

Fourth, the Gold Rush phenomenon occurred during a limited time period (1848-1851) that was marked by sudden and pronounced yearly socioeconomic and demographic changes.

Fifth, the multinational and multicultural character of the Gold Rush may be reflected in the archaeological record.

Sixth, while a number of residential deposits from the Gold Rush era have been encountered in San Francisco, the Hoff Store site is unusual in that it contains the remnants of a commercial establishment ruined by a single day's catastrophe. Accordingly, this deposit provides a unique opportunity for archaeologists to view the Gold Rush phenomenon from a singular perspective of a mid-19th-century merchant and entrepreneur.

In addition to Gold Rush material remnants, later 19th-century deposits are frequently encountered during downtown construction projects. With several notable exceptions (e.g., Archeo-Tec 1988), these deposits are usually characterized by isolated artifacts, or rubble pockets, in sand or rock fill. The significance of these associations must be evaluated on a feature by feature basis. In most instances, it is deemed sufficient to sample the feature and monitor its removal.

In many sites the 1906 Earthquake and Fire has left a debris layer that forms a stratigraphic marker. Material from this event is found in situ within the city and also as redeposited landfill throughout the San Francisco Peninsula. Although the data that can be recovered from these sites are comparable in content to the Gold Rush fire deposits, and that they too are associated with a singularly important historical event, the significance for a 1906 Earthquake and Fire site would have to be made on a case by case basis.

FROM VILLAGE TO METROPOLIS: THE RISE OF THE "INSTANT CITY"

As with many metropolitan areas, historic period cultural deposits in modern San Francisco provide an opportunity for the application of the archaeological perspective to a wide range of sociocultural and historical phenomena associated with life in an urban setting. Additionally, as a result of an explosively rapid population increase and a building boom that has few precedents in modern history, the remnants of Gold Rush San Francisco provide not only an opportunity to conduct urban archaeology but a framework and focal point for the archaeological study of the phenomenon of urbanization itself.

In 1848, as tales of gold for the taking in the Sierra Nevada foothills raced like wildfire around the world, San Francisco became the center of one of the 19th century's most dramatic events. In a remarkably brief period, San Francisco developed from a small, isolated, backwater hamlet into the Pacific Coast's principal metropolis. Indeed, by the close of the early Gold Rush period in 1851, San Franciscans proudly boasted that they had created, literally overnight, the greatest American city west of the Mississippi River. Ebullient San Franciscans viewed both themselves and their city as unique and destined for great things, a prevailing attitude that is well exemplified by the words of a contemporary chronicler:

The discovery of gold in 1848, gave an impetus to emigration from which San Francisco derived, in so short a period, the title of city. Her growth was sudden; there was no INFANCY to her history. An existence of only ten years has given her rank among the cities of the world; and . . . she is now in her onward march to wealth and greatness (Langley 1859:16).

Such exuberant claims are, perhaps, regionally chauvinistic, but there is no disputing the fact that San Francisco's growth from village to city occurred with astounding rapidity. Between mid-1849 through the close of 1851, San Francisco's citizens were involved in continuous social, political, economic, and demographic processes that shaped the essential character of the city and by extension, much of the American West. As shall

presently be seen, some of San Francisco's formative growth came about as a result of deliberate municipal policy; other aspects were obvious responses to prevailing environmental, and/or economic conditions; still other significant developments occurred as a result of historical serendipity. To varying degrees, these historical events and demographic processes directly influenced the formation of the archaeological record and affect its interpretation.

San Francisco's origins were humble and its initial development proceeded slowly. For 75 years after Spanish explorers made their initial penetration of San Francisco Bay in 1775, the region remained an isolated, relatively unimportant colonial outpost of Spain and, after 1821, Mexico. Few contemporary observers saw any evidence to suggest that any of the small settlements scattered around the Bay would develop into major population or economic centers.

The village of Yerba Buena—as San Francisco was initially known—was not founded until 1835, when an Englishman named William A. Richardson, who was interested in finding a favorable location on the Bay for his hide and tallow business, settled there (Hittell 1878:77). At the time of Yerba Buena's founding “. . . Richardson's only neighbors were bears, coyotes and wolves” (Davis 1889:9).

In its natural state, the area immediately adjacent to Yerba Buena Cove consisted of a narrow, semicircular strip of level ground, sloping gently upward toward the west from the edge of the Bay. This flat area was surrounded on all three landward sides by what were later described as “naked, monstrous sand hills” (Watkins and Olmsted 1976:19). Yerba Buena's sandy soil supported a sparse covering of vegetation—mainly scrub brush, willows and an occasional stand of oak trees (Davis 1889:76).

Yerba Buena's first permanent structure was erected in 1836 near the center of present-day Chinatown, on the south side of Clay Street, a few feet west of Grant Avenue (Hittell 1878:85; Watkins and Olmsted 1976:14). A road linking the fledgling settlement to Mission Dolores was built in 1838 (Olmsted et al. 1979:52).

In 1837, Jacob Leese, an Ohio-born immigrant to California, obtained permission from Yerba Buena's Mexican Alcalde to occupy a 100-vara (275 sq. ft.) lot near the beach on Montgomery Street between Clay and Sacramento streets (Hittell 1878:85). On this site, near the southwestern corner of Montgomery and Commercial streets, Leese erected a “large wooden two-story building” in 1838, the town's first substantial frame structure. This building became the economic and social center of Yerba Buena for the next decade (Davis 1889:68).

From this building on Montgomery Street, Leese operated a trading company in partnership with William S. Hinckley (Davis 1889:20). In 1841, Leese sold about two-thirds of his 100-vara beachfront lot on Montgomery Street, including his two-story house, to the Hudson's Bay Company (Hittell 1878:87–88). “The price paid for the property was \$4800, half in coin and half in goods” (Davis 1889:68).

Additional ownership changes took place before the Gold Rush. In its final incarnation as a hotel, the Hudson's Bay building, having reached the venerable age of 12 or 13 years, was finally destroyed in the same fire that ravaged the Hoff Store site.

Throughout the 1840s, the center of settlement in San Francisco was in the vicinity of present-day Portsmouth Square, located less than one quarter mile to the northwest of the Hoff Store site (Figure 2–1). At this time, the Hoff Store site lay submerged beneath the waters of the Bay, approximately 650 ft. to the east of the original shoreline.

In 1844, Yerba Buena could boast of perhaps 50 permanent residents (Watkins and Olmsted 1976:14). Little significant change occurred during the next two years (Hittell 1878:91), during which time the local population increased to no more than 200 individuals (Watkins and Olmsted 1976:14).

American sovereignty over California was established on July 8, 1846. At the time, San Francisco's 200 permanent residents occupied some 50 buildings scattered throughout the Yerba Buena Cove area (Soulé et al. 1855:173). Following the American seizure of California, San Francisco's growth began to accelerate, albeit moderately. By

April 1, 1847, the town contained a total of 79 buildings, mostly simple frame shanties or adobes, and almost 400 full-time residents (Soulé et al. 1855:173–174).

In 1847, Jasper O'Farrell, a civil engineer and newly appointed city surveyor, laid out the basic grid plan for the streets of San Francisco (Hittell 1878:86). O'Farrell delineated hundreds of "water lots"—parcels of land along Yerba Buena Cove that were at least partially exposed during periods of low tide. Throughout 1847, many of these water lots were sold at auction to generate municipal revenues, mainly to real estate speculators, and often at prices ranging between \$50 and \$100 apiece (Watkins and Olmsted 1976:23). These seemingly worthless water lots would soon become incredibly valuable and the center of the relentlessly expanding waterfront district throughout the Gold Rush.

In 1848, on the eve of the Gold Rush, San Francisco's population, now grown to a total of slightly more than 800 individuals, occupied approximately 200 structures (Soulé et al. 1855:200). Within months of the discovery of gold in the Sierra Nevada foothills, the once inconsequential hamlet was transformed overnight into what has been called an "instant city" (Lockwood 1978). Yerba Buena Cove, which just months earlier had been nearly empty, was now clogged with shipping, prompting the common Gold Rush image of the "forest of masts" (Davis 1889:333–334; Figure 2–2).

THE FORMATION OF SAN FRANCISCO'S GOLD RUSH ARCHAEOLOGICAL RECORD

Four historical events and demographic phenomena associated with San Francisco's rapid Gold Rush urbanization had a profound impact upon the formation of the archaeological record: 1) an explosively expanding population of diverse origins; 2) continuous construction and concomitant demolition; 3) massive modification of the natural landscape by the filling of some areas and the relentless reduction of others; and 4) the six fires that repeatedly ravaged the young city between December, 1849, and mid-1851. From this point forward,

San Francisco's Gold Rush development will be discussed in light of these crucial factors.

The immigrant tide pouring into San Francisco was composed of various ethnic and sociocultural groups including: Yankees and other Americans from the eastern seaboard, French, Italians, English; Germans, Turks, Slavs and other Europeans, Mexicans and South Americans, Chinese, Australians, Hawaiians, Jews, Africans, and Black Americans. The streets of the city echoed with a polyglot cacophony. One contemporary observer offered the following comment:

It seems as though every nation on the face of the earth had sent a representative to this place, and that they had all arrived with their credentials. Such a medley of languages and jargon of tongues the world has seldom seen. It is a modern Babel (Upham 1878:222).

San Francisco's population was not officially counted during 1849, but it increased dramatically. "The number of inhabitants was estimated to be two thousand in February, three thousand in March, and five thousand in July" (Hittell 1878:147). By November, the city's population was slightly less than 8,000 individuals (Hittell 1878:148). On the other hand, Soulé, Gihon, and Nisbet (1855:244) remark that by the end of 1849, San Francisco's population numbered at least "twenty, and probably nearer twenty-five thousand souls." This population explosion continued unabated throughout the Gold Rush. By 1852, according to census data for California, more than 36,000 people resided in San Francisco, representing about one seventh of the state's total number of inhabitants (Hittell 1878:183–184).

The population explosion was accompanied by an equally enormous spurt of building activity, which at first was haphazard and chaotic:

There was no such thing as a *home* to be found. Scarcely even a proper *house* could be seen. Both dwellings and places of business were either common canvas tents, or small rough board shanties, or frame buildings of one story. Only the great gambling saloons, the hotels, restaurants, and a few public buildings and stores had any pretensions to size, comfort or elegance (Soulé et al. 1855:245).

In addition, the unusually harsh winter of 1849–1850 exacerbated the disorder already caused by rapid population growth.

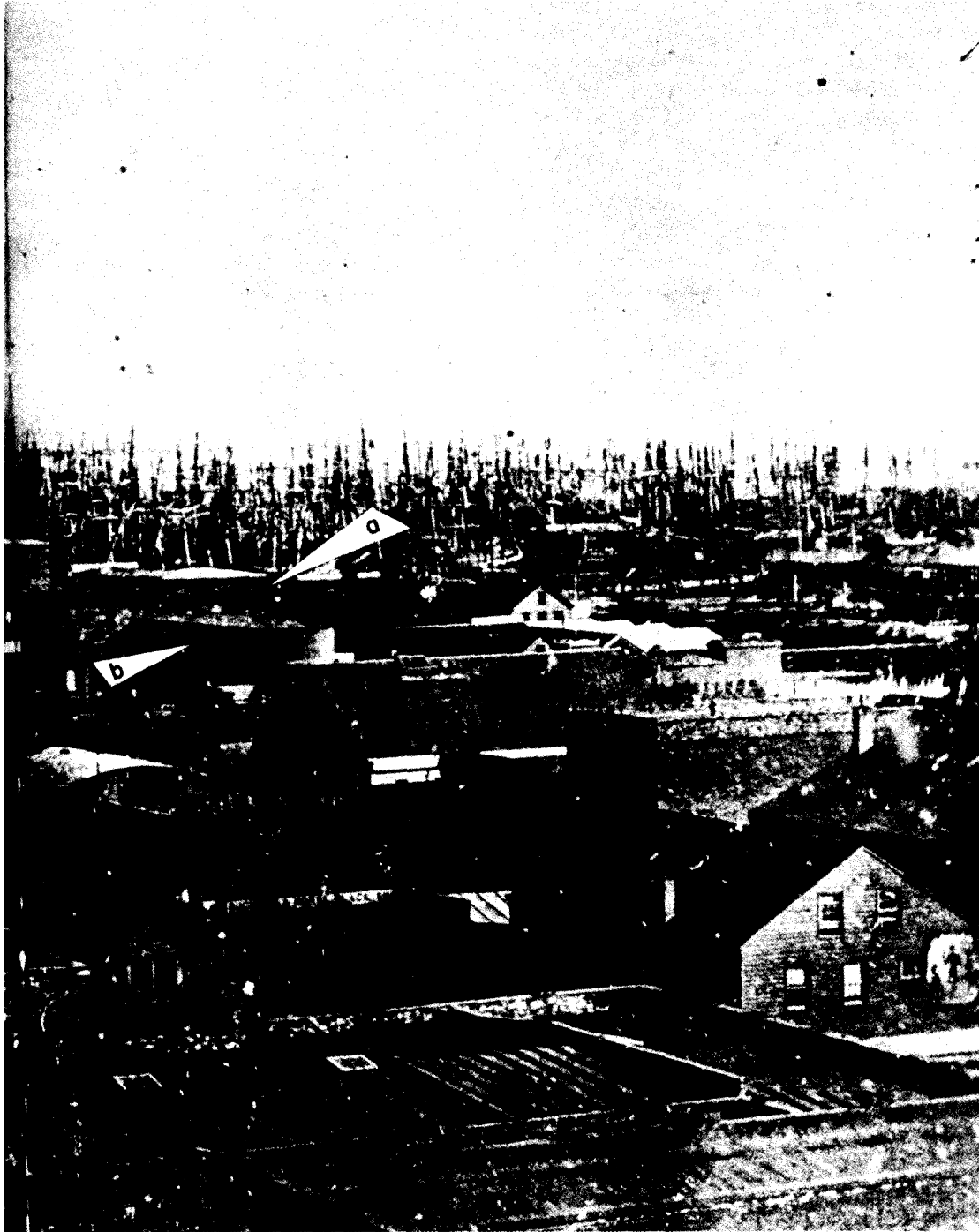


FIGURE 2-2. "Forest of Masts," ca.1850. View to west from Howison's Pier: (a) Hoff Store site; (b) Storeship *Apollo*. *Apollo* Saloon (Storeship *Apollo*) is on Battery Street. (Courtesy of the Bancroft Library.)

Throughout 1849, real estate was at a premium, and property owners became instantly wealthy. Extravagant prices were paid for rentals. "Real estate, that but a few years before was of little more worth than an old song, now brought amazing prices" (Soulé et al. 1855:254).

It is extremely difficult to document precisely the number or characteristics of the structures that existed in the heart of San Francisco between 1849 and 1852. As real estate values skyrocketed, speculators bought and sold choice parcels of land almost faster than the transactions could be recorded. Buildings were often erected and demolished before their existence could become incorporated into the contemporary archival record. Throughout the Gold Rush, it was by no means uncommon to have numerous discrete structures, each built successively under the short tenure of varying owners, occupying the same plot of ground.

As early as the Fall of 1849, the lack of wharfage was seriously felt in San Francisco, and steps were soon taken to remedy this problem. By December, 1849, San Francisco's first wharf—the Central Wharf, running along the line of present-day Commercial Street—stretched approximately 800 feet into the Bay (Soulé et al. 1855:291). By the spring and fall of 1850, this structure was joined by a number of other newly constructed wharves and piers.

San Francisco's newly built wharves soon became favored locations for the disposal of all manner of trash. Due to fluctuating prices of goods during the early Gold Rush, merchandise that was extremely valuable one day might be worthless the next:

It so happened that with the inflow of shipments many cargoes contained goods in excess of demand, such as tobacco, iron, sheet-lead, cement, beans, salt beef, and the cost of storage being greater than their actual or prospective value, they could be turned to no better use than fillage. Thus, entire lines of sidewalks were constructed of expensive merchandise in bales and boxes (Bancroft 1888:198).

Gold Rush visitor Frank Marryat reported that vessels would occasionally land unsalable goods:

The market has not only gone by for the articles she brings, but these, from long confinement, and her unseaworthy

qualities, are landed in such an unprepossessing state as to be almost unsalable (Marryat 1855:169).

Marryat himself received one such cargo in Vallejo, which he disposed of in typical fashion when he "deserted the property and allowed the owners of the wharf to throw it overboard . . ." (Marryat 1855:174).

Some merchandise was inadvertently dumped into the Bay. San Francisco historian Roger Olmsted observed that the pilings of San Francisco's Gold Rush wharves were in a constant state of collapse:

Occasional cargoes—usually bulk shipments of such things as coal and lumber—might be temporarily stored out in the open, and these were reported to have sometimes dumped into the bay as parts of the wharves collapsed (Olmsted et al. 1977:272).

Landfilling completely reshaped the city front during the Gold Rush. Soon after wharves had been built out from the Bay's original shoreline for some distance, cross-connecting streets on pilings were erected to join one pier to the next. The enclosed areas were then filled with sand or other materials and the shoreline began to advance bayward (Dow 1973:43).

The first significant filling took place in 1849. The reclamation of Yerba Buena Cove was gradual at first, but gathered momentum as the months went by (Dow 1973:43). Soulé, Gihon, and Nisbet made the following observation:

[The waters of Yerba Buena Cove are] yearly continuing to be encroached upon as the cove gets filled up with sand and rubbish, excavated from the sand-hills and the foundations of the limits behind, and as new streets and houses are pushed further into the bay (Soulé et al. 1855:159).

By 1852, the filling of Yerba Buena Cove was being carried out with "planned precision" (Dow 1973:45). The amount of filling necessary for a given piece of property was based on the need to bring it to the level of the official city grade. Fill consisted mostly of dune sand. Other fill "included rubbish, building rubble, abandoned ships, or anything else which had no immediate value" (Dow 1973:46). At any given place, depth of fill depended upon the depth of the water; hence, there is considerable variation in the amount of fill from

one spot to another throughout the city (Dow 1973: 47). While no official record of the amount of fill dumped into the Bay exists, Hittell estimated that approximately 21 million cubic yards of material were eventually transferred, while Bancroft places the figure at 22 million cubic yards (Dow 1973: 47–48).

At first, landfill was deposited into Yerba Buena Cove by manual laborers using horse carts. However, such crude methods were clearly inadequate to accomplish the task, and mechanical equipment soon augmented human and equine muscle:

A steam excavator better known as a 'Steam Paddy' was set to work on the sand hills in Happy Valley, back of the Oriental Hotel, and the cars laden with sand run on a railroad of descending grade along Battery Street, disposing their freight from California to Clay streets. The stagnant water which accumulated . . . above the newly formed streets became very offensive, given rise to immense quantities of sulphuretted hydrogen gas, which blackened the painted signs along Battery and Sansome streets to render them nearly illegible (Parker 1852:20).

The mountain of fill dumped into the Bay during the early 1850s sealed the copious quantities of cultural refuse that had either been lost or discarded in the shallow waters of the Cove by the inhabitants of Yerba Buena village and by San Francisco's first wave of Gold Rush immigrants.

Concomitant with the filling of Yerba Buena Cove, other areas of the city were being graded and reduced to bring them into conformity with the city grade system. While the sand hills were being reduced, many of the city's low-lying hollows above the original shoreline were filled, sometimes with sand from the adjacent dunes and sometimes with rubble and cultural debris.

One of the most crucial factors that profoundly influenced San Francisco's development throughout the Gold Rush was the series of fires that periodically devastated the city. Between December 24, 1849, and June 22, 1851, no less than six major conflagrations and a number of smaller fires ravaged the city. With few exceptions, all of San Francisco's older structures were destroyed (Soulé et al. 1855:274–275, 277, 299, 329–333, 344–345; Hittell 1878:133, 157, 168–169). The worst of these conflagrations, the "Fifth Great Fire" of

May 3–4, 1851, caused Soulé, Gihon, and Nisbet to note that "only five of the brick buildings on Montgomery Street escaped destruction, and ten or twelve in other localities" [Soulé et al. 1855:331] (Figures 2–3, 2–4). The impact of the repeated fires on the growing city of San Francisco is aptly summarized by the following passage:

. . . every citizen may be said to have been burned out several times and to again and again lost his all (Soulé et al. 1855:345).

In the conflagration of May 3–4, 1851, Howison's Pier burned as far as Battery Street, and various commercial enterprises which had been built on these wharfs were consumed and collapsed into the Bay (e.g., Pastron 1988). H. H. Bancroft's map (1888:204) portrays the burned area as extending no further east than Battery Street. Soulé, Gihon, and Nisbet (1855:332) suggest that the shipping in the harbor was saved only as a result of the drastic step of breaking up the wharves and thereby preventing the further eastward spread of the blaze. The above passage suggests that Howison's Pier, like other nearby wharves, was deliberately truncated at this time.

CENTRAL RESEARCH THEMES OF SAN FRANCISCO ARCHAEOLOGY

Gold Rush San Francisco's apparent metamorphosis from a chaotic frontier settlement into a major city was swift, and the remains of the various stages of urban growth and change are reflected in the archaeological record. The evidence is diverse, ranging from privy contents to cargoes unceremoniously dumped from the city's wharves into the Bay. The principal theme guiding archaeological research at Gold Rush sites centers on the city's rapid transformation from boomtown to urban center. Sub-themes include examination of the chronology of urban development throughout the Gold Rush, social conditions (e.g., class, sex, ethnicity), trade and economy, and sociocultural change.

Although the Gold Rush occurred within a brief span of time, it was marked by pronounced social,



GREAT FIRE IN SAN FRANCISCO.

FIGURE 2-3. Great Fire in San Francisco. (Courtesy of the National Maritime Museum, San Francisco.)

economic, and demographic changes, especially during the first chaotic years. Therefore, precise chronological placement of a site is often a necessary goal of Gold Rush archaeology. Indeed, temporal control is a basic key to answering other research questions about the Gold Rush. Besides detailed artifact analysis, stratigraphic studies are important for achieving temporal placement of artifacts deposited and features created during remarkably short intervals.

Because San Francisco was—and still remains—a major port of entry from the sea lanes of the Pacific Ocean, a myriad of ethnic and religious groups entered the city. These populations often settled in discrete neighborhoods and maintained aspects of their traditional culture. In some instances, due to their distinctive traditional material culture, these groups are relatively easily identified

(e.g., the Chinese). In other cases, acculturation and foreign trade makes differentiating these groups more difficult. In any event, identifying different ethnic and cultural groups in San Francisco, on the basis of their material remains, and exploring their experiences in the nascent metropolis is an important theme of regional archaeological investigations.

Other aspects of culture that are investigated archaeologically are sex and socioeconomic class. Prior to about 1852, the Gold Rush was a male-dominated event. For the most part, the early argonauts were sojourners in search of instant wealth and adventure. California was not initially viewed by many as a favorable place for permanent settlement, so wives and children were usually left behind to await the return of their husbands or fathers. When artifacts potentially associated with



FIG. 2-4. THE MORNING AFTER THE GREAT FIRE OF MAY, 4th. VIEW TAKEN FROM THE CORNER OF BROADWAY & SANSOME STS.

Lith. & Pub. by J. Smith & Co. Broadway St. San Francisco.

FIGURE 2-4. The morning after the Great Fire of May 4th, 1851. View taken from the corner of Broadway and Sansome streets (note burned pier pilings). (Courtesy of the National Maritime Museum, San Francisco.)

women and children are encountered, they are the subject of considerable interest and scrutiny, as such materials are not commonly part of the early Gold Rush archaeological record.

From Australian (British) felons to New England merchants and entrepreneurs, men of all social classes participated in the Gold Rush. In California, however, many of the traditional social trappings were waived in favor of wealth, usually newly acquired, with little regard to family history. Given these social factors, it is expected that artifact assemblages for the early part of the Gold Rush will be dominated by basic necessities, with few luxury items present. With the passing of the gold boom and the development of an increasingly complex urban infrastructure in San Francisco, one would expect the variety and number of luxury and other non-utilitarian items to increase.

The early Gold Rush economy was marked by sudden changes in supply and demand for both goods and labor. One would expect that comparison of various Gold Rush archaeological deposits from San Francisco would reflect these economic

vicissitudes. Coupled with sound chronological control in the field, the "prices current" listing in the *Alta California* and information in other contemporary periodicals provide excellent economic data for artifact interpretation.

California was almost entirely dependent upon outside trade for its supplies. The trade networks which developed were world-wide, and California's affect upon the international economy was substantial. By examining artifacts for potential points of origin, some of these connections may come to light for a particular assemblage. An important sub-theme of this line of research is the documentation of the maritime aspects reflected in a specific site or series of sites.

AN OVERVIEW OF RECENT ARCHAEOLOGY

As of this writing, much of the recent archaeological research conducted in San Francisco is ongoing and, hence, unpublished. Nevertheless,

much of these data are coeval with the Hoff Store site and, in many respects, relevant to its interpretation. Therefore, a brief summary of the information recovered from these deposits is presented.

As has been seen, many of the historical events and social, economic, and demographic processes previously discussed are, to varying degrees, reflected in downtown San Francisco's Gold Rush archaeological record. One of the innovative ways in which Gold Rush San Franciscans responded to the crushing population boom can be seen in the form of the numerous wooden sailing ships buried in waterfront landfill (Delgado 1979a, 1979b).

During the early months of the Gold Rush, the crush of immigrants pouring into San Francisco created a severe shortage of available commercial and residential buildings. For a time, new structures simply could not be erected fast enough to accommodate the demand for housing and business space. To cope with the problem, local entrepreneurs turned to ready-made buildings—wooden sailing ships: while there may have been a shortage of buildings on land in San Francisco, there was a surplus of ships anchored in the Bay.

Of the ships that had brought the "49ers" to California, a substantial number were unfit for further deep water passage. Other vessels had been deserted by their crews, who departed en masse for the gold fields. More often than not, new crews were difficult or prohibitively expensive to raise. Because of this, some of the ships glutting the harbor could be purchased quite cheaply in 1849, and many local businessmen availed themselves of this unique opportunity. Selected vessels were anchored alongside a wharf, or occasionally beached near the Bay shoreline. They were then modified as appropriate and utilized for a wide range of purposes, including warehouses, restaurants, saloons, hotels and, in one case, the municipal jail (Delgado 1981a).

During the last two decades, a substantial body of literature has arisen in connection with the Gold Rush ship hulks periodically encountered in waterfront landfill (e.g., San Francisco Maritime Museum 1963; Olmsted et al. 1977:282–291; Delgado 1979a, 1979b, 1980; Pastron and Prichett 1979, 1980; Baker 1980; Olmsted et al. 1981:107–250;

Smith 1981; Schwendinger 1984; Archeo-Tec 1985b).

Probably the most celebrated of San Francisco's Gold Rush storeships was the *Niantic*, which arrived in the city on July 5, 1849 (Smith 1981:40), and was sold shortly thereafter by Captain Cleveland to Gildmeister, DeFremsey & Company. The new owners beached the *Niantic* at what today is the northwest corner of Clay and Sansome streets and converted it into a warehouse. Several shacks were erected upon the deck of the ship and rented out as sleeping quarters. The Great Fire of May 3–4, 1851, destroyed all of the ship save the hull, which then was buried. The Niantic Hotel next occupied the site. Hittell continues the story of the *Niantic*:

[In] 1872 the wooden building was torn down and the hull dug out to make room for the foundation and cellar of the brick building which now occupies the place. In the course of their digging the laborers found that the bottom of the hull was filled with dirt, covering various articles of merchandise, including several dozens of champagne, which had been buried for twenty-one years. The dirt was doubtless washed in on the occasion of the [May 3–4, 1851] fire, and nobody had in the meantime thought it worth while to examine what lay buried there (Hittell 1878:166).

But the story of the *Niantic* did not end in 1872. In 1978, during construction for the modern high-rise office tower that now occupies the site, the hulk of the *Niantic* was once again unearthed. And once more, a wealth of artifacts came to light, including hardware, tools, arms and ammunition, furnishings, comestibles, and a number of still-unopened wine and champagne bottles (Smith 1981). On this occasion the remains of the *Niantic* were almost totally destroyed, with the exception of a small piece of the vessel (Smith 1981:3).

The assemblage of material culture recovered from the hulk of the *Niantic* is of particular relevance to an interpretation of the Hoff Store site. Not only are the two sites contemporaneous but both represent extensive, yet distinct, stores of Gold Rush merchandise.

Like the *Niantic*, most of San Francisco's Gold Rush storeships were consumed in the repeated conflagrations that ravaged the city in the early years of the Gold Rush, particularly the Fifth Great

Fire of May 3–4, 1851. Another storeship which met its end in the Great Fire is the *Apollo*, situated at the north-western corner of Battery and Sacramento streets, beneath San Francisco's former Federal Reserve Bank building, immediately adjacent to the north of the Hoff Store site (Olmsted et al. 1977:458–459, Figures 1, 2). The *Apollo* arrived in San Francisco on September 18, 1849, and her story is typical of most of San Francisco's storeships. Upon arrival, the *Apollo* was quickly sold, and the new owners tied the vessel along the north side of Howison's Pier. After the *Apollo* burned in the conflagration of May 3–4, 1851, the remaining hulk was covered by landfill. In 1925, its remains were unearthed during construction of the Federal Reserve Bank building. It is believed that at least part of the *Apollo's* hulk still lies intact.

Two other buried vessels have been recently investigated. These are the 1840s whaler *Lydia*, encountered in June, 1978, in San Francisco's South Beach district (Olmsted et al. 1981:107–250), and a hulk that had been used as a buttress for a Gold Rush wharf at the corner of Filbert and Battery streets (Olmsted et al. 1978). The latter vessel, believed to be the *William Gray*, was unearthed in September, 1979 (Pastron and Prichett 1979, 1980). The bow and stern of the *Lydia* still lie buried beneath the ground along King Street near the Embarcadero, and the *William Gray* remains interred beneath a small park that forms part of the Levi's Plaza development site along the Embarcadero.

San Francisco's storeships not only provide a wealth of detail concerning 19th-century maritime architecture and construction techniques, but afford a view of the diverse methods used by Gold Rush entrepreneurs both to accommodate San Francisco's exploding Gold Rush population and to develop and maintain the city's increasingly intricate economic infrastructure.

A different perspective on Gold Rush vessels was afforded by a program of excavation conducted in 1988 at the Hills Plaza development site, located at the tip of Rincon Point, to the south of present-day Market Street. Not all of the vessels that lay rotting in Yerba Buena Cove during the

Gold Rush were destined to become storeships: many of the unseaworthy hulks were systematically salvaged. During the early and mid-1850s, Rincon Point was the center of San Francisco's ship dismantling industry, and an English-born entrepreneur named Charles Hare made his living by scrapping these vessels, saving and selling the wood and metal fittings (Archeo-Tec 1985b; Delgado 1981b).

The nature of Hare's shipbreaking operations at Rincon Point was vividly captured by an article published in San Francisco's *Daily Evening Bulletin*:

The beach at the Rincon exhibits a scene which recalls the past in a most affecting manner. In almost every portion are to be seen the relics of old ships, that once braved the storms and dangers of a hundred seas, being broken up for their old iron and fire wood. This work is carried on chiefly by Chinamen, who hammer and saw and chop, day after day and week after week with the most exemplary patience and perseverance. Under their continued blows, the old vessels fall to pieces, one after the other. For a few days the yawning wrecks and then the bare skeletons of keel and ribs are seen: but in a short time the skeletons themselves fall to pieces; the iron and copper are stored, the wood piled up and carried away, and not a vestige of the once mighty masters of the deep remains (*Daily Evening Bulletin* 2/11/1857).

Archaeological investigation of Hare's ship-breaking yard revealed that, contrary to the assertions made by the article in the *Daily Evening Bulletin*, quite a few vestiges "of the once mighty masters of the deep" remained beneath the ground. This site yielded almost 100 hardwood timbers, almost exclusively oak, and a range of other remnants of Gold Rush vessels, including a small anchor, brass and iron ship fittings and fastenings, rigging elements, and several pieces of the copper sheathing (Pastron 1989). Most of the timbers, some measuring 15 ft. or more in length and weighing more than a ton, bore the scars of saws or axes in silent testimony to the labor expended by Hare's Chinese workers.

Another Gold Rush site was discovered to the south of Market Street, in the heart of a district once known as "Happy Valley" (Hittell 1878: 157). Throughout the first half of 1849, the area to the south of present-day Market Street remained

uninhabited. Soon, however, the influx of newcomers spilled over a sand ridge bordering the original settlement of Yerba Buena into the area near the Yerba Buena Cove shoreline between Market Street and Rincon Point. By September or October of 1849, Happy Valley was dotted with the tents and shacks of recent immigrants awaiting the opportunity to go to the mines (Olmsted et al. 1979:51). Several first-hand accounts vividly depict the boisterous character of this newly settled district, which at first was little more than a transient community of "newcomers waiting for a chance to go to the mines . . ." (Caughey 1941:29).

Among the most extensive Happy Valley reminiscences are those of Samuel C. Upham, who arrived in San Francisco via Cape Horn early in August, 1849. On August 6, Upham made his initial arrangements to settle himself ashore:

In the afternoon I visited the encampment of the gold-diggers in Happy Valley, for the purpose of selecting a site on which to pitch my tent. . . . The beach, Happy Valley, for the space of two miles, is covered with canvas and rubber tents, and the adjacent sand hills are dotted to their summits with these frail but convenient tenements of the prospective miner. The population, numbering perhaps five thousand, is as heterogeneous as their inhabitants (Upham 1878:218-222).

Upham soon left San Francisco for the mines, but returned in November. His comments provide a rare first-hand view of a city in metamorphosis:

San Francisco, during my absence of two months, had become so changed that I scarcely recognized it. Substantial frame buildings had superseded frail canvas tenements, and piers had been extended many hundred yards into the bay, at which vessels from the four quarters of the globe were discharging their cargoes. I visited the gold-diggers' encampment, Happy Valley, but that too was so changed, that I could hardly recognize a familiar spot or countenance. A three story warehouse was being erected on the spot where I had pitched my tent two months previously (Upham 1878:257-259).

The boisterous, chaotic, transient character of Happy Valley existed for little more than two years. By the close of 1851, the transients had departed and the South-of-Market area had become the "chief residence district of the city" (Hittell 1878:157).

In March, 1986, archaeological excavation uncovered the well preserved, artifact-laden remnants of a clapboard and canvas shanty that existed in the heart of Happy Valley during the first half of 1850 (Archeo-Tec 1986). This deposit, encountered within the 100 First Plaza development site and located on the west side of First Street near the Mission Street intersection, is the oldest South-of-Market Gold Rush occupation site yet investigated archaeologically. Unlike archaeological deposits situated in San Francisco's bay fill zone, this was a dry site that had originally been situated along the beach above the original shoreline. Hence, unlike the Hoff Store site, which required extensive pumping and shoring, this deposit could be excavated in a far more traditional manner.

The site yielded a diverse and extensive assemblage of material culture, including a range of objects associated with women and children. This portion of the collection includes various items of jewelry, an assortment of ceramics of higher quality than one might expect to find in a transient miner's shack, a thimble, brass bodkin and other sewing implements, household furnishings, a child's shoe, a clay marble, and a porcelain doll, as well as a ceramic dish caked with an oily rouge-like substance (Archeo-Tec 1986). These data are of particular interest in light of the fact that accounts of Happy Valley's heyday invariably note that the community was composed almost exclusively of single males who intended to stay in the area for only a brief time. Yet, archaeological data suggest that family life, or at least the presence of women and children, may have been established in Happy Valley considerably earlier than previously thought.

While on the subject of archaeology south of Market Street, it is worth noting that Gold Rush deposits are not the only sites recently encountered in this district. Investigations conducted in 1986 also uncovered two deeply buried, largely intact prehistoric sites—CA-SFr-112 and CA-SFr-113—near the corners of First and Mission streets and Fifth and Market streets, respectively. SFr-112 dates to A.D. 430-900; SFr-113 dates to the beginning of the Christian era (Pastron and Walsh 1988a, 1988b). These deposits are the first prehis-

toric sites to be encountered in downtown San Francisco since the late 1920s, and the only ones ever to be studied systematically. The discovery of these well-preserved prehistoric sites, coupled with nearby historic period finds, attests to the South of Market's potential as an archaeological data base.

Another focal point of archaeological research in downtown San Francisco was the site of the old Hudson's Bay Company building, located at 505 Montgomery Street near the original Bay shoreline, between Commercial and Sacramento streets (Archeo-Tec 1988). As noted previously, this area was the heart of both the hamlet of Yerba Buena and, after mid-1849, of early Gold Rush San Francisco.

Architectural remnants of the Hudson's Bay Company building were obliterated by foundation excavation for several structures that subsequently occupied the site. However, a filled-in well was uncovered and excavated which was apparently associated with the Hudson's Bay Company building. Examination of this feature yielded a range of early historic period refuse including two faceted glass trade beads.

However, in spite of the failure to recover architecture associated with the Hudson's Bay Company building, excavation revealed a remarkably well preserved floor fashioned of hand made, unmortared bricks. It is believed to date to the middle or later part of 1850. This floor was the basement of a Gold Rush structure and measures 31 × 16 ft.; it featured a carefully crafted drainage channel and cistern, probably built with the memory of the terrible floods of the winter of 1849–1850 in mind. A trash pit, located immediately adjacent to the eastern edge of the brick floor yielded a wide range of household and commercial refuse, including liquor and medicine bottles and an assortment of ceramic tableware, mostly white "Ironstone."

Before concluding this overview of San Francisco's archaeological record, mention must be made of the various overseas Chinese occupation sites found throughout the city. From the beginning of the Gold Rush, San Francisco was home to the largest and most complex overseas Chinese community in the United States. The great major-

ity of the Chinese immigrants who fanned out across the American West during and after the Gold Rush in search of work and opportunity entered the United States via the Golden Gate, and many of these people settled in San Francisco. In addition to the immigrants themselves, the great bulk of Chinese material culture imported into western North America throughout the second half of the 19th century first entered the United States via San Francisco. Hence, the archaeological study of Chinese occupation sites in San Francisco is crucial to an understanding of Asian experience in America during the second half of the 19th century.

Since 1978, a variety of Chinese sites have been encountered in various parts of the city. These include: 1) an early 1880s refuse dump along the waterfront near present day Fisherman's Wharf (Pastron et al. 1981:365–469); 2) the remnants of what is probably California's first Chinese fishing village, founded sometime between 1850 and 1852 along the southern shoreline of Rincon Point (Anonymous 1854:48; Huggins 1939:79; Armentrout-Ma 1981:152; Archeo-Tec 1985b:33–36; Pastron 1989); 3) the remains of the 1870s Fat Yuen Laundry, encountered within the Moscone Convention Center site, along the north side of Third Street, between Howard and Folsom, in the South of Market area; 4) an 1880s Chinese laundry/residence located amidst a cluster of Scandinavian sailors' boarding houses and saloons along the waterfront, near the intersection of Howard and Steuart streets (Archeo-Tec 1988); and 5) the recently excavated remnants of a Gold Rush Chinese store, located within the 600 California Street development site (Figure 2–1) on the south side of Sacramento Street, some 66 ft. north of the Kearny Street intersection. These overseas Chinese sites have produced a valuable body of data regarding the archaeological manifestations of such sociocultural phenomena as ethnicity, acculturation, and assimilation in the development of plural societies.

CONCLUSIONS

Gold Rush San Francisco was the quintessential plural society, as well as the entrepôt and social

and economic focal point for the entire Gold Rush phenomenon. San Francisco's archaeological data base provides a rich and informative addition to archival material which documents the city's early history and affords the opportunity to examine the complex phenomenon of rapid urbanization.

MICHAEL R. WALSH

Field Methods for the Hoff Store Site

INTRODUCTION

This paper describes field techniques used in the collection of materials from the Hoff Store site. These procedures were a response to field exigencies presented not just by the nature of the assemblage and its placement below the present water table, but by the site's urban setting. As will be seen, some of these factors affected field strategies and circumscribed subsequent analytical capabilities. Still, it is indeed possible to conduct a meaningful, empirical study of almost any recovered assemblage, so long as the limitations of the data are understood and accommodated. In brief, this paper describes the limitations of the data, and the reasons which underlie these limitations. It describes the manner in which an attempt was made to accommodate, or cope with, difficult stratigraphic and logistical conditions. While in some respects the Hoff Store site presented a seemingly ideal depositional context—a single Pompeii-like catastrophic event—various problems pertaining to the context of the recovered assemblage are presented so that the conclusions drawn, or not drawn, from the existing data may be properly evaluated.

