Praetzellis

ARCHAEOLOGICAL AND HISTORICAL STUDIES OF THE IJ56 BLOCK, SACRAMENTO, CALIFORNIA: AN EARLY CHINESE COMMUNITY

by

Mary Praetzellis and Adrian Praetzellis

Cultural Resources Facility
Anthropological Studies Center
Sonoma State University

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Mary Praetzellis and Adrian Praetzellis

with contributions by

Kathleen Bragdon
Marley R. Brown III
Sherri M. Gust
H.J. Hall
Elizabeth Honeysett
Janet Robinson-Rocha
Peter D. Schulz
Dwight D. Simons

Co-Principal Investigators
David A. Fredrickson, Ph.D.
Marley R. Brown III

Cultural Resources Facility
Anthropological Studies Center
Sonoma State University

FINAL REPORT

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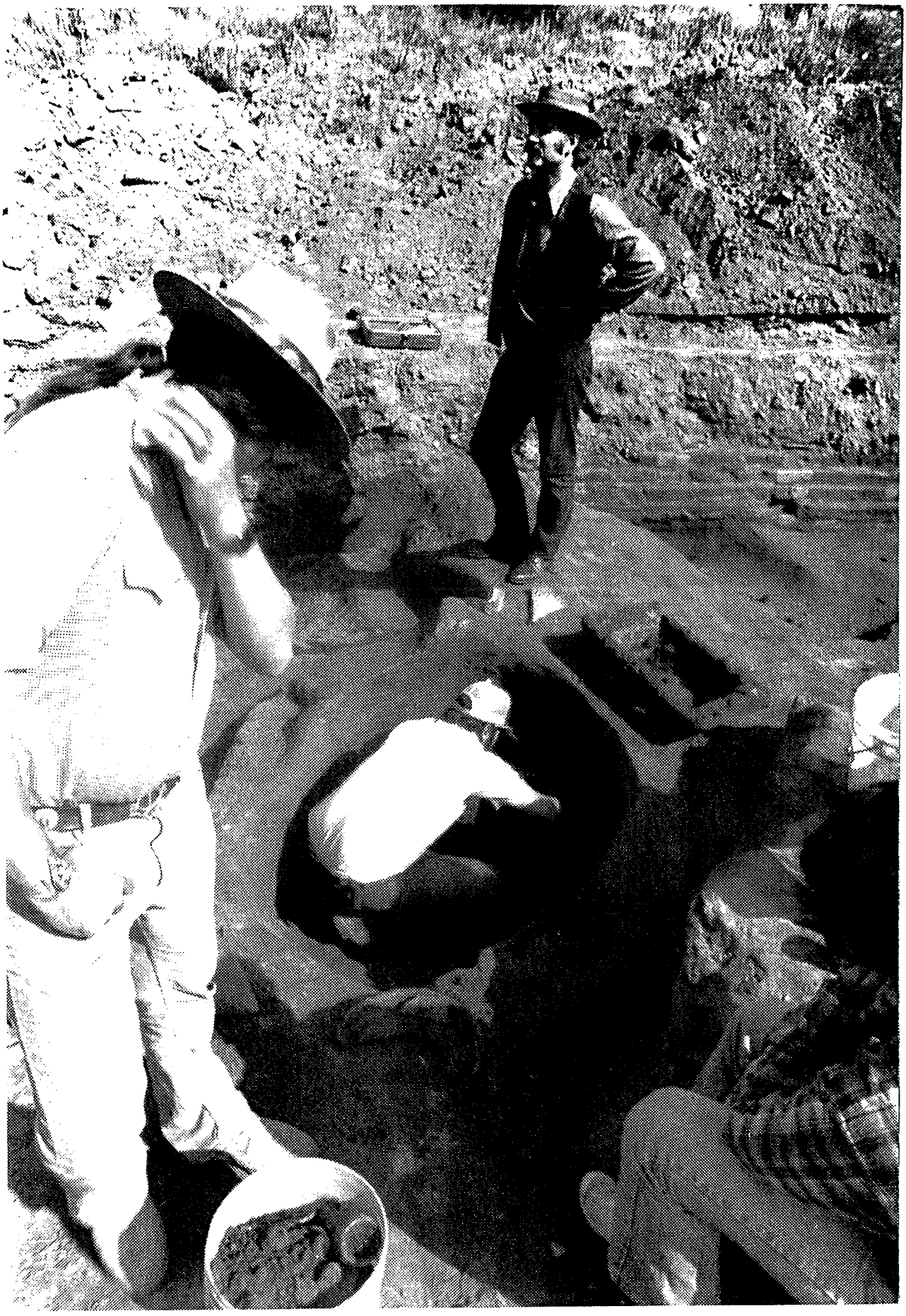

FRONTISPIECE

The Excavation of Feature 5.