The order of presentation is as follows. First, there is a brief description of the stratigraphy, revealed by both auger borings and by subsequent excavation down to Quaternary deposits. Next, the site location is discussed with an emphasis on the limitations imposed on the effort to obtain a wide horizontal exposure. These limitations were based primarily upon logistical and safety considerations, including post-1851 impacts to the deposit. Following this treatment is a discussion of the basis for defining the "primary" cultural deposit and the reasons for attributing it to the conflagration of May 3–4, 1851. As will be seen, physical characteristics of the artifact assemblage combine with

attributes of stratigraphy and soils, as well as with archival sources, to associate the recovered materials firmly with the so-called "Fifth Great Fire." The potential for the retrieval of materials extraneous to the fire is also explored.

The above exigencies—inherent stratigraphy, a metropolitan setting, disturbance to the deposit, and so forth—dictated the provenience control and, in certain cases, mandated the recovery techniques used at the Hoff Store site.

STRATIGRAPHIC ELEMENTS

Following the 1985 demolition of the early 20th century building atop the deposit, the surface of the project area (the "site") lay 10 ft. below street level (B.S.L.) at the south-western corner of Sacramento and Battery streets (Fig. 3–1). This location represents the maximum depth of the old basement; it has served as a datum plane for all succeeding depth measurements.

Physical stratigraphy was initially defined by test borings using a drill with a 24-in.-diameter auger. The results of this program guided subsequent excavations, which in turn further clarified site stratigraphy. Fourteen test borings (0.45% of the lot's surface area) were drilled well into underlying sterile sediments (Archeo-Tec 1985a:11). Test locations were derived judgmentally. It should be borne in mind that the project area is only partially representative of the original building "site," which cannot be precisely defined due to surrounding development.

The test borings revealed a picture of Bay mud, overlain by a distinctive black layer comprised of Bay mud, charred organic material, sand, and Gold Rush artifacts (Schlocker 1974:83–85). Above this layer lay sand fill, construction rubble, and a scattering of later 19th-century artifacts.

The uppermost two feet of deposit (10–12 ft. B.S.L.) consisted of fine, yellow homogeneous sand imported to prepare the ground for construction of the basement floor for the 20th-century building, locally called the Kodak Building. From 12–18 ft. B.S.L. was found a stratum of identical sand matrix, but including as well an array of

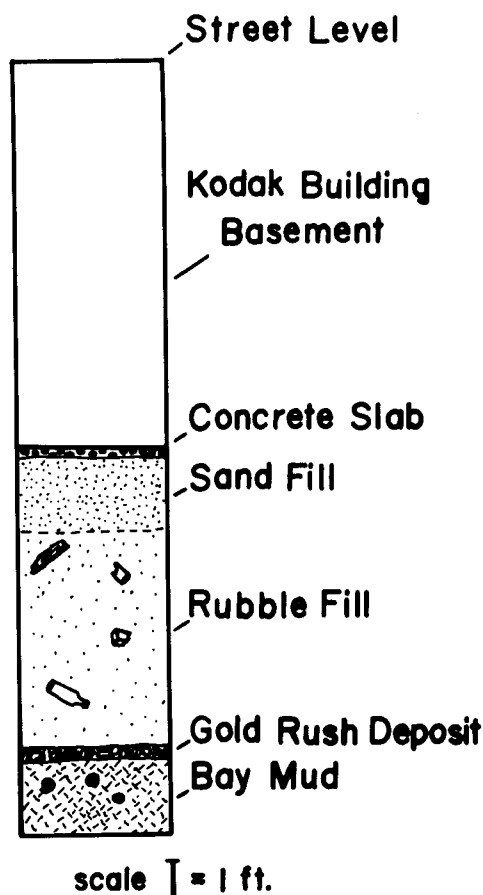


FIGURE 3-1. Stratigraphic column for the Hoff Store site.

brick, mortar, and wood. The fill material also included sparsely distributed artifacts dating to the 1860s and 1870s. Among these artifacts were sundry embossed soda and mineral water bottles and an 1860 U.S. quarter dollar. The drilling procedures did not permit establishment of superposition between materials contained in the fill. For a discussion of fill history and filling procedures in 19th-century San Francisco, see Dow (1973). The water table, which fluctuates with the tide's ebb and flow, was found at the lower reaches of this fill. Because tides at the Golden Gate routinely vary ± 6 ft., these fill materials act as an aquifer.

At approximately 18 ft. B.S.L. was found some 8 in. of "primary" deposit, or that presumed to

represent materials derived from San Francisco's "Fifth Great Fire" of 1851. This black, artifact- and charcoal-rich stratum lies at the contact with sediments known as "Bay mud." Bay mud ranges from a water-saturated, dark, plastic clay to silty clays with high organic content (Helley and Lajoie 1979:21; Pestrong 1972). Because the Bay water/Bay mud contact is unconsolidated sediment, artifacts at the Hoff Store site sank and were sealed in an anaerobic environment favorable to excellent preservation. Some discussion of the criteria for identifying the primary deposit is warranted. Moreover justification for attributing the deposit to the fire of May 3-4, 1851, is presented using physical, depositional data.

PRIMARY DEPOSIT

Because the primary deposit presumably represents a single, catastrophic event, contemporaneity can be fairly well assumed for constituents within the eight-inch stratum. In some instances, however, an object's position within the Bay mud deposits can result from depositional inconsistencies, most likely representing intrusions into the sediments. The following discussion is an attempt to identify the degree and extent to which extraneous materials may have become incorporated in the primary deposit at the Hoff Store site.

The easiest materials to isolate and exclude from analysis are those which form natural constituents of the Bay mud. Pelecypod and gastropod shells can occur in Bay mud and often lend a midden-like texture to the sediments. Primary among these are shells of the bent-nosed clam, *Macoma nasuta*. These shells abound in juxtaposition with the artifacts in the primary deposit. Although edible, there is no indication that these bivalves formed an economic resource, either at the Hoff Store site or elsewhere in Gold Rush San Francisco. Oysters, both fresh and preserved, were repeatedly mentioned in period newspapers, journals and diaries; yet this apparently hearty appetite for shellfish did not extend to locally available clam species. While evidence for preserved oysters was recovered from the site, no clustering or packaging of clams

among the thousands of observed bivalves could be ascertained (see Hattori and Kosta, this volume).

Included among the artifacts not associated with the fire were minor amounts of flotsam or litter which could immediately pre-date or post-date the May 3–4, 1851, conflagration. Throughout the early Gold Rush, the Bay was seen as a natural dumping site for a considerable amount of waste (Soulé et al. 1855:419–420). This took not just the form of garbage but included unsalable merchandise that was ruined in transit or that arrived during a market glut of identical goods (Berry 1984:14; Marryat 1855:169). Frequently, the cost of storing these overstocked goods exceeded their prospective value, so they were discarded (Bancroft 1888:198).

Additionally, materials stored on the network of piers and docks sometimes found their way to the Bay waters following the collapse of rickety wharves (Olmsted et al. 1977:272). In fact, a construction mishap at Howison's Pier in the summer of 1850 deposited building materials, tools, and several embarrassed workers into the Bay (*Evening Picayune* 8/10/1850). The point here is that a minor, sundry collection of artifacts is expected to accompany materials from the primary deposit from May 3–4, 1851; moreover, these extraneous materials are nearly impossible to segregate from specimens derived from the primary deposit.

Finally, it is important to point out that the exact location and dimensions of W. C. Hoff's store are not precisely known. This derives from an incomplete archival record and, primarily, from a general inability to reconstruct architectural features and thus, individual store boundaries. Wooden wharves and wooden architectural elements simply did not survive the fire and collapsed into the Bay; further, the buoyancy of wood and other artifacts surely created a morass of flotsam that drifted out into the Bay. Stores adjacent to Hoff's, notably the western neighbor Dunker (Bancroft 1888:204), may comprise some of the "Hoff" deposit. It is for this reason that the generic term "Hoff Store site" is used throughout this volume. Unfortunately, the material remains alone could not be convincingly segregated among the different com-

mercial establishments that once lined the south side of Howison's Pier near Battery Street. Hardware, foodstuffs, maritime materials, and so forth, were recovered throughout the entire exposure.

It should also be noted that the absence of charring or other thermal alteration of materials is an unsuitable test for direct association with the conflagration. Many of the recovered objects show no fire damage, yet associate in space and kind with burned specimens, indicating that Howison's Pier collapsed into the Bay well before the bulk of the Hoff Store site wares were totally consumed by flame. It should be emphatically noted that extremely few items with chronological implications recovered from the primary deposit are at odds with the assemblage's proposed association with the May 3–4, 1851, fire.

The necessity of this discussion is somewhat ironic since it attempts to justify associating the assemblage with a single 24-hour period that occurred more than 138 years ago. Normally, historical archaeologists strive to associate an assemblage with a single year and, in many cases, must settle for temporal affiliation within the span of a decade. Prehistorians often accept centuries, or even millennia, as adequate time control. Still, such restrictive temporal association is necessary here if the Hoff Store site materials are to be viewed not just as an array of coeval artifacts, but as an *inventory* of one or more early Gold Rush mercantile establishments.

The primary deposit is characterized by a high charcoal content. Burned pier lumber, crates, barrels and the like, contributed to an array of charred flotsam released by the removal of the overburden. This material, in combination with the inherent green-black color of the saturated Bay mud aquiclude, created a dark, gritty morass over the entire deposit.

The burned and charred nature of the artifacts, the high charcoal concentration in the sediments, and burned pier pilings suggest burning and collapse of the structures built over the Bay. Of the six "Great Fires" and other fires of lesser consequence in early Gold Rush San Francisco, only the "Fifth Great Fire" extended to the corner of Sacramento and Battery streets (Table 3–1). When the

TABLE 3-1
MAJOR GOLD RUSH FIRES IN SAN FRANCISCO*

Name	Date	Boundary			
		North	South	East	West
1st GREAT FIRE	04/24/1849	WASHINGTON	COMMERCIAL	MONTGOMERY	KEARNY
2nd GREAT FIRE	05/04/1850	JACKSON	CLAY	MONTGOMERY	DUPONT**
3rd GREAT FIRE	06/14/1850	CLAY	CALIFORNIA	SANSOME	KEARNY
4th GREAT FIRE	09/17/1850	PACIFIC	WASHINGTON	MONTGOMERY	DUPONT
5th GREAT FIRE	05/3-4/1851	BROADWAY	PINE	BATTERY	DUPONT
6th GREAT FIRE	06/22/1851	BROADWAY	CLAY	SANSOME	POWELL
UNNAMED	11/09/1852	MERCHANT	CLAY	MONTGOMERY	KEARNY
UNNAMED	05/31/1854	VALLEJO	BROADWAY	KEARNY	DUPONT

*Fires consuming more than two buildings. Sources: Soulé et al. (1855); Hittell (1878).

**Present-day Grant Street.

area was rebuilt, the Bay was filled to Battery Street on the east by October 1851 (*Alta California* 10/9/1851).

SITE BOUNDARIES AND DEFINITION

The Hoff Store site took the form of 10 contiguous, roughly square excavation units (16 ft. square) and two auxiliary units—a 16 ft. square and a quadrilateral trench, some 10 ft. at its maximum width and 32 ft. in length (Figure 3-2). All told, some 3104 sq. ft. were systematically excavated, representing approximately 28% of the total lot size.

Twentieth-century structural foundations played a major role in determining the lay-out of excavation units at the Hoff Store site. Their placement coincided with what was determined through archival study and test borings as the area of maximum artifact density and architectural potential. Although the physical impact of the 20th-century foundations on the Gold Rush stratum was minimal, the removal of these concrete features would have proved highly destructive to the primary deposit. The foundations created arbitrary unit limits (Figure 3-2). Since the foundations could be partially undermined without creating a hazard to the personnel working at the site, all excavation units can be considered roughly equal in terms of horizontal extent. Contiguous units were numbered 1N

through 5N (North) and excavated consecutively from east to west. Their southern extensions were excavated consecutively from 5N to 1S (South). Units 6 and 7 were placed arbitrarily in an attempt to secure a broad horizontal picture of the lot at Sacramento and Battery streets.

What occurred, as a result of the emphasis on contiguous units, was a rather broad *exposure* that has become the Hoff Store "site." In recognition of the lack of historic site boundaries and architectural remains, inter-unit references are held to a minimum in the papers that appear in this monograph. Following the conclusion of archaeological field investigations in April, 1986, construction monitoring revealed an extensive distribution of Gold Rush materials beyond the limits of the exposure at Sacramento and Battery streets, clearly extending beneath streets and surrounding buildings.

FIELD PROCEDURES

Overlying post-Gold-Rush fill was removed by back-hoe to approximately 12 in. above the primary deposit. From this point, hand excavation of the waterlogged site with hoses, shovels, and trowels removed fill down to the layer of Gold Rush deposition. Once the primary deposit was encountered, all soils were water screened through 1/4-in. hardware cloth. This procedure not only provided

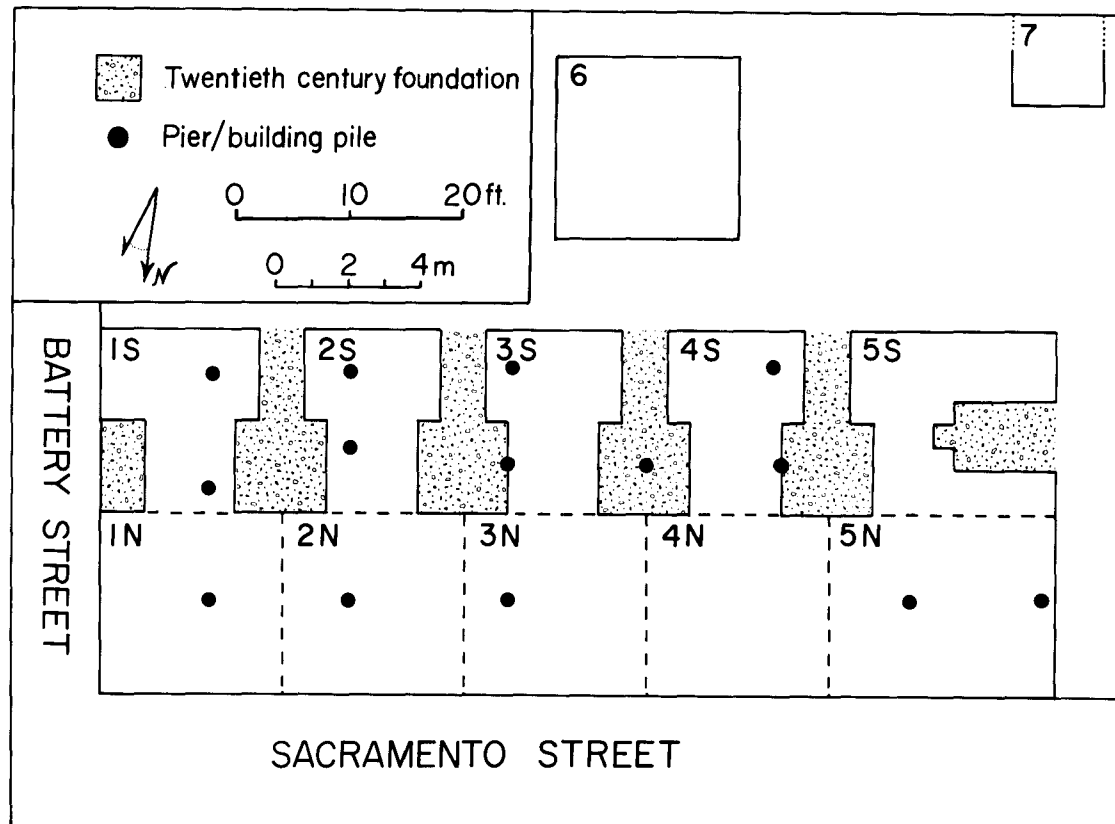


FIGURE 3-2. Excavation unit plan.

a viable means of field washing, it proved less destructive to the artifacts than dry shaker screen recovery would have been.

All cultural materials recovered from the screens were retained with the following exceptions. Exceedingly redundant materials such as nails and plate glass were sampled from each unit and the remainder discarded. For example, nails were ubiquitous throughout the deposit and, in one instance (Unit 5S), cemented into a multi-ton ferrous boulder containing perhaps hundreds of thousands of cut nails. This mass presented an artifact class whose complete collection was impossible with available resources. Unembossed bottle glass lacking shoulder, base, or neck form was generally not collected, after a sample was retrieved for each color of bottle glass represented at the site. These

conventions were implemented only after the intensive excavations began and it had become clear that the systematic collection of redundant materials with minimal analytical value would entail sacrificing the recovery of a large sample of other, seemingly more informative, artifact types.

All recovered materials were attributed to one of the units described above (Figure 3-2). Vertical provenience was not recorded, save for the discrete distinction between "fill" and "primary deposit." Stable materials, such as glass and porcelain, were simply labelled and bagged for transport to the laboratory. Some diagnostic, unstable metal artifacts were placed in a sodium sesquicarbonate solution in the field.

Wood and leather were immersed in a solution containing a 50-75% solution (by weight) of poly-

ethylene glycol-400 (PEG) to inhibit shrinking and cracking from water loss (Van Dienst 1985; Grat-tan 1988). Metal objects—such as nails, tin, brass implements, and iron tools—were immersed upon recovery in a 5% solution, by weight, of sodium sesquicarbonate and water to inhibit further corrosion (Oddy and Hughes 1970). Sealed containers were caulked with melted beeswax to maintain an airtight environment for container contents. In this manner, some measure of success was achieved for objects whose excellent preservation for the past 138 years has contributed materially to the wealth of data recovered from the Hoff Store site.

SUMMARY

The primary goal of this paper has been to emphasize some of the problems inherent in conducting archaeological inquiry in urban settings. The exigencies faced at the Hoff Store site included an inability to define “site” size and configuration with any accuracy. Accompanying this limitation

was the difficulty in defining *sample* size or *site* locus distributions within an archaeological deposit located beneath the present water table and consisting of sufficient carboniferous debris to simulate excavation in India ink.

Pre-excavation preparation consisted of archival research as well as limited examination of the project area through test borings; both procedures indicated the excellent probability of a substantial deposit. Neither, however, could portend the extent or sheer numbers of deposited remains. Neither, moreover, could define the sample universe—the site boundaries. Observational “tools”—in the form of excavation methods and strategies—could not be precisely adjusted to the experimental environment due to extraneous features such as overlying structural foundations, present water table, and so forth. In addition, contemporary urban features such as streets and surrounding buildings, which further obscured the Gold Rush deposit, played a major role in creating an “exposure” out of a “site.”

JAMES P. DELGADO

“Ships were constantly arriving . . .”: The Hoff Store Site and the Business of Maritime Supply and Demand in Gold Rush San Francisco

INTRODUCTION

A significant assemblage of maritime material culture was recovered during archaeological investigations of the Hoff Store site. This material is probably associated with the ship chandlery of W. C. Hoff and his partner Henry Owner, whose establishment was located in one of the buildings situated on the south side of Howison’s Pier, west of Battery Street, in mid-1851. At that time, San Francisco Harbor Master George Simpton had his office on the second floor of this building (*Alta California* 3/28/1851).

Viewed from a maritime perspective, the materials recovered from the Hoff Store site are important for a number of reasons: 1) they exemplify an essential—perhaps the central—focus of Hoff and Owner’s business; and, more importantly, 2) they underscore the crucial role of both maritime commerce and ship chandlers in provisioning the Gold Rush and in bringing about San Francisco’s rapid transformation from a small village to a great city.

Supplies of consumer goods in California in the 1840s and 1850s were almost completely dependent upon the arrival of ship-borne goods at San Francisco, a port which functioned as the primary commercial emporium and depot of the Gold Rush. Businesses which served the needs of ships and shipmasters, particularly ship chandlers’ shops, flourished in San Francisco during this time.

Chandlers provided cordage, canvas, rigging, navigation equipment, medicine, provisions, paint and sundry other materials used aboard ship. An

abundance of materials of this type were recovered from the Hoff Store site. While it can be argued that many of the items recovered from the site are not specifically maritime-related, a significant proportion of the assemblage is maritime in nature.

One of the largest ship chandleries was Hoff’s and Owner’s. Harbor Master George Simpton kept his office on the second floor. Both required ready access to the ships in the harbor: Hoff and Owner to provision and supply vessels, Simpton to greet arriving ships and direct them to a safe berth where they could moor and discharge cargo.

A range of material culture appears to reflect the activities of ship chandler W. C. Hoff. These items include preserved and dried foodstuffs capable of withstanding the long-term storage requisite for prolonged ocean voyages, white lead paint, copper tacks, brushes—important materials for the maintenance of a ship—navigational instruments, the remains of what is believed to be a ship’s medicine chest and other artifacts designed for maritime use. These objects serve as a forceful reminder of the basic maritime character of the Gold Rush, in which shipboard provisions and goods served an additional role as ideal consumer goods for prolonged sojourns to the “mines.”

MARITIME MATERIAL CULTURE RECOVERED FROM THE HOFF STORE SITE

Some of the recovered items—notably oarlocks, a hinge, and navigational instruments—are definitely maritime in character. Others are identified or inferred as maritime goods through their contextual associations within the site, listings in period ship chandlery advertisements and catalogues, and the fact that Hoff and Owner were known to make their living as ship chandlers: objects in this latter category include a range of hardware, tinware, and foodstuffs.

Oarlocks

Two identical oarlocks were recovered from Unit 5N (see Walsh, this volume). The first oar-

lock was recovered during pre-construction test boring and the second was recovered during excavation. The former specimen was damaged by the auger and lacks one arm, while the second oarlock is in excellent condition. Made of cast brass, these open "U" shaped artifacts with single shanks were fabricated as a pair and reflect common oarlock design. The fact that only one pair of oarlocks was recovered from the site may indicate that these oarlocks were not intended for sale; rather, they may have been objects in storage, associated with a vessel kept on the premises, or that had been lost in the Bay shallows prior to the construction of the buildings associated with the Hoff Store site. However, the close association of these specimens with burned architectural remnants from the buildings seems to rule out the latter proposition.

Octants

The badly-burned, fragmentary remains of two octants were recovered from the northwest corner of Unit 4S. The instrument remains include two indexes, one broken into two pieces and measuring 14 in. The second fragmentary index was broken into four pieces and measures approximately 12 in. The index glass mount is still attached to the first specimen; the second octant's index glass mount is detached.

Two sets of horizon glasses and shades were also recovered; one set is partially melted and may be associated with the slightly smaller, more badly burned instrument. Two backsights, the larger of which has screw mounts for a telescope and a sight, were recovered, as were the telescope and sight.

In addition, a number of smaller fragments from these instruments were unearthed. These include two tangent screws for the adjustment of the index along the vernier (generally indicative of a better-made instrument), two legs, a larger eye-hole for the sight, two detached adjustment screws, a tool for aligning the horizon glasses, two brass mounts for a handle, six unidentifiable brass fragments, a small screw, and an eyelet.

The badly burned remains of the boxes for the

octants were also found. The two boxes are represented by seven brass angle brackets, four brass angle brackets with curved facing (one badly burned) which formed the ends of the box top's corners, three hinges (one large, two small), two lift-out handles, four pieces from a locking mechanism, one small brass lock, and a brass escutcheon plate.

The octant, or the Hadley Reflecting Quadrant, was invented by John Hadley (1682–1744). The first navigational instrument to measure angles by reflection, the Hadley Quadrant was patented in Great Britain in 1734. Because of its greater accuracy and precision, the instrument brought about a marked improvement in marine navigation. The Hadley Reflecting Quadrant worked by measuring the angle between two objects "by bringing the reflection of one into coincidence with the sighted image of the other in one mirror . . . irrespective of the motion of a ship" (Stimson 1975:3). The instrument measured up to one quarter of a circle (a quadrant) by reflection. The actual arc of the instrument, however, was one-eighth of a circle, hence the popular name "octant."

Octants were wooded instruments with brass parts and ivory verniers. Telescopes were introduced to octants after 1800, "though whether the accuracy of position of the mirror justified this step is debatable" (Nuttall n.d.:45). Octants began to be replaced by the more accurate sextants by the early years of the 19th century, although the former instruments saw continued use. Sold throughout the 19th century as a "cheap alternative to the sextant" (Nuttall n.d.:45), octants were also recommended as a secondary tool for any good navigator. Accordingly, octants remained a widely manufactured item throughout much of the 19th century: "Wherever there was a need for maritime victualling, octants were sold, frequently with the Chandler's trade label in the box, or on the instrument" (Wynter and Turner 1975:79).

The presence of the two octants at the Hoff Store site may be explained by their association with the burned-out ship chandlery, but the fact that only two octants were recovered, coupled with the fact that these instruments were of different sizes, might indicate that they were the property of the

Harbor Master's office on the second floor of Hoff and Owner's Store. The approximate age of the octants appears to be the late 18th or early 19th century. Such instruments, while useful, were antiquated by the time of their loss in 1851 (Warner 1987, pers. comm.). The two specimens from the Hoff Store site are probably of British manufacture, but in the absence of the wooden portions, no more definitive conclusions are possible.

Parallel Rulers

Parallel rulers are an instrument used to lay down courses and bearings on a navigational chart. They consist of two rulers connected by crosspieces, and moveable at joints, so that while the distance between the two rulers may be decreased or increased, the edges always remain parallel (DeKerchove 1948:568). A crosspiece from a set of parallel rulers was recovered with the octant parts. Made of brass, this crosspiece is marked with the legend "I Grace" crudely engraved on one side. The rulers themselves were probably wooden and, hence, consumed in the fire.

Dividers

A pair of brass (proximal end) and iron (distal end) dividers with a mount for a lead pencil at the end of one arm and a badly corroded iron point on the other were recovered with the octant parts. These were generally used by navigators to "step off" distances on a chart. A set of dividers was recovered from the hulk of the storeship *Niantic* in 1978, but this specimen was longer and did not possess a pencil mount (Smith 1981:73).

Medicine Chest

Medicine chests were standard shipboard items required by American law for vessels of more than 150 tons. (This requirement was in effect during the 19th century: today, vessels exceeding 75 tons must carry a medicine chest.) A ship's medicine chest was an encapsulated hospital with vials of

various medications, bandages, and surgical instruments. The badly burned residue of what appears to have been a ship's medicine chest was recovered along the boundary between Units 3N and 4N. While fire had rendered the wooden chest itself all but unrecognizable, many of the small glass vials were recovered in sound condition, including one specimen which contains essence of peppermint.

"Nautical Style" Brass Hinge

Four cast-brass "nautical style" hinges were recovered from the Hoff Store site (see Hattori and Brigham, this volume). This ovate hinge is identical in style to a smaller example recovered from the wreck of the 1875 steamer *City of Sydney* in 1952, when the vessel's remains were dredged from Candlestick Cove, San Francisco. The oval style of the hinge provided a closer fit (hence, water-tightness) between the door and bulkhead (DeKerchove 1948:373).

Preserved Foodstuffs

The majority of the foodstuffs recovered from the Hoff Store site would seem to fit within a "maritime" category since they were capable of withstanding the long-term storage required in prolonged ocean voyages. These foodstuffs include preserves, rice, hardbread and salt pork. Two partially complete barrels of "salt" or "prime" pork were recovered; so too were a number of individual pork bones and associated barrel elements which apparently came from formerly intact barrels of salt pork (see Hattori and Kosta, this volume).

Paint, Brushes, and Brooms

Two partially burned barrels with a white lead or paint residue were excavated at the boundary of Units 3N and 4N. Immediately adjacent were the burned remnants of several dozen paint brushes and brooms. White lead and paint brushes, while

not necessarily maritime in nature, are found in ship chandlery catalogs and were commonly used aboard ship, since constant scraping, cleaning, and painting are regular shipboard activities in a corrosive marine environment.

Copper Tacks

Several dozen copper tacks or brads were recovered from Unit 3S (see Hattori and Brigham, this volume). These items were commonly used aboard ship and are listed in a catalogue of available items from the San Francisco ship chandlery of Folger and Tubbs (n.d.).

Tinware and Hardware

A range of tinware and hardware was recovered from the Hoff Store site. While one might expect to find items such as tinware, hardware, and coffee mills in any general store of the period, such items are also found in ship chandlery catalogues and were recovered from Units 2N, 2S, 3N, and 3S.

GOLD RUSH MARITIME ACTIVITY AT THE HOFF STORE SITE

San Francisco was the great entrepôt for the Gold Rush. Throughout 1849, 1850, and 1851, hundreds of ocean-going ships and steamers discharged their passengers and cargo at the city's wharves and piers. From San Francisco, the argonauts bound for the "diggings" made their way into the upper reaches of San Francisco Bay and entered the river systems that eventually led to the Sierra Nevada gold fields. Running up the Sacramento and San Joaquin rivers, the argonauts sailed or steamed to the river ports of Sacramento, Marysville, and Stockton, the jumping-off points for the mines. Miners who struck it rich or who simply grew weary of the primitive conditions in the Sierra foothills could easily catch river boats returning to San Francisco, further boosting the city's economy.

A number of San Francisco merchants sent ves-

sels in search of merchandise. Foodstuffs from Hawaii and other Pacific islands; fruit and beef from Mexico; manufactured goods from South America, China, and the East Coast of the United States; and lumber from the Pacific Northwest began to arrive regularly at San Francisco. Accordingly, San Francisco burgeoned as an active port.

The sheer numbers of vessels lying at anchor off San Francisco made a lasting first impression on many Gold Rush visitors and firmly established the maritime nature of the city. It also conveyed a negative image of the port to wary ship owners fearful of a prolonged lay-over for their vessels. In the summer of 1849, as the first onslaught of Gold Rush arrivals began, the Harbor Master counted 72 vessels at the port (*Alta California* 6/21/1849). By October the number had grown to 308 vessels at anchor (*Alta California* 10/30/1849). In the edition of June 6, 1850, the *Alta California* reported 509 vessels in the port. Since only a few of these were between voyages, the majority of the ships had been, and would continue to be, laid-up for a prolonged period. The Deputy Harbor Master counted 452 ships in the harbor in November 1851, which included 232 American registered vessels and 36 hailing from Great Britain, 11 from France, 10 from Germany, 5 from Chile, 3 from Sweden, 3 from Australia, 2 from the Netherlands, 1 from Italy, and 1 from Austria (*Alta California* 11/1/1851). The remaining 148 (32.7%) ships counted were laid-up storeships (*Alta California* 11/1/1851).

Despite the large number of unseaworthy or abandoned vessels on the San Francisco waterfront, the statistics concerning arrivals and departures indicate that San Francisco was an active and significant port. Initially, maritime news focused on arrivals—very few vessels cleared San Francisco in 1849. The formal recording of arrivals commenced on March 26, 1849. Seven vessels arrived from that date to the end of the month, followed by 64 in April, 43 in May, 74 in June, 93 in July, 112 in August, 128 in September, 90 in October, 82 in November, and 89 in December. The total of 782 arrivals includes several repeat visits by coasters, Panama steamers, and the Hawaiian traders (Society of California Pioneers 1924:35–

45). In January of 1850, the Harbor Master reported that the aggregate tonnage of arrivals from April 12, 1849, to January 29, 1850, stood at an amazing 284,238 tons and was comprised of 805 vessels, 487 American and 318 "foreign" (*Alta California* 1/31/1850).

The first year that departures began to outstrip arrivals was 1851. In August and September of that year it was noted that "the clearances of some time past have been almost as numerous as the entries . . ." (*Daily Herald* 8/19/1851). More than 1000 emigrants left for the eastern seaboard by way of Panama at the end of August, and on September 26, 1851, the *Daily Herald* made the following observation:

Our port is now being perceptibly thinned of shipping: the departures this month having greatly exceeded the arrivals. From the 1st to the 21st of September, 51 vessels, besides steamers, sailed whilst the arrivals only amounted to 28. There are numbers of ships only awaiting crews to put to sea; but the preponderance of departures over arrivals has caused a scarcity of seamen and rather high rates of wages. . . . We expect to find by the end of the year that the shipping now in port [exclusive of . . . others unfit for service] will be curtailed . . . at least one-fourth (*Daily Herald* 9/26/1851).

The *Daily Herald* (9/26/1851) viewed this change favorably, as "Ship owners will send out their ships with greater confidence, convinced that at last some of the difficulties are removed." Thus, San Francisco apparently experienced a more regular flow of maritime traffic after 1851.

Chandlers

Among San Francisco's maritime industries were numerous ship chandlers, merchants who supplied vessels with all kinds of stores and dealt in "cordage, canvas, and all other articles connected with the furnishing of a ship" (DeKerchove 1948:723). Without ship chandlers to supply and provision the vessels in the harbor, San Francisco could not have sustained its status as an active port.

In 1850 only individuals were listed as chandlers in an 1850 San Francisco city directory. These were Thomas Bargin, corner of Green and Powell

streets, and John W. Smith, Happy Valley (Kimball 1850:11,102). Without doubt, other San Francisco merchants including W. C. Hoff, also sold to ships. James B. Weir, a grocer and commission merchant on Clay Street near Montgomery, advertised in an 1850 city directory that he had "constantly in store, and receiving daily, fresh supplies of goods suitable for traders. Also ship and miners' stores" (Kimball 1850:132).

By 1852, however, eight chandlers were listed in a city directory (A.W. Morgan & Co. 1852: 122A-123A). They supplied the numerous vessels actively arriving and departing the waterfront, belying two years of congestion by an idle fleet of "deserted" vessels. The majority of chandlers were located on Sacramento and Commercial streets. A typical 1852 advertisement for one firm noted that they stood ready to offer a large ". . . and complete assortment of Ship and Steamboat Chandlery and Stores, Naval Stores, India Rubber Packing, Cotton and Flax canvass, Hemp and Manila Rope, Paints, Oils &c, and are receiving by Clipper arrivals, constant additions to their stock" (*Alta California* 1/7/1852).

W. C. Hoff's Store

W. C. Hoff appears in 1850 as a grocer located at the foot of Sacramento Street at the extreme end of Howison's Pier at Battery Street (Bancroft 1888:204; Kimball 1850:60; Barry and Patten 1947:7). Hoff was also listed as a partner with Goodhue Ambrose in the Whitehall Building on Battery Street at Central Wharf (Kimball 1850: 60,115). His tenancy on Howison's pier soon after its construction suggests that he was an original occupant or perhaps owner of the building housing his store. In June 1850, Hoff was noted to have offered the second story of his store as shelter to some refugees from the Fourth Great Fire (Barry and Patten 1947:101). Then, prior to March 28, 1851, Hoff entered into partnership with Henry Owner (*Alta California* 3/31/1851). This partnership probably marked the transition of Hoff's enterprise into a full-fledged chandlery. Despite the loss of the store in the Fifth Great Fire, Hoff and

FIGURE 4-1. 1852 broadsheet for Hoff and Owner's chandlery (Bonnard 1852:32).

Owner remained partners, and they relocated the store two blocks east.

Reconstruction plans after the Fifth Great Fire called for filling the open Bay eastward to Battery Street (*Alta California* 10/9/1851). This plan encouraged extension of the existing piers, including Howison's Pier (Sacramento Street). To maintain direct lighter access to anchored ships, a distinct advantage for a ship chandler, Hoff relocated to 27 Sacramento Street at a new wharf fronting Davis Street (Baird 1967, Figure 137; Bonnard 1852:32). Hoff and Owner's ship chandlery and ship and steamboat stores business was advertised in a broadsheet in 1852 for "First Class Business Houses in San Francisco" (Figure 4-1; Bonnard 1852:32).

Harbor Master

The fire that destroyed Hoff's store in 1851 also destroyed the office of the city's Harbor Master on the second floor of the store. The Harbor Master was an elected official who assigned berths and kept order within the crowded port. The navigational instruments recovered from the site may be associated with the second story office of the city's second Harbor Master George Simpton. San Francisco's first elected Harbor Master, James Hagan, kept offices at Commercial Wharf and Clark's Point (Kimball 1850:129). Apparently, financial ruin caused by having personally to fund his position forced Hagan from office at the first part of 1851. The next Harbor Master was George Simpton, who had been an outer-bar pilot on board the schooner *Rialto* in 1850 (Kimball 1850:128). On March 28, 1851, Harbor Master Simpton moved his office, serving notice:

For the convenience of ship masters, merchants, and others connected with shipping, an office has been opened at Messrs. Hoff and Owner's store, on the wharf at the foot of Sacramento St., where all orders and applications may be left at any hour of the day. The Harbor Master can be found at this office between the hours of 10 and 12 N, and at the office on Cunningham's Wharf from 3 until 5 PM, and at his dwelling on the wharf, foot of Broadway, at all other hours. Geo. Simpton, Harbor Master (*Alta California* 3/31/1851).

One of the few architectural remnants from the Hoff Store site was a trapdoor and staircase encountered in Unit 2N. The trapdoor and staircase led to the water and, most likely, a Whitehall boat or two tied up to the pilings, allowing the proprietors and the Harbor Master to descend quickly to the water and row out under the Battery Street wharf to a waiting vessel.

The destruction of his office did not deter Simpton from remaining at Howison's Pier, however. When Hoff and Owner rebuilt, Harbor Master Simpton remained a tenant. The October 1, 1851, "Regulations of the Harbor and Port of San Francisco" lists Simpton's "Offices, on the corner of Sacramento and Davis streets, at Hoff & Owner's Ship Chandlery Store, near Long Wharf." By 1852, however, the Harbor Master's job and office

again changed; W. T. Thompson, with offices at 21 Pacific Street, was also listed as Harbor Master in the 1852–1853 edition of the *San Francisco City Directory* (Parker 1852:A10).

COMPARING THE HOFF STORE SITE ASSEMBLAGE TO THE ARCHIVAL RECORD

The artifacts recovered from the Hoff Store site represent its maritime nature. Contained within a ship chandlery, the goods were intended for ship-board use and reflect maritime culture, specifically outfitting trade practices, in the mid-19th-century market of Gold Rush San Francisco, a decidedly “maritime” town. The maritime cultural value of the artifacts and site is confirmed not only by the breadth of the assemblage recovered from the chandlery but also by the archival record.

The surviving catalog of Hoff and Owner’s competitor, Folger and Tubbs, offers a unique glimpse of the stock of a San Francisco ship chandler during the Gold Rush (Figures 4–2, 4–3, 4–4). It also serves as a guide to many of the artifacts excavated at the Hoff Store site. The principal partner in the firm, Capt. William H. Folger, established the business in the Fall of 1850 with 22-year-old Alfred A. Tubbs, recently arrived from Concord, New Hampshire. Folger and Tubbs built a store at No. 49 Pacific Wharf, close to what would ultimately be the intersection of Pacific and Front streets. A catalog, ca.1851, of their stock listed them on the Pacific Street wharf as “Importers and Dealers in Ship Chandlery, Ship Stores, Steamboat Stores, and Naval Stores . . .” (Folger and Tubbs n.d.). Goods were listed under various headings including: “Ship Chandlery;” “Sail-makers’ Stores;” “Carpenters’ Tools;” “Paints, Oils, and Naval Stores;” “Steward’s List, Ship Stores;” and “Engineers’ List” (Folger and Tubbs n.d.:2,8,9,12,14,17). Although they specialized in the sale of cordage, goods ranging from gin wheels to elephant oil were offered for sale (Folger and Tubbs n.d.:2,16). As one historian noted, the Folger and Tubbs catalog listed, in short, “every conceivable item a ship would need to operate” (Ryder 1954:20).

FOLGER & TUBBS,

IMPORTERS AND DEALERS IN

SHIP CHANDLERY,

SHIP STORES,

STEAMBOAT STORES,

AND

NAVAL STORES,

No. 49 PACIFIC WHARF,

SAN FRANCISCO.

FIGURE 4–2. Cover of the Folger and Tubbs (n.d.) catalog, ca.1851. (Courtesy of San Francisco Maritime N.H.P.).

CONCLUSION

The archaeological documentation of the Hoff Store site and the archival record associated with the activities of ship chandlers in Gold Rush San Francisco demonstrate that the business and commodities attendant to provisioning and outfitting vessels at that place and time coincidentally reflected the basic nature of supply by ship in Gold Rush California. The business of supplying those vessels in a harbor clogged with historically-reported “abandoned” ships points to an actual booming port and

SHIP CHANDLERY.

Manilla Rope,
Hemp Rope,
Bolt Rope,
Cotton Rope,
Hide Rope,
Ratline,
Spunyarn,
Marline,
Housline,
Wormline,
Anchors,
Kedges,
Cables, Hemp,
 " Chain,
Hawsers,
Steering Wheels,
Ship s Bells,
Binnacle Bells,
Patent Friction Bushings,
Iron Bushings,
Hoisting Chains,
 " Winches,
Gin Wheels,
Sheet Copper,
 " Lead,
Bar Lead,
Sheet Zinc,
Composition Sheath Nails,

FIGURE 4-3. Second page of the Folger and Tubbs (n.d.) catalog showing "Ship Chandlery" items. (Courtesy of San Francisco Maritime N.H.P.).

14

Bread Knives
Cook's “
Cullender.
Dredging Boxes.
Pepper. “
Cook's Spoons.
Skimmers.
Cook's Axes.
Hatchet.

SHIP STORES.

Beef.
Pork.
Pilot Bread.
Navy “
Hams.
Lard.
Butter.
Cheese.
Smoked Beef.
Coffee.
Cocoa.
Chocolate.
Hyson Tea.
Young Hyson Tea.
Black Tea.
Crushed Sugar.!
Powdered “
Brown “
Molasses.
Vinegar.
American White Beans.
Chili Beans.
Split Peas.
Carolina Rice.
China “

maritime activity that responded to economic and social dynamics demanding regular supply, available only by ship. Thus, the pervasive nature of supply during the Gold Rush was maritime.

Nearly any imaginable item could be found aboard a merchant vessel of the mid-19th century—as indicated by the catalogue of Folger and Tubbs, the ship provisioning account from Crosby, Crooker & Company, and the assemblage from the Hoff Store site, the first ship chandler's establishment to be excavated, documented, and analyzed archaeologically. The goods sold by Hoff and Owner provide a unique opportunity to assess the social and economic aspects of a maritime subculture in a city that depended upon the sea for its existence.

The assemblage from the Hoff Store site can also be assessed against maritime archaeological returns from shipwreck sites and provides useful identifications for other goods that might otherwise be ascribed as cargo. The assemblage tends to confirm the potential significance of shipwreck archaeological sites as encapsulated, microcosmic, and yet distinctly use-filtered versions of the parent culture ashore.

Reliance solely upon historical documents may lead to the positing of faulty historically-derived research questions. The popular concept of a “forest of masts” from abandoned vessels and a harbor relegated to derelict ships is not correct and reflects a romantic view of a “gold-maddened” society. The commonly cherished image of the Gold Rush migration coming overland reflects the means by which half the people, but basically none of the goods and provisions, arrived. The needs of supply and demand and the importance of an active port are indicated by vessel departure records in the contemporary press and in the assemblage of the Hoff Store site. Of greater significance, however, is the demand and heavy use of maritime goods in the Gold Rush. A maritime migration and the necessities of “frontier” life in the mining camps combined to transfer the commodities of one subculture into the common culture of Gold Rush California. When viewed from a maritime perspective, the true nature of the Gold Rush is apparent; it was first, foremost, and always a maritime event.

FIGURE 4-4. Fourteenth page of the Folger and Tubbs (n.d.) catalog showing “Ship Stores” goods. (Courtesy of San Francisco Maritime N.H.P.).

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GOLD RUSH CONSTRUCTION

Construction Hardware from Gold Rush San Francisco

INTRODUCTION

The onset of the California Gold Rush in 1849 created an immediate demand for building sites and buildings in San Francisco. Bay-side space on this peninsula was limited by steep hills, sand dunes, and marshes. Additional complicating factors included a scarcity of building materials, threat of fire, and the loss of the labor force to the gold fields. Among the solutions to these boom-town problems were construction over water, balloon-frame construction, and the use of prefabricated structures.

By 1851 the San Francisco embarcadero consisted of over a mile of wharves and piers supporting an assortment of imaginative structures (Taylor 1850, 1:52). Pilings functioned as foundations for planked thoroughfares, building, and docks. Howison's pier ran east of Leidesdorff Street on the alignment of present-day Sacramento Street. In 1849, this pier extended 1100 ft. into the Bay and was up to 40 ft. wide; at high tide it stood 14 ft. above water (Figure 5-1; Barry and Patten 1947: 61; Soulé et al. 1855:292).

None of the original superstructures from the Hoff Store site survived the fire or, possibly, subsequent salvage operations. Inferences as to the store's construction are based upon photographic, archival, and archaeological data. The Hoff Store is believed to have been one of a group of five iron structures, probably prefabricated buildings, located on a water lot on the south side of Howison's pier (Bancroft 1888:204). The hardware assemblage from the Hoff Store site contained a variety of materials and tools reflecting Gold Rush construction practices.

Prior to the Gold Rush, San Francisco was a small sea port populated by about 900 people living in a variety of wooden structures and adobes (Kirker 1960:29; Soulé et al. 1855:188). Some of these structures utilized traditional, timber-framed construction assembled with mortise and tenon joints (Kirker 1960:28). Skilled carpenters needed for this work had arrived by at least 1846 as part of a Mormon mission from New York state, and, in 1847, 26 carpenters were enumerated in the city (Soulé et al. 1855:178). Building sites were readily available on gently sloping ground around Yerba Buena Cove. This situation drastically changed in late 1848 when the flood of immigrants began to strain all existing resources, especially vacant buildings and the availability of likely building sites. Despite this explosive population growth, construction on the surrounding hills was avoided by the early-day builders (Lotchin 1974:15). Instead, developers looked to the Bay.

After the Territory of California sold its claim to the city's shoreline in 1847, it was legally possible for citizens to expand the city into San Francisco Bay on so-called "water lots" (Soulé et al. 1855: 180-184; Lotchin 1974:62). Beginning in May 1849 wharves and piers were constructed over the Bay, and by 1850 structures built on pilings fronted these landings (Soulé et al. 1855: 290-292). An impressive, bustling business district developed on the water lots (Lotchin 1974: 16-17). These buildings, and others on dry ground, however, were quite different from those of established cities on the east coast. Instead of substantial brick, stone, or heavy-framed wood buildings, balloon-framed wooden buildings and iron- or wood-framed sheet metal buildings promoted San Francisco's rapid urban development. The balloon-frame building technique utilized a large number of narrow studs joined by nails to create a structure's frame. This method was coincident with the growth of the machine cut nail industry and refinement of lumber-milling saws. Prior to these developments, hand-wrought nails were a relatively expensive fastener and large quantities of framing lumber were relatively more

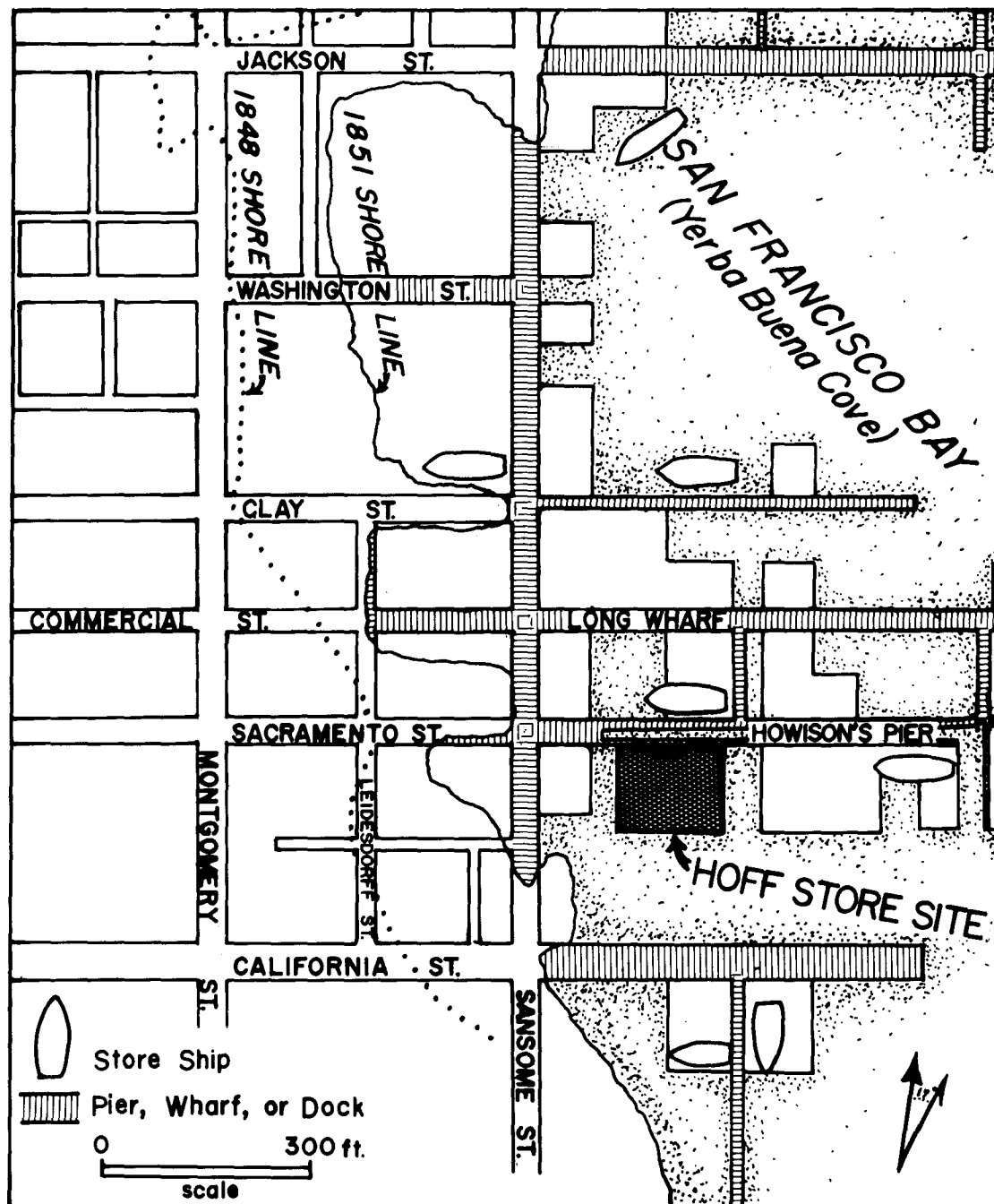


FIGURE 5-1. Map of San Francisco Embarcadero in 1851 showing extent of land fill and piers.

expensive than a few large framing timbers. It was also said that common laborers could easily erect a balloon-frame house because driving nails was the only major skill required (Giedion 1967:349). Balloon-frame and iron-frame types of building construction were ideally suited to Gold Rush San Francisco where "carpenters" were often unemployed clergymen, accountants, physicians, and lawyers (Kirker 1960:31).

Another advantage of both balloon-frame and iron-frame buildings is that the major components could be partially assembled outside California in areas where labor and raw materials were more readily available. These prefabricated structures, termed "prefabs," were a popular item shipped from the east coast, Europe, Australia, and China (U.S. Customs Service 1849–1851). In mining camps these structures were also valued because they could be disassembled and moved, or moved intact when economics dictated relocation elsewhere.

Prefabs could be purchased in a variety of shapes and sizes, and some could be assembled in a single day by common laborers. Iron- or wood-framed buildings up to three stories high included churches, saloons, hotels, warehouses, stores, and houses (Marryat 1855:190–192). Bayard Taylor noted a newcomer's amazement at the rapidity with which prefabricated structures were assembled:

He walks over an open lot in his before-breakfast stroll—the next morning, a house complete, with a family inside blocks up his way. He goes down to the bay and looks out on the shipping—two or three days afterward a row of store houses, staring him in the face, intercepts the view (Taylor 1850, I:110).

The shortcomings of prefabricated iron and wooden commercial buildings soon overcame their popularity, especially after the May 3–4, 1851, fire. Wooden buildings offered no protection from fire and were responsible for the rapid spread of fire throughout the business district. This fire also demonstrated that corrugated iron prefabs offered little resistance to fire and, when burned, collapsed into a twisted mass. These buildings left a laborious, time consuming mess to clean up. It cost \$9000 and took several weeks to cut up and haul

away the burned, twisted ruins of a warehouse that had collapsed in the Fifth Great Fire (*Alta California* 5/29/1851). Other reasons for the decline in the popularity of the pre-fabricated iron buildings included their lack of insulation and noise inside during rainstorms (Marryat 1855:190).

The construction of wooden or sheet metal commercial buildings was partially encouraged by the merchants' knowledge that several hastily constructed buildings were still less expensive than one of fire-proof brick or stone (Soulé et al. 1855: 610, 613). Although wooden structures were a recognized fire hazard, the city government did little to restrict their construction in the downtown commercial district until 1852 (Lotchin 1974:11, 178). By this time the California clay brick industry was well established, and brick buildings supplanted both sheet iron and wood construction in the downtown commercial district (Kirker 1960:60).

ARTIFACTS FROM THE HOFF STORE SITE

Various tools and fasteners recovered at the site were probably used in the 1850–1851 construction of Hoff's store and Howison's pier. Some other items represent retail merchandise for use in construction. Distinguishing between the unused store merchandise and the used hardware was easy in some instances—such as unused rolls of wall covering, bundles of shovels, boxes of tacks, and kegs of nails. Items believed to be used in building and pier construction include hinges with attached screws, spikes with wood adhering to the shank, clinched nails, and worn tools. In many cases, however, the status of the artifact is unknown.

Tacks

Four hundred and seventy-seven copper carpet tacks were recovered from a single feature. These fasteners have flat heads that are circular in outline. Two general lengths are represented, 7/8 in. and 5/8 in., although there is considerable variation in actual dimensions (Figure 5–2g). The shafts taper from the base of the head on two op-

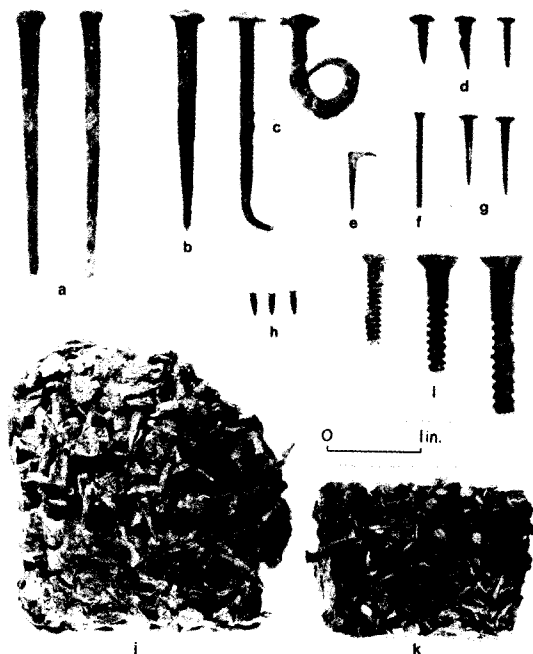


FIGURE 5-2. Fasteners: (a) cut nails; (b-c) wrought nails; (d) iron tacks; (e) L-head tack; (f) preform for copper tack; (g) copper tacks; (h) Chinese pointed-tipped screw; (i) flat-tipped screw; (j-k) iron tacks fused in shape of container.

posing sides and taper from the midpoint of the shank on the other two sides to produce extremely sharp tips. The bottom of the head and upper portion of the shank exhibit seam lines from the heading operation. Two aberrant specimens may represent tack blanks. One of these specimens is similar to the shank of a cut nail, slightly tapered with two opposing shear faces. The other specimen has a similar shank and a small head with seams (Figure 5-2f). It resembles cut finish nails, although details of the head differ. The completed tacks probably began as blanks sheared from sheet copper. These blanks were then fed into a two-piece die and then stamped to produce the desired head and shank configuration.

L-head tacks appear to be stamped from iron sheet into this unusual shape (Figure 5-2e). This manufacturing method differs from the Chinese L-head nails produced from square nail rod and

headed by merely bending one end and flattening it slightly (Mercer 1960:244). Head length for the Hoff Store site specimens averages $1/4$ in., and shank length averages $5/8$ in. The square shanks are $5/64$ in. in diameter.

Iron carpet tacks possess manufacturing attributes similar to those exhibited by the copper tacks (Figure 5-2d). Three sizes of tacks are represented. They have overall lengths of $5/16$ in., $9/16$ in., and $5/8$ in. Several boxes of these carpet tacks are fused in masses preserving the shape of the packaging (Figure 5-2j-k). In one instance the remnants of the cardboard box and string tie were preserved (Figure 5-2k). The box size for the small tacks is $2\frac{1}{3} \times 1\frac{5}{8}$ in. \times $7/8$ in. high (Figure 5-2k). The intermediate size tacks came in a box $2\frac{1}{2} \times 2\frac{1}{2}$ in. \times $1\frac{1}{2}$ in. high. The larger size tacks were contained in a box that measured $3 \times 3\frac{1}{4}$ in. \times $1\frac{3}{8}$ in. high (Figure 5-2j).

Nails

The machine-cut nail was the most common fastener in use at the time of site occupation (Figure 5-2a). In addition to the cut nails used in building construction, a number of kegs of 10d (3 in.) cut nails were contained in the store. Several nail masses preserve the shape of the keg, but the majority of these nails was fused into a large low mound of oxidized iron. Approximately 2700 cut nails (not including fused nail masses) dominate the fastener assemblage. Cut nails range from 2d (1 in.) to near spike-size <20 d (4 in.). The head and shank vary according to the nail type represented.

Twelve wrought nails were recovered with both clinched and unclinched shanks. These specimens have a square shank that tapers on four sides to a sharp point (Figure 5-2b). Length of the specimens varies between $2-2\frac{5}{16}$ in. The heads were formed by four or five blows to create the "rose-head" pattern. One specimen has a spiral clinch, two have "U"-shaped clinched shanks and three are bent at the tip (Figure 5-2c).

Although more expensive to produce than cut nails, clinchable, wrought nails were suited for use

in securing parts subject to warping, vibrations, jarring, and continual movement. Among the architectural components benefiting from clinched nails are door battens, window shutters, hinges, and door latches. Cut nails produced prior to 1840 were too brittle to be successfully clinched because the iron's crystalline structure (grain) was oriented perpendicularly to the shank. With the invention of the Burden rotary squeezer in 1836, a wrought iron nail plate was first available for production of clinchable cut spikes and horseshoe nails (Loveday 1983:18, 20).

A few of the cut nails from the Hoff Store site collection are clinched, demonstrating the probable use of a nail plate from a Burden squeezer. Another means of producing clinchable cut nails, apparently introduced about 1871, was to anneal them after manufacture (Fontana and Greenleaf 1962:53). This process creates a non-aligned crystalline structure and would significantly reduce the hardness of the finished product.

Spikes

Both hand-wrought and machine-cut spikes are represented in this collection. Spikes were generally considered to have a shank length greater than or equal to four inches. Other factors were also used in categorizing spikes including mode of manufacture, head type, and raw material.

The most common spike found at the Hoff Store site is the hand finished square shank spike often called a boat spike (Figure 5-3b-d). These spikes have a square shaft diameter of $\frac{3}{8}$ in. and taper on two sides to form a chisel point. The heads are usually faceted and range in profile from high-topped squared heads (Figure 5-3d) to low rounded heads (Figure 5-3b). In most instances the spike head has four lateral facets forming a raised "rosehead." These spikes were probably manufactured from square stock, cut to length, and then headed and forged on two sides to a point. Head diameters varied with the force used to form the head but average $\frac{19}{32}$ in. in diameter. The lengths of the spikes range from $4\frac{1}{5}$ – $8\frac{3}{4}$ in. Spikes with chisel-shaped points may have been



FIGURE 5-3. Spikes: (a) threaded spikes; (b-d) wrought spikes; (e) cut spikes.

intended for use on hardwood and driven with the point running parallel to the grain to prevent splitting (*Encyclopedia Britannica* 1853:771). Some of the spikes have wood adhering to the shank, probably reflecting their use in pier or building construction (Figure 5-3c).

Cut spikes are differentiated from cut nails by their length (Figure 5-3e). The various attributes of production vary little between nail and spike fasteners. Cut spikes range in size between 4–6 in.

Threaded Spikes

Nine large spikes with square shanks taper to a point on one end and taper to a threaded shank on the other (Figure 5-3a). These artifacts are represented by two sizes, $10\frac{3}{8} \times \frac{3}{4}$ in. and $12\frac{1}{4} \times 1\frac{1}{8}$ in. The threaded ends for these specimens are 1 in. long by $\frac{1}{2}$ in. in diameter and $1\frac{1}{4}$ in. long by $\frac{5}{8}$ in. in diameter, respectively. The nut size

for the smaller spike is 1 in. and 1 1/8 in. for the larger. These specimens may exhibit use-wear from being driven into wood by placing a collar over the threaded end of the spike to protect the threads, and then striking the collar to drive the spike into place. Once driven into wood, the space between the upper tapered end of the shank and the wood may have been filled with pitch or tar further to secure the spikes and seal the hole. Two specimens have wood fragments adhering to the iron reflecting their possible use in pier or building construction. These spikes probably served as studs to secure a strap or base plate to a post or piling.

Screws

Eighteen iron flat-tipped wood screws with slotted heads were analyzed (Figure 5-2i). Shank lengths range from 15/16–1 7/8 in. Head diameters range from 3/8–1/2 in. Although all of the screws are flat-tipped, two specimens taper slightly toward the blunt end of the shank (Figure 5-2i, center). The remainder of the screws have an untapered shank terminating in a flat end. Flat-tipped screws required a preliminary hole drilled by a gimlet before the screw could be driven into the wood. The machine-pointed screw, patented in August 1846, ended the need to drill a relatively wide starter hole to drive a screw (Mercer 1960:256). Prior to that date some flat-tipped screws were pointed by hand.

Although Mercer (1960:256) believed that the transition from flat-tipped screws to machine-pointed screws was sudden and widespread, the Hoff Store collection reveals otherwise. The presence of gimlets as well as flat-tipped screws indicates that these older types of screws were in use in 1851. There are several possible explanations for this finding. The screws could have been from artifacts constructed prior to 1846. The transition from flat-tipped to pointed screws may also have occurred differentially, especially with European manufacturers.

Although the California Gold Rush frontier supposedly received the best and most modern tools and implements available, there were exceptions. Firearms comprise a class of objects which could

be used over a long period of time. Several of the Hall's carbine iron butt-plates were attached to the stock with untapered flat-tipped screws. It is most likely that these screws were used on the North-Hall Model 1843 specimens that dominate the identifiable carbine assemblage (see Delgado, Pastron, and Hattori, this volume). Although these firearms were produced until February 1853, the 1844 production date on one specimen supports the notion that these represent Mexican War surplus.

Furthermore, the need to adopt the pointed screw may not have been as pressing as Mercer (1960:256) believed. Although the pointed screw could be started by tapping it with a hammer and then screwing it into the wood, gimlets continued to be used with wood that is prone to splitting. It is possible that the pointed screw was not perceived as a revolutionary invention but only as a minor improvement on an existing design. There may also have been other factors involved with the change to the pointed screw manufacturing machinery. These would include economic, labor, and patent considerations. The use of flat-tipped screws may have continued for some time after 1846 until they were gradually replaced by the pointed screw (Roberts 1978:15).

San Francisco received a goodly portion of its supplies from Europe, including prefabs and building components. The United States was an international leader in manufacturing innovation during the second half of the 19th century, and European counterparts may not have been as quick to adopt pointed screw manufacturing machinery. A lag of more than five years could have occurred for the European changeover to the American equipment.

Approximately 50 1/4-in.-long brass fasteners with threaded points and unthreaded shanks were recovered (Figure 5-2h). The slightly flared, flat heads are indented with a shallow slot. These screws, which are believed to be of Chinese manufacture, were used to affix brass edging to a number of nested wooden boxes.

Bolts

Thirty-four 5 1/2-in.-long wrought iron carriage bolts have 15/16-in.-diameter heads inclined 25



FIGURE 5-4. Bolts: (a) carriage bolt with inclined-head; (b) square-head bolt with inclined-head; (c) flange-head bolt; (d) carriage bolt with square shank; (e) square-head bolt.

degrees (Figure 5-4a). The round shanks are 5 1/8 in. long and 7/16 in. in diameter. The length of the threaded section of the bolt is 2 11/16 in. with 12 threads per inch. Attached to each bolt is a 7/8-in.-square nut and 1 1/16-in. washer.

Three inclined-head bolts, 5 1/2 in. long, have square heads 1 in. in diameter (Figure 5-4b). The offset for the head is 33 degrees. The round shanks are 5 1/4 in. long and 1/2 in. in diameter. The threaded area extends for 1 1/2 in. and contains 12 threads per inch. Large rectangular nuts for these bolts are 1 5/8 × 2 3/8 in.

Four carriage bolts have 7/16-in.-square shanks between the head and the threads (Figure 5-4d). They range in overall length between 4 5/16–6 11/16 in. The corresponding shank lengths range between 4–6 1/2 in., respectively. These specimens also have 12 threads per inch. The heads are 1 1/4 in. in diameter, and the nuts are 1 in. in diameter. Two of the longer specimens have a crudely-made triangular washer that measures two inches across the longest side.

Another bolt type is represented by 16 specimens with a flanged, tapered square head (Figure 5-4c). Fifteen of these measure 5 15/16 in. long with 5 1/4-in.-long shanks that taper to a point. One specimen has an overall length of 7 5/8 in. The shank diameter is 7/16 in. The threads extend from the point for 2 13/16 in., and there are 12 threads per inch. The heads have a domed flange 15/16 in. in diameter merging into a square head

that tapers from 7/16–5/16 in. across the flat. This bolt may have required a special socket or wrench with a tapered opening to secure it onto the nut. The nut for these specimens is 7/8 in. in diameter.

Four 3/4-in.-square-head bolts with 3/8-in. round shanks and lengths from 2 1/2–2 5/8 in. were recovered (Figure 5-4e). The threads extend for 1 in. from the tip, and there are 12 threads per inch. The associated nuts are 3/4 in. and vary in thickness from 7/8–11/16 in.

Hinges

The 20 hinges recovered range in size from large spiked strap hinges to small butt hinges. The collection includes both loose-joint and fast-joint hinges. A loose-joint hinge has a fixed hinge pin on one side. The opposing leaf slips over the pin allowing easy removal of the door. The fast-joint hinge is usually comprised of two leaves and a hinge pin. The two leaves pivot on a pin that is affixed to the hinge by peening the ends of the hinge pin.

A minimum of four cast brass, fast-joint T-hinges were distributed throughout the site (Figure 5-5f; see Delgado, this volume). These were probably used in building construction and were 12 × 6 × 1/4 in. thick. The jamb-ends of the specimens are badly burned but appear to have been a ram's horn or Y-shape with five beveled screw holes. The tapered door-end portion has four beveled screw holes. The outer edges are beveled, and exposed surfaces have been filed smooth. The hinge pin was 5/16 in. in diameter. One broken flat-tipped iron screw and the remnants of another iron screw are associated with the hinges.

Three loose-joint iron hinges have a spike fastener and pin on the jamb-end and a strap leaf on the door-end (Figure 5-5g). Two specimens have an over-all length of 11 1/2 in., including a 2 1/2-in.-long spike. Pin dimensions are 1 5/8 in. long by 3/8 in. in diameter. The strap has four beveled screw holes and tapers to an expanded circular end.

A 7-in.-long L-shaped hinge bracket is the jamb-end and pin for a large loose-joint hinge (Fig-

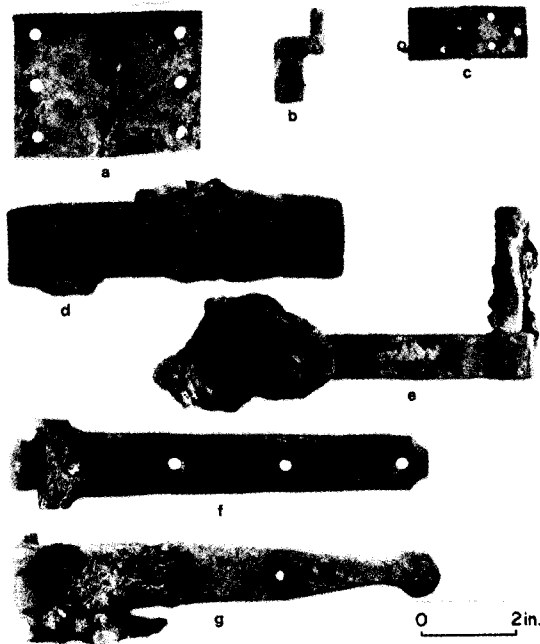


FIGURE 5-5. Hinges: (a) iron fast-joint hinge stamped "3 1/2 x 4;" (b) iron loose-joint hinge; (c) iron fast-joint hinge (note clinched wrought nails); (d) forged iron hinge leaf; (e) forged iron spike-hinge pin; (f) brass fast-joint hinge leaf; (g) iron loose pin spike-hinge.

ure 5-5e). The spike fastener is $7/8 \times 9/16 \times 6$ in. long. The hinge pin dimensions are $2\frac{1}{2}$ in. long by $3/8$ in. in diameter. This specimen was hand-forged from a single piece of iron strap bent around $3/8$ -in.-round stock.

An iron hinge strap from another unit corresponds in manufacturing technology to the preceding hinge bracket, although the pin sizes do not correspond (Figure 5-5d). This $6\frac{3}{4}$ -in.-long specimen is made from $1\frac{1}{2} \times 1/4$ in. flat strapping bent around a $1/2$ -in.-diameter mandrel to form the joint. The strap is perforated by two or three $3/8$ -in.-diameter holes.

A small cast iron fast-joint hinge pin and leaf assembly is atypical for construction hardware (Figure 5-5b). This piece is 2×1 in., including the $5/8$ -in.-long by $5/16$ -in.-diameter hinge pin. The leaf is perforated by a single beveled hole.

A $11\frac{1}{2}$ -in.-long fast-joint iron strap hinge was associated with three flat-tipped iron screws. The

jamb-end is $3 \times 1\frac{11}{16}$ in. and is perforated by four beveled holes. The door-end was $8\frac{1}{2}$ in. long and was probably perforated with four beveled holes. The spacing of the holes is uneven. Manufacture was from thin $1/8$ -in.-gauge strapping bent around a $3/16$ -in.-diameter pin and forge welded back onto itself. The ends of the pin were peened to fix it in place.

Two 3×4 in. fast-joint iron butt hinges were collected (Figure 5-5a). The hinge size "3 x 4" is stamped with $3/8$ -in.-high numbers on the back side of one leaf. The front side of this leaf is stamped with the maker's name: "THO_s (indeterminate) COV," and other indeterminate lettering that may have indicated the manufacturer's location. Each leaf has three aligned countersunk holes.

A $3\frac{5}{8} \times 3\frac{1}{2}$ in. fast-joint iron butt hinge was also recovered. The middle beveled hole in each leaf is slightly inset. A flat-tipped screw is associated with this hinge.

Four cabinet-size, fast-joint iron butt hinges are $1 \times 1\frac{1}{2}$ in. Two specimens retain flat-tipped iron screws, and a single specimen has two clinched wrought nails (Figure 5-5c). The latter specimen is made by forming each leaf from a thin piece of strapping bent completely back upon itself around a hinge pin mandrel. The resultant hinge has two-layered leaves. On the other specimens only the end of the leaf is bent around the hinge pin. All specimens are perforated by three beveled holes.

Small, narrow, brass fast-joint butt hinges may have been used on box lids. One specimen is $1\frac{3}{4} \times 1$ in. The other specimen is $2\frac{15}{16} \times 1\frac{7}{8}$ in. Both specimens are cast brass with three beveled holes. The smaller specimen has the letter "B" on one leaf. A flat-tipped iron screw also is attached to this leaf.

Mortise and Tenon Plates

At least 14 pairs of iron plates, one with a mortise cut-out and the other with a corresponding tenon bar were probably used in building or pier construction (Figure 5-6). The base plate for each

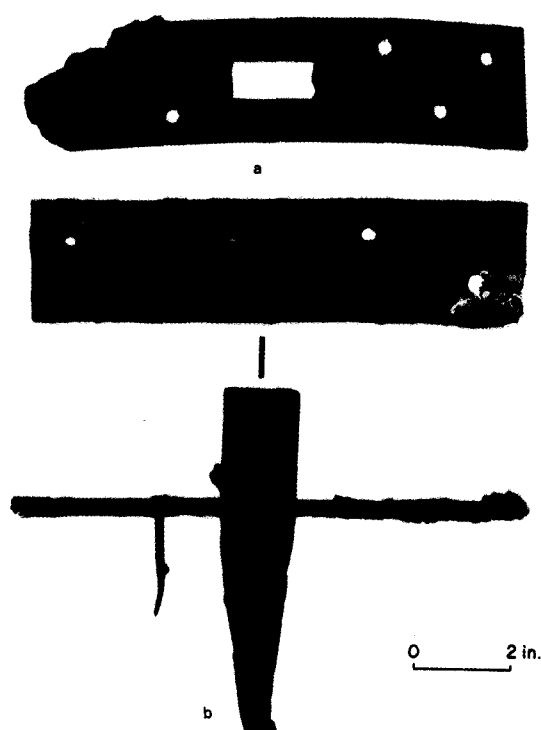


FIGURE 5-6. Mortise and tenon plates: (a) curved mortise plate; (b) tenon plate (note wrought nail).

piece is $11 \times 1 \frac{1}{2}$ in. and perforated by six $\frac{3}{8}$ -in. mounting holes. The plates were fabricated from $2 \frac{1}{2}$ -in.-wide, $\frac{1}{4}$ -in.-thick strapping that was cut to length with hammer and cutter or hardie. Several wrought nails, some clinched, are still attached through punched holes.

The tenon plate is distinguished by the attachment of an iron bar, squared on one end and tapered on the opposite end (Figure 5-6b). The bar is firmly wedged into the plate. This was probably accomplished by heating the plate, inserting the unheated bar, and then allowing the plate to cool and shrink around the bar. The edges of the tapered end of the tenon bar were notched with a chisel during manufacture leaving a low barb oriented away from the pointed end. The tapered tenon bar was probably driven through the wood until the plate was flush with the surface. The projecting

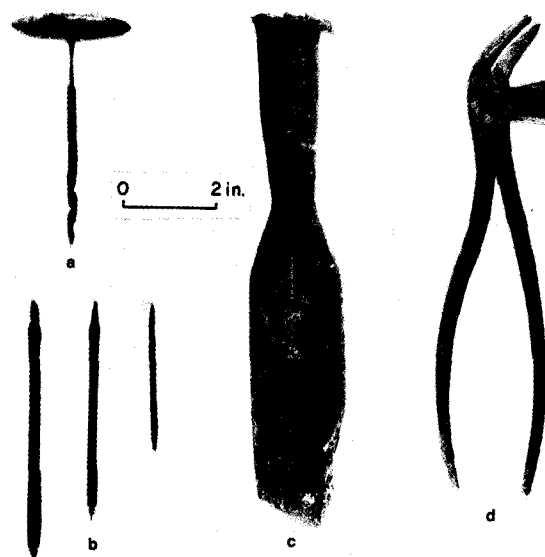


FIGURE 5-7. Tools: (a) spiral gimlet with iron handle; (b) cylinder gimlets; (c) framing chisel; (d) alligator nose pliers.

tapered end was clinched and the plate was nailed down.

The mortise plates are slightly curved to flat (Figure 5-6a). The rectangular perforation, $1 \frac{11}{16} \times \frac{13}{16}$ in., is slightly larger than the tenon bar. A flat mortise plate is still attached to a charred fragment of lumber estimated to have been at least $5 \times 2 \frac{1}{2}$ in. thick.

Forming Chisel

A forming chisel lost its wooden handle sometime prior to deposition (Figure 5-7c). This chisel is $10 \frac{1}{2} \times 2$ in. maximum width. The thickness of the chisel near the cutting edge is $\frac{1}{8}$ in. The estimated maximum inside diameter of the socket is 1 in. The edge of the socket is peened outward where it has been struck with a metal tool. The blade also reflects considerable misuse. The lower, lateral edge of the chisel blade was hit with a metal tool, and the opposing corner of the tip broke off. A maker's mark is stamped into the blade. Although the mark is barely discernible, it

is surmised that the mark reads: "J.N. PERRY". A chisel of this size is well suited for jointury in building-timbers and roofs. The wood handled forming chisel was commonly employed by carpenters or jointers to cut a mortise when used in conjunction with an auger (Mercer 1960:163, 165).

Gimlets

Gimlets are diminutive one-handed augers used to drill small diameter holes, such as those required for the flat-tipped screw (Mercer 1960:202–203). Sixteen specimens were recovered, representing two basic styles—cylindrical and spiral.

Twelve cylindrical gimlets have a tapered, threaded point with a right-hand twist to start the hole (Figure 5–7b). Cutting the hole is accomplished by the sharpened leading edge of the cylindrical, troughed lower portion of the tool that extends between about one-quarter to one-third the length of the shaft. This trough is slightly flared to prevent the upper portions of the shank from binding in the hole as it is being drilled. The trailing (non-cutting) edge of the gimlet is sharp in the single, well-preserved specimen. This specimen also exhibits resharpener of the leading, cutting edge by grinding or filing the outer surface of the trough area. The cylindrical gimlets are graduated in size from 5/16–5/32 in. maximal diameter. The shaft lengths vary from 5 5/16–3 3/8 in. The ends of the shanks are flattened and tapered. One specimen retains a lozenge-shaped wooden handle. The handle was secured to the shaft by inserting it through the handle and then bending the flattened, tapered shaft end 90 degrees.

Four twisted gimlets are distinguished by the spiral cutting portion of the tool at the lower one-third of the shank (Figure 5–7a). Unlike the spiral auger, these gimlets cut a hole with the sharpened edges of the spire (Mercer 1960:Fig. 178). The cutting portion of the tool has a slightly larger diameter than the shank. Two specimens, 4 in. and 4 1/8 in. long, respectively, have a 3/16-in.-diameter spiral cutting area. The shank is 5/32 in. in diameter. Two other specimens, both 4 1/3 in.

long, are badly rusted and encrusted with iron cemented sediments. The estimated diameter for the cutting area of these specimens is 3/16 in. Three specimens retain lozenge-shaped iron handles. A flattened, tapered shank is partially visible at the bottom of one handle. The specimen lacking a handle has a flattened, tapered end for insertion into a handle or bit. It was probably attached to a handle as the end is slightly peened.

Alligator Pliers

A pair of forged, box-joint alligator pliers was recovered from the site (Figure 5–7d). This tool serves both as pliers and as a hammer. The pliers nose is curved, and the jaw surfaces are grooved. The curved nose was used for leverage in bending and pulling. These pliers are well suited for clinching nails by cabinet makers and by cordwainers (McRaven 1981:166). A squared, flaring projection on the convex surface of the nose functions as a hammer and a fulcrum. The jaw surfaces are damaged from use. The pliers measure 10 in. in length. The fulcrum/hammer head height is 1 in., and the top measures $9/32 \times 3/4$ in.

Open Spiral Auger

A 15 3/4-in.-long open spiral auger was suited to drill holes 1 5/8 in. in diameter (Figure 5–8a). The spiral, right-hand twist section of the auger is 5 7/8 in. long and has one twist per 2.4 in. The intermediate portion of the shank is round, 5/8 in. in diameter, and over 6 in. long. The haft or handle attachment portion of the shank is 9/16 in. square, over 2 3/8 in. long, and terminates in a tapered, flattened end for the last 1 9/16 in. The tip of this end is missing. The auger has a tapered pivot screw 1/2 in. long and 3/8 in. maximum diameter. The single bottom knife and corner-cut blade edges are still reasonably sharp, although badly rusted.