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Leslie Jang
Conrad Lopez
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Gene Prince
Scottie Thompson

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Kathryn Crabtree
Julie Dinkins
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INTRODUCTION

This report details the results of a program of archaeological excavation on the I Street half of the IJ56 block in Sacramento, California (map 1). The investigation was conducted for the Sacramento Redevelopment Agency by staff of the Anthropological Studies Center, Sonoma State University, in October 1981.

Project History

The present work represents the final stage in a four-phase investigation of the IJ56 block, in accordance with the City's Cultural Resources Plan, prior to the block's imminent development. The first stage of the overall study was undertaken in 1978-1979 by a team of historical researchers under the leadership of Joseph McGowan, working under contract with Sacramento's Housing and Redevelopment Agency and Museum and History Department. Using assessor's records and city directories, McGowan and his associates researched the historical development of 16 blocks in downtown Sacramento and produced a series of reports outlining the ownership and uses of the land from 1850 to 1920 (McGowan et al. 1979). It was intended that this research should form the basis for the second stage of the study: the preparation of block-specific, archaeological research designs.

Using the data assembled by McGowan, as well as census information and secondary sources, such a design was developed for the IJ56 block by the research firm of Brienes, West & Schulz (1981). Specific target areas were established on the block where it was believed important archaeological remains might exist. Brienes, West & Schulz described their work as follows:

> The procedure used in this study is to review the historical development of the target area, with attention to the economic, social, and ethnic factors which provide a basis for understanding its role in the life of the city in the last century. The goals and procedures currently used in historical archaeological investigation are then reviewed, followed by an assessment of the potentials for the accumulation of significant archaeological deposits and their likelihood of survival to the present. Based on these considerations, guided by available cartographic detail on structural placement as well as experience with nineteenth century deposits in Sacramento, detailed recommendations for testing are proposed (1981:1).

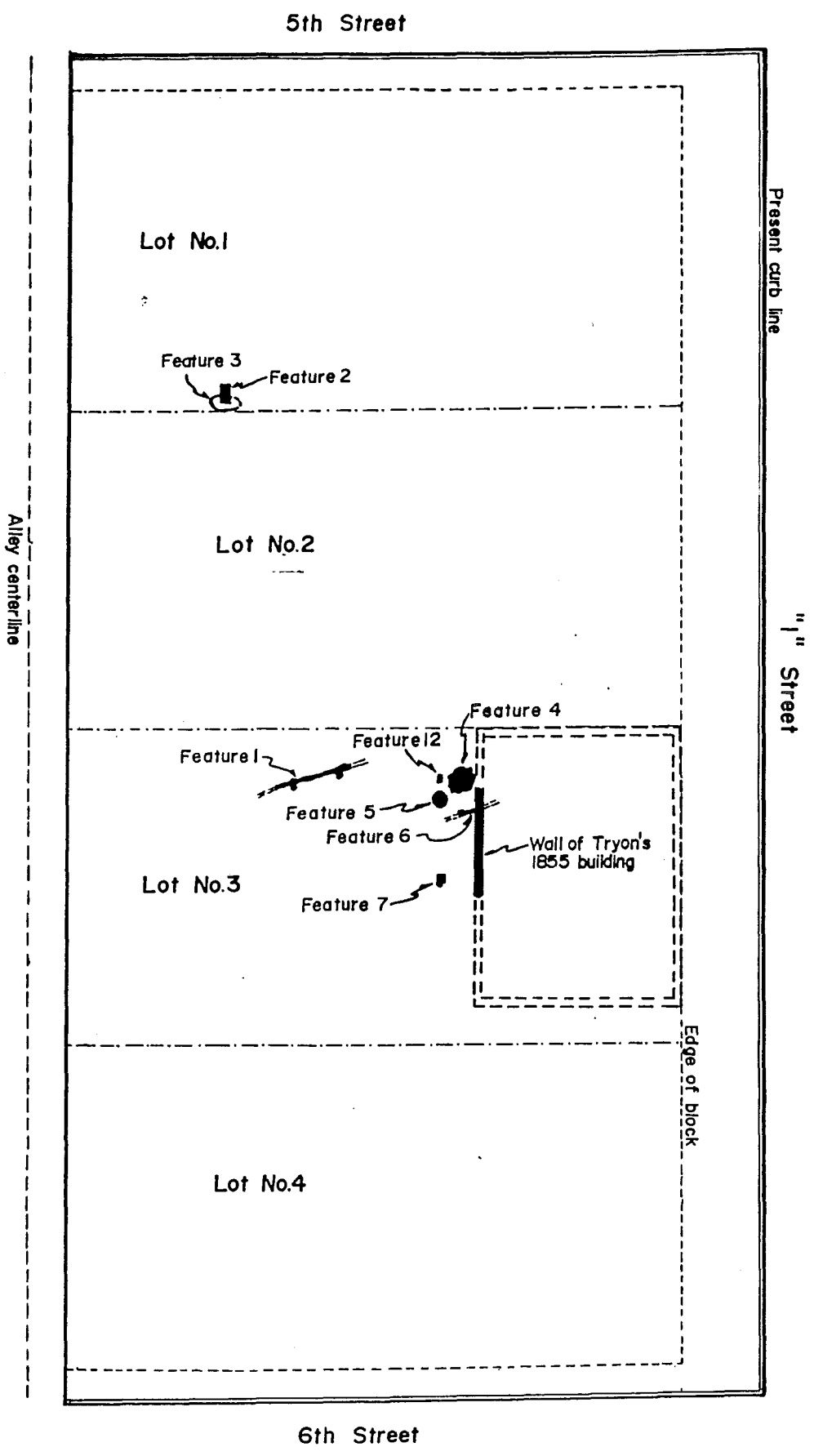
The delineation of test areas within the block was based on "the potential productivity of sites in terms of contributions to the archaeological record, and our ability to discern the historical factors leading to such a contribution" (Brienes, West & Schulz 1981:28). Five areas within the block were recommended for test-trenching with a backhoe. The purpose of the proposed testing was to identify buried archaeological features and to preliminarily assess their research potential. The results of the study would determine whether further archaeological investigation was warranted.