The handle of the auger was turned with two hands. The missing tip of the tapered, flattened end of this tool may have been bent 90 degrees to secure it to a wooden handle. The tapered or

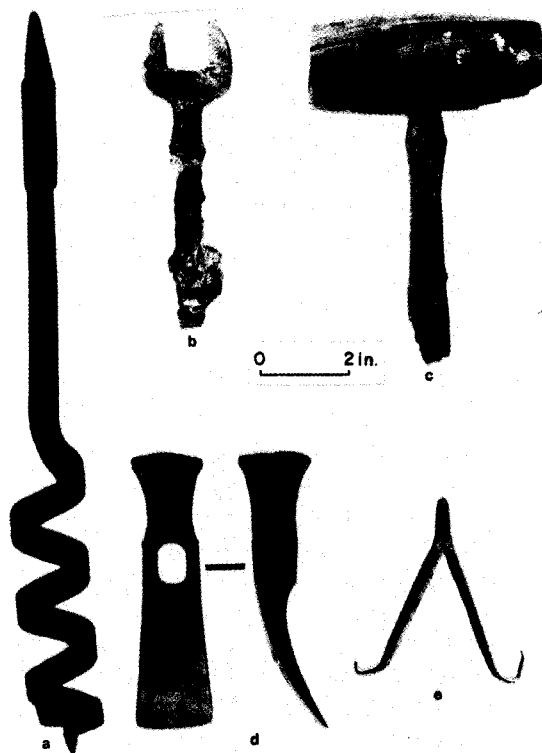


FIGURE 5-8. Tools: (a) open spiral auger; (b) open end wrench; (c) wooden mallet; (d) cobbler's hammer; (e) enigmatic iron object.

square portion of the shank end may alternatively have served as an attachment for a removable handle or bit. The spiral auger was probably introduced into the United States early in the 19th century as an improvement over various types of cylindrical, side-cut augers of earlier centuries (Mercer 1960:200-201). The chief advantage of the spiral auger lies in its ability to raise the wood chips via the spiral shank as it cuts down. Unlike cylindrical augers, the full dimension of the hole was achieved by one or two pairs of horizontal and vertical cutting blades at the tip of the tool.

Wooden Mallets

Two wooden mallets were recovered from the site. One mallet has a head comprised of a squared

section of heartwood $11 \frac{3}{8} \times 2 \frac{5}{8} \times 3$ in. high. The grain runs parallel to the long axis. A turned handle, $10 \frac{13}{16} \times 1 \frac{1}{8}$ in., is inserted in a hole through the center of the head. There are no wedges or pins holding the head to the handle. This tool would have been suitable for use with the forming chisel described earlier. An additional use for similarly sized mallets includes driving wooden pins or treenails into framing timbers or ship hulls.

A smaller, incomplete mallet is formed from a turned head, $5 \frac{1}{4}$ in. long by $2 \frac{3}{16}$ in. diameter, with the grain running parallel to the long axis (Figure 5-8c). An incomplete, $11 \frac{3}{8}$ in. long, turned handle is joined to the head through a central hole and affixed with a wooden wedge. A possible function for medium sized mallets includes use with mortise chisels or gouges.

Hammer Heads

A cobbler's-style hammer head from the site is distinguished from the carpenter's claw hammer by lack of the V-split wedge or claw used to extract nails (Figure 5-8d). The hammer head weighs 15.5 oz. and is $5 \frac{1}{2}$ in. long. The handle eye is $\frac{13}{16} \times \frac{9}{16}$ in. Although called a cobbler's hammer, this tool was just as frequently used by cabinetmakers for finish work (Sloane 1964:23).

A probable hammer head fragment is fused in a mass of sand and charcoal. The hammer head has a grooved, wedge-shaped peen with the edge running parallel to the handle. The maximum width at the eye is $1 \frac{3}{16}$ in., and the reconstructed length of the specimen is $2 \frac{1}{2}$ in. The handle eye dimensions are $\frac{7}{8} \times \frac{1}{2}$ in. This hammer may have been a carpenter's riveting and saw hammer (Mercer 1960:267-268).

Wrench

An open-end wrench is constructed with an offset head and threaded shank for attachment to a separate handle (Figure 5-8b). The jaw would fit square nuts or bolt heads 1 in. in diameter. The $3 \frac{13}{16}$ -in.-long handle shank is threaded (six threads per $\frac{1}{2}$ in.) and shouldered at the base of

the threads. The off-set at the end of the shank is 1 5/8 in.

Indeterminate Fastener, Tool, or Fitting

At least six Y-shaped, 4-in.-long, forged iron objects exhibit a distinctive form and material, but their function remains a mystery (Figure 5-8e). These artifacts appear to be manufactured from two pieces of nail rod that have been forge welded together and then flattened to form a rounded end. The opposite ends of the two rods were hammered to a point and bent into a hook. None of the specimens exhibits any identifiable use wear. Breakage in two specimens occurs at the point of the weld but cannot be attributed to usage.

An identical, unreported, specimen in the National Maritime Museum, San Francisco, was recovered from the store ship *Niantic*.

Lifting Hooks

Two large wrought iron hooks, 8 1/2 in. in length, were recovered. The eye of the hook has a diameter of 2 3/4 in. A rope thimble, 1 3/4 in. wide, is attached to the eye. Lifting hooks could be used for moving cargo or equipment in a variety of settings. These tools would have been useful in cargo transfer between the lighters and the pier, but were also common to ships and found in the gold fields for moving large pieces of equipment.

Snatch Block

A wood, sheaved snatch block has a 5-in.-diameter wooden pulley and a 6 3/4-in.-long swiveling, iron hook (Figure 5-9b). Snatch blocks are typically single pulley blocks, without becketts, that possess open access to the pulley. The snatch block is structurally weaker than conventional blocks due to the gate mechanism in place of a solid strap. The iron gate for the recovered specimen is 5 1/2 in. long, and it is secured by a hasp closure. Overall dimensions are 20 × 6 × 5 1/4 in. thick. The function of this tool is similar to that

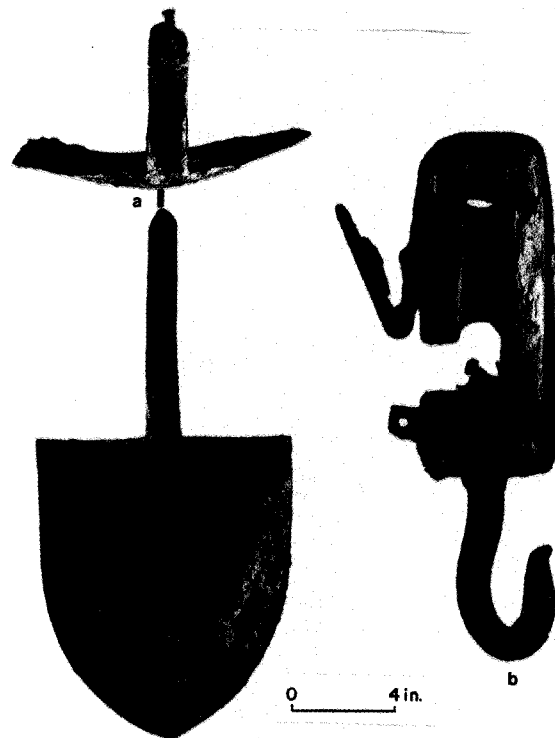


FIGURE 5-9. Tools: (a) pointed shovel; (b) snatch block.

described for the lifting hook. In a snatch block, however, the pulley affords mechanical advantage while the gate provides for convenience of use.

Shovels

A concentration of 133 pointed shovel heads and shovel head fragments was contained within the site. One distinctive style represented by at least 75 specimens is stamped "AMES" (Figure 5-9a). The Ames Co. was founded in 1812 by Oliver Ames at North Easton, Massachusetts (Anonymous 1870:367). These shovel heads have an overall length of 20 1/4 in. The blade portion is 12 × 10 in.

The handle attachment for this shovel was formed by opposing strap shanks that terminate in a socket extending into the blade for about 4 in. Three rivets, two through the strap and one through the pocket at the rear of the blade, secured

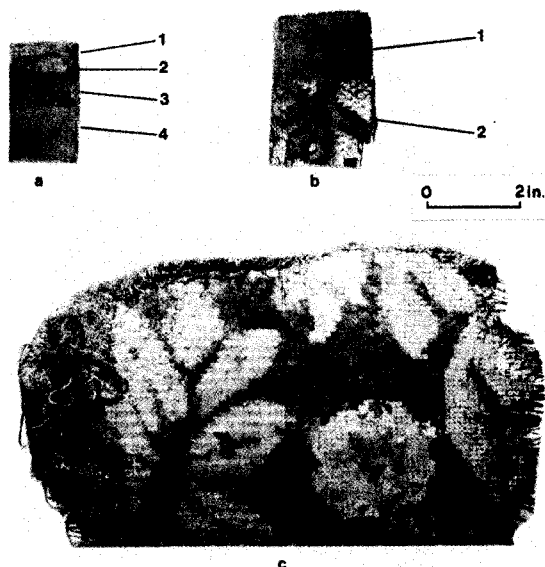


FIGURE 5-10. Floor covering: (a) bottom view (1 = paper covering, 2 = design and upper paint layer, 3 = cloth layer, 4 = bottom paint layer); (b) top view showing geometric design (1 = paper covering, 2 = design layer); (c) top view of floral design (note cloth layer along edges).

a 1 1/4-in.-diameter wooden handle to the shovel blade. The handle haft appears to have been formed by forge-welding two sheets of metal together. The lateral and distal extent of the weld cannot be discerned, and the entire upper portion of the body was probably fabricated from two separate sheets of iron. This manufacturing technology was described some years later for Ames "steel edge" shovels (Anonymous 1870:370-372). In these shovels a piece of hardened steel was wedged between the distal ends of the two halves, and then all three pieces were forge welded together (Anonymous 1870:370-371). These steel-tipped shovels were the least expensive of the three shovel types manufactured by Ames in 1870 (Anonymous 1870:370). No transition between iron and steel could be discerned in the Hoff Store site specimens.

Floor Cloth

At least 10 rolls and one fragment of floor cloth were recovered from the site. The rolls were at

least 78 in. long and 10 in. in diameter. Thickness of the floor cloth with its paper covering is 1/16 in. Original length of the rolls could be up to 24 ft. (Tomlinson 1866, 1:690). The floor cloth is made with a base of loose woven vegetal (flax?) cloth with about 18 threads per in. (Figure 5-10a.3). Over this base was applied a pink oil paint backing (Figure 5-10a.4). On the decorated top side, another layer of paint forms the base coat, over which a multicolored design is applied by block stamps (Figure 5-10a,b.2,c; see also Tomlinson 1866, 1:690-693). A final protective paper layer is applied over the design surface (Figure 5-10a.1,b.1). The rolls appear to have a geometric pattern (Figure 5-10b.2), while a single loose fragment is decorated with a floral design (Figure 5-10c). Forty-eight rolls of floor cloth were recovered from the storeship *Niantic* (Smith 1981:130).

CONCLUSIONS

The 1851 Hoff Store site assemblage reflects a transition in American architecture and construction techniques from carpenter dependent, timber-and-frame construction to balloon-frame construction. Evidence for both construction methods is present at the site. Among the tools more commonly associated with timber and frame construction are the forming-chisel, large wooden mallet, and large spiral auger. The forming-chisel was badly misused in a manner inconsistent with use by a skilled carpenter or joiner. The mortise and tenon plates are fittings that could be associated with timber and frame construction techniques. The presence of large numbers of cut nails may reflect balloon-frame construction technology. The mortise and tenon plates and the threaded spikes could also be associated with prefabricated construction practices.

The use of balloon-frame construction and prefabricated buildings was an important contributing factor in the successful settlement of the west. This was particularly true in the boom and bust economies of mining settlements, including early-day San Francisco. These short-lived structures pro-

vided adequate shelter from the elements until economic conditions favored construction of more substantial brick or stone buildings. Although balloon-frame construction was developed in the midwest, its dominance in the early years of the California Gold Rush was a true mark of its success.

The modernization of materials, however, lagged in some cases. Flat-tipped wood screws dominate the wood screw assemblage despite the introduction of machine-made, pointed-tip wood screws in 1846. The presence of gimlets also supports the use of the flat-tipped screws during this interval. Hand wrought spikes dominate the spike assemblage. These fasteners required significantly more labor to produce than did the cut spikes. Functionally, however, the chisel-pointed hand

wrought spikes may have been more easily driven than their machine-cut counterparts.

Another tool association includes the smaller gimlets, spoon-bit drills, shoemaker's-style hammer, and brads. These tools reflect construction of cabinetry or other fine woodwork.

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Civilian and Military Armament and Accoutrements from the Hoff Store Site

INTRODUCTION

The perils of the California mining frontier, either real or imagined, included Indians, claim jumpers, desperados, wild animals, and urban gangs such as San Francisco's notorious "Sydney Ducks" and the "hounds." The argonauts of the California Gold Rush provided a major market for weaponry. Among the artifacts from the Hoff Store site was a large assemblage of military firearms and accoutrements, possibly representing U.S. Army surplus from the Mexican War (1846-1848). At least nine Hall's carbines possess attributes indicating that they were previously-used military issue weapons. The remainder of the assemblage is somewhat puzzling because it includes a wide variety of military accoutrements such as uniform parts, brass "US" plaques, and bayonet scabbards. The absence of bayonets and the presence of musket ammunition further support a military surplus origin for the assemblage.

MEXICAN WAR SURPLUS

A number of small arms were used by United States forces in the Mexican War, the most common being flintlock muskets. This choice was made despite the fact that the percussion ignition system had been adopted by the military in the U.S. Model 1841 rifle, the U.S. Model 1842 musket, and the Hall's breechloading carbines. One reason for this unusual preference for the ancient flintlock ignition system probably was the command's fear that resupply of percussion caps to

Mexico or other regions of the west was unreliable, while flints could be obtained from captured Mexican stores. Many of the troops also expressed a preference for the flintlock weapons over the more "modern" percussion arms, such as Hall's breechloaders (Smith and Judah 1968:383-384).

The formal cessation of hostilities with Mexico occurred in May 1848, when the ratifications of the treaty of peace were formally exchanged. In the summer of 1848, American troops occupying Mexico withdrew; regiments were mustered out of service; and the military once again shrank to a small peace-time contingent. Among the flotsam of war were the no longer needed weapons and accoutrements of the discharged troops. While some of the Mexican War surplus would remain in government stores and would eventually equip troops in the Civil War some 13 years later, large amounts of Mexican War surplus were sold.

In February 1849, the War Department announced its policy of selling surplus rifles, pistols, and ammunition at cost to California and Oregon-bound emigrants. Many of the weapons had never been issued, unlike earlier government surplus sales of used, worn firearms in the 1820s and earlier. The prices were right, too, with carbines selling for \$10 to \$17, muskets for \$15, percussion rifles for \$13.25, and percussion horse pistols for \$7 (Garavaglia and Worman 1984:235).

A typical surplus sale was advertised in the Little Rock, Arkansas, *Gazette* in February 1850; included were ". . . 5 Saddles, 88 Carbines, 58 Cavalry sabres, 15 Art'y swords, 2 Non-com officers swords, 28 Pistols, 251 Muskets, complete, 32 Muskets, in-complete, 149 Copper flasks, 146 Flasks and belts, 73 Pouches and horns, 325 Rifle chargers, 84 Holsters and housings, 69 Percussion cap boxes, 81 Rifle slings . . . 147 Rifle pouches . . ." (Garavaglia and Worman 1984:266).

GUNS IN THE GOLD RUSH

Firearms were an integral part of a gold seeker's equipment. Rifles, handguns, knives, and swords were as commonplace as cooking utensils, blankets, hardtack, and salt pork to those traveling

overland or by sea (Robinson 1949:55; White 1930:27; Borthwick 1857:7, 51). One observer, crossing the plains in 1849, noted "Wagons . . . are daily seen rolling along towards the Pacific, guarded by walking arsenals. Arms of all kinds must certainly be scarce in the States, after such a drain as the emigrants have made upon them" (Holliday 1981:138). Will Shaw, on board the cutter *Diana* enroute to Sacramento, reflected on the boredom of the trip and recreation it inspired:

Rifle and pistol shooting was the only amusement all day; and the crew of a boat, which met us at the bend of the river, hearing the firing thought there was a sharp action going on. It was almost miraculous that no fatal accident occurred, as loaded guns and revolvers were strewn about the deck in all directions (Shaw 1851:51).

Large numbers of men went about their daily business in the mines heavily armed; even in San Francisco, pistols and knives were tucked into the belt at the back, "and to be without either was the exception to the rule" (Borthwick 1857:56). Firearms were so prevalent that certain events, such as theatrical performances, were advertised as "No Weapons Admitted." Door-keepers received the weapons and issued claim-checks for them:

If any man declared that he had no weapon, the statement was so incredible that he had to submit to be searched . . . (Borthwick 1857:78).

The discovery of a number of weapons and even military accoutrements at the Hoff Store site was, therefore, not surprising. Interestingly, weapons were not a common import listed in the record of vessel cargoes for 1850–1851 (Rasmussen 1965). Most argonauts, undoubtedly, arrived in California with firearms as a basic piece of equipment for their trip west.

MILITARY ITEMS RECOVERED AT THE SITE

Over 100 civilian and military-issue weapons and military accoutrements are represented in the assemblage of the Hoff Store site. The recovered materials include at least nine Hall's carbines, the butt plate from a U.S. martial pistol, at least three cases of .64 caliber buck and ball cartridges, the

remains of at least 24 leather cartridge boxes, six eagle breastplates, six uniform buttons, an epaulet, at least 50 bayonet scabbards, and the remains of two swords and scabbards.

Most of these items were discovered in units 3N and 4N. The carbines were wrapped in oil cloth and stacked atop each other, as if in a crate. The pistol butt plate was recovered nearby. The uniform buttons, epaulet, and parts to one sword were recovered from the southeast corner of unit 4N. The buck and ball cartridges, most of the bayonet scabbard tips, and the cartridge box remnants, were found next to each other atop an intact section of collapsed store floor in unit 3N.

The proximity of the assemblage of carbines, cartridge boxes, and shot in what appeared to have been the front of the building suggests a closely defined military goods section in the establishment, perhaps on display at the storefront. The buttons, epaulet, one of the swords, and the butt plate from a martial pistol were found together further back in the store. This association suggests storage of a military officer's dress uniform coat, sword, and pistol. A more detailed discussion of the recovered items follows.

Hall's Carbines

At least nine Hall's carbines—including weapons produced by S. North—are represented by various firearm components found at the site (Figure 6–1). John H. Hall patented a breech-loading rifle in 1811. Beginning in 1819, Hall began to manufacture rifles at Harpers Ferry for the War Department (Hicks 1962:59). Hall's pattern firearms were also manufactured and modified by Simeon North, a long-standing weapons contractor in Middletown, Connecticut. Most notably, Hall rifles were the first firearms with truly interchangeable parts, a feat made possible by using specialized wood working and metal working machines (Huntington 1972; Smith 1977:201,212). The Hall weapons were manufactured until 1853 and continued to be used by militia, state, and some regular troops through the Civil War (Huntington 1972:173, 234; Todd 1974:155).

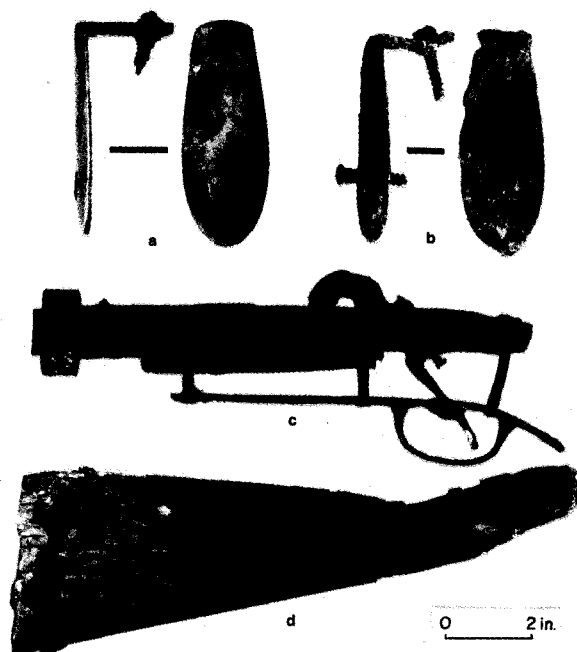


FIGURE 6-1. Carbine parts: (a) brass butt plate from Model 1842 Hall carbine; (b) iron butt plate from Model 1840 to 1843 North-Hall carbine (note flat-tipped wood screws); (c) trigger and breech assembly for Model 1843 North-Hall carbine; (d) stock with iron butt plate from Model 1840 or 1843 North-Hall carbine (note letter "A" branded near base of stock).

The Hall carbine was introduced as the standard issue firearm for U.S. Army dragoons. In 1833 North utilized Hall's breech-loading pattern to develop a .58 caliber (0.577 in.) percussion carbine for the (First) Regiment of Dragoons (Huntington 1972:217; Hicks 1962:61). Hall followed suit in 1836 with production of a .64 caliber carbine to arm the Second Regiment of Dragoons (Huntington 1972:201). Among the changes in the subsequent weapon orders were several design improvements and a change to a standard rifle caliber of .52 caliber. The North-Hall Model 1840 carbine is distinguished by a number of changes including the use of a "fish-tail" receiver catch on the bottom of the receiver. Six thousand of these weapons were manufactured from 1841 until 1843, when an improved version was introduced (Huntington 1972:343).

Simeon North, already under contract to manufacture carbines, received a specification change in 1843 that resulted in the final design of this weapon (Hicks 1962:72). The North-Hall Model

1843 carbine is distinguished by a side-lever action known as "North's Improvement" that was used to load and lock the breech. This carbine proved to be the longest lasting Hall model; the last shipments of the 11,000 weapons manufactured were delivered in 1853 for use by state militia (Huntington 1972:344). The Hall's carbines were replaced as dragoon issue weapons in 1849 by the .69 caliber Model 1847 Dragoon musketoon and the .44 caliber Model 1848 Dragoon Colt revolver (Huntington 1972:173).

The minimum number of nine Hall's carbines are represented by 30 firearm fragments attributable to three models of these breechloaders. Eight highly distinctive breech mechanisms and other diagnostic parts reveal the presence of seven Model 1843 North-Hall carbines, one Model 1840 North-Hall carbine, and one breech assembly for an indeterminate model of Hall percussion breechloader (Figure 6-1c). One of the Model 1843 receivers is stamped:

U.S.
S.NORTH
MIDL^{TN}.
CONN.
1844

The Model 1840 receiver is stamped:

U.S.
S.NORTH
MIDL^{TN}.
CONN.
1843

Additionally two brass butt plates and two trigger plate assemblies represent at least two Model 1842 Hall (Harpers Ferry) carbines (Figure 6-1a). The other Hall and North-Hall carbines used iron furniture (Figure 6-1b). One of the Model 1842 trigger plates is stamped "N" on the rear inner surface and one Model 1842 butt plate is stamped "AW" on its upper, inner surface. These marks are usually the armory inspector's or sub-inspector's initials. "AW" represents Asaph Wilson a rifle and carbine inspector at Harpers Ferry (Huntington 1972:166). The single initial "N" is not currently attributable to a Harpers Ferry inspector (Huntington 1972; Kirkland 1988:536).

Some of the carbines exhibit post-production modifications. The letter "A" was branded on two stocks and carved into one stock (Figure 6-1d). These brands may be military company designations. The letter "X" was cut into two of these stocks as well. The Roman numeral "LXVIII" (68) was scratched on the outer surface of a Model 1842 trigger plate. It has been suggested that this numeral may represent an armory rack number (Green 1988, pers. comm.).

The availability of the Hall's carbine in 1851 San Francisco is further exemplified by the recovery of a North-Hall Model 1840 carbine from the storehouse *Niantic* (Smith 1981:112-113).

United States Pistol, Model 1842

A brass butt plate attributed to a United States Pistol, Model 1842, was recovered in proximity to

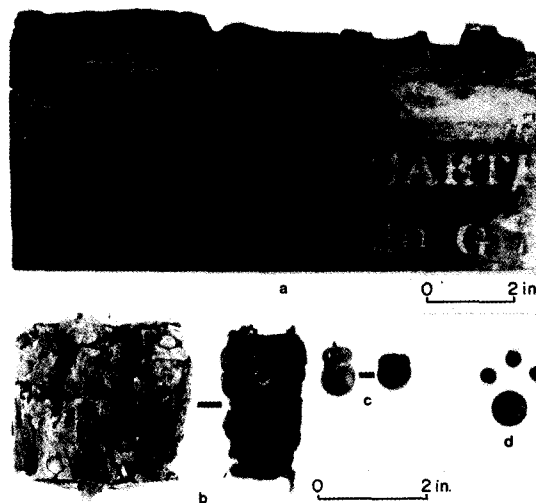


FIGURE 6-2. Ammunition: (a) stenciled end of wooden ammunition case; (b) remnants of a buck and ball cartridge pack; (c) fused buckshot and ball round with components in original position; (d) .64 cal. ball and .30 cal. buckshot.

the North-Hall Carbines. These single-shot weapons were considered the best martial pistol of their time (Smith 1964:112-113; Todd 1974:167). Model 1842 pistols were .54 caliber percussion-lock, smoothbore weapons, 14 in. in length. Approximately 40,000 of these firearms were manufactured between about 1842 and 1855 (Smith 1964:112).

Ammunition Cases

Excavation of a section of intact wooden tongue-in-groove flooring in unit 3N disclosed a concentration of loose lead bullets. The source of the shot was determined to be three wooden boxes.

Stenciled on the end board of one of the boxes (Figure 6-2a) was the following:

Buck and Ball Cartrid
1845 120 G

These badly charred wooden boxes were packing crates for packages of .64 caliber buck and ball cartridges.

The box is constructed of a rough sawn wood about 0.8 in. thick joined with nails of an indeterminate type. Reconstructed outside dimensions of the box are $17 \times 12.25 \times 8.1$ in. high. The bottom, side, and end pieces are from a single piece of lumber. The ends of the box had a wooden strip attached to the upper edge to act as a handle. The box may have been varnished. Based upon estimated dimensions for the cartridge packets and the inside dimensions of the boxes, 120 packages of 10 cartridges would fit within a box (Figure 6-2b). These packets would be arranged on their side, 20 to a layer, six layers deep. The basic construction of these boxes is similar to modern government, small arms ammunition boxes.

Ammunition

The ammunition, packed in the wooden cases, consisted of tapered paper cartridges containing three .30 caliber lead balls (buck-shot) above a single .64 caliber lead ball atop a charge of black rifle powder weighing 120 grains (Figure 6-2b-d). The weight of the larger ball is 386 grains, and the weight of the buckshot is 40 grains each. The reconstructed dimensions of the cartridge are 2.6 in. long by 0.6 in. in diameter at the top, tapering to 0.5 in. in diameter at the base.

This ammunition was probably meant for any of a number of .69 caliber muskets (Hunter 1988, pers. comm.). Although a .64 caliber carbine (Hall Model 1836) was manufactured, the 120 grain load greatly exceeds this weapon's standard 74 grain charge. If this round were to be fired in a .64 caliber Hall carbine, the stock would be in danger of splitting, the breech would probably leak an excessive amount of gas, and flames would shoot from the barrel (Huntington 1972:239). Sixty-four caliber was chosen for the Hall Model 1836 carbine because it proved more "effective" in firing buckshot than did .52 caliber test arms and also because the bullets were the same as those used in .69 caliber U.S. muskets (Huntington 1972:74, 201). The seemingly undersized .64 caliber ball is ideal for .69 caliber musket use where irregular ball diameter, speedy reloading, irregular bores,

and powder fouling all favored the .05 in. "windage" factor (Gluckman 1965:25). The apparent tight fit of a .64 caliber ball in a .64 caliber weapon is mitigated in a breechloader where the bullet is seated in a short breach block rather than the entire barrel length.

Amazingly, several packets of cartridges retain their form and contents because they were encased within a latticework of lead (Figure 6-2b). After cascading into the Bay, rapidly cooled molten lead apparently flowed into and around the cartridges even preserving some remnants of paper, powder, and string. In one instance the powder charge was replaced by a lead cast. From these specimens, it was determined that the cartridges were packed 10 to a paper wrapped package, in two tiers of five each, with the cartridges arranged in alternating directions. These packets measured about $2.6 \times 2.7 \times 1$ in. thick. The cartridge length of 2.6 in. is considerably longer than the 2-in.-long cartridge for 75-grain Hall's carbine loads (Lord 1965:14; Francis Bannerman Sons 1927:124).

The buck and ball cartridge was designed to provide three supplemental projectiles should the main bullet miss or if additional targets were close to the primary target (Figure 6-2c-d). These rounds were adopted by the U. S. Army to compensate for the inaccuracy of the large bore musket. Between 1835 and 1840, the Army Ordnance Department issued more than 2,700,000 buck and ball loads as opposed to 950,000 single-ball loads (Garavaglia and Worman 1984:109).

Cartridge Boxes

Twenty-four cartridge box strap-posts, 38 "US" plaques, copper rivets, iron buckle fragments, and leather fragments represent the remains of cartridge boxes for the Model 1842 U.S. Musket (Figure 6-3a,d-f). These artifacts were found next to the wooden ammunition crates. The Model 1842 cartridge box was the common cartridge box in the Mexican War (Todd 1974:191). Made of black bridle leather, these 7.2×5.8 in. boxes were 1.6 in. thick and carried two tin plated sheet iron inserts that divided the box into two lower and

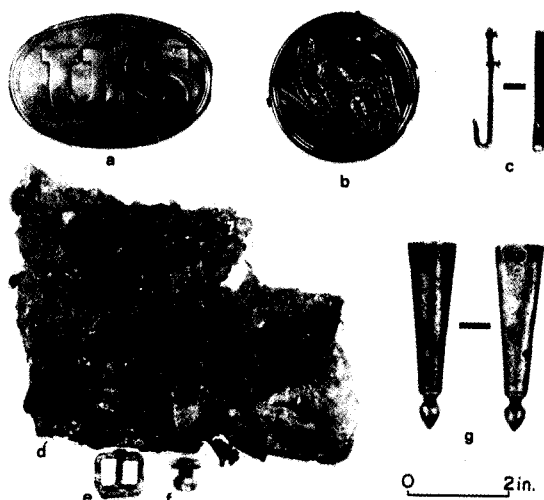


FIGURE 6-3. Accoutrements: (a) cartridge box plaque; (b) shoulder strap plaque; (c) belt hooks; (d) cartridge box remnant; (e) cartridge box strap buckle; (f) cartridge box strap post (note, for d-f, cartridge box components arranged in approximate original positions); (g) bayonet scabbard tips.

two upper compartments for a total of forty .69-caliber paper cartridges. The Model 1842 cartridge box had two loops on its back and two buckles on the bottom to engage a shoulder belt (Figure 6-3e). An outer flap covering the front of the box was weighted by a lead filled oval brass plate, 3.4 × 2.2 in. high, stamped "US." It was affixed to the flap by two iron loops projecting from the back (Todd 1974:190-191).

Leather fragments from two cartridge boxes are attributable to the front of the box, including the implement pouch and its strap, the inner box flap, and the outer box flap (Figure 6-3d). The imprint of the tin plated inserts is present on both box fragments.

The 24 brass strap posts have a rounded end 0.4 in. in diameter (Figure 6-3f). The size range for overall length is 0.5-0.6 in.; the exposed or stud length is 0.4 in. Two brass washers are inserted at the base of the post on either surface of the leather. The proximal end of the post is peened to rivet it in place.

None of the 38 brass "US" plates used to weight down the outer flap retained its lead fill

(Figure 6-3a). Wire loops were recovered in association with the plaques indicating that cartridge box plaques and not belt buckles were represented.

Eagle Plaques

Eleven circular brass plaques embossed with an eagle facing to its left are sling plates (Figure 6-3b). These were used, prior to 1841, on shoulder straps for bayonet scabbards. Later they served on the shoulder straps of cartridge boxes (Brinkerhoff 1976a:16). The plaques are 2.5 in. in diameter and have lead filled backs with two iron loops for attachment. This insignia was authorized for use between 1839 and 1874 (Kerksis 1974:57-58).

Bayonet Scabbard Tips

Approximately 50 brass bayonet scabbard tips were recovered in association with the cartridge box remains (Figure 6-3g). The bayonet scabbards were probably composed of a brass tipped leather sheath riveted to a throg or shoulder sling. Only the two piece brass tip, copper tacks, and scattered copper rivets survived. The tips are 3.1 in. long and between 0.9 in. wide at the top tapering to 0.5 in. at the bottom. Construction is two-piece with a sheet-brass tube and a distinctive solid brass "acorn" finial soldered to the end of the tube. The tip was attached to the scabbard by two clinched copper tacks through one side of the tube. The scabbard tips are triangular in cross-section reflecting use with a three-edged, socket bayonet. Brass tips were common to bayonet scabbards for U.S. Models 1822, 1840, 1842, and 1855 bayonets. The lack of a throat is attributed either to their fabrication from iron sheet that did not preserve or, perhaps, to the absence of a throat liner altogether.

Although at least 50 bayonet scabbards were represented at the Hoff Store site, no bayonets were discovered. At the nearby storeship *Niantic* site a single triangular, socket bayonet (sans scabbard) for a musket was recovered (Smith 1981: 111).

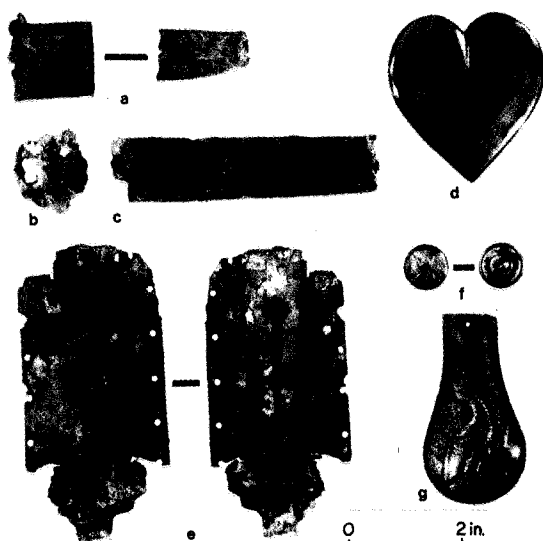


FIGURE 6-4. Accountrements: (a) brass scabbard fittings; (b) sword counter guard; (c) sword blade fragment; (d) martingale heart; (e) fragment of officer's-type epaulet; (f) coat-size infantry buttons; (g) Colt pistol flask half.

Belt Hooks

Seven brass belt hooks approximately 2.0×0.2 in. wide with a 0.5 in. hook are probably adjustment hooks for a sabre belt shoulder strap, such as for the Model 1851 Dragoon sabre belt (Figure 6-3c; Dorsey 1984:19, 22; Herskovitz 1978:Figure 11i). These specimens possess beveled edges below the attachment rivets. Two round headed brass rivets project from the back of the hook to attach it to a strap. A similar specimen with rivets protruding from the hook-side of the strap were recovered at Fort Bowie, Arizona. This hook was identified as the rear attachment for a pre-1874 sabre belt shoulder strap (Herskovitz 1978:35, Figure 11i).

Uniform Buttons

Five military "coat" buttons, 0.77 in. in diameter, were recovered (Figure 6-4f). All five bear the line eagle device with "I" in the recessed shield signifying infantry (Johnson 1948:50). The

buttons are of the three-piece Sanders type with a wire-loop shank soldered on the back. An identical button is described and illustrated in Johnson (1948:50). Four buttons are inscribed "WH HORSTMANN & CO/N YORK" two of the buttons are inscribed "WH HORSTMANN & SONS/PHILA." A diecutter's error was undoubtedly responsible for the reversed "N" in the former specimens. The New York buttons are earlier and date from 1837 to 1845. The Philadelphia buttons are later: "Horstmann and Sons" first appeared in a Philadelphia City director in 1843 and continued beyond William H. Horstmann's death in 1858 (Peterson 1977:251-252). Large numbers of buttons were manufactured for sale by Horstmann inasmuch as the firm was one of the two principal suppliers to the government in the mid- to late 19th century (Albert 1973:7; McGuinn 1978:26).

Epaulet

Epaulets, worn on the shoulders of military officers' uniforms, could denote the wearers' rank, branch of service, and regiment. Epaulets were worn from the 1820s into the 20th century when they were replaced by shoulder straps. These devices had a fabric-covered iron base strap with a gilded brass crescent edge with a bullion fringe on the distal end and a small branch-specific button on the proximal end (Todd 1974:97-101). The color of the fabric covering differed with branch. Branch, rank, and regimental insignia were embroidered onto the cloth with silver or gold thread (Todd 1974:98). Beginning in the 1830s, numerous patent fasteners were developed to attach the epaulet to the shoulder.

Remnants of one epaulet were recovered at the Hoff Store site in immediate proximity to the uniform buttons (Figure 6-4e). Only the epaulet's iron strap assembly and patent fastener remained. The strap edge is perforated every 0.7 in. with a 0.098-in.-diameter hole for attaching the cloth covering; there is also a 0.28-in.-diameter hole at the strap end for the epaulet button. The strap plate is hinged distally separating the fringed, crescent end. The patent fastener is a brass channel type,

inscribed "W.H. HORSTMANN & SONS/ PHILADELPHIA" dating it from 1843 to 1851, when it was deposited at the site (Figure 6-4e, right). The epaulet was attached by sliding the channel over a stud sewn to the uniform shoulder. Given the proximity of the epaulet and the uniform buttons, it is surmised that they represent the remains of an infantry officer's swallowtail coat. A blue wool "melton cloth" cuff was recovered from the storeship *Niantic* (Smith 1981:192). This fragment has been subsequently identified as part of a Mexican War era officer's frock coat (Green 1987, pers. comm.).

Powder Flask, Colt's Patent

Two halves of a small copper powder flask were recovered at the site (Figure 6-4g). Known as the "Colt large eagle pistol flask," this artifact is embossed with an eagle facing to its right, clasp ing a revolver in its left talons and an eagle embossed powder flask in its right talons. The eagle sits upon a hummock and two long rows of pistol balls; above the bird "COLTS PATENT" is embossed. Earlier types of this flask depict an undecorated powder flask in the talons; another variation has four long rows of balls below the eagle. The decoration of the flask and the diminishing rows of pistol balls on the base apparently represent the second type of this pistol flask (Riling 1953:344). This flask was issued with the most widely-sold Colt percussion firearm, the .31 caliber "old model" pocket pistol. Over 339,501 of these pistols were produced between about 1847 and about 1876, with two production peaks, one during the Gold Rush period and the other during the Civil War period (Kirkland 1988:518).

Swords

The remains of two swords with scabbards were recovered from the site (Figure 6-4a-c). A 4.7 in. section of the forte of the blade with the ricasso and a small section of the tang is represented by one specimen (Figure 6-4c). The blade tapers from 1.10-0.98 in. toward the foible and tapers

from 0.23-0.20 in. in thickness. The blade is wedge-shaped in cross section and the back edge is squared. A perforated, stamped brass counter guard slips over the base of the tang and extends past the ricasso (Figure 6-4b). The tang was approximately 0.4 in. wide at its base.

The scabbard for this specimen was leather, and only the brass throat with a carrying ring mount and the tip fragment were recovered (Figure 6-4a). Both scabbard pieces are decorated with a double line and scalloped edge. The sword and scabbard fragments are probably from a "hunting" sword from the first quarter of the 19th century (Buxton 1986, pers. comm.). Reconstructed length for this specimen is 18 inches.

The other sword is still encased in its sheath. This specimen is approximately 20.1 in. long and is the foible end of the blade. The blade is deteriorated, and both the 0.9 in. width and 0.2 in. thickness should be considered minimal dimensions. The blade has a fuller, or "blood gutter," on both sides. The sheath is iron and retains no fittings. It is 18.3 × 0.6 × 1.2 in. high.

Swords were carried by both civilian and military personnel during the Gold Rush era (Borthwick 1857:51). An unmarked sword fragment was recovered from the *Niantic* (Smith 1981:118-119). The hunting sword, such as found at the Hoff Store site, was more frequently associated with Europeans; the short broad sword (*espada ancha*) was common to the Californians and Mexicans, and the Americans preferred Bowie knives. The other sword from the site could be an American military sword. However, no truly diagnostic portions of it remain.

Martingale Heart

A lead-filled, sheet-brass ornament is identified by Lord (1965:129) as a martingale ornament (Figure 6-4d). The height of the heart is 2.7 in. and the width is 2.5 in. This artifact was probably attached to a saddle collar that could be used to anchor the martingale (Schuyler et al. 1864:76). The attachments for the heart did not preserve, but holes in the lead indicate that three wires extended

from the back of the ornament at the apex and at either lobe of the heart.