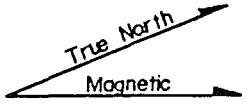
In the third stage, test-trenching was carried out during the week of 5 July to 10 July 1981 by staff of the Anthropological Studies Center. The method of trenching was guided by the type of archaeological features which the research design had specified as the object of investigation, i.e., discrete refuse associations. As the abandoned privies, wells, and trash pits which were sought would have been cut from the plane of the original ground surface, the initial goal of each trenching operation was to establish the level of the buried A horizon and to expose its surface for the length of the trench. In this way, pit-fill--identified by dissimilarities between it and the native soil--was not disturbed by the backhoe's bucket.

When archaeological features were found, they were exposed by the machine to the degree necessary to assess their shape and volume. Generally, the edges of these pits were defined with a trowel, cleaned, and photographed. Artifacts were collected only to provide data--chiefly chronological in nature--with which the features' historic associations could be determined and, ultimately, their research value assessed. After each trench was completed, it was filled and thoroughly compacted by the backhoe, and the surface returned to grade.

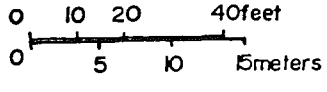
Extra time permitted the excavation of additional trenches, and a total of seven trenches, exposing 10 discrete archaeological features, were excavated by backhoe. Seven of the features (map 2), because of their apparent integrity and research potential, were recommended for further investigation. In completion of the testing phase, a report (Praetzellis et al. 1981) was prepared for the Sacramento Museum and History Division, who acted on behalf of the Redevelopment Agency of the City of Sacramento in guiding this work. The report consisted of three elements: a description of the findings and their historical associations; recommendations for the disposition of the archaeological remains which were discovered; and a research design and technical specifications to guide the performance of the final stage of the block's archaeological investigation. Relevant portions of the testing report have been incorporated into the present effort to give the reader lacking access to the preceding document a fuller understanding of the site.

MAP 1
Project Area Location





MAP 2
Locations of Archaeological Features



The authors believe that the long-term future of public-financed archaeology will be decided on the basis of the public's interest. It is therefore essential to show the lay public that they are getting something worthwhile for their money. To pursue this end, a traveling exhibit depicting the results of the IJ56 project will be created by staff of the Anthropolgical Studies Center in consultation with James E. Henley of the Sacramento Museum and History Division.

Project Goals

Goals, like most everything else, change with time. The goal of the report on archaeological investigations at Sacramento's Golden Eagle site (Praetzellis et al. 1980), completed by the authors almost two years ago, was to show that a scholarly product could come from within the regulatory context. That report detailed the use of stratigraphic excavation techniques and the application of the Harris-Winchester Matrix to produce discrete artifact associations. Artifact typologies were developed which were sensitive to the elucidation of site chronology and function, as well as the occupants' demographic and behavioral characteristics. It was hoped that these discussions would provide the basis for future artifact identification and the evaluation of the potential usefulness of various artifact categories. Another goal of the Golden Eagle report was the creation of a city-wide research strategy. Combining the "formation process" as discussed by archaeologists with a model of urban development provided by geographers, the report outlined a general research strategy focusing on Sacramento's "transitional stage," which will be discussed in detail later in this report.