DISCUSSION

The civilian and military weaponry and military accoutrements from the Hoff Store site join the *Niantic* firearms assemblage as archaeological evidence of the heavily-armed, semimilitary character of Gold Rush California and the military surplus market of the Gold Rush era (Smith 1981: 108–120). The possible surplus firearms range from a U.S. Model 1812 flintlock musket from the *Niantic* to the Hall's carbines from the *Niantic* and the Hoff Store site (Smith 1981:112–115). At the Hoff Store site, all three models of the .52 caliber Hall's carbines are represented. The Model 1843 Hall's carbines and the Model 1842 pistol were not obsolete weapons, but the end of the Mexican War and America's western expansion were factors in making current military firearms and accoutrements available to citizens.

Evidence for Colt revolvers reflects the popularity of the most current, reliable, and deadly civilian handguns available. The *Niantic* site yielded three single cavity bullet molds for .44 caliber conical bullets (Smith 1981:117). These were probably associated with large frame Colt revolvers (e.g., Walker and Dragoon models) developed for use by mounted troops (Serven 1964:136–137; Smith 1981:117–118). Although these pistols sold for about \$25 at the factory, they were sold in California for up to \$150 each (Serven 1964:138). The other popular Colt revolvers were the .31 caliber Colt pocket models, although these too were relatively expensive. An obvious advantage for these smaller firearms was that they weighed about 2.5 to 3.0 pounds less than the big frame .44 caliber models. Even during the Gold Rush, these early Colt revolvers were establishing themselves as "peacemakers" (Marryat 1855:140–142, 276; Soulé et al. 1855:334, Illus. 336).

Among the other popular handguns of note were the "pepperbox" or "pepperpot" pistols. The pepperbox, unlike the Colt revolving cylinder handguns, has a multiple barrel-chamber assembly

revolving around a central pin mounted in the frame. Because of this design, pepperboxes were not as accurate as the fixed-barrel Colt models were. The main advantages of these weapons included their capability of firing more than a single shot, their widespread availability, and their relatively inexpensive cost. A small caliber pepperbox was recovered from the site of the Montgomery Block constructed in 1853.

The miscellaneous military accoutrements included leather cartridge boxes with shoulder straps, bayonet scabbards, and sabre belts. The cartridge boxes are functional containers suitable for a variety of uses in addition to holding ammunition. As ammunition containers, the basic design remained unchanged through the Civil War. The same could be said for the sabre belts, items usable for their intended function or amenable to other uses. Bayonet scabbards without bayonets, however, are not as easily explained. There was a perceived need for bayonets as defensive or offensive weapons, as evidenced by their use at San Francisco's "Fort Gunnybags" during the formation of the 1856 Committee of Vigilance (Fardon 1977: Plate 8; Johnson 1974: Illus. 194–195, 197, 198). Bayonet scabbards, however, are very specialized, and the basic design is not amenable to other everyday uses. These artifacts, more than any others, seem to point to a surplus origin for some of the Hoff Store merchandise.

CONCLUSIONS

Because weapons were an integral part of the Gold Rush and frontier expansion, a wide variety of armaments is to be expected from Euro-American archaeological assemblages, and indeed it is present. Swords, flintlock muskets, percussion carbines, single-shot martial pistols, revolvers, and even bayonets from Gold Rush archaeological sites support historic reports on the popularity of weaponry. The military equipment is likewise varied and may reflect surplus sales to an eager civilian market. By 1850, San Francisco supported four gunsmiths producing firearms as well as selling

and repairing them. As Hinton Helper noted in 1855:

I may not be a competent judge, but this much I will say, that I have seen purer liquors, better segars, finer tobacco, truer guns and pistols, larger dirks and bowie knives, and prettier courtezans here than in any other place that I have visited; and it is my unbiased opinion the California can and does furnish the best bad things that are obtainable in the America (Helper 1855:67–68).

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The Bottles of the Hoff Store Site

INTRODUCTION

When the Hoff Store site collapsed into San Francisco Bay during the conflagration of May 3rd and 4th, 1851, hundreds of glass bottles containing preserved foods, alcoholic beverages, medicines, toiletries, and various other contents for retail purchase were deposited onto the muddy floor of the Bay. The waters and sediments of the Bay, combined with landfill from expansion of San Francisco's shoreline in the year following the fire, "sealed" these glass containers. As a result, many still retain their original contents.

In addition to a purely descriptive account of the functional types of glass retail containers present in the Hoff Store site assemblage, the collection will also be viewed with the specific goal of determining whether the production methods exhibited help define either the nascent or terminal dates currently associated with 19th-century bottle production technologies.

During excavation, all complete bottles, bottle bases, and bottle finishes were collected. Body or shoulder sherds were collected when deemed temporally or functionally diagnostic, or when excavated as part of a feature. Non-diagnostic glass sherds were discarded. A total of 3,983 pieces of bottle glass was recovered, representing at least 874 bottles. Of these, 77 were complete or nearly complete. The remainder is a minimum number derived from base and finish counts, or distinctively-embossed fragments. Measurements taken of the individual bottle classes include basal dimension, total container height, and, where applicable, volume measurement at brimful capacity. The extremely fragmentary condition of the majority of glass recovered is undoubtedly due to the intense heat of the fire, followed by immersion in the cold Bay waters. The bottle fragments exhib-

iting thermal deformation or extreme hairline fracturing attest to this occurrence (Fig. 7-1).

The Hoff Store site bottles are divided into five functional classes: alcoholic beverage, culinary, medicinal, toiletry, soda and mineral water bottles. A sixth class includes those fragments which could not be identified and incorporated into one of these five classes.

By far the largest functional class of bottles represented by the Hoff Store site assemblage is that of the alcoholic beverage bottle. A total of 401 alcoholic beverage bottles were recovered, constituting 45.9% of the bottle assemblage. The great majority of these containers are "black glass" beverage bottles, totaling 259 specimens (64.6%). Other types of alcohol containers are wine and champagne bottles ($n=140$) and two "Ale" bottles. These latter two are identified on the basis of body embossing.

Culinary bottles represent the second largest functional class ($n=262$, or 30.0%). Bottles in this class include wide-mouth preserve bottles, spice and condiment bottles, and cooking oil bottles.

Medicinal bottles comprise the third functional class ($n=182$, or 20.8%). The majority of these are small unembossed vials, although embossed medicine bottles and a small variety of other unembossed types also occur in the assemblage. Toiletry bottles are next in frequency, represented by 22 specimens totaling 2.5% of the collection. Soda and mineral water bottles form a small minority of the total ($n=3$, or 0.3%). The remaining glass containers, represented by four specimens (0.4% of the total), were functionally unidentified.

ALCOHOLIC BEVERAGE BOTTLES

Alcoholic beverage bottles consist of two types, those of black glass and those for wine or champagne. Each type is described more fully below.

Black Glass

Black glass bottles blown from dark olive or amber colored "metal" (glass) dominate the alco-

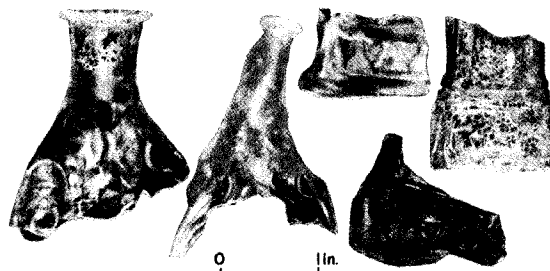


FIGURE 7-1. Figured cologne bottle fragments exhibiting fire damage.

holic beverage class, totaling 259 specimens (64.6%). Eighty specimens that exhibit identical morphological characteristics are thought to have contained brandy—four complete specimens still retain brandy. However, one cannot discount the possibility that some bottles may have been recycled to contain other goods (Busch 1987). Indeed, six black glass bottles were found to contain caraway seeds and ground black pepper. In short, the specific contents of the majority of black glass bottles cannot be stated for certain at the time of their deposition, but wine, porter, ale, brandy, distilled spirits, or liqueurs are the most likely prospects (cf. McKearin 1970:32; Switzer 1974:9; Felton and Schulz 1983:47).

The basic profile of all black glass bottles consists of a cylindrical body, a rounded shoulder, either a tapered or slightly bulbous neck, and an applied, slanted collar with a lower beveled ring formed with the use of a hand-held finishing tool. However, basal diameters, container height, and volume vary within the assemblage. Basal diameter ranges from 2.5–3.8 in., with a mean value of 3.1 ± 0.33 in. Container heights vary from 9.4–11.8 in., with a mean of 10.8 ± 0.78 in. Volume measurements range from 16 fl. oz.–29 fl. oz., with a mean of approximately 24 fl. oz.

All but two of the 259 black glass bottles were formed within molds. The two exceptions exhibit characteristics typical of free blown containers (Table 7-1; Toulouse 1969a:530; Jones et al. 1985:22). The bodies and bases are asymmetrical in horizontal cross section. Mold seams are absent.

Basal edges and resting points are rounded, and the glass is evenly distributed throughout the various parts of the bottle. Both free-blown specimens exhibit “rounded cone” push ups with blowpipe pontil scars present at the push up apex (cf. Jones et al. 1985:113, Figure 80).

Of the 257 black glass bottles formed with the use of contact molds, the specific mold type could be positively identified for only 84 specimens. Eighty of these were formed in three-part molds utilizing a single piece dip mold to form the body and a hinged two-piece upper to form the shoulders and occasionally the lower neck. Included within this number of three-part molded bottles are eight specimens which exhibit a manufacturer’s or proprietor’s basal embossing, denoting the use of Ricketts-style three-part molds utilizing a removable basal mold insert (see discussion below). The four remaining were blown in single piece, open top dip molds which form the base and body of the bottle. Shoulders and necks are formed outside the mold by hand manipulation. The remaining 173 specimens are too fragmentary to permit the distinction between these mold types; however, the technique used was surely one or the other.

Fully 180 mold-blown bottles exhibit bases that were formed in the mold, while the 77 remaining bottles display bases with push ups that appear to have been formed manually after removal from the mold. This latter style of push up displays a deep, conical profile, usually with a small pointed or dome-shaped depression at the push up apex, presumably resulting from the tool used to indent the base (Figure 7-2). Bases similar to these have been found primarily on dark green glass “wine” bottles that were probably manufactured during the second and third quarters of the 19th century (Jones 1971:67).

Bases formed within molds were identified by a mold seam line circling the base at or inside the basal resting point, by basal embossings, or by the presence of one or three raised dots (or mamelons) on the indented basal surface. The latter are possibly the result of mold vents (Peligot 1877:304–305). One bottle base displays an embossed decorative motif on the push up (Figure 7-3a). Eight bottles blown in Ricketts-style three-part molds ex-

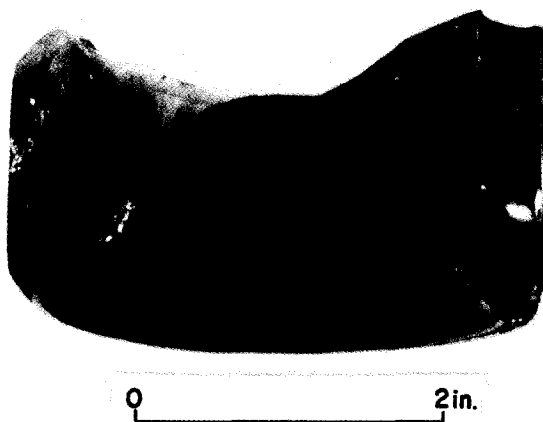


FIGURE 7-2. Black glass alcoholic beverage bottle base showing cross-section of conical push up with dome-shaped depression at push up apex.

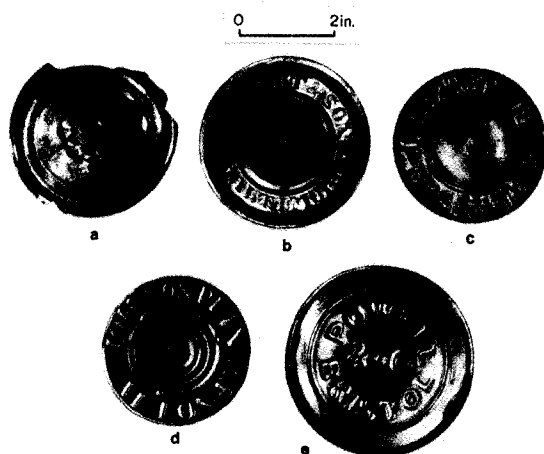


FIGURE 7-3. Embossed black glass alcoholic beverage bottle bases: (a) decorative motif; (b) A. HART & SON BALTIMORE; (c) J & W PETERS HAMBURG; (d) IOH VON PEIN ALTONA; (e) POWELL & Co BRISTOL.

hibit a circular seam on the push up surrounding a manufacturer's or proprietor's embossing. Bases of this description indicate the use of a basal mold insert, such as Henry Ricketts' 1821 patent in England (McKearin and Wilson 1978:216; Jones et al. 1985:30). This removable mold part facilitated embossing the base with the glass manufacturer's or proprietor's name. The names identified from

the eight bottles exhibiting basal embossings include "POWELL & CO. BRISTOL," "A. HART & SON BALTIMORE," "IOH VON PEIN ALTONA," and "J. & W. PETERS HAMBURG" (Figure 7-3b-e). The bottles displaying the "IOH VON PEIN" and "J. & W. PETERS" basal embossings also exhibit the identical embossing laterally around the shoulder of the bottle.

It is probable that the "POWELL & CO. BRISTOL" embossment refers to a British glass manufactory operated by Powell prior to incorporating the Powell, Ricketts, and Filer firm in 1853 (McKearin and Wilson 1978:217; Smith 1981:152). Archibald Hart and Son are listed as wholesale and retail grocers residing at 252 W. Baltimore Street, Baltimore, from 1845 to 1851 (Murphy 1845:54; Matchett 1847:149, 1849:171, 1851:119). Unfortunately, little historical information could be gleaned from available resources about the "IOH VON PEIN" or "J. & W. PETERS" embossings.

A total of 198 (77.0%) of the mold-blown black glass bottles exhibit sand pontil scars. These include 121 bottles with bases formed within molds and all the bottles displaying manually formed push ups. For the bottles with molded bases, the sand pontil scar appears as a thin line of glass chips encircling the push up. The use of sand pontils on bottles with molded bases was preferable to using other pontil types, as the sand pontil would conform to the shape of the molded base without distorting it (Jones 1971:69). For the bottles with bases formed outside the mold, the sand pontil is less well defined. Often the pontil scar starts near the basal resting point and covers nearly the entire surface of the push up. The surface of the push up contacted by the pontil may appear orange peel-like in texture (Figure 7-4a), or, alternatively, may appear shiny or polished and occasionally may display cobalt coloring (Figure 7-4b). Bits of glass or grains of quartz sand are often embedded within the empontilled surface. However, care should be taken not to confuse the orange peel surface of a sand pontil, caused by the sand or glass chips adhering to the surface of a glass-tipped pontil indenting the push up's surface, with a push up formed from glass containing extremely minute seed bubbles which have risen to the surface of the

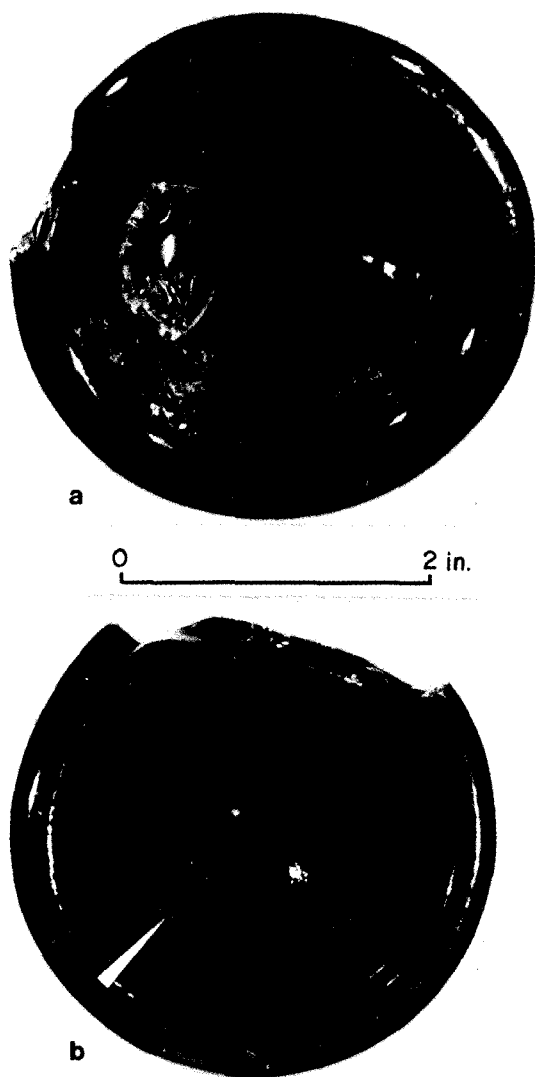


FIGURE 7-4. Sand pontilled black glass alcoholic beverage bottle bases: (a) push up showing orange peel-like texture resulting from sand pontil—excess glass adhering to push up torn from pontil; (b) push up exhibiting shiny or polished sand pontilled surface. Arrow is pointing to cobalt colored area.

push up and burst open during formation of the push up. The “indentations” on the latter surface will normally be ovoid in shape and not contain any particles of sand or glass, while the true in-

dentations associated with the sand pontil will be irregular and angular in shape and often retain particles of sand or glass. Examination of the suspected surface under magnification will help differentiate between the two.

The 59 black glass bottles that do not exhibit any sort of pontil scar were undoubtedly held by some form of snap case holding device during the finishing process. Many of these specimens bear indentations around the lower body resulting from the use of this type of device.

Two bottles blown from olive-green glass are identified by the embossing “JOHN DOVE’S/CELEBRATED ALE/GLASGOW,” which is displayed on the body of the bottle in three vertical lines (Fig. 7-5). Both bottles were shaped in two-piece cup bottom molds and exhibit a cylindrical body, rounded shoulders, a slightly tapered neck, and an applied, slanted collar with a lower beveled ring. Bases are 2.4 in. in diameter and feature a dome-shaped push up with centrally located mamelon. Container height and capacity measurements were obtainable from only one specimen which measured 9.4 in. in height and 12 fl. oz. in volume. One specimen exhibits a sand pontil scarred base, while the second specimen must have been held in a holding device during the finishing process.

Wine and Champagne

A total of 140 wine bottles were recovered from the site. These are divided into three distinct styles: Champagne-style, Bordeaux-style, and Hock-style (Schulz et al. 1980:75, Figure 23).

Champagne bottles are represented by a minimum of 134 specimens, including five complete bottles—two of which still retain their alcoholic contents—and 129 bases. Eighty-four champagne finishes were also retrieved.

All champagne bottles were blown from dark olive-green glass and display the profile typical of modern day champagne bottles. Bottles averaged 11.7 in. high \times 3.7 in. in basal diameter. Volume averaged 29 fl. oz. All but three of the 134 champagne bottles were blown in dip molds (Table 7-1). Of these, 105 specimens exhibit bases with

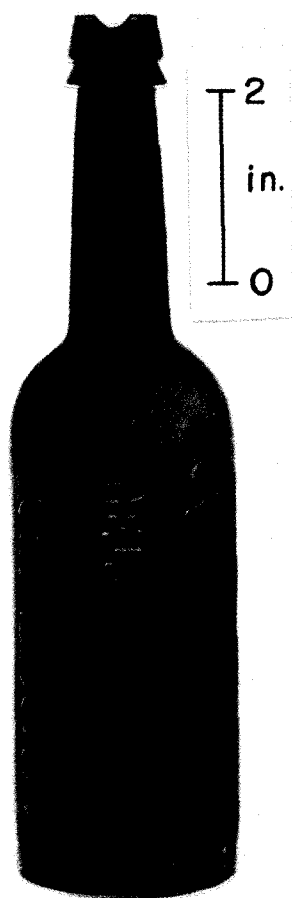


FIGURE 7-5. Alcoholic beverage bottle: JOHN DOVE'S CELEBRATED ALE GLASGOW.

deeply indented "bell-shaped" push ups with large mamelons present at the push up apex (Jones et al. 1985:114, Figure 81). The 26 remaining dip molded bottles exhibit deeply indented, rounded cone push ups. The three champagne bottles not blown in dip molds display the asymmetrical characteristics of free blown bottles, and also exhibit rounded cone push ups.

The 89 champagne finishes recovered—including those on the five complete bottles—exhibit two lip styles. Sixty-nine of the finishes have flat, sheared lips while the 20 remaining exhibit beveled lips. Both lip styles are accompanied by laid-on-rings, tooled to a uniform shape.

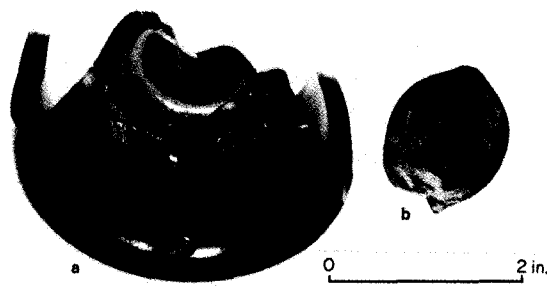


FIGURE 7-6. Wine and champagne bottles: (a) champagne bottle base showing sand pontilled surface of push up; (b) Bordeaux-style bottle finish with lead foil label embossed NELSON DUPOY A BORDEAUX.

Pontil scars are present on 41% of the champagne bases ($n=55$). Sand pontils predominate ($n=43$). Each sand pontilled specimen is a dip molded bottle featuring a bell-shaped push up with large mamelon. The pontil scar usually covers the upper half of the push up (Figure 7-6a), although occasionally the scar will occupy a larger portion of the push up surface. Twelve specimens exhibit a blowpipe pontil scar at the apex of the push up. This type of pontil scar was found only on bottles lacking mamelons, with rounded cone push ups, including the three free-blown specimens and nine dip molded bottles.

Bordeaux-style wine bottles blown from transparent olive-green glass are represented by basal and finish fragments, presenting a total of only four bottles. Basal asymmetry suggests that two of the specimens were free blown to shape, while the other two were probably formed in dip molds. Due to the fragmented condition of these bottles, basal diameter is the only possible measurement and averages 2.7 in. These bases have rounded cone push ups, with one specimen exhibiting a sand pontil scar. Finishes are characterized by flat, sheared lips with casually applied, untooled, laid-on-rings.

One Bordeaux-style bottle finish retains the lead foil label covering the cork. This label reads "NELSON DUPOY/A BORDEAUX" (Figure 7-6b). Unfortunately, the written resources available and numerous inquiries of wine merchants familiar with 19th-century French wines have failed to shed any historical information concerning Nelson Dupoy Bordeaux.

Hock bottles, presumably containing Rhine wine, were recovered in fragmented condition. A minimum of two bottles are represented from the collected fragments, which include two bases and two finishes with portions of the necks intact. These specimens were blown in dip molds from both amber and transparent green colored glass. The finishes recovered exhibit sheared lips with tooled laid-on-rings. Bases average 2.8 in. in diameter and are characterized by wide, flat resting points surrounding dome shaped push ups with small, centrally located mamelons. One base displays the "J. & W. PETERS HAMBURG" embossment previously described (Fig. 7-3c). This embossment is located on the flat area surrounding the push up. This base also displays a sand pontil scar within the dome push up.

CULINARY BOTTLES

Glass culinary bottles are the second largest functional group of retail containers recovered from the Hoff Store site. The majority of culinary bottles were recovered in fragmented condition. Fortunately, however, bottles were usually found and collected in groupings of distinct bottle types—probably representing individual packing crates—which, though broken, made identification, quantification, and association of the various sherds to a specific bottle type feasible. Complete specimens were occasionally found within the concentrations of broken bottles, often with their original contents intact.

Bottles identified as containing or having contained ground black pepper are the most numerous type of culinary container found at the Hoff Store site (Figure 7-7a-b). A minimum of 122 specimens are represented (46.6% of the total assemblage), three of which are complete, including one that still retains black pepper, which proved decisive in the functional characterization of these bottles. These bottles were recovered in two sizes. The smaller size averages 2.2 in. square at the base, 5.6 in. high, with an average capacity of 7 fl. oz. (Figure 7-7a). The larger variety averages 3.1 in. square at the base, 7.6 in. high, with an average



FIGURE 7-7. Wells, Miller, and Provost ground black pepper bottles: (a) small 7.0 fl. oz. variety; (b) large 28.0 fl. oz. variety containing ground black pepper.

capacity of 28 fl. oz. (Figure 7-7b). All 122 specimens were blown from aqua colored glass in two-piece post bottom molds. Bottle bodies are long, square, octofoil shaped with a central narrow rib on each side. Shoulders are conically tapered, joining a short, cylindrical neck that terminates in a rounded, everted collar. Bases have beveled heels, flat resting points, and dome shaped push ups. All specimens exhibit pontil scarred bases, with 113 specimens displaying blowpipe pontil scars and the nine remaining specimens displaying bare iron pontil scars.

Many of the specimens recovered retain a lead foil cap covering the cork, collar, and uppermost portion of the neck. The proprietors identified by these lead foil caps are "WELLS . MILLER & PROVOST/217/Front/ST/NEW YORK" (Fig-

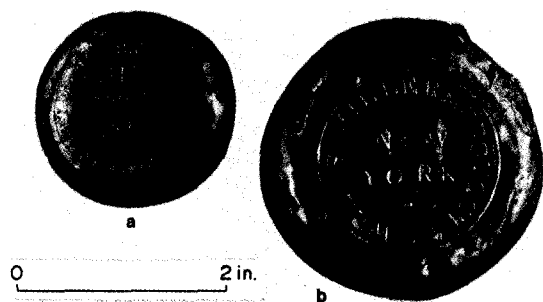


FIGURE 7-8. Culinary bottle lead foil labels: (a) WELLS, MILLER & PROVOST 217 FRONT ST NEW YORK; (b) WELLS MILLER & PROVOST NEW YORK.

ure 7-8a). John B. Wells, Ebenezer Miller, and Stephen H. Provost were known as one of the leading manufacturers and distributors of preserved foods and condiments during the mid-19th century. They were located at that address from 1844 to 1852 (Zumwalt 1980:428, 431).

Large, wide-mouth bottles identified by the embossing "Wm. UNDERWOOD & CO./BOSTON" are the second most numerous type of culinary bottle recovered from the Hoff Store site, totaling 50 specimens. Only one of these bottles was recovered intact (Figure 7-9). These containers were blown from deep, aqua-green colored glass, in two-piece post bottom molds. The cylindrical bodies are scallop-edged in horizontal cross-section. A bulbous ring joins the body to a conically tapered, scalloped shoulder. Another bulbous ring is present at the junction of the shoulders and short, cylindrical necks which terminate in everted, tooled collars. Bases averaged 3.9 in. in diameter and have narrow, flat resting points and conical push ups. All specimens exhibit blowpipe pontil scars at the apex of the push up. Maximal container height and volume measurement is obtainable only from the complete specimen: 11.1 in. high, with a capacity of approximately 57 fl. oz. Embossings are located on opposing sides of the body near the base, with "Wm. UNDERWOOD & CO." located on one side and "BOSTON" opposite.

William Underwood and Company, probably



FIGURE 7-9. Large preserve bottle utilized by William Underwood & Co. of Boston.

most famous for their current product "Underwood Deviled Ham," was first established in 1822 on Boston's Russia Wharf. The company originally packed all their preserved foods in glass or ceramic containers imported from Europe but soon turned to domestically produced glassware (Zum-

walt 1980:407). The Ellenville Glass Company of Ellenville, New York, established in 1836, provided the primary source of glass containers used by the Underwood Company (Switzer 1974:78; McKearin and Wilson 1978:110). In 1846 the company began the large scale use of hermetically sealed tin containers for the packaging of meats and seafood. However, perishables such as sauces, mustard, cranberries without sugar, cranberry jam, spiced meats, and pie fruits continued to be packaged in glass containers (Switzer 1974:78).

The specific contents of the Underwood bottles found at the Hoff Store site cannot be determined, but foodstuffs such as those mentioned above are likely prospects. It is also probable that these bottles are products of the Ellenville Glass Company, which manufactured "bottles and hollow ware" from 1836 to 1896 (McKearin and McKearin 1948:602; McKearin and Wilson 1978:221).

A minimum of 21 olive oil style bottles are represented by bases and finishes. These bottles were blown from extremely pale, aqua colored glass. Bases display the asymmetrical characteristic of free blown bottles and exhibit rounded resting points with deep, conical push ups. Due to the fragmented condition of these bottles, basal diameters were the only measurement obtainable, averaging 2.1 in. in diameter.

All but one specimen were held in holding devices while being finished. The pontilled specimen exhibits a glass tipped, pontil scarred push up.

Thirteen large, wide-mouth, cylindrical bottles have been identified as olive containers. These bottles are represented by two base fragments and 11 complete specimens, nine of which are still corked and packed full of green olives in pickling solution (Figure 7-10a). All of these bottles were blown from aqua colored glass in hinged bottom molds. Shoulders are conically tapered. Necks are cylindrical and finished with plain, rounded, everted collars. Bases average 3.8 in. in diameter, are slightly indented, and display blowpipe pontil scars. Container heights average 8.3 in. Volumes average 34 fl. oz.

Thirteen bottles which presumably contained some sort of oil or condiment are represented by one complete specimen and 12 bases. All were

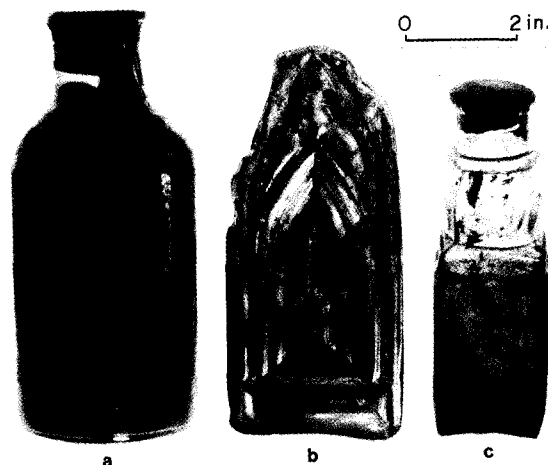


FIGURE 7-10. Culinary bottles: (a) olive bottle; (b) Gothic panelled preserve bottle depicting Baltimore's Washington Monument; (c) S. WARDELL bottle.

blown from aqua colored glass in two-piece post bottom molds. These bottles display cylindrical bodies, rounded shoulders, and long tapered necks terminating in an applied, slanted collar tooled to form. Bases average 2.7 in. in diameter and have flat resting points and dome shaped depressions with central mamelons. All 13 specimens exhibit blowpipe pontil scars. The only complete specimen recovered measures 10.0 in. high, with a brimful capacity of 19 fl. oz.

These bottles were included in the culinary group because of their extreme similarity to the Class V, Type 14 bottles described by Switzer (1974:60, Figure 85) recovered from the hulk of the steamship *Bertrand* and found to contain lemon syrup. The color of the glass used for the specimens recovered at the Hoff Store site also makes unlikely their use as containers for alcoholic beverages or other substances that were believed to deteriorate in sunlight.

Thirteen fragmented Cathedral-style preserve bottles displaying an embossing of Baltimore's Washington Monument are represented by 13 bases, only one of which retains a portion of the Cathedral body panel (Figure 7-10b).

These bottles were formed in two-piece cup bot-

tom molds from aqua colored glass. Bases are square with chamfered corners, have relatively flat resting points surrounding dome shaped depressions, and average 2.8 in. square. Blowpipe pontil scars are present on all 13 bases. The base with adjoining body portion displays a narrow, horizontal panel recessed one step immediately above the base. Above this narrow panel, a Cathedral-style arched panel with a central embossing of Baltimore's Washington Monument, without the statue of Washington, is recessed two steps from the outer columns which form the corners of the bottle. A trefoil motif stemming from a central lobe decorates the top of the arches. Due to the fragmented condition of these containers it is unknown whether this design is portrayed on more than one side of the bottle. Characteristics of the shoulders, neck, and collar are also unknown.

Historical flasks designated as types GI-20, GI-21, GI-73, and GVI-2 by McKearin and Wilson (1978:528-529, 542-543, 605) are the only other known glass containers that portray Baltimore's Washington Monument without Washington's statue adorning the top. All of these flasks are attributed to the Baltimore Glass Works, possibly established as early as 1789 but certainly producing "all kinds of glassware and bottles" by 1800 (McKearin and Wilson 1978:71; Van Rensselaer 1926:192). It seems reasonable to assume that the present specimens are also products of the Baltimore Glass Works.

Eight bottles exhibiting the proprietor's embossing "S WARDELL" are represented by one complete specimen (Figure 7-10c) and seven incomplete specimens. These small, wide-mouth containers were blown in two-piece post bottom molds from aqua colored glass. Their bodies are rectangular. Each of the four body sides displays a raised escutcheon. The embossing "S WARDELL" is located on one side of the body, directly above the escutcheon but below the shoulder. Shoulders are short and abruptly squared. A medial neck ring separates the bulbous lower portion of the neck from the cylindrical upper portion of the neck. Finishes are simple, rounded, everted collars. Bases average 1.9 in. square and exhibit flat resting points and dome shaped depressions.

All specimens exhibit bar iron pontil scars. Average container height is 6.1 in. Container volumes average 7 fl. oz. The complete specimen exhibits a brown, fibrous residue adhering to the bottle's inner surface, and it has been speculated that this residue might be the remnants of chutney (James Deetz 1988, pers. comm.).

Solomon Wardell is listed as a pickle grocer at 110 W. 19th Street, New York, New York, during 1850 and 1851. In 1852 the firm's name changed to "S. & J. Wardell," when Solomon joined partnership with Jeremiah Wardell and changed their business location to 234 West [Street], New York, New York. This partnership was short lived, however, as from 1853 to 1858 Solomon Wardell is listed as being in partnership with Joseph M. Pease at the same address (Doggett 1850:526; Rode 1852:62, 1853:75, 1854:735; Trow 1855:858, 1857:862, 1858:834). Using this chronological framework, the bottles described above were likely blown during 1850 or 1851.

The purveyors "Wells, Miller, and Provost" are once again represented in the bottle assemblage of the Hoff Store site, this time by a minimum of seven large preserve bottles exemplified by seven bases, seven finishes displaying "W., M., & P." lead foil caps, and assorted embossed body sherds. All specimens were blown in two-piece post bottom molds from dark aqua-green colored glass. Bases are square with chamfered corners, and have wide, flat resting points surrounding shallow, dome shaped depressions. Four bases display bare iron pontil scars. The three remaining exhibit blowpipe pontil scars. Due to the fragmented condition of these containers, basal dimensions—which average 3.3 in. square—were the only measurement obtainable. Bodies are long and rectangular. A slight constriction in the lower body forms a slightly footed base. Each side of the body has large oval panels in relief. The "WELLS/MILLER/& PROVOST" embossing is located just above the oval panels, one name to a side. These embossings contour the convex top of the oval panels. Shoulders are scallop-edged and taper conically. Necks are short and cylindrical and are separated from the shoulders by a bulbous ring. Collars are everted and round. Each finish retains the

cork, either partially or totally covered by lead foil caps displaying "WELLS MILLER PROVOST/NEW/YORK" (Figure 7-8b). A complete example of this bottle type is illustrated by Zumwalt (1980:427, 428).

A minimum of two large preserve bottles are represented by eight pale-aqua-colored fragments, including one finish with the neck and portion of the embossed shoulder attached and one embossed body panel. Embossing appears on opposing sides of a conical shoulder, just above and contouring the apex of a pyramidal, recessed shoulder panel. "Wm. BODMAN" occurs on one side, "BALTIMORE" on the other. A narrow body panel also exhibits the "Wm. BODMAN" embossing, vertically. Recessed shoulder panels suggest these bottles were Cathedral-styled. A bulbous ring separates the shoulder from a cylindrical neck terminating in an everted, rounded collar. Mold type, volume, and specific dimensions of this bottle type cannot be determined.

William Bodman is listed as a Baltimore merchant from 1833 to 1859. From 1849 through 1854, Bodman's business is described as a "preserving and pickling establishment & vinegar depot," located at 46 and 48 S. Howard Street, Baltimore (Matchett 1849:42, 1851:31, 1853:36).

Two bottle shoulder fragments displaying the embossing "LEWIS & Co./BOSTON" were recovered. These bottle fragments are composed of aqua colored glass, and appear to be portions of Cathedral-style preserve bottles. More detailed characteristics of these bottles could not be ascertained from the fragments present in the assemblage.

During the years 1833-1836, William K. Lewis was an employee of the William Underwood firm of Boston. It was not until 1847 that Boston business directories listed the Lewis pickling concern at 56 Broad Street (Zumwalt 1980:277, 407).

Four unembossed bottles missing the upper portions of the neck and collar were recovered. These aqua colored specimens were blown in two-piece post bottom molds and exhibit blowpipe pontil scars inside dome shaped push ups. Bases average 3.1 in. in diameter. Bodies are cylindrical. Shoulders and necks are faceted and tapered, with no

clear transition point between the two. Collar type is unknown.

Complete bottles exemplifying the incomplete specimens recovered from the Hoff Store site are illustrated by Zumwalt (1980:385-second from left, 431-top left). One of these complete specimens exhibits a brass label adhering to the body displaying the "WELLS, MILLER, & PROVOST" insignia, which identifies the contents as preserved berries.

Three complete, wide-bodied, wide-mouth containers blown from aqua colored glass are included in the culinary group because of their similarity to the "32 oz." cylindrical bottle utilized by the Underwood firm (Zumwalt 1980:408). These specimens display plain, wide, cylindrical bodies; rounded shoulders; cylindrical necks; and flared collars. Bases are slightly indented and display blowpipe pontil scars. These specimens occur in two sizes. The smaller specimen has a basal diameter of 3.1 in., a container height of 8.0 in., and a capacity of 25 fl. oz. The two larger specimens have basal diameters averaging 3.8 in., container heights averaging 8.3 in., and an average volume of 37 fl. oz. Three-part molds were used to mold the larger specimens. The smaller specimen was blown in a two-piece post bottom mold.

Two condiment bottles are represented by one specimen, lacking only the upper neck and collar, and one basal section. Both specimens were blown in two-piece post bottom molds from aqua colored glass. Bases average 2.3 in. in diameter and have flat resting points surrounding dome shaped depressions displaying blowpipe pontil scars. Bodies are basically cylindrical but are octagonally scalloped in horizontal cross-section. Shoulders are conical, and octagonally faceted. The specimen with the partially intact neck exhibits three medial, bulbous neck rings. Collar type is unknown. These specimens appear morphologically identical to a bottle type recovered from the storeship *Niantic* (Smith 1981:142, Figure 20c) which was tentatively proposed to have contained catsup (Smith 1981:155). However, the nearly complete specimen recovered from the Hoff Store site is filled to one-third capacity with small red peppers and seeds, suggesting the contents were peppersauce.

One aqua-green bottle was recovered that suggests a "mustard" or "horseradish" style bottle (e.g., Whitall, Tatum & Co. 1971:49; Jones 1983: 75, Figure 8). The base and body of this container is rectangular with chamfered corners in cross-section. All sides of the body are slightly concave. The base measures 2.6×1.8 in., has a beveled heel, flat resting point, and an oval depression displaying a blowpipe pontil scar. Mold seam lines denote a two-piece post bottom mold construction.

In addition to being used as containers for dried mustard and horseradish, this bottle type was also known to contain ground black pepper, cinnamon, allspice, cloves, thyme, or similar dried or powdered condiments and spices (Switzer 1974:60; Zumwalt 1980:153, 187, 253). The specific contents of the specimen recovered from the Hoff Store site could not be ascertained.

One complete condiment or sauce bottle was found with a dried black powdery substance adhering to the inside. This aqua colored specimen was blown in a hinged bottom mold. The base measures 2.1 in. in diameter, is slightly concave, and features a blowpipe pontil scar. The body is plain and cylindrical. Shoulders are rounded. The neck is long and cylindrical and is finished with an applied, slanted collar. Total container height is 8.7 in. Container capacity was not specifically measured because of the dried substance adhering to the glass but is estimated to be approximately 8 fl. oz.

The specific contents of this bottle can only be guessed. The black substance adhering to the inside of the bottle could be the dried remnants of a Worcestershire type sauce. Morphologically similar bottles recovered from the steamer *Bertrand* were found to contain catsup (Switzer 1974:48).

MEDICINAL BOTTLES

Medicinal bottles identified by contents, embossings, or morphology total 182 specimens, or 20.8% of the assemblage of bottles recovered from the Hoff Store site. Small, unembossed vials total 120 specimens, or 66.0% of the medicinal bottles recovered (Figure 7-11a). Twenty-two of the 31



FIGURE 7-11. Medicinal bottles: (a) vial with contents; (b) medicinal bottle with ground glass stopper closure.

complete vials recovered contain a camphorous smelling clear liquid. These small aqua colored, cylindrical bottles were blown in hinged bottom molds and average 1.0 in. in diameter, 3.8 in. in height, and contain approximately 1 fl. oz. All 120 specimens exhibit blowpipe pontil scarred bases.

Twenty-seven bottles with ground glass stopper closures were also recovered (Figure 7-11b). Only two of the bottles found were complete. The remainder are represented by bases or finishes. However, 57 ground glass stoppers were collected, suggesting many more of these bottles were originally present in Hoff's merchandise. Whether the missing specimens were too fragmentary for recognition and collection during excavation, or displaced previous to archaeological investigation by 20th-century construction activity remains undetermined. These containers were blown in hinged bottom molds from aqua colored glass. All but six

specimens exhibit sand pontilled bases. Bodies and bases are rectangular with chamfered corners. Bases average 2.1×1.6 in. Shoulders are short and rounded and join short, cylindrical necks finished with narrow, everted, rounded collars. The complete specimens measure 5.5 in. in height and have a capacity of 6 fl. oz.

The necks and finishes recovered exhibit ground bores to accommodate a glass stopper, obviously those found in association. The stoppers conform to the "flat oblong head stopper" style described by Jones et al. (1985:153, Figure 130). The finial is flat and rectangular and vertically oriented. The stopper shank is slightly tapered and exhibits grinding on the sides and bottom.

It is uncertain whether these bottles actually contained medicine, or, indeed, whether they ever contained anything at all. Because each stopper is uniquely ground to fit the individual bottle it is intended for, bottles such as these were desirable for contents necessitating a hermetic seal and figured prominently in druggist's glassware catalogues (e.g., Maw 1913:61–65, 636–637). However, because of the custom-fit needed for each of these containers and accompanying stoppers, prices for this type of bottle were two to three times higher than similar corked bottles. The higher manufacturing costs thus limited the use of glass stoppered bottles as commercial retail containers (Jones et al. 1985:151–154). Therefore, it is indeed likely that these bottles were imported and stocked without contents, to supply druggists arriving in San Francisco during the Gold Rush.

Fifteen bottles of "Ayer's Cherry Pectoral" were collected, represented by broken bases and fragments of embossed body panels. Each of these aqua colored containers was blown in a hinged bottom mold and exhibits a blowpipe pontil scar. Bases are rectangular with chamfered corners, average 2.0×1.4 in., and are slightly indented through application of the pontil. Body embossing is located on three sides: "AYER'S" is shown in a recessed, arched panel located on the obverse side just below the shoulder; "CHERRY" and "PECTORAL" are located individually in two recessed side panels. Necks and finishes are cylindrical, terminating in an applied, rounded collar

with a lower beveled ring. Height and volume measurements are unobtainable due to the fragmented condition of the bottles. However, similar "Ayer's" bottles are 6.1 in. tall (e.g., Baldwin 1973:46).

James Cook Ayer established his drug trade in 1841, introducing "Ayer's Cherry Pectoral" for the relief of respiratory illness. Embossed bottles, such as those found at the Hoff Store site, were first distributed by the Ayer firm in 1847 (Fike 1987:94, 199).

Eight bottles of "Shaker Syrup No. 1" are represented by two complete specimens and bases or embossed panels. One of the complete specimens retains the cork and syrup at original filling capacity. All specimens were blown from aqua colored glass in hinged bottom molds. Bases are rectangular with chamfered corners, average 2.6×1.7 in., and are slightly indented. All bases exhibit blowpipe pontil scars. Bodies are rectangular and display embossed, recessed, side panels. "No 1/SHAKER SYRUP" is located on one side panel, "CANTERBURY N.H." is shown on the other. Necks are short and cylindrical, terminating in an applied, slanted collar. Container height averages 7.3 in. Liquid volume measured 11 fl. oz.

"Shaker Syrup" is actually a sarsaparilla compound originally formulated by Dr. Thomas Corbett in the 1820s (Fike 1987:230). In the intact bottle from the Hoff Store site, the syrup appears as a viscous, dark brown liquid.

Two complete aqua colored "plain oval" style prescription bottles blown from two-piece cup bottom molds were recovered (Putnam 1965:33). Both specimens exhibit blowpipe pontil scarred bases and applied, slanted collars. Basal dimensions average 2.7×1.5 in. Container height averages 6.6 in. Capacity of these specimens is 8 fl. oz. The specific contents of these bottles is undetermined. However, one complete specimen exhibits a dried out, rusty-brown substance caked to the inside of the bottle.

Ten miscellaneous aqua colored bottle bases were included in this functional class because of their basic morphological similarity to many of the medicinal bottles previously described. However, dimensional variations or slight morphological dif-

ferences preclude these specimens from being integrated into known type categories. Five bottle bases are rectangular with fluted or channeled corners. These bases average 2.0×1.1 in. Mold seam lines denote the use of hinged bottom molds. Bases are slightly indented and exhibit blowpipe pontil scars. Three bottle bases are rectangular with chamfered corners. However, all body corners and basal edges are rounded. Bases average 2.6×1.7 in., have shallow concave depressions, and exhibit blowpipe pontil scars (Jones et al. 1985:115, Figure 82). Bodies expand slightly from the base. This fact, combined with the absence of mold seams, suggests these containers are the products of dip molds. Two bottle bases are rectangular with chamfered corners, average 2.0×1.2 in., and were blown from hinged bottom molds. Both specimens exhibit blowpipe pontil scars.

TOILETRY BOTTLES

Toiletry bottles are the fourth functional type of retail glass container recovered from the Hoff Store site. A minimum of 22 individual bottles are represented, totaling 2.5% of the entire bottle assemblage.

Twenty Cathedral-style figured bottles identified as cologne containers are represented by 20 bases, 20 accompanying finishes, and numerous decorative, paneled body fragments (McKearin and Wilson 1978:392, No. 8).

These bottles depict an embossing of the Madonna and Child on the obverse panel (Figure 7-12a) and were blown from extremely thin, fragile, aqua colored glass in hinged bottom molds. Bases are rectangular with chamfered corners, average 2.1×1.1 in., and exhibit blowpipe pontil scars. The bases form pedestals, and have recessed panels on all four sides. The obverse and reverse basal panels display four embossed Y-shaped ribs, while the side panels portray a diamond lattice pattern with a central dot within each diamond. Bodies also display recessed panels on all four sides, with two columns rising from a narrow plinth forming each corner. The reverse body panel is vacant. The



FIGURE 7-12. Toiletry bottles: (a) Cathedral-style figured cologne bottle depicting the Madonna and Child on obverse panel; (b) unidentified perfume (?) bottle.

side panels exhibit the same latticed design shown on the base panels. Shoulders are sloped, with recessed ogival panels on all sides. Necks are slightly bulbous at their bases, then become cylindrical. Finishes are simple, narrow flanges. Due to the fragmented nature of these specimens, container height was obtainable from only one specimen, which measured 5.5 in. Volume measurements were unobtainable. However, similar bottles have been documented to contain approximately 3 fl. oz. (McKearin and Wilson 1978:392, Nos. 7, 8).

One complete 1-fl.-oz. French perfume bottle was recovered, displaying the embossing "LUBIN/PARFUMEUR/A PARIS" horizontally on the body. This small cylindrical container was blown in a hinged bottom mold from colorless glass. The base is roughly flat and measures 1.5 in. in diameter. The body is cylindrical, shoulders are rounded, and the neck is short, cylindrical and finished with a narrow flange. Total container height measures 3.1 in. This bottle was recovered

with glass stopper closure in situ. The stopper is "disc" style, consisting of a vertically oriented, flat, circular finial with a ground tapered shank (Jones et al. 1985:155).

Archival resources indicate that of all perfumes manufactured either in Europe or the United States, Lubin's was the most popular perfume sold on the American market during the early 1850s (Anonymous 1853:284, 285).

A broken bottle base with partial body also presumably contained perfume or cologne (Figure 7-12b). This specimen appears to have been formed in a two-piece cup bottom mold from colorless glass. The base is square with rounded corners in horizontal cross-section, has a relatively flat bottom exhibiting a glass tipped pontil scar, and measures 1.3×1.3 in. The base forms a foot consisting of two narrow, rounded rings. Above the footed base the lower body is square with rounded corners horizontally, but roughly violin-shaped in vertical cross-section. Five ribs are located at each corner, vertically contour the shape of the body, and meet in arched fashion on each side just below a bulbous ring which truncates the upper portion of the violin shape. Above the bulbous ring the bottle appears to become cylindrically fashioned. The missing portions of this container cannot be characterized. Unfortunately, complete examples of this bottle type could not be located in the resources consulted.

MINERAL WATER BOTTLES

Saratoga-style mineral water bottles are the final functionally identifiable containers found at the Hoff Store site (Schulz et al. 1980:118, Figure 30a). Only three specimens are represented, totaling 0.3% of the bottle assemblage. Each is of dark green glass, including one complete specimen and two embossed sherds which display the embossing "CLARKE & Co/NEW YORK" located horizontally on one side of the body. The complete specimen was blown in a hinged bottom mold. The base measures 4.3 in. in diameter, has a flat resting point surrounding a dome shaped push up with centrally located mamelon, and exhibits a bare iron

pontil scar. The body is cylindrical, and shoulders are rounded. The neck is cylindrical and finished with an applied slanted collar with a lower beveled ring. Total container height measures 7.5 in. Liquid volume at brimful capacity is 16 fl. oz.

Bottles exhibiting the "Clarke & Co." embossing are dated from 1846 to 1852. These bottles presumably contained mineral waters from the Columbia Spring or famed Congress Spring of New York (McKearin and Wilson 1978:235).

BOTTLES OF UNKNOWN FUNCTION

Four bottle bases which could not be specifically included in any single functional class previously described comprise the remainder of the bottles from the Hoff Store site, totaling 0.4% of the collection. Three bottle bases appear to be from globular, demijohn style containers. The bases are aqua colored, are slightly depressed with blowpipe pontil scars, and range from 5.0–5.4 in. in diameter at their resting points. However, because of the incomplete nature of these specimens and the typically globular profile of this type of container, maximum container diameter could not be estimated. The asymmetrical shape, even distribution of glass, and rounded resting points suggest free blown manufacture.

Demijohns generally occur in sizes from one quart to five gallons. A variety of "noncorrosive and bland liquids such as spirits, wines, and other beverages, medicinal cordials, fruit juices, oils, honey, and toilet water" were known to have been contained within this type of vessel (McKearin and Wilson 1978:256). However, the specific contents of the specimens recovered from the Hoff Store site could not be determined.

Finally, a single bottle base was recovered with a British Registry Mark embossed on the push up (Figure 7-13). This base is aqua colored, measures 2.6 in. square, and was formed in a two-piece cup bottom mold. Other characteristics include a chamfered basal heel, flat resting point, and dome shaped push up.

Registration marks were used in Britain from 1842 to 1883 to indicate that the particular design



FIGURE 7-13. Embossed push up exhibiting British Registry Mark; manufacturing date represented = April 2, 1849.

or pattern was registered, or "patented," and thus secure it from imitation for a period of three years (Zumwalt 1980:459). Because these registry marks changed frequently, they provide an effective, firm chronological tool. The precise date of manufacture specified by the Hoff Store specimen is "April 2, 1849" (Kovel and Kovel 1953:viii, ix; Zumwalt 1980:459).

CONCLUSIONS

Apart from the bottled medicinal supplies and non-effervescent alcoholic potables contained in black glass bottles, both of which could reflect the wants or needs of the gold miner, the majority of the bottled commodities recovered from the Hoff Store site seem to reflect the desires of the more affluent or sedentary population of San Francisco in 1851. Indeed, it is hard to imagine the transient gold seeker stocking provisions of preserved foods packed in fragile Cathedral-style glass bottles, potentially explosive bottles of champagne, and so on. In addition, the bottled preserved foods strongly reflect an Anglo-Saxon taste preference, and belie the cultural diversity that characterized the gold seeking population, so colorfully de-

scribed by Soulé et al. (1855:257, 258). In this respect, the Hoff Store bottle assemblage is similar to the collection of bottled goods recovered from the storeship *Niantic*, although the Hoff Store site yielded a much wider variety of bottled foods and medicinal supplies (Smith 1981). However, the lack of variety in the *Niantic* assemblage is undoubtedly due to the limited area of the storeship available for sampling (12%), and the severely limited time available for archaeological investigation (Smith 1981:203, 207). Therefore, the results of a comparative study of these two collections would be questionable.

The manufacturing techniques exhibited by the Hoff Store site bottles are compatible with glass technologies currently accepted to have been in use in the United States and Europe during the mid-19th century (e.g., Jones et al. 1985). However, some refinements of the chronologies associated with certain production methods can be interpreted from the bottle data. Table 7-1 shows the frequency of mold types represented within each functional category. Although not pertinent to the discussion of mold types found below, Table 7-2 is included to present the types and frequencies of different pontil styles represented in the assemblage.

Of the 874 bottles represented, mold types are identified on 697 specimens (79.7%). Production methods could not be positively identified on 177 specimens (20.3%), although the latter are primarily black glass containers surely blown in either dip or three part molds. Of the mold types identified, the hinged bottom mold predominates, with 215 specimens (30.8%) exhibiting this production method. Chronologically, sources have stated that this mold type was in use from ca.1750-1880 (McKearin and Wilson 1978:188; Jones et al. 1985:27). Unfortunately, the deposition of the Hoff glass assemblage occurs within this time frame and cannot help define either the nascent or terminal dates relating to the use of hinged bottom molds.

Post bottom molds were used to form 208 specimens, or 29.8% of the assemblage. All post bottom specimens are found exclusively in the culinary class. Jones et al. (1985:28) cite a beginning

TABLE 7-1
MOLD TYPE

Bottle Category	Free	Dip	3-Piece	Hinge	Cup	Post	Indeterminate	Total
Liquor (Black Glass)	2	4	80				173*	259
Ale					2			2
Wine/Champagne	5	135						140
Culinary	21		2	14	13	208	4	262
Medicinal		3		177	2			182
Toiletry				21	1			22
Mineral Water				3				3
Unknown	3				1			4
TOTAL	31	142	82	215	19	208	177	874

*The 173 unclassified liquor bottles are from dip or three-piece molds.

TABLE 7-2
PONTIL TYPE

Bottle Category	Glass Tip	Blow pipe	Sand	Bare Iron	Un-Pontilled	Un-known	Total
Liquor (Black Glass)			198		61		259
Ale			1		1		2
Wine/Champagne		12	45		83		140
Culinary	1	216		21	20	4	262
Medicinal		155	21		6		182
Toiletry	1	20			1		22
Mineral Water				1		2	3
Unknown		3			1		4
TOTAL	2	406	265	22	173	6	874

employment date of ca.1850 for this mold type. However, the fact that 29.9% of the entire bottle assemblage is made from this mold type, and these specimens represent at least three companies from at least two cities, indicates that this mold type was well established in the bottle making industry by the late 1840s. This would support Toulouse's statement that post bottom "construction was much favored during the hand blowing days, and was already old when Mason showed it in the fruit jar mold he patented on November 23, 1858, one week before his famous jar" (Toulouse 1969b: 582).

Dip molds were used primarily in the formation of alcoholic beverage bottles and total 142 specimens or 20.4% of the collection. Use of this mold type was popular in Europe since the 1700s and was still in use in France as late as 1870 (Jones et

al. 1985:26; Peligot 1877:8). As a result, dip molded bottles are not extremely useful as sensitive time markers.

Three part molds are identified on 82 specimens (11.8%), primarily black glass alcoholic bottles. Henry Ricketts received a British patent in 1821 for the three part mold incorporating a basal mold insert that facilitated embossment of the base (McKearin and Wilson 1978:216; Jones et al. 1985:30). It has been suggested that this mold type was being phased out by about 1850 or, alternatively, was most popular between 1870 and 1910 (Toulouse 1969b:578; Rock 1980:5; Switzer 1974: 6). The present specimens discount both of these contentions. Jones et al. (1985:30) relate a general production range of ca.1820-1920 for this mold type. In light of current archaeological data this production range seems reasonable (e.g., Arm-

strong 1980:10-17; Sternad and Prichett 1981: 612; Felton and Schulz 1983:47).

Free blown bottles account for 31 specimens or 4.4% of the assemblage. The chronology of free blown containers can be summarized in one sentence: "free blown bottles were being made almost a score of centuries ago . . . they are being made today" (Toulouse 1969a:530). In other words, free blown bottles are poor temporal markers.

Cup bottom molds were used to form 19 specimens (2.7%). The most interesting of these is the bottle base exhibiting the British Registry Mark (Figure 7-13). Jones et al. (1985:45) cite an introductory date of ca.1850 for the use of this mold type but do not substantiate this date nor specify whether this employment date relates to European or American glass production. Since the Registry Mark displayed by the present specimen relates a specific manufacturing date of April 2, 1849, it can be stated that cup bottom mold technology was used in England as early as 1849.

In closing, two last observations seem to war-

rant brief discussion. First is the black glass bottle bases displaying the "A. HART & SON BALTIMORE" basal embossing (Figure 7-3b). These bases do not exhibit pontil scars. It seems unlikely that a Baltimore merchant would import glass containers from Europe when locally produced bottles could be purchased from the Baltimore Glass Works, thereby eliminating cost of trans-Atlantic shipping and passage time. This being the case, it would appear that at least one American glass house was utilizing pontil substitutes by 1851, if not earlier.

Finally, of the 89 champagne finishes present in the collection 69 exhibit sheared lips while the 20 remaining exhibit beveled lips. It has been suggested that the stylistic change from sheared to beveled champagne lips occurred around 1860 (Felton and Schulz 1983:50). The presence of beveled champagne lips in the Hoff Store site assemblage clearly indicates this stylistic transition was occurring by around 1850.

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Chinese Export Porcelain in Gold Rush San Francisco

INTRODUCTION

A minimum of five Chinese underglaze blue (or blue-and-white) porcelain toiletry sets were recovered from Unit 7 of the Hoff Store site (see Walsh, this volume, Figure 3–2). These toiletry sets represent a unique, and as yet largely unrecorded, aspect of trade between China and the United States during the California Gold Rush.

In 1851, at the moment when the underglaze blue porcelain from the Hoff Store site was entombed, the United States had already enjoyed more than 60 years of independent trade with China (Mudge 1986:164). However, this was a time of change and instability for the China trade. Demand for Chinese ceramics was in decline along the East Coast while, concomitantly, the Gold Rush precipitated a burgeoning trade in the Western frontier. San Francisco became the new focus for American trade with China, and Chinese goods of every description found their way into the stores of the city (Mudge 1986:189–191; Barry and Patten 1947:167). The vigor of this trade is in part reflected in the ubiquity of Chinese ceramics recovered in mid-19th-century archaeological deposits throughout San Francisco (e.g., Pastron et al. 1981).

The toiletry sets from the Hoff Store site belong to the broad category of Chinese ceramic wares usually called export porcelain. Volumes have been written on export porcelain (e.g. Beurdeley 1963; Crossman 1964; Feller 1982; Mudge 1962, 1986; Scheurleer 1974; Schiffer et al. 1975, 1980; Yeo and Martin 1978). Nevertheless, these sources rarely mention pieces such as those recovered in San Francisco. These particular examples fall into a gray zone which is neither the fine porcelain found in private collections and art museums nor

the common domestic ware associated with the storage and consumption of food, and commonly found at Chinese occupation sites in the western United States. Export porcelain of the sort recovered at the Hoff Store site was made specifically for Westerners; it is finer than utilitarian ware, yet not fine enough to be considered “collectible” (Beurdeley 1963:28).

DESCRIPTION

The toiletry sets—or wash sets, bathing objects, toilet sets—from the Hoff Store site consist of five separate vessel forms (Table 8–1): basins (MNS=9); water bottles with lids (MNS=9); brush boxes with lids (MNS=7); three-part soap dishes consisting of catch basins, sieves, and lids (MNS=5); and chamber pots with lids (MNS=7).

Basins, Water Bottles, Brush Boxes, and Soap Dishes

The basins, water bottles, brush boxes, and soap dishes are made of a white, dense, slightly grainy hard-paste porcelain. These four vessel forms were painted under the glaze in a blue floral pattern. The motif is the distinctive “Blossom and Foliage” (Willits and Lim 1981:70). This pattern has also been referred to as “Formal Flowers and Angular Leaves and Twigs” (Yeo and Martin 1978:286), “All Over Lotus Decoration with Various Borders” (Alessandra Smith 1988, pers. comm.), and “Plant with Central Flower” (Pastron et al. 1981:447). The glaze is smooth with intermittent pitting and bubbles and varies in color from vessel to vessel, ranging from light gray to celadon.

The “Blossom and Foliage” pattern is an elaborate motif, and details of the design vary from piece to piece. In addition, there is a standard variation in the “blossom” part of the pattern: the brush boxes and soap dishes depict chrysanthemum flowers, while the basins and water bottles depict sweet-pea flowers (Willits and Lim 1981:36). The “foliage” element of the “Blossom and Foliage” design is a continuous spiraling pattern

TABLE 8-1
HOFF STORE SITE CHINESE PORCELAIN*

Form	MNS**	Length (cm)	Width (cm)	Diameter (cm)		Height (cm)
				Base	Rim	
Brush Box	7	19.3	9.6			5.5
Brush Box Lid	6	19.4	9.8			1.9
Soap Dish Catch Basin	4	10.1	7.0			4.5
Soap Dish Sieve	4	9.0	5.6			3.1
Soap Dish Lid	5	9.5	6.1			3.6
Basin	9			19.8	42.1	12.3
Water Bottle	9			13.7	5.0	35.5
Water Bottle Lid	6			3.2	7.9	9.0
Chamber Pot	7			13.2	21.5	13.5
Chamber Pot Lid	5				18.0	3.6

*Dimensions based on intact and reconstructed specimens.

**MNS signifies Minimum Number of Specimens.

that suggests vines and leaves. There are no distinguishing characters, seals, or marks on the vessel bases.

The rectangular brush boxes are longitudinally divided to form two compartments (Figure 8-1b). Lid rims are decorated with the "Greek Key" pattern, while the border of the lid top is decorated with a spiral pattern (Schiffer et al. 1975:68; Figure 8-1a,c).

The term "brush box" attributed to these vessels refers to their use for storage of hair brushes and combs as a part of a toiletry set. Traditionally, however, the Chinese used these for the storage of paint brushes (Schiffer et al. 1975:102).

The soap dishes are comprised of three compartments: catch basin, sieve, and a slightly domed lid with a rectangular knob. When assembled, the flange of the sieve rests on the rim of the catch basin and the lid rests atop the inner edge of the sieve (Figure 8-2b-c).

The catch basins and lids are decorated in the "Blossom and Foliage" motif. The sieves are covered in a plain celadon glaze except for the flange, which is decorated in a spiral pattern. The lid rims are decorated with the Greek Key motif.

The basins are broad, shallow, open vessels and have a 4.8 cm (or 1.87 in.) wide flange at the rim. The flange and concave surface of the basins is decorated with blue underglaze in the "Blossom and Foliage" motif (Figure 8-3b). The convex surface of each basin is plain with the exception of

four stylized bats placed at equidistant points around the vessel. Bat style varies from vessel to vessel and on a single vessel; for example, some have detailed faces showing eyes and whiskers, while others are an absolute abstraction (Figure 8-4a-b).

The water bottles are globular with a long tapering neck and lid (Figure 8-5). The hollow domed lids have a pointed knob at the top and a flared base to allow the lid to seat on the rim of the bottle. A hollow "stopper" extends from the bottom of the domed portion of the lid, fitting loosely inside the neck of the bottle when the lid is in place. The rims of the bottles and the rims of the lids are decorated in the Greek Key pattern, although one of the bottle rims is finished with two parallel lines encircling the rim.

Chamber pots

The chamber pots are made of a light gray, dense, slightly grainy hard-paste porcelain. Painted in underglaze blue, the motif is the "Canton" pattern (Schiffer et al. 1975:70; Crossman 1964:19). Variations of the "Canton" pattern are sometimes referred to as "Nanking" (Crossman 1964:23) or "Macao" (Beurdeley 1963:28). The gray glaze varies in depth of shade from vessel to vessel and is smooth with intermittent pitting and bubbles. There are no distin-

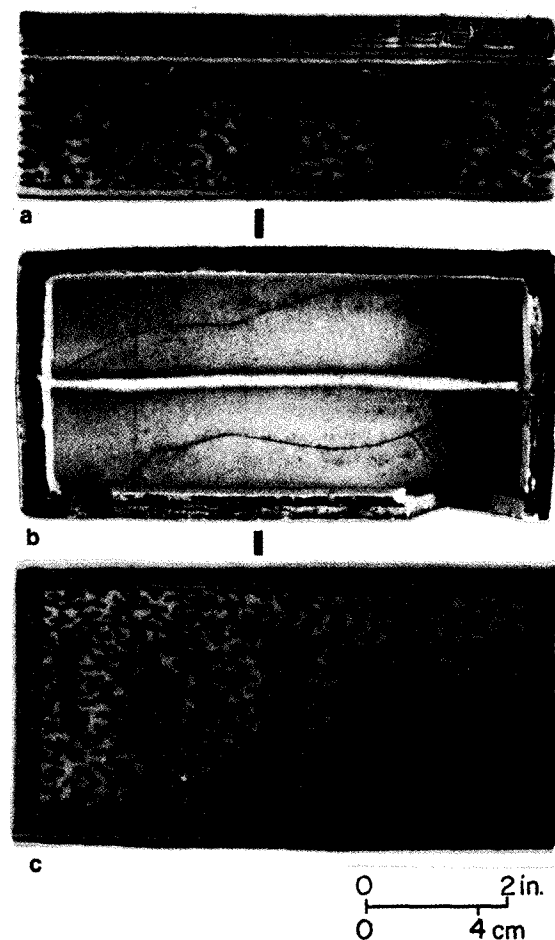


FIGURE 8-1. Brush box in "Blossom and Foliage" motif: (a) side view of box with lid (note "Greek key" lid border); (b) view of open box with center divider; (c) top view of box lid showing spiral pattern border.

guishing characters, seals, or marks on the vessel bases.

The "Canton" pattern depicts Chinese landscapes of mountains, islands, buildings, water, bridges, and in some cases, boats and people. The border of the "Canton" pattern is usually a lattice with a scalloped or wavy line above (Mudge 1962: 140). The "Nanking" border is "a finer lattice work design with an ornament inside the lattice and a spearhead inner border rather than a scalloped line" (Crossman 1964:23). However, the borders on the chamber pots from the Hoff Store site appear as neither scalloped nor spearhead but, rather, as a series of dots, dashes and hatch marks

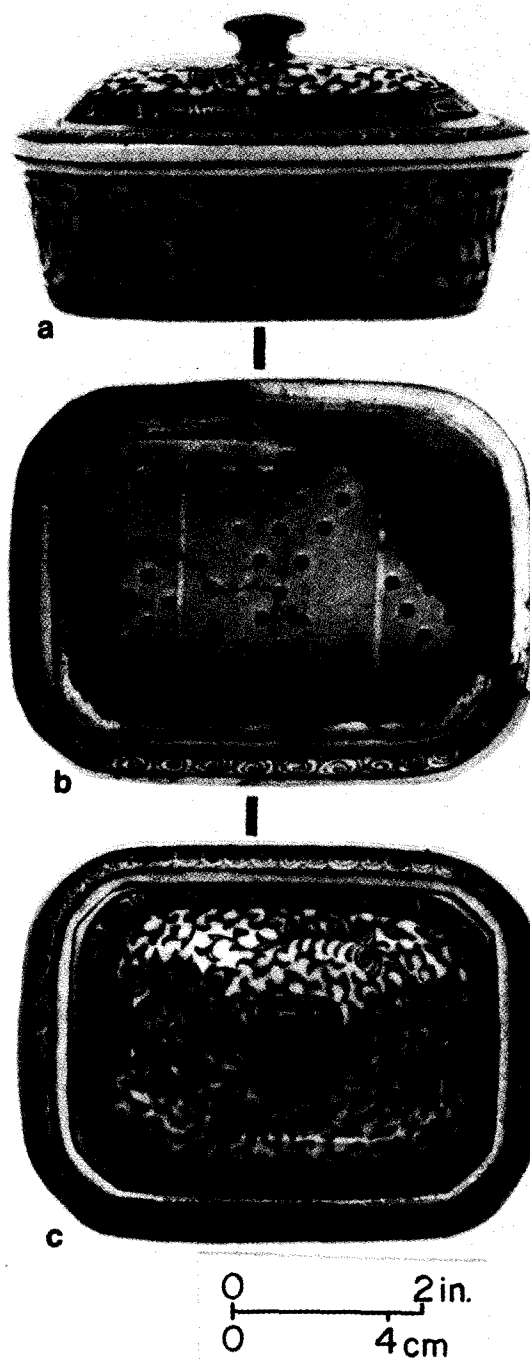


FIGURE 8-2. Soap dish in "Blossom and Foliage" motif: (a) side view of soap dish showing chrysanthemum flower; (b) soap dish with lid removed to show strainer resting on catch basin rim; (c) top view of the soap dish showing position of lid on inner edge of sieve (note the "Greek Key" design on lid border and the spiral pattern on sieve rim, respectively).

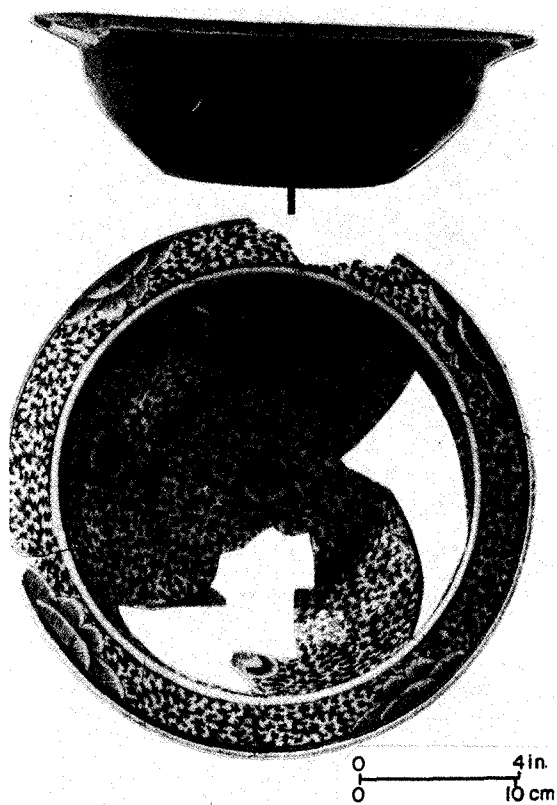


FIGURE 8-3. Basin in "Blossom and Foliage" motif: (a) side view of basin with bat design; (b) inner surface of basin with sweet-pea blossom design.

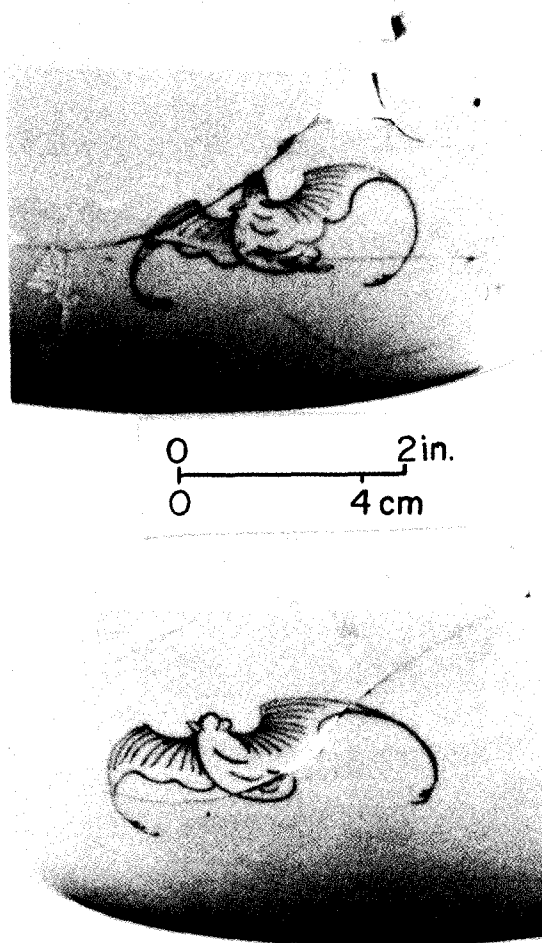


FIGURE 8-4. Bat design: (a) bat with detailed facial features, including whiskers; (b) bat with head facing forward.

(Figure 8-6c). Therefore, these vessels are somewhat arbitrarily designated as "Canton" ware.

The chamber pots are globular vessels with a single handle, a flared rim, and a slightly domed lid with a round knob. The lid rests on the inner edge of the vessel rim. The top of each vessel handle is decorated with an embossed heart-shaped leaf. The lids are in blue underglaze showing an abstraction of the "Canton" pattern (Figure 8-6b).

DISCUSSION

Although there is no way to indicate conclusively that the Hoff Store site porcelain was being sold as "sets," solid support exists for the grouping of such vessel types as sets (Mudge 1986:177; Schiffer et al. 1980:65-75; Herskowitz 1978:115).

A possible exception may be the chamber pots, since they are of a different clay, glaze, and pattern than the other vessels from the site.

Throughout the 18th and 19th centuries, porcelain toiletry sets were a common feature of European and American households (Feller 1982:17). Chinese toiletry sets roughly similar to those recovered from the Hoff Store site may be found at the Peabody Museum in Salem, Massachusetts (William Sargent 1988, pers. comm.); Historic Cherry Hill in Albany, New York (Mudge 1986:177); and the Captain Robert Bennet Forbes house

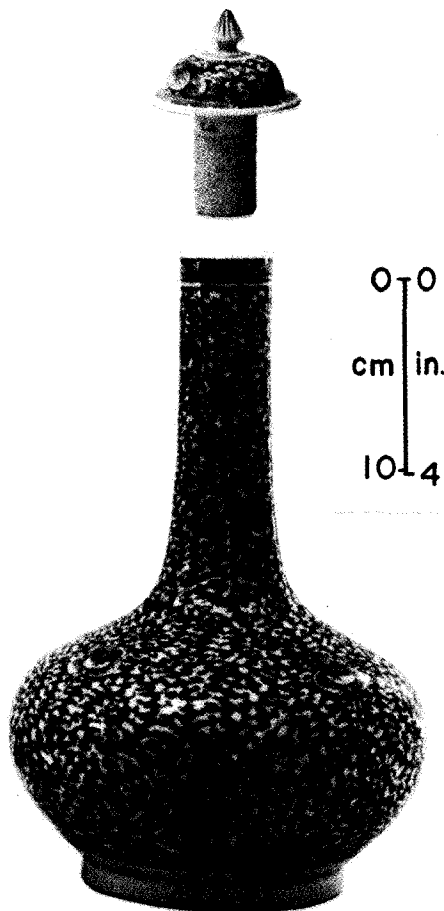


FIGURE 8-5. Water bottle and lid in "Blossom and Foliage" motif.

in Milton, Massachusetts (A. Smith 1988, pers. comm.).

The set at Historic Cherry Hill is in the "Rose Mandarin" pattern, dates to ca.1855–1870, and includes "basin, covered bottle, commode, brush box, and soap dish" (Mudge 1986:177). The set at the Captain Robert Bennet Forbes House includes "wash basin, water jug and top, toothbrush holder and lid, mug, cup, and chamber pot with lid" (A. Smith 1988, pers. comm.). This set, in the "Blossom and Foliage" pattern, was purchased in China by Captain Forbes, ca.1850, who made personal use of the vessels in his home (A. Smith 1989, pers. comm.).

Although today many more examples of early to



FIGURE 8-6. Chamber pot in "Canton" motif: (a) chamber pot with lid (note single handle); (b) view of lid top showing design; (c) design variation on chamber pot lip.

mid-19th-century China Trade porcelains are found in collections along the eastern seaboard, the West Coast was by no means excluded from China Trade activities prior to the Gold Rush (Brown 1947:1; Mudge 1986:181).

By the close of the 1820's California had begun to feel strongly the influence of the China trade. . . . Indeed, the Mexican War and the Gold Rush were, in a sense, products of the China trade, which directed national attention to the acquisition of California and brought an influx of Americans into this far western land (Cleland 1916, 1:281–289).

Alfred Robinson, supercargo for the China Trade firm Bryant and Sturgis, reported a strong market in 1834:

The California trade at present is brisk and we have a good demand for Goods of every description, each year approaching to a greater consumption. . . . (Mudge 1986: 183–184).

Several early to mid-19th-century West Coast sites have yielded blue-and-white Chinese porcelain, although none of the recovered specimens matches the Hoff Store site porcelain forms. For

example, the ca. 1824–1825 HBC Kanaka Village/Vancouver Barracks site in Washington yielded several “blue on white [porcelain] sherds” thought to represent ginger jars (Carley 1982:57). In California, two adobe sites, the Ontiveros adobe (ca. 1811–1814) and the Cooper-Molera adobe (ca. 1820–1840), both yielded Chinese porcelain. However, these pieces represent tableware: the Ontiveros adobe assemblage includes four “China Trade Porcelain” plate sherds, as well as 17 sherds of “Canton Ware” (Benté 1980:124), while the Cooper Molera collection includes “fragments of a small hand-painted rice bowl” (Felton and Schulz 1983:45).

The advent of the Gold Rush saw a dramatic increase in the amount of goods imported from China to the West Coast, especially to San Francisco. In 1849 the ship *Rhone* arrived in San Francisco from Canton with a cargo that included “Chinaware, in complete Tea and dinner Sets . . . Toilet Sets, Etc.” (Mudge 1986:190–191). Several businessmen received merchandise from China, including B. Frederick Moses who advertised himself as an “Importer of China Goods.” In 1850 he received a shipment of porcelain (including “wash-bowls”) from the American China trade firm of Russell and Company (Mudge 1986:190–191).

T. A. Barry and B. A. Patten describe the San Francisco office of the shipping company Riddle and Co., which seems to have served as both place of work and residence for those connected with the firm during the Gold Rush:

The upper story of this building was used as a dormitory. . . . It was a spacious room, nearly square. Hammocks were slung at every corner and available post. . . . Against the walls on all sides were large China water-jars, China wash-stands and large China-stone wash-basins, and coconut-shell dippers. Nearly all the furniture then was of China importation. . . . (Barry and Patten 1947:99–100).

They also mention a shop which specialized in Chinese merchandise:

Thomas J. Poulterer was on the corner of California and Montgomery streets in 1849–1850. We remember a great sale of China goods, fancy furniture, bedsteads, lounges, chairs, work-tables, silks, shawls, ivory-work, stone-ware, etc., seemingly enough to supply the whole city for a year (Barry and Patten 1947:167).

San Francisco archaeological sites have yielded limited amounts of blue underglaze porcelain in the “Blossom and Foliage” pattern. Vessel types decorated in this motif include “Wine or Soy Sauce Serving Vessels,” “Red Seal Ink Well,” and “Flower Bulb Container,” but none of these vessel forms represents the components of a toiletry set, and all are associated with a waterfront fill site dating to the 1880s (Pastron et al. 1981:251, 447, 462).

Chinese porcelain in motifs other than “Blossom and Foliage” has been recovered in virtually every Gold Rush or post-Gold Rush site excavated in San Francisco within the past ten years (see, for example, Pastron et al. 1981; Archeo-Tec 1986, 1988, n.d.a, n.d.b, n.d.c). Yet, until the excavation of the Hoff Store site, none of the recovered forms has been a component of export ware toiletry sets. In December, 1988, excavations at the southwestern corner of Sacramento and Kearny streets revealed the remains of a Chinese store destroyed in the May 3–4, 1851, fire (see Pastron, this volume, Figure 2–1). Three sherds from this site form a portion of a large blue underglaze basin in the “Blossom and Foliage” pattern, with the convex surface showing a bat.

CONCLUSIONS

Chinese porcelain toiletry sets of the type found at the Hoff Store site are well documented in both museums and private collections throughout the Eastern United States. For example, an identical set dating to around 1850 is part of the collection at the Captain Robert Bennet Forbes House in Milton, Massachusetts.