Moving from this foundation, the goal of the present study is to demonstrate that not only can scholarly products be achieved within the regulatory context, they can be achieved in a cost-efficient manner. Thus, detailed artifact descriptions and illustrations, such as those included in the Golden Eagle report, are not offered here. New types are fully described, while the reader is referred to other sources for those types already considered in the literature. The goal of the present effort is the integration of historical and archaeological data, infused with an anthropological perspective and amenable to a wide range of future research applications.

THE SOUTH SIDE OF I STREET BETWEEN 5TH AND 6TH STREETS: 1850-1870

From 1848, Sacramento grew and prospered as the gateway to the goldfields of the northern Sierra Nevada. During this time, probably because the roads to the gold district fed into it, J Street was the town's main thoroughfare and center of trade. Miners could purchase supplies at general merchandise and specialty shops and could find temporary lodging, food, and amusement in the many hotels, restaurants, gambling halls, and saloons. During the mid-1850s, a variety of goods and services were offered to those shopping on J Street between 5th and 6th, including dry goods, groceries, fruit, candy, hats, shoes, saddles, liquor, drugs, and doctor's care. One block north, I Street between 5th and 6th streets appears to have served the same supply and service function for prospective Chinese miners and residents. In the 1850s, numerous Chinese stores, gaming houses, and lodgings were located there, as well as a butcher shop and a doctor's office, while a Chinese theater provided entertainment one block to the west.

Unlike the line of J Street merchants who continued to supply goods and services throughout the nineteenth century, the Chinese merchants and the bulk of the Chinese residents disappeared from the south side of I Street between 5th and 6th streets by 1870. Bordering the slough on the north side of town and the site of the 1852 levee (Brienes 1979:7), I Street was a less desirable neighborhood during Sacramento's early period. Later as Sacramentans raised the city streets to prevent further flooding, I Street frontage increased in value as property suitable for businesses that required space for storage and heavy traffic. With the increase in value of project-area real estate came the departure of its Chinese residents. The project area and vicinity circa 1860 are shown on map 3.

Background

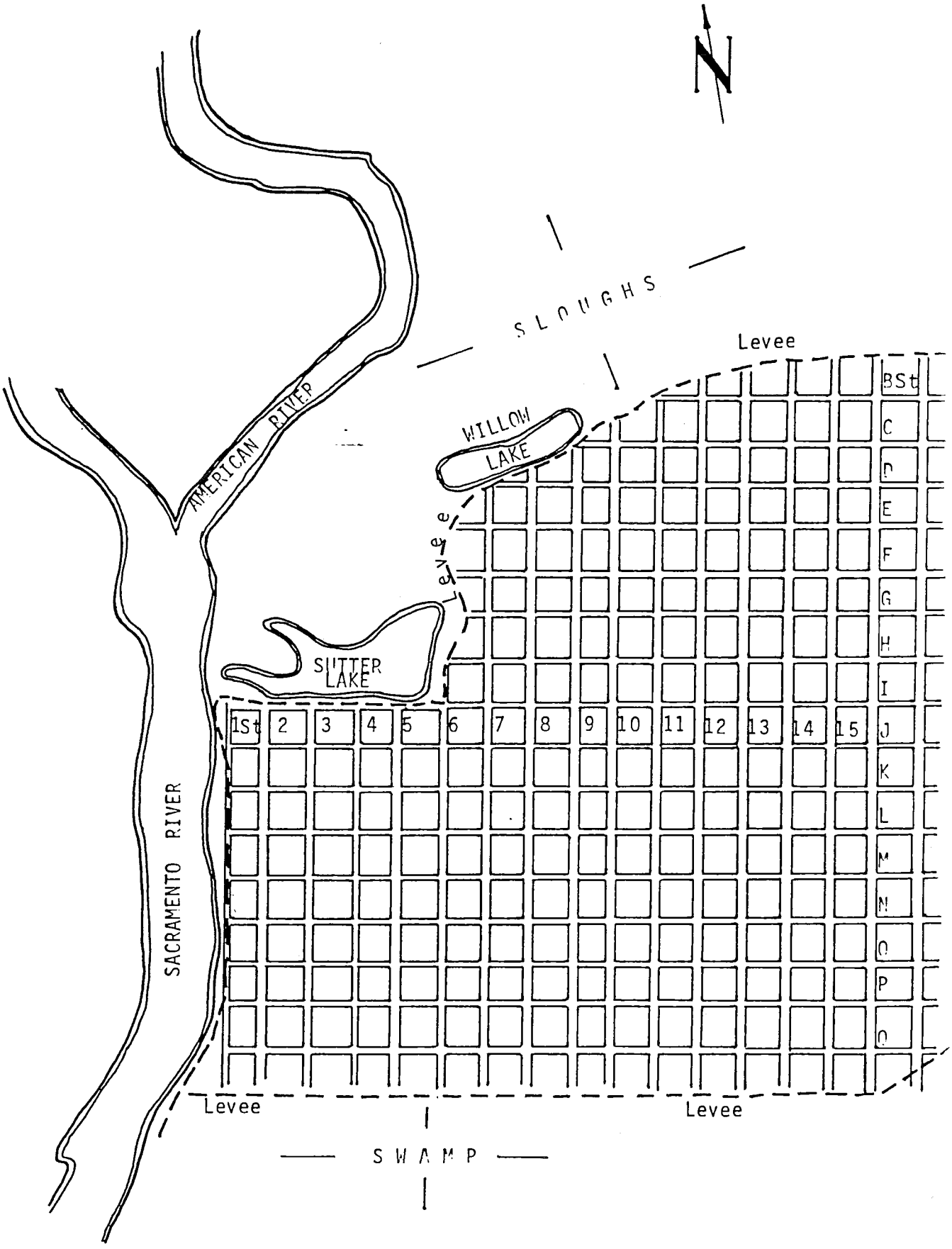
Overpopulation, war, natural disaster, and generally unstable living conditions in southeastern China prompted the migration of large numbers of Chinese men to foreign lands during the nineteenth century. Most of these men originated from rural areas, where this turmoil had served to strengthen the traditional value of social obligations to family and clan among the resident peasant groups. As conditions made it increasingly difficult to support their families, men were forced to emigrate to more favorable environs. Barth described their goal as follows:

> Devotion to family motivated the peasant to abandon land and family, home and friends, in exchange for the uncertain fortunes and the certain privations that awaited him in Burma, Siam, Indochina, Malaya, on Sumatra, Java, Borneo, and the Philippines. There he planned to work until he was fifty or sixty when he would return to his native village, a wealthy and respected man, to enjoy the rest of his life venerated by the large family which he had kept intact with his earnings and savings during the long years overseas (1964:29).

Later, frontier California, with its lure of gold and demand for laborers, attracted a large proportion of these migrants. According to Barth (1964:55), the bulk of these immigrants traveled by the "credit-ticket system" as "indentured servants" to the Chinese merchants at San Francisco or Hong Kong who had paid their expenses. Until they had paid their debts, the immigrants were under the control of these brokers. The strong Chinese kinship system supplied the extra-legal mechanism for such control, as this arrangement was not recognized by United States courts. Through the adaptation of Chinese family associations, guilds, and secret societies to their needs, the Chinese merchant-creditors maintained tight control over their debtors. District companies traditionally supplied mutual aid and protection to their members; in California, they also supplied the means to control and oppress them (Barth 1964:78).

Chinatowns were both the symbol and the scene of that control. It was here that the Chinese sought aid, solace, news, and amusement. It was from here that they first ventured forth to employment and to here that the bones of the deceased sojourners were returned for shipment and reburial in China. Here, the Chinese spent their hard-earned gold on food and drink, gambling and fraternizing. Here, they received news from home and re-encountered old acquaintances. Here, also, was the source of the district companies' power; their agents ran the boarding houses and stores where the Chinese gathered.

In the 1850s, most Chinese immigrants worked as river miners in remote portions of the Sierra Nevada. They lived in mining camps, varying in size but usually containing 10 to 30 men, and owed allegiance and probably money to one of the district companies. In the mining district, old feuds between villages and clans were revitalized, as Chinese associations struggled to gain control of the profits attendant to mining claims and trade networks. Attempts by Chinese companies to stage pitched battles between hundreds of followers were not uncommon, but were never successfully engaged (Barth 1964:94). These disputes eventually subsided with the decline in river mining and the change in the predominant structure of the Chinese laboring force--from relatively small groups of independent miners to large gangs of contract laborers on railroad and irrigation construction projects. By the early 1860s, the Chinese Six Companies presented a solid front to the American



MAP 3
PART OF SACRAMENTO, CIRCA 1860, SHOWING LOCATION OF LEVEES
(Adapted from Brienes1979:12)

0.5 miles
1 km

community and exercised more direct control over the Chinese contract laborers.