The porcelain toiletry sets from the Hoff Store site, like most 19th-century Chinese ceramics, are, in comparison to their 18th-century counterparts, of inferior quality in terms of workmanship and design. Nevertheless, the fact that a man like Captain Robert Bennet Forbes would choose to make personal use of a set of vessels identical to those recovered at the Hoff Store site suggests that these pieces were among the better examples of Chinese export ware available at the time.

Although Chinese porcelain is commonly found at 19th-century archaeological sites throughout the American West, the recovered ceramic forms consist almost exclusively of tableware. The porcelain toiletry sets from the Hoff Store site are the first examples of this type of Chinese export ware documented from a Gold Rush era archaeological deposit on the West Coast.

Since the 1986 archaeological investigations at the Hoff Store site, only one other Gold Rush deposit in San Francisco has yielded ceramic fragments of the same type of Chinese export porcelain. This was the Chinese Store at the corner of Kearny and Sacramento streets (see Pastron, this volume, Figure 2-1), exactly three blocks to the west of the Hoff Store site. Archival and archaeological data combine to suggest that this Asian mercantile establishment met its end in the same conflagration that destroyed the Hoff Store site.

Unfortunately, provenience data regarding the Chinese porcelain toiletry sets from the Hoff Store site deposit are less than ideal. The raging fire and its aftermath resulted in the destruction of architectural remains at the site from which point provenience information may have derived. Also, all of the pieces were recovered from Trench 7, the southernmost excavation unit placed at the site. Further, the quantity of vessels is relatively small, and the pieces are morphologically and functionally incongruous in comparison to the rest of the collection.

Nevertheless, the historical record leaves no doubt that Chinese export ceramics were in high demand in San Francisco at the height of the Gold Rush. Chinese export ware of the sort recovered at the Hoff Store site was eagerly sought for use in both hotels and private homes. Thus, it is by no means unreasonable to posit that one of the merchants doing business near the foot of Howison's Pier had ordered these sets from China with the intention of selling them in the city.

The possibility of a link between the Chinese export porcelain at the Hoff Store site and a similar vessel form found at 600 California Street is of some interest. It is all but certain that the Chinese toiletry sets from the Hoff Store site were intended for sale to Euro-Americans and not to members of

San Francisco's burgeoning Chinese community. This assumption is supported by the fact that no similar vessel forms have been found at any of the Gold Rush Chinese occupation sites excavated to date in California. Yet, fragments of an identical washbasin were found at 600 California Street which, as has been seen, was a Chinese mercantile establishment whose operation was coeval with the Gold Rush stores operating at the southwestern corner of Battery and Sacramento streets.

It is possible that one or more of the Anglo-American merchants at the foot of Howison's Pier had established a business relationship with an Asian counterpart in Chinatown and that this latter individual served as a *negotiant*, or broker, for the acquisition of various desired goods from China. Such use of a Chinese go-between in business transactions between Chinese producers and/or sellers and Western traders and/or buyers was an established practice in the China Trade throughout the mid-19th century.

Conversely, it may be that one of the Anglo-American merchants at the foot of Howison's Pier was himself an active participant in the China Trade or that Chinese merchants in "Chinatown" conducted retail trade with Anglo-Americans. Although the data are presently inadequate to address this question in any detail, the issue itself is worthy of consideration in future historical archaeological research, both in San Francisco and other areas of the American West.

In conclusion, the Chinese porcelain toiletry sets from the Hoff Store site appear to represent a new dimension of the West Coast China trade—a trade that was already well established in California prior to 1849, but which increased dramatically in the years following the discovery of gold at Sutter's Mill.

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Packed Pork and Other Foodstuffs from the California Gold Rush

INTRODUCTION

In May 1851, San Francisco, California, was the west coast's principal transshipment point for goods destined for the gold fields, mining camps, towns, and outbound ships. Despite erratic inventories and price fluctuations, the California economy at that time was moderately strong, and the spring-time mining season was under way. Basic supplies and exotic goods were readily available for purchase in over-stocked San Francisco stores (Soulé et al. 1855:610; *Alta California* 4/22/1851). Among the necessities supplied from this urban, frontier supply center was food.

The food remains recovered from the Hoff Store site reflect a pattern of food consumption that would be repeated throughout the remainder of the century in other western mining booms. From the subsistence diet of emigrants en route to the gold fields by sea or land to the opulence of the banquet table for the successful miners or businessmen, the Gold Rush menu reflected the boom and bust life-way of this new and exciting land.

Although much of the food data from the Hoff Store site consists of unique perishable items, one component is common to many historic archaeological sites, butchered pig bones. Over 500 pig bones and pig bone fragments from the site provide insights into pork cuts present in commercially packed, preserved pork. This 19th-century staple was common throughout the United States, and it was particularly well suited for use under frontier conditions.

FEEDING THE GOLD RUSH

Although California's agricultural potential was recognized prior to the Gold Rush, there were

problems with supplying sufficient quantities of locally produced foodstuffs during the height of the Gold Rush between about 1849 and 1852 (Lotchin 1974:10). With the prospect of unlimited wealth from minimal effort, many California farmers and field hands abandoned farms and became prospectors or miners. Emigrant farmers entering California during the Gold Rush were faced with vastly different soils and climates than they were familiar with, and farming for them in this new environment was a hit or miss venture (Paul 1973: 16-17). For those who persevered, the profits from agriculture were very good and less speculative than mining, although the potential for reward was commonly believed to be much greater in mining. Most of the food consumed in California prior to about 1852 was imported, and it entered the state through the port of San Francisco (Lotchin 1974:47). The Hoff Store foodstuffs were imported into California from the east coast and elsewhere in the world.

A determination of the ports of origins for the types of food recovered from the Hoff Store site was made through a survey of ships' manifests for vessels arriving in San Francisco between 1850 and 1851. In some instances, however, listed foodstuffs may have been transferred from other ships or obtained in a port of call. For example, the Russian brig *Freja* sailed from southeastern China in 1850 with a large cargo of tea (U.S. Customs Service 1851). Six cases of butter listed on her manifest were probably obtained at the port of origin, during a stop at Lahaina, Hawaii, or in some other port of call, as China was neither an exporter nor a producer of dairy products.

ARCHAEOLOGICAL FOOD ASSEMBLAGE

The archaeological record from the Hoff Store site is remarkable because San Francisco Bay muds encased and preserved the material in a stable, anaerobic environment. Additionally, carbonization from the fire preserved the forms of baked goods and dried vegetables. The meat from the packed pork, however, did not preserve, and only the butchered bones remain.

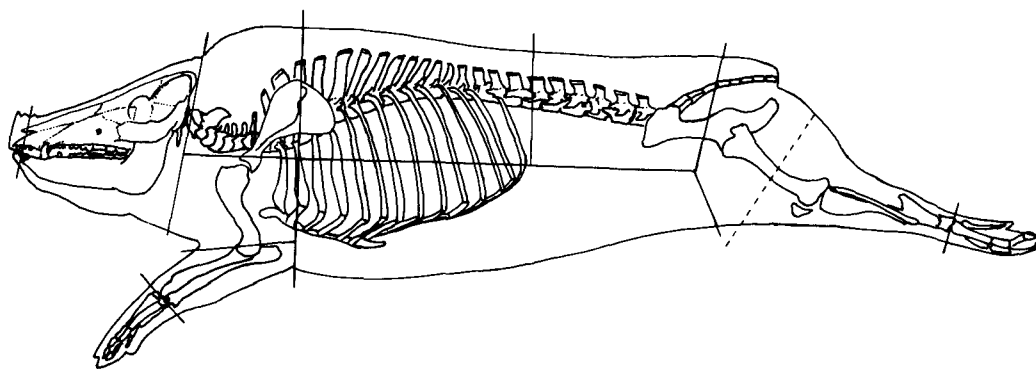


FIGURE 9-1. Hypothesized butchering pattern for prime, packed-pork. See Table 9-1 for percentage of parts represented.

Pork

Five-hundred and forty-three pig (*Sus scrofa*) bones were recovered from the excavation. This assemblage represents a major foodstuff present in the store and one of the most common forms of meat consumed in the west and elsewhere in the United States in the 1850s. It is believed that most, if not all, of the pig remains are from packed-pork, known also as "salt pork." One excavation unit (2N) contained a feature comprised of 257 pork bones and pork bone fragments—some remaining in the barrel bottoms—from a minimum of three barrels with lids branded with a company name (unclear letters denoted by underline):

_ . H. THOMPSON
N.YORK
PRIME PORK 200

Analysis of the pork bones associated with the lids reflects representative meat cuts for prime packed-pork (Table 9-1; Figure 9-1). The pig bones from elsewhere in the site are analyzed separately, although these too probably represent packed-pork (Table 9-1).

Elements and Butchering. A notable attribute of the barrel lid, pig bone assemblage is the pres-

ence of at least three heads and six jaws. The heads were separated from the body at the basioccipital by cutting between the skull and the atlas. This is evidenced by the removal of the condylar portion of the skull and the anterior edges of the atlas wings (Figures 9-1, 9-2f). The anterior edge of one chin is cut, probably from removal of the pig's snout (Figure 9-1). Two jaws from the remainder of the site also exhibit this butchering. No other butchering marks were noted on the crania or mandibles, but these bones were often highly fragmented.

Vertebral butchering marks reflect cross cuts through the spine and sagittal splitting of the carcass. Sagittal cuts were sometimes through the centrum, but more commonly the hog was split along edge of the centrum alongside the backbone.

Two scapulae are cut diagonally through the posterior side of the scapula neck to the scapula's anterior border, to help separate the shoulder (Figures 9-1, 9-2d). One scapula has a cut parallel to its vertebral border (Figure 9-2c). Several scapulae, however, exhibit no evidence of butchering.

The distal ends of five humeri were truncated by a saw cut at the base of the shaft (Figure 9-2a) or at the condylar end (Figures 9-1, 9-2b).

The neck of the ilium was usually sawn diagonally separating the ilial wing from the remainder of the innominate (Figures 9-1, 9-2e). This saw

TABLE 9-1
PORK BONES

Meat Cut: Element	No. Specimens		Minimum No. Elements		Percent Minimum No.		No. Specimens Butchered	
	Prime ¹	Other ²	Prime	Other	Prime	Other	Prime	Other
Head/Jowl:								
Cranium	13	19	3	3	1.9	1.3	2	0
Mandible	25	14	6	6	4.0	2.7	1	2
Teeth ³	23	8	NA	NA	NA	NA	0	0
Sub-Total	61	41	9	9	5.9	4.0	3	2
Neck:								
Atlas	6	3	5	3	3.2	1.3	3	1
Axis	8	3	8	3	5.2	1.3	1	1
Cervical	27	21	24	17	15.6	7.6	5	3
Scapula	20	21	10	15	6.5	6.7	2	6
Sub-Total	61	48	47	38	30.5	16.9	11	11
Shoulder:								
Humerus	22	32	11	22	7.1	9.8	4	7
Sub-Total	22	32	11	22	7.1	9.8	4	7
Foreshank:								
Radius	8	13	5	10	3.2	4.4	0	1
Ulna	10	15	6	15	3.9	6.7	0	2
Sub-Total	18	28	11	25	7.1	11.1	0	3
Rib & Loin:								
Thoracic vert.	16	30	12	28	7.8	12.4	0	1
Rib Head end	14	28	14	28	9.1	12.4	3	0
Iliac Wing	8	14	8	14	5.2	6.2	6	12
Lumbar vert.	4	30	4	30	2.6	13.3	1	8
Sacral vert.	10	12	9	12	5.8	5.3	0	3
Sub-Total	52	114	47	112	30.5	49.6	10	24
Spareribs:								
Medial frag.	3	9	3	6	1.9	2.7	1	0
Sternal end	4	2	4	2	2.6	0.9	0	0
Sub-Total	7	11	7	8	4.5	3.6	1	0
Roast/Ham:								
Innominate ⁴	8	0	8	0	5.2	0.0	3	0
Caudal vert.	1	1	1	1	0.6	0.4	0	0
Femur	17	4	6	3	3.9	1.3	1	0
Tibia	7	2	4	2	2.6	0.9	0	0
Fibula	1	1	1	1	0.6	0.4	1	1
Astragalus	1	1	1	1	0.6	0.4	1	0
Calcaneum	0	1	0	1	0.0	0.4	0	0
Sub-Total	35	10	21	9	13.5	3.8	6	1
Hock:								
Phalange	1	1	1	1	0.6	0.4	0	1
Carpal	0	1	0	1	0.0	0.4	0	1
Sub-Total	1	2	1	2	0.6	0.8	0	2
TOTAL	257	286	154	225	99.7%	99.6%	35	50

¹Bones associated with "PRIME PORK" barrel lids.²Bones not associated with "PRIME PORK" barrel lids.³Outside Minimum Number of Elements count.⁴Excludes iliac wing.

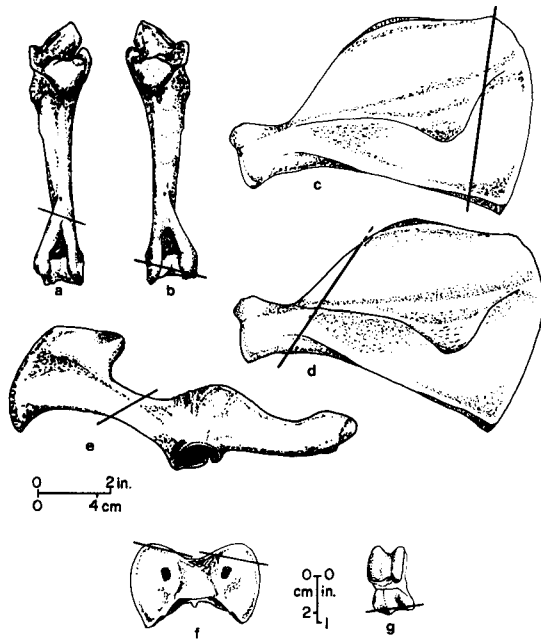


FIGURE 9-2. Meat cuts: (a-b) humerus; (c-d) scapula; (e) innominate; (f) atlas; (g) astragalus (note scale change for f-g).

cut was the most consistent butchering attribute for both assemblages. Only one of six femora from the barrel lid association exhibits evidence of butchering, and this evidence consists of a single cross-cut through the middle of the shaft (Figure 9-1).

A body region with relatively poor representation in the recovered bones is comprised of the medial and ventral portions of the rib cage. Few foot bones are present in either assemblage. An astragalus exhibits a distal truncation associated with removal of the feet (Figure 9-2g).

Although no systematic aging study was undertaken, most of the remains are those of younger animals, with unerupted third molars, unfused vertebral articular surfaces, and unfused long bone epiphyses.

Pork bones from elsewhere in the site exhibit some differences from the barrel lid pork bones in relative percent of elements represented (Table 9-1). The butchering techniques, however, differ little.

Packed-Pork Processing. The following is a synthesis of commercial, packed-pork processing derived from a variety of sources (DeBow 1854, 1; Richardson [1851]; Skaggs 1986; Youatt 1847). Minor variations exist within most of the steps presented. Packed-pork processing began in the slaughter-houses with killing or stunning the animal and then bleeding it. The body was scalded with hot water, and the softened hair and bristles were scraped off. Next, the animal was hung by its hind legs and gutted. The early-day Cincinnati slaughter-houses dumped the viscera and blood into the Ohio River (Skaggs 1986:39). As the offal increased in value, however, slaughterers were either paid with by-products—the heart, liver, and “gut fat,” or they turned the by-products over to the slaughter-house and were paid a bonus of \$0.10–\$0.25 per animal (DeBow 1854, 1:376).

The carcass was transported to the packing house and weighed. It was then hung overnight to cool and to allow the meat to “set.” Front and hind feet were the first body part removed, and they were set aside or discarded. The feet were apparently not included with packed-pork. The next step was usually removal of the head “close to the ears,” at the basioccipital (Richardson [1851]:136; Figure 9-1). The carcass was split sagittally through or next to the spine with cleaver and mallet, or saw. Next, it was divided into middling, ham end, and shoulder end (DeBow 1854, 1:376).

The cuts were thoroughly rubbed with salt. These pieces were in turn placed in a series of brine vats, or they were packed in salt and then covered with brine (Skaggs 1986:39–40; Youatt 1847:148; Richardson [1851]:142–143). Saltpeter (potassium nitrate) and sugar or molasses were often used at various stages of the process to preserve color and enhance taste. After curing for one to four months, the pork was ready for packaging, shipment, and consumption for up to two years (Youatt 1847:148). “New” packed-pork grades, however, commanded higher prices than “old” packed-pork grades (*Baltimore Sun* 5/24/1851).

Two hundred pounds of butchered pork were packed into water-tight oak barrels for shipment. The gross weight of each barrel was about 355 pounds (Dawson 1911:329).

Packed-Pork Grades. The better hogs were reserved for the fresh meat trade while the packed-pork trade generally utilized lesser quality live hogs and carcasses. Most 19th-century pork packers followed industry grading guidelines and local inspection laws based on meat quality and cut. Packed-pork was retailed in three grades, but it was also sold ungraded. Adherence to the grading system was the responsibility of the individual packers, so considerable variation within these classes is expected. The grades and prices for pork in San Francisco in March, 1851, included clear pork for \$18 per barrel, mess pork for \$15 per barrel, and prime pork for \$10 per barrel (*Alta California* 3/15/1851, 3/30/1851). In Baltimore, the March prices were \$12.87 to \$13.75 for mess pork and \$10 to \$11 for prime pork (*Baltimore Sun* 3/22/1851).

Clear pork was the top grade of packed-pork. It could be made from sides or middlings of extra heavy, well-fatted hogs with the back-bone and, minimally, the dorsal part of the ribs, removed (Dawson 1911:363; DeBow 1854, 1:376; Skaggs 1986:40). Clear pork was popular in New England and Europe (DeBow 1854, 1:377; Skaggs 1986:40).

Mess pork was the most common form of packed-pork, and, at one time, accounted for one-third of the wholesale pork trade (Dawson 1911:360). It was made from well-fatted packing hogs including those with heavy loins (Dawson 1911:360). The carcasses often exhibited defects—such as large bones, coarse-grained meat, bruises, and uneven shape—that mitigated against their use as fresh market pork (Dawson 1911:321). In some instances, mess pork sides were cut into six-inch-wide strips that retained the backstrap, or clear plate and fat back (Dawson 1911:360). Additional cuts represented in mess pork included shoulder, flank, and rump (Skaggs 1986:40; Dawson 1911:360). DeBow (1854, 1:376) lists mess pork as comprised of sides with two rumps per barrel. Mess pork was associated with middle class households, maritime use, lumber camps, and the South (Dawson 1911:362; DeBow 1854, 1:377; Skaggs 1986:40).

Prime pork was the lowest grade of packed-

pork. It was made from light, packing hogs, “deficient in shape, quality, and finish” (Dawson 1911:321–322, 362; DeBow 1854, 1:376). Among the potential cuts represented in this grade are shoulders, jowls, and sides (DeBow 1854, 1:377; Skaggs 1986:40; Hilliard 1972:58). Prime pork was apparently favored by plantation owners for use by slaves on antebellum Southern plantations and by other lower economic groups (DeBow 1854, 1:377; Hilliard 1972:58).

Discussion of Pork Remains. One group of pork bones associated with the prime pork barrel lids reflects a prime, packed-pork meat assemblage from a single 1851 New York supplier. The less desirable shoulder and rib and loin elements predominate. Surprisingly, the more desirable roast or ham is well represented, as is the shoulder cut. Belly elements, spareribs, are under-represented.

Pigs’ crania and mandibles are not unusual cuts for the lowest grade of packed-pork, although early Cincinnati packing-houses apparently discarded the head (Skaggs 1986:41). Seldom a popular cut, the pig’s head could be baked or boiled for sausage (Childs 1832:46). In addition to the jowls, the head contains the tongue, snout—removed in at least three specimens, and brain, all considered edible cuts (Childs 1832:42, 44).

One factor not judged from the bones was the relative quality of the meat. For swine, variation in size and body configuration is pronounced. Desirable cuts from a lean, packing pig might not be as highly valued as less desirable cuts from an extra heavy, well-fatted hog.

The pig bones found elsewhere in the site reflect a slightly different composition. Of note is the higher percentage of the loin elements and dorsal ends of ribs and correspondingly lower percentage of roast or ham elements. The percentage of the neck cut is also significantly lower than in the barrel lid association. In some respects, this assemblage is more characteristic of less desirable pork cuts expected with prime grade pork than is the barrel lid bone assemblage. This other assemblage is probably also attributable to prime packed-pork.

Pork was the dominant meat consumed in the

United States during the mid-19th century. Packed-pork was the common preserved meat used in households throughout the United States and Europe. Its popularity was attributable more to the lack of refrigeration and low cost of packed-pork, than to a preference for its taste over fresh meat. Packed-beef, although available, was not considered as tasty as packed-pork, and it did not preserve as well as pork (Skaggs 1986:35). In Chicago up to 1842, only 810 of a total of 16,209 barrels of packed meat were beef (Skaggs 1986:44). New York pork-packing houses dominated the early packed-pork industry until supplanted by Cincinnati beginning in the 1840s. Cincinnati packed-pork was shipped on waterways to the east coast, the South, Cuba, Great Britain, France, and the German states (Skaggs 1986:36). Westphalia, for example, received over three million tons of packed-pork from one of the 40 Cincinnati firms in the 1840s (Skaggs 1986:36). This pork, however, was probably sold in bulk for curing into hams.

Packed-pork was a basic staple on the western frontier (Holliday 1981:314). Packed-pork was equally common in a ship's larder and an emigrant wagon. Because of the shortage of fresh meat in remote mining camps, packed-pork was also utilized there. It would not, however, be unusual to find packed-pork in urban settings, particularly during seasons or areas where warm temperatures prevail.

Despite the fact that the California ranchos in the 1840s supported tremendous herds of cattle, these animals were principally raised for tallow and hide production. Beef from these range animals was described by Gold Rush immigrants as tasteless, tough and stringy (Borthwick 1857:30; Delano 1854:224–225). References to the taste of packed-pork, however, fare little better and often times much worse:

The pork I bought in town last night is the stinkiest salt junk ever brought around the Horn. It is a hardship that we can't get better hog meat, as it's more than half of our living. We fry it for breakfast and supper, boil it with our beans, and sop our bread in the grease (Canfield 1920:3).

Instead, a variety of fresh game animals was offered to consumers in 1851 markets including the

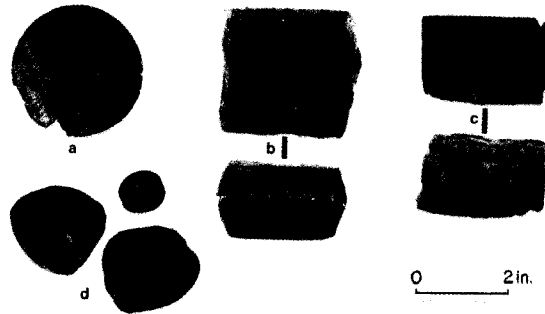


FIGURE 9-3. Baked goods: (a) bread; (b) cakes; (c-d) crackers.

following: salmon, geese, ducks, quail, bear, elk, antelope, deer, and "smaller game" (Soulé et al. 1855:360).

Packed pork was imported to San Francisco from the east coast, England, Germany, and Australia. Fresh pork was available from Hawaii, Tahiti, South America, and Mexico.

Other Foodstuffs

A number of other categories of foodstuffs are represented in the assemblage from the Hoff Store site. These are discussed below.

Cake. One hundred and sixty nine small square cakes ($2\frac{3}{4} \times 2\frac{3}{4} \times \frac{7}{8}$ in.) were individually wrapped in paper, two to a package (Figure 9-3b). The name "T CARRACAS" is molded around a central, indistinguishable design on the top of each cake. These cakes have a dense, granular texture with few air pockets. It is believed that these cakes were soft when packaged; surface irregularities conform to remnants of the paper wrapping around each cake, and the molded design is flattened on some specimens. In addition to these specimens, at least 16 similarly impressed and wrapped smaller cakes ($2\frac{1}{3} \times 2\frac{1}{3} \times \frac{7}{8}$ in.) were recovered.

Historic references to comparable specimens are rare, although cake was popular fare when it could be obtained. One gold field merchant sold 125 lbs. of canned wedding cakes for \$0.50 per lb. (Rich-

ards 1956:21). Pies, cakes, and sweets such as candy were manufactured and sold in the city as early as 1849 (Taylor 1850, 1:114, 212; Soulé et al. 1855:644). An 1850 flyer from a gold field store advertised "China Bread and Cakes," reflecting another source for similar foods (Johnson 1974:122).

Breads. A group of 29 packages of rectangular, flat crackers is represented in the collection. Five of these unleavened, granular crackers are contained in each package and measure $2\frac{1}{2} \times 1\frac{3}{4} \times 1\frac{1}{3}$ in. (Figure 9-3c). Fragments of the paper wrappers display undeciphered English text.

Nineteen small- to medium-sized ovoid crackers with a hard, smooth surface were recovered from the site (Figure 9-3d). These range in size from a mere $1 \times \frac{7}{8} \times \frac{7}{32}$ in. thick to $2 \times 1\frac{3}{4} \times \frac{5}{8}$ in. thick. The relative thickness of these leavened specimens is the result of a nearly hollow interior. The surface of the crackers was perforated with small holes to facilitate even baking and help stabilize the food's form.

The maker's name "BENT & CO" was impressed in the dough of the larger specimens prior to baking. Bent & Co. was established in 1801 in Milton, Massachusetts, by Josiah Bent (Teele 1887:386). Their specialty was a water cracker, "made by hand, from choice selected flour, with the greatest of care" (Teele 1887:386). By 1908 the company had been purchased by the National Biscuit Co.—later known as Nabisco—but retained the company name (Boston Suburban Book Co. 1908:32). G.H. Bent continued the family's hand-made water cracker business through G.H. Bent & Co. (Union Publishing Co. 1912:24, 41). In 1915, the Bent & Co. name was dropped from the city directory and only the National Biscuit Co. name was listed (Union Publishing Co. 1915:100). Bent & Co. maintained an order box in Boston during the late 1840s and later opened an office there in 1859 (Adams 1847:54, 1848:71, 1849:72; Adams, Sampson and Co. 1859:42).

A carbonized disk, $2\frac{3}{4}$ in. in diameter by $\frac{2}{3}$ in. thick, may be a canned bread (Figure 9-3a). This biscuit is moderately dense with small air pockets and a granular texture. One surface is pla-

nar and appears to have been sliced; the other surface is slightly rounded. The edge is impressed with a vertical line that probably represents a can seam.

A variety of flour and water based baked breads and crackers substituted for freshly baked, yeast-leavened bread. These include navy bread or hard-tack (large, dense, square biscuits), pilot bread, and soda crackers. The basic constituents for the hard breads were flour, water, and salt, with inclusion of saleratus (baking soda) for some of the recipes. These products were baked and then cooled in the open until the moisture dissipated and they assumed a hard consistency. The smooth, hard crust was thought to deter vermin and deterioration. More times than not, however, only humans were deterred by the semi-vitreous shell. The use of wheat flour with the inclusion of a small amount of bran was believed to be more nutritious than making "Navy biscuits" from flour alone (S—K 1854:378).

Navy bread and other hard breads were mixed with other food to add some diversity to the menu. Lobscouse or Lap's-course was a hash or stew made from vegetables, packed-meat, and hard bread (Lewis 1949:107, 121). Another concoction called skillygalee by Lord (1965:113) was made by soaking hardbread in water and then frying it in lard. For desert, dandy funk was made by baking crumbled hardbread with fat and molasses and adding cinnamon and/or raisins (Lewis 1949:107).

Rice. Fragments of at least two burned "mats" of rice were recovered. Some of the charred aggregates of rice remain fused to the plaited inner wrapping. A fragment of an open-twined outer wrapping surrounded the inner bundle on one specimen. The rice grains are between 4–5 mm (or $\frac{1}{6}$ – $\frac{1}{5}$ in.) long by 1.5–2 mm (or $\frac{1}{16}$ – $\frac{1}{12}$ in.) in diameter. These probably represent polished, long-grained "India" or "China" rice.

In China, fixed volumes of rice weighing approximately 100 and 200 lbs. were bundled in diagonal plaited, matting (Figure 9-4b-c). These bundles were then wrapped with a sheet of open twined matting that was tied closed at either end

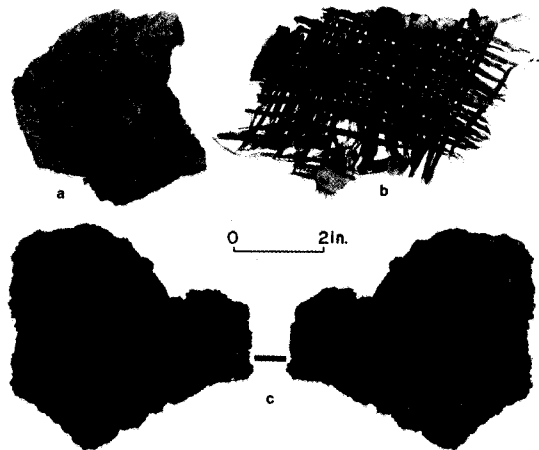


FIGURE 9-4. Rice bundles: (a) outer, open-twined rice bundle wrapping fragment; (b) inner, plaited matting fragment; (c) *left*—carbonized remains of rice on inner surface of rice bundle; *right*—carbonized impression and remnant of inner, plaited rice-matting.

(Figure 9-4a). The plaited inner matting, called “China mat,” was reused or could be purchased separately; in San Francisco this material functioned as wall and floor covering (Barry and Patten 1947:99).

Rice was a popular food in the United States, and it was cultivated in the southeastern states from the 18th century on. Unlike dried beans, boiled rice required little time to prepare, and unlike potatoes, rice stored well. For California-bound overland emigrants, 50 lbs. of rice were recommended as a staple by Street (1851:55). “Irish” potatoes, however, appear to have been the favored vegetable side dish with San Francisco’s Euro-American population, in general. Although price lists in *Alta California* (3/15/1851) show only India rice (\$0.06–\$0.09 lb.) and Carolina rice (\$0.08–\$0.09 lb.), “China” and “Carolina” rice were the two varieties listed in the ca.1851 San Francisco Folger and Tubbs (n.d.:14) catalog. With the increase in China trade to California during the Gold Rush, “mats” of rice from China, rather than barrels and sacks of “Carolina” rice from the southeastern United States, would dominate the San Francisco market. By 1851 at the

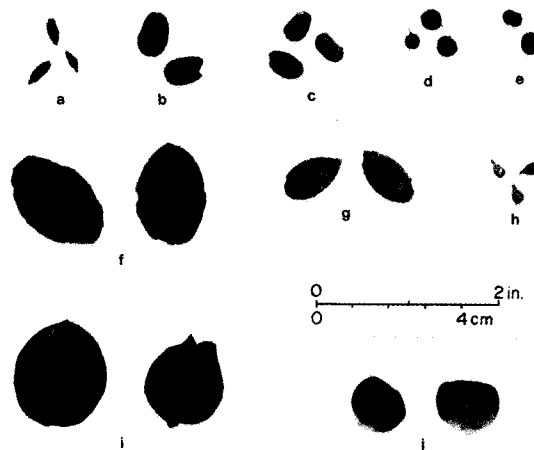


FIGURE 9-5. Pits and seeds: (a) wheat; (b) coffee beans; (c) beans; (d) whole peas; (e) split peas; (f) peach pits; (g) olive pits; (h) grape seeds; (i) hazel nut shells; (j) walnuts.

Hoff Store site, the wrapped mats of rice are dominant.

As the Chinese population began to expand in the early 1850s, the demand for rice increased dramatically as did the price. By late 1851, however, Chinese merchants were noted to have increased in number, and they supplied commission houses with rice for Euro-American consumption, thereby lowering the cost for all (*Evening Picayune* 10/01/1851).

Fruits. Fruit seeds, including peach pits and grape seeds, were recovered from the site (Figure 9-5f,h). Fruits, especially fresh fruits, were highly desirable foods in the west, particularly in light of their known antiscorbutic—anti-scurvy—properties (Wierzbicki 1849:61). At times, however, fresh pears and grapes were rumored causes of cholera outbreaks in San Francisco during 1851 and 1852 (Richards 1956:12, 84).

Preserved or dried fruits were the principal forms available. In March 1851, dried apples and dried peaches were plentiful and sold for \$0.10 lb. (*Alta California* 3/15/1851). Other dried fruits in the markets at that time included prunes for \$0.12

lb. and currants in over-supply (*Alta California* 3/15/1851). Citrus fruits—oranges, lemons, limes, tamarinds—were imported into San Francisco in large quantities from Central and South America, Tahiti, and Hawaii. Fresh peaches were imported from South America and also grown locally, though not in great quantity. Preserved fruit from China was packed in cases containing six jars selling for \$5 per case (*Alta California* 3/15/1851). The site yielded over 750 fragments of small, straight-walled, wide-mouth, brown-glazed Chinese stoneware jars with lids. However, no contents could be associated with this ceramic assemblage.

Nuts. Shells from walnuts and hazel nuts were recovered from the site (Figure 9-5i-j). Fresh walnuts were apparently plentiful in March 1851, as their price was listed as "nominal" (*Alta California* 3/15/89). Peanuts were discovered in association with the storehouse *Niantic* (Smith 1981:178).

Dried Beans. Carbonized beans ranging in length from 8–12 mm (or 3/10–5/10 in.) were recovered from the site (Figure 9-5c). Many of these kidney-shaped beans have split longitudinally into halves. Beans were a standard 19th-century low cost food item. Beans stored well, but because of the lengthy soaking and cooking times required, beans were not ideally suited for overland treks or on-board ships where rolling seas and threat of shipboard fire posed problems. This foodstuff was usually reserved for days of rest or special occasions. J. O. Bruff's emigrant party celebrated the Fourth of July by a "sumptuous repast" featuring pork and beans, bean soup, and buffalo meat (Read and Gaines 1949:29). On the negative side, beans, known to "often disagree with the bowels," as one emigrant noted, were also rumored to cause cholera (Stansbury 1852:57; Read and Gaines 1949:47). Along the emigrant trail, sacks of beans were the most common foodstuff discarded by emigrants to lighten their load or escape cholera (Read and Gaines 1949:47, 48, 51, 68). In 1851, Mexico and Chile were ready sources for this commodity.

Wheat. Small quantities of wheat and possibly flour were recovered from the store (Figure 9-5a). The wheat grains retain their husks and could be seeds meant for planting. Flour may be represented by compact, carbonized material fused to remnants of coarse sack cloth (about 25 threads per in.). In the early days of the city, wheat was imported by the Euro-Americans while corn was favored by the Mexican residents. Although local flour mills processed small amounts of wheat into flour, large commercial flour mills were not established in the city until 1852 (Lotchin 1974:66). The bulk of the wheat in California during the Gold Rush was imported as flour from Valparaiso, Chile, especially from the Chile and California Flour Co. Extensive commodity price lists show oats, barley, corn, corn meal, Chile flour, Sweet Western flour, Gallego & Haxalls flour, and Van Dammen Land flour (*Alta California* 3/15/89). Conspicuously absent from these lists is wheat.

Peas. A few shelled peas, both split and whole, were recovered from the deposits (Figure 9-5d-e). The whole peas may be associated with wide mouthed bottles (see McDougall, this volume). Dried and bottled peas were imported from the east coast, Germany, and Mexico. Fresh or dried peas were imported from Oregon. Split peas sold for \$0.075 lb. (*Alta California* 3/15/89).

Pickled Foods. Wide mouthed quart bottles containing pickles, unpitted green olives, and onions were recovered in wooden cases (Figure 9-5g; see McDougall, this volume, Figure 7-10a). Although popular fare in cities and on board ships, bottled pickled foods could also be found in the mining camps and even in emigrant wagons. Part of the popularity of pickled foodstuffs came from the belief that they prevented scurvy (Lewis 1949:111). Pickled foods were imported from the east coast, China, Australia, and Europe (see *Fruits* for discussion of Chinese ceramic food containers). Pickles in quart bottles sold for \$3 per case [number of bottles per case unspecified] (*Alta California* 3/15/1851).

Coffee. Whole coffee beans, ground coffee, and small wall-mount coffee grinders were recovered

ered from the site (Figure 9–5b). The coffee beans range in length from 9–12 mm (or 1/3–1/2 in.).

By the 1850s, boiled coffee was the favored American hot beverage. Retailers sold whole beans—green or roasted—and ground coffee. Coffee beans were listed as cargo on ships sailing from Hawaii, Mexico, Peru, Brazil, Europe, and the east coast (U.S. Customs Service 1851). Prices range from \$0.125 lb. for Sandwich Island (Hawaiian Islands) coffee to \$0.17 to \$0.18 lb. for Old Government Java coffee (*Alta California* 3/15/1851). Ground coffee was priced at \$0.20 to \$0.30 lb. (*Alta California* 3/15/1851).

Tea. Lead sheet (3/16 in. thick) and associated tea represent the remains of tea caddies. These wooden shipping boxes were lined with soldered lead sheet and filled with one or more paper-wrapped bundles of tea. The tea was probably a “black” tea. The extant tea contains stems as well as leaf parts: it is not the early tea picking of young stems, small leaves, and buds.

Tea, a major impetus for the China Trade, was not as popular with the majority of Americans as it once had been in colonial times. In California, however, emigrants from the British Isles, Australia, and China provided a ready market for the beverage (Borthwick 1857:126). Ship manifests and newspapers list common and fine grades of a variety of teas including the following: Oolong (\$0.45 lb.), Imperial (\$0.40–\$0.60 lb.), Gunpowder (\$0.40–\$0.60 lb.), Pinching Souchong (\$0.25–\$0.45 lb.), and Hysin (\$0.25–\$0.45 lb.) Chinese teas; and Russian Kokeiv, possibly a brick tea (*Freja*, U.S. Customs Service 1851; *Alta California* 3/15/1851).

Pepper and Caraway Seeds. Several fragmented black glass liquor bottles contained ground black pepper and caraway seeds (see McDougall, this volume). It is believed that these condiments were repackaged from larger bulk containers. Pepper was priced at \$0.15 lb. in 1851 (*Alta California* 3/15/1851).

Oysters. A single, brass oyster-tin label was recovered (Figure 9–6). It is embossed with an elaborate pictorial and the following text:

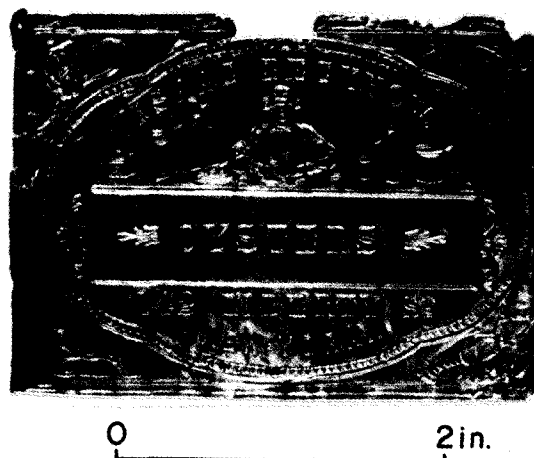


FIGURE 9–6. Brass label from oyster tin. An open oyster tin is depicted on the far right side of the table.

ISAAC RECKHOW.
OYSTERS
142 LIBERTY ST
NEW YORK.

Isaac Reckhow was a pickle packer/dealer who was listed at that New York address from 1847 to 1852 (Doggett 1847:337; Rode 1852:425).

Oysters were an extremely popular 19th-century American food (Marryat 1855:349–350). In the mining camps and cities, champagne and oysters were consumed together not only because they made a tasty pair, but such consumption was also a display of extravagance and celebration (Conlin 1986:119). The oyster beds in San Francisco Bay were severely depleted by 1851. So live oysters were imported from the Pacific Northwest and possibly from Mexico for consumption and for replenishing the beds (*Alta California* 5/17/1850; Marryat 1855:349–350; Postell 1988:28; Rasmussen 1965:20). Canned oysters were imported from the east coast and were sold for \$12 to \$13 per dozen quarts (*Alta California* 3/15/89).