The economic dominance of gold mining through the early 1860s led to a "bifurcated social structure pattern" in the Chinese community (Chan 1981:8); here, large numbers of Chinese miners depended on a small group of entrepreneurs and providers of services for their subsistence and personal needs. At this time, there was no Chinese working class in rural California and only a relatively small group of cooks, servants, and laundrymen who were dependent upon the White community for their earnings (Chan 1981:11). The Chinese community as a whole was a fairly self-sufficient enclave. In the 1860s, demands for cheap labor in agricultural, light-manufacturing, and heavy construction projects broke down this structure and changed the composition of "Chinatown." Chinese districts no longer merely supplied goods and services to a population dominated by transient miners; they now housed a relatively permanent population of cheap manual laborers for use in "cottage industries." Compiled from census tabulations by Chan (1981), table 1 shows the changes in the occupational structure of both the urban and rural Chinese population of Sacramento County. The decline in independent entrepreneurs and miners and the rise in manual laborers in both the town and the countryside reflect the change in the economic orientation of both the Chinese community and the state as a whole. The decline in the number of bakers, merchants, medical practitioners, and musicians and the concomitant rise in the total Chinese population indicate that the Chinese community was also becoming increasingly less self-sufficient.

The Chinese Presence in Sacramento

Considerable conflict exists regarding the number of Chinese in California during the early 1850s. Chinese were not counted in the 1850 census; in 1852, however, the Chinese Companies estimated the population in the state to be approximately 25,000. Chinese immigration peaked in 1854, when the San Francisco Customs House reported 16,084 new arrivals (Sandmeyer 1973:13-16).

As with other miners traveling to the goldfields, many Chinese stopped over in Sacramento. The Chinese were primarily engaged in river mining, an occupation which could not be undertaken during the rainy season. Thus, most Chinese miners spent a portion of the year living in town. At this time, Sacramento was called **yee fow** or 'Second City' by Chinese immigrants (Chan 1981:8). Although a large number of Chinese lived in town, their places of residence prior to 1854 are unclear and an initial date for the Chinese settlement of the project area has not been established. In 1852, when fire destroyed seven-eighths of the town of Sacramento, no fire damage was reported north of the alley on the IJ56 block (Askin 1978a:plate 6; Brienes, West & Schulz 1981:appendix A), indicating either that these

Table 1

OCCUPATIONAL STRUCTURE OF THE CHINESE POPULATION
IN SACRAMENTO CITY AND COUNTY: 1860, 1870, and 1880[1]

Occupational Category	City			Rest of County		
	1860	1870	1880	1860	1870	1880
PRIMARY EXTRACTION AND PRODUCTION						
Miners	23	4	0	633	875	1070
Farmers	0	4	0	3	26	438
Fishermen	67	3	0	0	0	9
Truck gardeners	70	35	95	15	37	94
MANUAL LABOR-- AGRICULTURAL						
Farm laborers	0	0	3	0	567	534
Fish factory workers	0	0	0	0	0	33
Woodmen	9	2	0	0	23	23
MANUAL LABOR-- NON-AGRICULTURAL						
Common laborers	41	264	450	11	224	705
Factory workers	0	23	0	0	0	0
Levee builders	0	0	0	0	250	0
Railroad workers	0	8	0	0	0	6
PERSONAL SERVICE						
Cooks	27	70	104	18	42	87
Servants	63	122	229	10	0	15
Waiters/dishwashers	1	4	26	0	0	0
Prostitutes (specified)	105	0	2	0	44	2
Prostitutes (probable)	8	169	63	5	0	32
INDUSTRIAL FACTORY WORKERS						
Mill workers	0	0	28	0	0	0
ARTISANS, PROFESSIONAL AND ENTREPRENEURS						
Bakers	19	1	0	0	0	0
Barrel makers	0	16	0	0	0	0
Barbers	9	18	13	0	0	7
Boarding house keepers	2	16	0	1	0	0
Boot/shoe makers	0	15	3	0	0	4
Brick makers	0	0	9	0	41	0
Broom makers	0	0	2	0	0	0
Bucketmakers	0	0	9	0	0	0
Butchers/fish sellers	20	22	26	0	3	7
Cabinet makers	7	0	0	0	0	0
Candle makers	0	2	0	0	0	0
Candy makers	0	0	1	0	0	0

[1] Taken from Chan 1981: tables 4, 6 and 8. Tallied by Chan from manuscript population censuses.

Table 1 continued

Occupational Category	City 1860	City 1870	City 1880	Rest of County 1860	Rest of County 1870	Rest of County 1880
Carpenters	9	0	0	0	0	1
Chair makers	0	0	7	0	0	0
Cheese makers	0	0	6	0	0	0
Cigar makers	0	35	34	0	0	0
Clerks	3	28	5	0	0	9
Fortune tellers	2	1	0	0	0	0
Gamblers	0	40	60	0	8	8
Jewelers	0	0	1	0	0	0
Labor contractors	5	1	0	0	0	0
Laundrymen/Laundresses	272	246	305	3	1	41
Medical practitioners	27	15	0	2	0	0
Merchants/storekeepers/grocers	50	28	38	37	4	56
Musicians	16	0	0	0	0	0
Peddlers/scavengers	7	6	6	0	0	8
Opium dealers	0	0	6	0	0	0
Pickle makers	0	3	0	0	0	0
Potters	0	0	0	0	1	0
Poultry dealers	3	0	0	0	0	0
Religious personnel	0	0	0	0	0	2
Restaurant keepers	0	2	11	0	0	3
Silversmiths	2	0	0	0	0	0
Tailors/seamstresses	21	11	44	0	0	4
Tea merchants	0	2	0	0	0	0
Teamsters	10	9	0	1	0	0
Tinsmiths	0	3	0	0	0	0
Vegetable/fruit vendors	0	18	16	0	0	0
WIVES AND CHILDREN	64	74	28	0	0	20
INMATES	3	0	0	0	0	0
MEN WITH NO OCCUPATION	15	22	43	0	1	60
TOTAL	980	1331	1674	739	2147	3278
SUMMARY						
Percent in primary extraction and production	16.3	3.5	5.7	88.1	43.7	49.2
Percent in manual labor	5.1	22.3	27.1	1.5	49.6	39.7
Percent in personal service	20.8	27.4	25.3	4.5	4.0	4.2
Percent in factory work			1.7			
Percent artisans, professional, entrepreneurs	49.4	39.6	36.0	6.0	2.7	4.6
Percent with no occupation	8.4	7.2	4.3	0	0	2.4

structures survived, that no structures had been located on this half-block, or perhaps that the effects of the Chinese population camped here were thought of insufficient significance to be reported. By 1854, the Chinese had firmly established their occupancy within the project area, I Street between 5th and 6th being known as "Little China." This section was entirely destroyed on 13 July 1854 in the second most disastrous fire in Sacramento's history. At this time, the half-block had been covered with flimsy wood and canvas structures. The **Sacramento Daily Union** described the situation as follows:

> The Chinese are literally left homeless. They had taken almost exclusive possession of I Street, between 5th and 6th, which they had built up almost solid of materials calculated to make a flaming fire. Had they been made of cotton, they could not have burned with more feverousness. The fire seemed to lick them up as it passed (14 July 1854).

As the fire started a number of blocks away, the Chinese had time to move some of their belongings to safety on an island in the nearby slough. Although the paper stated that the fire must have ruined "most of the Chinese merchants," only one merchant, Tuck Lung on K Street between 4th and 5th, was mentioned specifically in the "List of Sufferers." This list also included "about a dozen Chinese shanties" on the east side of Fifth Street between I and J, and a "number of frames occupied by Chinese" on I Street between 5th and 6th (**Sacramento Daily Union:** 14 July 1854).

A large portion of the Chinese section must have been rebuilt almost immediately. Between July and October of 1854, at least 11 business licenses were issued to Chinese concerns on I Street between 5th and 6th, including five markets, one merchandise store, one bar and boarding house, and four gaming houses (Sacramento Tax Collector 1854: 3rd quarter). The gaming houses paid 10 times the license fee paid by each market ($150 vs. $15), indicating the substantial profit made, or believed to have been made, in such places. Gaming houses were not consistently taxed, nor were they always legal. The 1859 and 1863 City License Books have no listings for gaming houses; although illegal by state law, gaming houses were again taxed in Sacramento during portions of the 1880s (**Santa Rosa Democrat:** 2 February 1884). Regardless of the legal situation, Chinese gaming establishments operated on I Street during the 1850s. The police made periodic raids of these "dens," but their conviction record was poor, and those arrested were often discharged due to lack of evidence (**Sacramento Daily Union:** 3 September 1857).