Sardines. Two small sardine-tin labels were recovered from the site. These brass labels are embossed with a seal of a sailing ship flanked by

fish-like creatures. No cans or can fragments were recovered with the labels. The labels are embossed as follows:

CHATONET J^{NE}
FABRIC^T DE CONSERVES
ALIMENTAIRES
SARDINES A L'HUILE
QUAL S^T NICOLAS
N^o 54
LA ROCILELLE
CHARPEVTIER A NANTES

Small tins containing sardines in oil were a common import from France. This product, however, was but one of an amazing assortment of canned foods arriving on the French ship *Ferriere* in December of 1850. Listed on its manifest of canned or bottled foods are the following: lark pâté, woodcock with truffles, lobster, artichoke leaves, and mushroom crepes (*Ferriere*, U.S. Customs Service 1850). The storeship *Niantic* site yielded two French brass food-tin labels, one of which was for small sausages with truffles (Smith 1981:184).

Butter. The remains of two wooden cases each containing six butter-filled, saltglazed stoneware pots were recovered. The crocks are sealed with a tapered wooden stopper. These pots have a capacity of 2.6 qts. for an estimated 7 lbs. of butter.

As with other diary products, butter was a commodity relished by most Euro-American groups on the western frontier (Taylor 1850, 1:60). Although a staple in Euro-American households, it was not a standard food item for overland treks because of problems with preservation. Even at sea, it was recommended that butter be shipped in firkins or wooden kegs and that these be placed in brine because butter shipped in crockery jars was prone to spoilage (Lewis 1949:29). Containers of butter were imported from Europe, the east coast of the United States, and Australia (Tomlinson 1866, 1:262). The butter from Holland was especially regarded for its quality (Tomlinson 1866, 1:262). Butter sold for \$0.20 to \$0.50 lb. depending on its quality and the quantity purchased (*Alta California* 3/15/1851).

SUMMARY AND CONCLUSIONS

The food remains recovered from the Hoff Store site represent a wide variety of foods including: breadstuffs, hot beverages, fruits, vegetables, preserved meat, and even sweets. When the contents of empty bottles and brass labels are considered, an even wider array of food was present (see McDougall, this volume). In most instances, these foodstuffs are common frontier provisions that would have been salable to customers traveling to the gold fields, living in the city, or even shipping out to sea. The demand for these foodstuffs in San Francisco is partially reflected by their presence on the "Prices Current" listings in the local newspapers. In instances of oversupply or little demand, entries such as "nominal," "plenty," "no demand," "no sale," and "dull" appear in place of the prices (*Alta California* 3/15/1851).

The food assemblage is heavily weighted toward preserved or packaged foods capable of withstanding shipment from a distant port. These foodstuffs were also well suited for further transport or storage and consumption at a later date. Much of the food was packaged in small quantities suitable for individual or family use. Other foods were in standard bulk containers weighing up to 355 lbs. for the salt pork (Dawson 1911:329). There is even evidence for repackaging some bulk items into smaller containers (see McDougall, this volume).

The foodway reflected by this assemblage is probably typical of that followed on the California frontier in a variety of settings during the early part of the Gold Rush. Local agriculture, commercial fishing, and market hunting undoubtedly contributed to the diet of the argonauts, but their impact was limited in 1851. The retail establishment(s) selling the food probably catered to a variety of customers. Although Hoff and Owner's store was later listed as a ship's chandler, even in 1851, the store(s) contained such a wide variety of goods that a strictly maritime association is only weakly supported (see Delgado, this volume). Round point shovels, carbines, stacks of iron sheet, boots and shoes, and rolls of floor covering probably indicate that the store owners were possibly "commission merchants" for general merchandise. The second-

ary title of "commission merchant" was adopted by some 31% of 55 businessmen listed in an 1850 San Francisco business directory (Campbell & Hoogs 1850). These merchants acted as retail outlets and distributors for goods consigned to them by wholesalers and manufacturers from outside the area (Lotchin 1974:52; Soulé et al. 1855:367).

The pork bone collection from the Hoff Store site provides a cautionary note for using pig bones for socioeconomic position studies. In this collection, bones from commercially butchered prime packed-pork are represented. These bones reflect inclusion of nearly the entire animal, with the notable exceptions of the feet and the spareribs. Although bones from a "high status" (roast/ham) cut are well represented, they were from barrels of the least expensive grade of packed pork. The wide variation between pig breeds and between individual animals makes it difficult to determine the quality and the relative value of the meat from the skeletal elements. Although some of these criteria such as body configuration and fat distribution are

also used in assessing meat from other domestic animals, they are more pronounced in swine. Furthermore, the most desirable pork cuts either leave no bones for bacon or have a wide range of values based on details of post-butcher modification, as with ham.

The principal value of the Hoff Store site pork bones lies in the large number of bones present, evidence of meat cuts represented, and the knowledge that many of these bones could be associated with a particular grade of packed-pork.

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JULIA E. HUDDLESON
MITSURU S. WATANABE

Pegged Footwear from 1851 San Francisco

In the shoe manufacture, the introduction of pegged work, probably more than any other improvement before the invention of the sewing machine, gave an impulse to the business. The shoe peg . . . [is] a small but revolutionary instrument . . . (Bishop 1861, 1:464)

INTRODUCTION

The Hoff Store site yielded a large number of unused pegged work shoes and a few boots undoubtedly offered for sale at the time of the Great Fire on May 3–4, 1851. Rugged footwear, particularly the boot, was a necessity in the early days of the Gold Rush. Fashionable, eastern dress shoes were neither practical nor considered necessary for most residents of the times (Marryat 1855:26). In San Francisco, winter rains and an organic, silty substrate made “navigating” even planked streets a challenge (Soulé et al. 1855:245; Taylor 1850, 2:60; Fardon 1977:9). This problem was particularly pronounced east of Montgomery Street where the poorly drained landfill area began. The shoes from the Hoff Store site also typify the male-dominated, heavy labor aspects of a developing frontier outpost.

The Hoff Store site yielded two basic types of utilitarian footwear worn during the early Gold Rush period—boots and brogans, or simple work shoes. In both types of footwear the layers of leather comprising the sole are pinned to one another and to the upper by wooden pegs often supplemented with nails. There are a number of differences in the style and construction methods used in the fabrication of both boots and shoes. For the boots, these differences are fairly significant with distinctive styles represented. The brogans, however, are a distinctive style with only minor differences in construction and design. The vast majority of the specimens are unworn and represent a

sample of wood pegged footwear available for the 1851 market. Many of the boots and shoes can be differentiated as either right or left, indicating that they were made on crooked lasts.

TERMINOLOGY

Boots and shoes consist of two principal components, the upper and the sole (Fig. 10–1a). The upper of a boot or shoe covers the top of the foot. The front of the upper is called the vamp, and the back is called the quarter. The quarter is usually reinforced by a counter, an additional piece of leather that surrounds the back of the heel. The counter can be sewn to the outside or the inside of the shoe. The shape of the counter can be semi-circular, rectangular, or trapezoidal. On boots, the section of the upper along the wearer’s leg is called the top or the leg.

The vamp and quarter are stitched together at the mid section, forming the side seam. This seam is reinforced with several rows of stitching and, occasionally, metal rivets.

The components of the sole include the insole, welt, filler, midsole, and outsole (Figure 10–1b). The insole is a piece of leather that provides a smooth inner surface and cushions the foot. The welt is a strip of leather that fits between the upper and the midsole along the perimeter of the shoe. The filler or shank is a piece of leather or wood that stiffens the sole, providing the foot with additional support. The filler extends from the toe to the beginning of the heel. A midsole, when present, is an additional lower layer of leather providing added stiffness and cushioning to the shoe. The outsole is the layer of leather that contacts the ground.

A stacked heel is made from layers of leather or lifts held together by pegs and/or nails. Some of the heels have a split-lift at the top of the heel that functions to create a heel cup on the inside of the shoe.

Shoe components are assembled by driving an oversized wood peg into an undersized hole (Saguto 1984:6). The pressure between the peg and the perforated layers holds the shoe together.

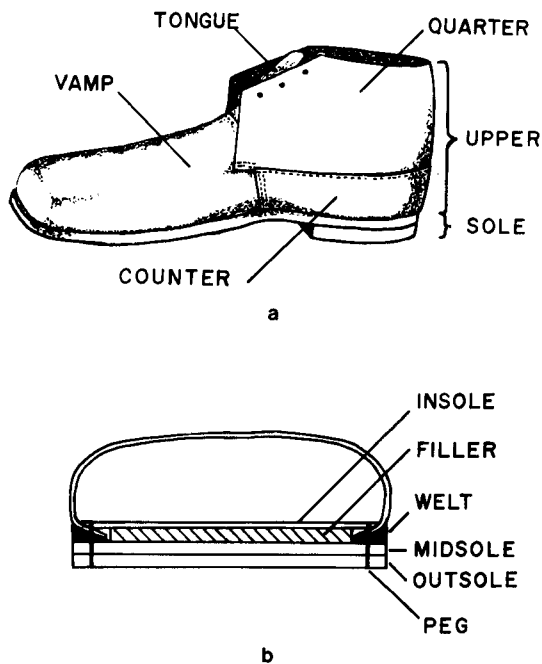


FIGURE 10-1. Shoe terminology: (a) brogan components; (b) cross-section showing pegged sole construction.

Wooden pegs perforate the outsole, midsole, welt, upper, and insole to form the sole and attach it to the upper (Figure 10-1b). In most specimens, wooden pegs are located along the perimeter of the sole as well as in three other areas along the center line of the sole—at the toe, the midsection, and the heel. Pegs in these latter locations prevented the components from shifting during perimeter pegging and aided in stiffening the sole. In some specimens, the pegging machines gripped or punctured the sole leaving clamp marks in the form of small punctures, asterisks, and concentric circles.

Footwear is constructed on foot-shaped forms or lasts. An indeterminate or straight last is used for constructing a laterally symmetrical shoe suitable for either foot. A crooked last is used to make shoes specific to either the right or the left foot.

PEGGED FOOTWEAR HISTORY

Historically, pegged soles were first used in the manufacture of Roman footwear (Saguto 1984:6).

In the 1500s, wooden pegs were used by other Europeans for shoe repair, but not manufacture (Saguto 1984:6).

Prior to 1800, American shoe manufacturers principally made stitched, soled shoes using the same techniques employed in Europe. After 1800, pegged shoe construction methods changed the way that shoes were made in the United States and allowed mass production of durable shoes and boots at reasonable prices (Saguto 1984:8). Because English labor unions successfully resisted the technological innovations associated with mechanized, pegged shoe manufacture, they continued to produce significant quantities of footwear by hand until the late 1800s (Wilcox 1948:140).

Several U.S. patents in the first half of the 1800s contributed to the development of the pegging process. July 30, 1811, saw the first patent filed for boots and shoes made with pegs. Samuel B. Hitchcock and John Bement of Homer, New York, were granted a patent for pegging boots and shoes: "With much relief to the workmen [this invention] . . . increased dispatch, durability, and neatness in the work" (Bishop 1861, 2:176).

The New England shoe industry became increasingly dependent on machinery and labor specialization. From the 1820s to the 1840s several models of machines to produce wooden pegs and pegged footwear were patented. Although precise dating for adoption of this equipment is uncertain, the pegging machine was generally in use by the mid-1840s (Hazard 1921:93). After 1840, in Massachusetts, there is no evidence that apprentices in shoe factories manufactured entire boots; instead, they specialized in making specific components (Hazard 1921:95). The use of these machines in the United States, however, was not industry-wide. An account book from a Lynn, Massachusetts, shoe manufacturing company shows that they used relatively few pegging machines as late as 1848 (Hazard 1921:79). In 1848, Joel Robinson of Methuen, Massachusetts, obtained a patent for a shoe pegging machine that reduced several time-consuming steps to one process (Bishop 1861, 2:447).

The impact of the sewing machine on the shoe industry was similar to that made by the pegging

machines over 30 years earlier. Elias Howe, Jr., patented a sewing machine for fabrics in 1846 which was quickly adapted for use with the waxed linen thread used to sew leather uppers (Anderson 1968:59). A machine capable of stitching the sole to the upper, however, would have to wait until 1860 (Anderson 1968:59).

Sewn shoes were generally preferred to pegged shoes, especially with design and material improvements in the last half of the 19th century. Shoes with pegged soles tended to be stiff, and the layers of the sole would separate if the shoe was exposed to dry conditions (Brinckerhoff 1976b:3). Pegged heels, toes, or entire soles continued to be used with declining frequency for boots and work shoes into the 20th century.

DESCRIPTION OF THE COLLECTION

The Hoff Store site assemblage contains 1131 footwear fragments. A minimum number of 420 boots and shoes was established by counting the number of specimens representing the toe end of the sole. The majority of the footwear in the collection is soled with two rows of wood pegs. Only five fragments of stitched sole shoes were in the collection. Many of the boot and shoe soles are asymmetrical in outline and can be identified as either a right or a left (Figures 10-2b, 10-4b). The degree of difference between right and left shoe for most of these specimens is, however, very slight (Brinckerhoff 1976b:3). Other specimens are symmetrical in plan and are suitable for use on either foot (Figures 10-2a, 10-3b, 10-4a).

The soles and heels were probably made with full-grained leather that had been machine rolled or peened on a lap-stone to compress and strengthen the material (Trefry 1981:214-216). The uppers, however, are made from uncompressed leather, often split-grained. This construction favors differential preservation of the soles and heels over upper components. Many of the brogans have an outsole with a knife cut at its juncture with the front edge of the heel (Figure 10-2a). This may be the result of trimming the heel or enhancing the

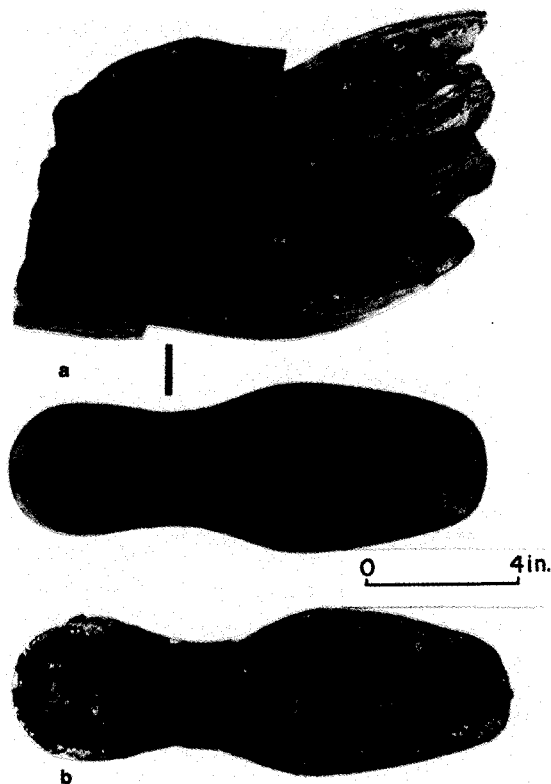


FIGURE 10-2. Brogans: (a) stacked "F.DANE" brogans. Sole without heel displays cross-cut at heel, "F.DANE" imprint at instep, and size "6" stamped at toe. This shoe was constructed on an indeterminate last; (b) brogan made on crooked last (left) and assembled with square pegs.

flexibility of the sole. In either case, it causes an incipient weakness in the completed shoe.

The uppers are made of either full grain or split grain leather. Full grain is the complete thickness of the tanned hide producing a sturdy but stiff shoe probably somewhat uncomfortable to wear. Split grain leather is from a hide that is shaved to create two or more pieces of leather. The split side of the hide can be finished smooth or left rough. It usually forms the outer surface of the shoe. The epidermal layer usually faces the shoe's interior to create a smooth lining.

Several styles have shoe and boot sizes ranging from 6 to 12 marked in Arabic or Roman numerals

on the sole (Figure 10-2a). Fillers are made of either strips of full grain leather or single slats of wood. All but one dress-boot in this collection is soled with two rows of perimeter pegs. Diamond-shaped pegs predominate (Figure 10-2a), but there are four specimens with square pegs (Figure 10-2b).

In the Hoff Store site collection, some of the brogans collected were in stacks of three and four (Figure 10-2a). Leather thongs were inserted in the lace holes and then tied around the stack. A stamped leather tag with a leather thong was possibly associated with one of these stacks. It bears the impression:

BRAGDON
BOSTON 13 1/4

William Bragdon was listed in Boston city directories between 1846 and 1862 (Adams 1846:20; Adams, Sampson and Co. 1862:52). Several of these entries list his occupation as "leather measurer" at 19 Shoe and Leather St. (Adams 1852:34; Adams, Sampson and Co. 1862:52).

Boots

Fourteen "pull-on" boots (3.3% of the footwear) were contained in the footwear collection. These ranged from low topped, dress boots to a top fragment of a rugged, high-topped riding boot. On the intact specimens, the toe is square. On some specimens, leather boot pull-straps were sewn to the upper quarter portion of the top, on either side of the wearer's calf. The boot tops range from split-grain boots at least 8 in. tall to a full grain high-front riding boot top at least 18 in. high (Figure 10-3a). Counters are sewn to the outside of the quarter.

The boot soles are typically pegged with two rows of pegs and sometimes also joined with iron or brass tacks at the heel, instep, and toe (Figure 10-3b). The exception to this is a light-weight, low-top boot (8 in. tall) with a single continuous row of pegs reinforced at the instep with a second row of pegs. This boot was made on a crooked

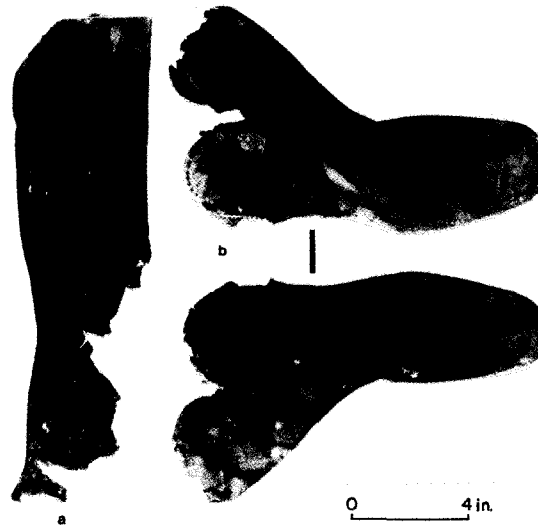


FIGURE 10-3. Boots: (a) vamp portion of the top or leg for a high-topped boot; (b) boot made on straight last with nailed heel, instep, and toe (note pegged clamp marks along centerline of sole).

last, and it appears to have been worn. Various clamp marks and arrangements of pegs appear along the center-line of the sole (Figure 10-3b). One specimen is marked with a Roman numeral VI.

Brogans

Brogans are ankle-high work shoes of a simple style and design (Figures 10-1a, 10-2, 10-4). They are made with full grain or split grain uppers. The quarter of most of the brogans has three lace holes (Figure 10-2a). One group of brogans, however, has an unperforated quarter and stitched edges where the other shoes are perforated (Figure 10-4a). This may indicate a different, indeterminate mode of attachment or, merely, the sale of shoes lacking the lace holes at the time of manufacture. The side seam is created by the quarter overlapping the vamp. This is fastened with several rows of stitching and, on some shoes, a metal rivet at the top corner of the counter. The counter may be semicircular, quadrilateral, or rectangular

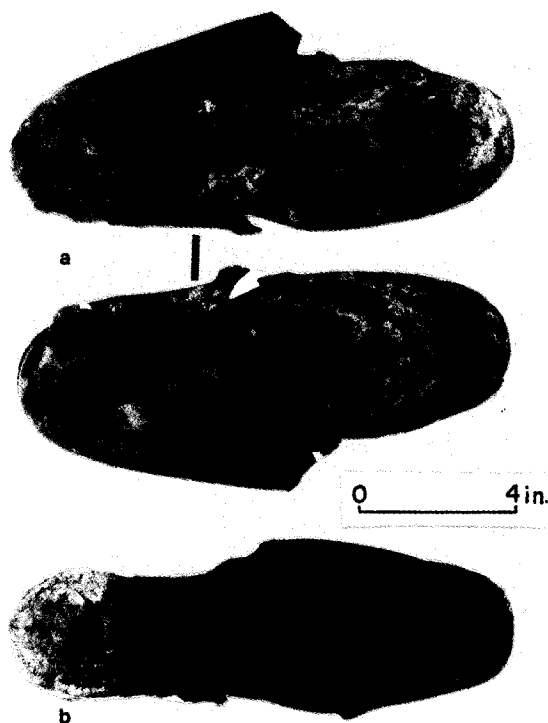


FIGURE 10-4. Brogans: (a) brogan made on straight last with an indeterminate mode of attachment to the foot; (b) sole of brogan made on crooked (right) last.

and is usually on the outside of the shoe. A few specimens have an internal counter (Figure 10-2a). The brogans in this collection have two types of tongues: a separate tongue, sewn to the vamp; and a tongue formed from the same piece of leather as the vamp.

The sole can be single layered (no midsole), double layered (with midsole), or double layered only in the forefoot. Pegging is typically double rowed with nails sometimes added to the heel, toe, and instep. A few brogans have square pegs (Figure 10-2b). Most of the brogans have low heels made with two lifts and no split-lift.

One style of brogan is represented by at least 16 specimens with soles impressed with the name "F. DANE" (Figure 10-2a). Details that distinguish it from other shoes include construction on a straight last, a double thick sole (midsole), and an internal counter.

Other marks on brogans, besides obvious sizes, include the following two marks on separate heels:

"28 1/2" and "CONT"
TANNED

(indistinct letters denoted by underline).

DISCUSSION

Massachusetts was a major shoe manufacturing center during the 19th century and was responsible for much of the California trade. The William Bragdon tag indicates that some of the footwear can even be traced to a shoe and leather district of Boston. Certain towns and counties specialized in particular types of footwear. The brogan production centers in the 1840s and 1850s were in Worcester and Middlesex counties, Massachusetts (Hazard 1921:81). Randolph, Norfolk County, Massachusetts, specialized in boots in the 1840s and produced some boots specifically for the California trade (Hazard 1921:81). Howard and French began shipping a boot from Randolph called "the Californian" as early as March 1849 (Hazard 1921:89). The profit potential from the California Gold Rush market was quickly recognized, and the shoe manufacturers were especially generous in extending credit and large stocks of shoes and boots to the California merchants (Bryant 1891:3).

By early 1851, there was an abundance of boots and shoes in San Francisco. A January 31, 1851, newspaper advertised boots for sale at cost, and in March 23, 1851, the listing of "Prices Current" noted that boots and shoes were overstocked in San Francisco (*Alta California* 1/31/1851, 3/23/1851). On April 1, 1851, the *Evening Picayune* priced footwear as follows: "Light pegged (boots) per dozen: \$32 to \$40, Heavy pegged (boots) per dozen: \$36 to \$42, Sewed (boots) per dozen: \$40 to \$50, Brogans pegged per dozen: \$20 to \$25."

The great fires of 1851 affected the local economy by reducing inventories and increasing prices, if only for a few weeks (*Alta California* 5/7/1851). Jonathan Wales of Randolph, Massachusetts, was

a San Francisco distributing agent for three eastern shoe manufacturers in 1851 (Hazard 1921:99). Wales survived impending bankruptcy after the Fifth or Sixth Great Fire by selling the invoice from an undelivered shipment of 50 cases of brogans for over \$5 per pair (Bryant 1891:125). The price and demand for other articles may have experienced similar increases which favored immediate re-establishment of businesses within the burned district (Crane 1931:63).

Anderson (1968:59), Brinckerhoff (1976b:3), Smith (1981:197), and Wilcox (1948:139) have each asserted that footwear made on crooked lasts was not developed in the United States until the late 1850s or even as late as the Civil War. It is clear from this collection that by 1851 right and left shoes were being manufactured in quantity by some cordwainers. Five of the six shoes from the 1851 San Francisco storehouse *Niantic* were also made on crooked lasts, although attributing these specimens to 1851 was questioned because they were made on crooked lasts (Smith 1981:197). These San Francisco data contrast with the majority of the 700 pairs of straight-last shoes from the 1865 steamboat *Bertrand* (Petsche 1974:60).

CONCLUSIONS

The Hoff Store site reveals a collection of footwear aptly suited to frontier conditions. Brogans and boots were the work shoes of the urban areas and the gold fields, respectively. At the time of their deposition at the site, however, there was little demand for either boots or brogans due to oversupply (*Alta California* 4/27/1851). In San Francisco, brogans were suitable for laborers and other workmen engaged in construction, cargo transport, and other industries. These heavy shoes may even have been worn by merchants and clerical workers because fashion was not of great importance until later.

Boots, particularly heavy riding boots, were best suited for miners and prospectors in the gold fields where foot and leg support and protection were needed in the course of one's work. This gold field dress "requirement" was best exemplified by

the Chinese who adopted high-topped boots while otherwise maintaining a non-Euro-American style of dress (Borthwick 1857:267; Marryat 1855:illus. facing 224).

California provided a ready market for the high-topped boot, which at times sold for up to \$100 a pair (Soulé et al. 1855:253). During the particularly harsh winter of 1849–1850, San Francisco appeared to one observer "composed entirely of dismounted hussars" (Taylor 1850, 2:60). In anticipation of another wet winter, many streets were planked. The winter of 1850–1851, however, was unusually mild with little rainfall. Boots were required only during storms, and then mid-calf, jack boots would suffice (Crane 1931:8; Marryat 1855:165–166). The demand for boots over the winter of 1850–1851 was so low, and the stock so high, that they were sold at a loss in the spring (*Alta California* 3/15/1851). Nevertheless, only 14 boots were recovered from the Hoff Store site.

Fashionable dress, including footwear, was occasionally worn but apparently was of little importance as late as 1851 (Borthwick 1857:47; Marryat 1855:26). Finer quality boots and shoes, represented by one boot from the site, were widely available in the city by 1852 (Parker 1852:25, inside back cover). This increase in attention to fashion by men was attributed to the increasing female population (Parker 1852:12; Borthwick 1857:378–379). The simple work shoes from the site were well suited to the social conditions of the times.

The large footwear assemblage from the site reflects the "soft" retail market for brogans in the first quarter of 1851. It also reflects a merchant's decision to stock large quantities of work shoes for his customers. Shortages of footwear, and other commodities, followed the great fires of May and June. The concomitant price increases, however, could almost be expected to be short-lived, because the Gold Rush market had peaked.

Finally, this collection of shoes clearly demonstrates that various styles of pegged brogans and boots made on crooked lasts were available in 1851. The practice of making indeterminate shoes on straight lasts appears to have continued into the mid-1860s, which lessens the utility of this attribute as a chronological marker.

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Some Observations and Concluding Remarks: The Hoff Store Site

INTRODUCTION

The Hoff Store site yielded an extensive archaeological assemblage associated with one or more retail stores operating near the heart of the San Francisco waterfront at the height of the California Gold Rush. The cultural materials were deposited into the shallow waters of San Francisco Bay when buildings on the south side of Howison's Pier, near the Battery Street intersection, were destroyed by the disastrous fire of May 3–4, 1851.

This local catastrophe occurred at a crucial moment in California's development. Beginning early in 1849, an uninterrupted flood of humanity booked passage for the Golden Gate. Although most of these people may have initially intended to seek their fortunes in the Sierra Nevada gold fields, many settled in San Francisco, quickly transforming a growing, chaotic frontier town into a major city (Lewis 1949:13).

San Francisco's explosive urbanization throughout the Gold Rush, and its development as an economic center, greatly facilitated American expansion in the far west and enhanced the nation's economy. By mid-1851, the time of the fire, San Francisco's metamorphosis from boomtown to metropolis was well underway.

The Gold Rush stores operating along the south side of Howison's Pier were probably typical of the many Euro-American commercial emporiums doing business throughout San Francisco at the time. The stores stocked a wide variety of goods ranging from hammers to preserved foodstuffs to chamber pots. Inventories were often consigned by

distant manufacturers hoping to find a ready demand for their products in the burgeoning Gold Rush marketplace.

In mid-1851, California was still an isolated outpost, almost entirely dependent upon logistical support from outside; typically, a sea voyage of between three and eight months was required for desired goods and services to reach San Francisco from New York. Yet, Gold Rush commerce was a risky venture. Slow communication and transportation, coupled with severe fluctuations in supply and demand, resulted in a marketplace that was characterized by overnight shortages and surpluses of selected merchandise; market conditions often changed significantly with the arrival of a single ship (Berry 1984:14).

The majority of the inventory recovered from the Hoff Store site is comprised of basic commodities suited to frontier conditions and is, for the most part, specifically related to eating, drinking, clothing, and shelter. Additional materials include a stock of military arms and equipment, nautical instruments, and Chinese export porcelain toiletry sets.

GOLD RUSH MERCHANTS

Much of San Francisco's early growth is attributable to its role as the major supply center for goods destined for the gold fields. The realization that commerce could be as sure a path to wealth as mining initiated a frantic flood of merchants, and merchandise, into the city. Gold Rush merchants learned quickly, however, that inflated prices were often short-lived and that consumer demand for some goods was capricious and unpredictable (Marryat 1855:169; Soulé et al. 1855:213).

San Francisco's spring-time economy of 1851 contrasted sharply with the previous year's commerce, when chronic shortages of supplies, coupled with a harsh winter, created an unstable marketplace. Archaeological excavation of the remains of a typical waterfront store from May 1850 would probably reveal a much different inventory of merchandise than that found at the Hoff Store site.

By May 1851, an abundance of goods was available for purchase at "reasonable" prices due to a stabilizing local economy. However, this stability was still tenuous. When most of San Francisco's northern commercial district was consumed in the Sixth Great Fire on June 22, 1851, another short-lived, wildly fluctuating seller's market occurred in the conflagration's immediate aftermath.

THE FRONTIER TAMED

The Hoff Store site represents an important phase of San Francisco's formative urban development. The nucleus for the city's development was the village of Yerba Buena, founded in 1835. The town's location was chosen because Yerba Buena Cove, between Telegraph Hill and Rincon Point, provided the best anchorage in San Francisco Bay (see Pastron, this volume, Figure 2-1).

In a rapidly expanding boomtown environment growth was largely uncontrolled. Level building sites were limited, so numerous piers were built over the cove in order to create building space. On one of these, Howison's Pier, were built the structures that became the Hoff Store site. These buildings, along with scores of others, were built in part to accommodate the hundreds of cargo-laden vessels entering port.

Most of San Francisco's early Gold Rush buildings were simple wood-frame structures, and by the close of 1850, prefabricated metal structures were becoming increasingly popular. Bancroft's map (1888:204) and contemporary photographs of the Hoff Store site structures suggest that these buildings were prefabricated "iron structures." However, excavation produced no conclusive *in situ* evidence for either the presence of iron framing or sheet metal siding as part of these buildings. Stacks of sheet metal were unearthed, but these were probably merchandise, not architectural remnants. Therefore, archaeological data concerning the construction of the Hoff Store site buildings remain ambiguous, and it is possible that the Gold Rush prefabricated structures along the south side of Howison's Pier, west of Battery Street, may

have been made of wood-frame construction and sided with metal or wood.

In May of 1851, the Gold Rush was still continuing, but the frenzied growth of the earlier years had abated. Beginning in mid-1850, the harbingers of true urban development were in evidence: a formal city grade was adopted, the main streets were planked, and a rudimentary sewer system was built. The facts that the established grade was insufficient to drain much of the business district and the planked streets were still often muddy, were, in retrospect, only minor irritations against the more important backdrop of a solidly emerging urban infrastructure (Dow 1973:46; Soulé et al. 1855: 295-296).

A series of six catastrophic fires destroyed large portions of the city during the first three years of the Gold Rush (1848-1851). The Hoff Store site fell victim to the Fifth Great Fire. After the Hoff Store site burned, the waterfront area was filled in when rebuilding commenced. This action helped isolate and protect the Hoff Store site deposits from the effects of subsequent construction; in essence, a cap of post-fire fill "sealed" and preserved the Gold Rush deposit.

Much of the hardware assemblage from the Hoff Store site is associated with wood-frame construction. In the city's commercial district, the use of these materials and associated building techniques waned after the fires of 1851. New wood-frame construction was subsequently outlawed in 1852 and brick or stone mandated as the preferred building materials within the city center. Hence, the Hoff Store site, and its assemblage of tools and hardware, represents the final phase of San Francisco's initial Gold Rush building boom. Following the Great Fire of May 3-4, 1851, San Francisco merchants dealing in frame construction materials and associated supplies targeted as their primary market the city's burgeoning residential districts, the gold fields, and the myriad small towns springing up throughout California.

EXTERNAL CONNECTIONS

Throughout the Gold Rush, San Francisco was the quintessential plural society. Ships, seamen,

and immigrants from most seafaring nations flocked to the city. At that time, San Francisco's ethnic diversity was as great as any place on earth (Soulé et al. 1855:257–258). As an inevitable consequence of this diversity, foodways of various ethnic groups were sampled, modified, and even selectively adopted by the American residents of the city.

All of the merchandise represented in the Hoff Store site and, possibly, the buildings themselves were probably imported into California via the sea lanes. Country of manufacture or packaging was only recognizable for a few items from the site. Yet it appears that there was a direct connection with suppliers on the eastern seaboard of the United States, Britain, China, and possibly France and Germany.

CHINESE GOODS

Chinese immigrants comprised a distinctive segment of San Francisco's Gold Rush population. Although the Hoff Store site yielded numerous items of Chinese origin including mats of rice, boxes of tea, brownware containers, and blue-on-white porcelain, no Chinese presence is postulated for the site. These items are but a few of the Chinese goods commonly offered for sale by San Francisco's Euro-American merchants for the Euro-American market (Barry and Patten 1947: 100). Gold Rush San Francisco received a wide variety of goods from China ranging from silk shawls to granite building blocks.

The contents of a contemporary Chinese store, some three blocks west at the 600 California Street site, contrast strongly with those of the Hoff Store site. This Chinese store undoubtedly catered to a Chinese clientele. It stocked bulk comestibles in large brownware jars, Chinese liquor, and blue-on-white "rice" bowls with a distinct paucity of Euro-American goods.

THE DATA BASE

The Hoff Store site assemblage stands out as an extensive, well dated collection of material culture

from the height of the Gold Rush. Perhaps the most beneficial aspect of the site is the fact that it represents a single, identifiable depositional event. Beyond this fact, however, additional aspects of the prevailing economic, social, and demographic patterns of the emerging western frontier are revealed. The wide diversity of the articles and their overall utilitarian nature bespeak the frontier character of the gold districts and the boomtown nature of early San Francisco. San Francisco's transformation into an urban settlement comparable to those on the east coast of the United States essentially began after the fire of mid-1851 with the establishment of a responsible city government, the implementation of organized construction practices aimed at creating durable public facilities and private buildings, and the advent of a more stable local economy.

The archaeological record and contemporary documentation provide insights into early Gold Rush life, unbuffered by the romanticism commonly associated with the Gold Rush by later historical accounts. Further, many of the original documents, records, and manuscripts pertaining to the city's early development were destroyed not only in the fires of the early 1850s but in the Great Earthquake and Fire of 1906.

THOUGHTS ON SITE INTERPRETATION

This volume contains some divergence of opinion over the nature of the deposit, particularly with regard to the potential purchasers of the merchandise recovered from the Hoff Store site. On the one hand, there is firm evidence for a distinctly maritime aspect (see Delgado, this volume). This maritime emphasis includes the location of the Hoff Store on a pier, W. C. Hoff's vocation in 1852 as ship chandler, the presence of San Francisco's harbor master above the Hoff Store at the time of the May, 1851, fire, and material remains such as navigational equipment, oarlocks, and preserved foodstuffs—e.g., salt pork and hardtack.

Nevertheless, all recovered comestibles and medicinal materials were common fare for the immigrant sojourners as well as mariners (see Hattori

and Kosta, this volume). Surely, shovels and myriad other items of hardware were hardly intended for use at sea. There is, however, no intrinsic interpretive conflict here, nor is the distinction between goods intended for maritime or terrestrial use incompatible. Put simply, as cosmopolitan as San Francisco had become by the spring of 1851, it was still a frontier outpost whose prime commerce revolved around transshipment to and from ocean going vessels and river boats. In 1851, California's chief cargos on ships were gold and returning argonauts. It still received almost all of its supplies via the sea lanes and redistributed these goods locally and state wide. It is not surprising that W. C. Hoff, or any other entrepreneur, would probably seek to supply and serve both maritime and frontier markets.

It is important to note that preserved foods and packaged pharmaceuticals were, in ocean-going and frontier settings alike, the order of the day for simple survival. Sustained treks to the gold field hinterlands are directly analogous to long sea voyages, and comestibles associated with one mode of transport are equally well suited to the other. Indeed, foodstuffs and medicines traditionally associated with life at sea—such as salt pork, hardtack, camphors, and purgatives—were probably abundantly available as surplus in San Francisco following the lay-up of so many ships in the harbor during the early months of the Gold Rush (Soulé et al. 1855:252). These goods would have provided familiar fare for many of the miners whose transport to San Francisco—whether as passenger or crew member—was by sea. Essentially, these goods would have provided sustenance whether an anticipated voyage to a far-off destination was made by prairie schooner or two-masted vessel.

Another avenue of interpretation must be briefly mentioned. Gold Rush San Francisco consisted of more than miners and mariners. By mid-1851, the city had a large and growing permanent population. Hence, in addition to sailors and prospectors, local merchants must have targeted city residents as a prime market. It is therefore likely that a substantial percentage of W. C. Hoff's clientele consisted of local residents.

THE ROLE OF CULTURAL RESOURCES MANAGEMENT IN URBAN ARCHAEOLOGICAL RESEARCH

From inception to conclusion, the excavations at the Hoff Store site were conducted as a Cultural Resources Management (CRM) project. As archaeologists working in this field quickly learn, there are often profound differences between projects conducted under the aegis of CRM and research performed in a more traditional academic setting. Most of these differences are, however, logistical.

Without a doubt, the primary obstacle to conducting empirically sound, relevant, theoretically oriented archaeological research in an urban setting, particularly in the CRM context, is the difficulty in generating an appropriate project research design. Although there is usually some interval between site discovery and the commencement of extensive data recovery, this amount of time is usually exceedingly short. A preliminary literature search and subsurface testing usually have as their primary goals: 1) the establishment of the presence of a subsurface archaeological deposit; and 2) the distributional boundaries of the material remains. Subsurface features often go undetected because of the limited amount of fill sampled with the mechanical drill used in testing. Because of the depth of the Gold Rush deposits, archaeological testing with backhoes is prohibitively expensive and dangerous. Archaeological excavation and related data recovery procedures usually begin apace with mechanical excavation for construction. When architecture or other site features are encountered and cleared of overburden, construction activity ceases at that locality and archaeological investigations ensue.

Moreover, it is likely that project boundaries exist independently of "site" boundaries. Development parcels seldom coincide with the distribution of material remains of the past. In these cases, urban archaeology runs the risk of devolving into catch-as-catch-can research. Additionally, even under ideal circumstances, it is likely that development schedules imposed upon the project take little heed of empirical concerns. Indeed, it is often

the case that construction activities surround the archaeologists with a cacophony of earth moving, demolition, and pre-construction preparations. For these reasons, in many CRM circumstances, the most common answer to the diligent field technician's question, "How shall this be excavated?" is "Faster."

All of these circumstances combine to create a situation where the rapid retrieval of material remains is usually the initial research strategy and is modified as needed. This is not to imply that mere artifact collecting is justifiable or even a necessary result of urban archaeology in a CRM context. But it is a fact that any research strategy, no matter how carefully conceived, must often be modified to accommodate rapidly changing field conditions. When for example, a project conducted in Bay fill encounters a ship hull, the research design is then modified to include investigation in maritime history and nautical architecture.

In many settings, particularly academic endeavors, research designs are refined from one field season to the next, with the benefit of months of

reflection and data analysis. In urban archaeology, research strategies must sometimes be altered overnight.

For all of these challenges, the experience gained by conducting archaeological research in downtown San Francisco for more than a decade has provided valuable lessons that should result in increasingly effective research strategies. Primary among these is the degree to which the extent, context, and content of subsurface deposits are becoming increasingly predictable. In spite of the widespread attention focused on the Gold Rush by contemporary chroniclers, later day scholars, and romanticists, many crucial aspects of the early development of the western frontier remain incompletely documented and only partially understood. As researchers begin to formulate and refine theoretically-oriented research questions, designed to accommodate the deductive method, archaeological field investigations will become increasingly capable of interpreting, verifying, and clarifying the extensive but often unfocused data base of the Gold Rush phenomenon.

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