The Chinese section stood for a little less than one year before it was again partly destroyed by fire. On 3 July 1855, a fire began on the second floor of the Sze-Yap Company building. This small blaze, unchecked for want of a full bucket of water, spread rapidly within the canvas structure and consumed the entire half-block within half an hour. The fire was confined to a triangular area bounded by the levee and 6th and I streets--an area, with but only one exception, occupied

entirely by Chinese. Fire companies, initially hampered by lack of water, were aided by a shift in wind direction which blew the fire toward the slough at the rear of I Street and prevented it from spreading to other parts of town. Although the fire did not cross I Street to the project area, goods in buildings on the south side of the street suffered considerable water damage (**Sacramento Daily Union:** 4 July 1855).

The rapid spread of the fire prevented removal of goods and furniture, and losses from fire and from water damage were reported to be from $65,000 to $100,000. A Chinese company reported the following list of estimated losses to the local newspaper:

> Shang Lee & Co., $10,000; Wah Fong, $6,000; Tu Tuck & Co., $10,000; Wing Lee, $6,000; Yu Chung, $10,000; _____ Restaurant, $3,000; buildings $10,000 (**Sacramento Daily Union:** 4 July 1855).

The Shang Lee Company's loss was reported to have been primarily of opium, while other merchants lost, among other goods, a total of 85 tons of rice. Loss of life was also indicated, as the fire company expressed fear for the survival of a number of individuals confined in the Chinese hospital next door to Sze-Yap's building (**Sacramento Daily Union:** 4 July 1855).

Following the fire, the Sacramento City Council had an emergency meeting, in which they amended an ordinance fixing the limits wherein only fire-proof buildings could be erected to include the "Chinese burnt district." This law was to have a profound influence on the development of the half-block project area. Although the project area was already within the 1852 and 1854 fire limits, the ordinance had not been strictly enforced, and small wood-framed structures continued to be built there. The 1855 fire inspired a crackdown, and fire wardens could, and did, dismantle new attempts to build "combustible shanties" in the neighborhood (**Sacramento Daily Union:** 4 July 1855, 23 August 1855, 18 August 1857).

Within one week of the fire, "six substantial brick buildings" on both sides of I Street were in the planning stage. A.G. Tryon, who had recently purchased two lots in the project area formerly owned by the City, was one of these developers. An initial proposition to construct small frame buildings on these lots was rejected by the City Council in their new determination to enforce the fire-proofing of I Street. Chinese merchants who owned property on the north side of I Street outside of the project area, also planned to rebuild in brick. The **Sacramento Daily Union** expressed its editorial approval of these plans:

> Aside from the unquestionable improvement which will enure to that locality in this respect, the event may be regarded as singularly important in its bearing on the future relative condition of the Chinese population in California. It is an acknowledged trait of that singular people to be

> tenacious of their customs--they do not readily depart from the beaten path in which they have been accustomed to tread, even though surrounded by the allurements of an active American life. When once some of their more influential countrymen shall have invested a proportion of their means in real estate and permanent brick improvements, the balance who have the ability will the more readily and surely seek similar investments. Should this view of the tendency of the movement prove correct, the objection hitherto frequently urged, that the Chinese accumulate wealth without employing it in advancing the prosperity of the State, must necessarily be quieted or be greatly modified (11 July 1855).

The burnt area remained vacant for a short time, as indicated by the following incident:

> A flock of sheep numbering 1007, belonging to the proprietor of the City Market, arrived in the City from Dry Creek yesterday.... The drivers were bothered with them around two hours in attempting "to make riffle" of Chinadom. Having ascended the grade they kept running to and fro over the burnt district, stirring up dust and ashes (**Sacramento Daily Union:** 24 July 1855).

By 1 August, however, work had commenced on three brick structures within the project area and two brick structures on the north side of I Street. The project-area structures included a two-story building on I Street, measuring 70 feet by 50 feet, and a 40 foot by 50 foot building on 6th Street, both owned by A.G. Tryon, as well as a two-story, 80 foot by 30 foot building on the north side of the alley built by D.O. Mills. Tryon leased his I Street building to a Chinese company for a number of years and used his 6th Street building as an office and residence; D.O. Mills subdivided his building into five rental units, apparently never occupied by Chinese (**Sacramento Daily Union:** 20, 30 July 1855, 1 August 1855). A photograph of the project area in about 1859 shows these three brick buildings and a number of wooden buildings on the block (plate 1).

Within one month, a number of brick buildings had been completed. These improvements evoked more praise from the local press:

> The late fire in Chinadom has resulted advantageously to a portion of the Chinese population, in furnishing them with buildings at once safe, commodious, convenient and comfortable. Where before there was a heterogeneous mass of tenements replete with every element of disease and discomfort, are now erected a number of substantial brick buildings--cool and cleanly and well adapted for pleasant habitations. The main floor of these is, moreover, raised to the grade of the street, whereas, under the old arrangement, it was wholly below the level, and excluded

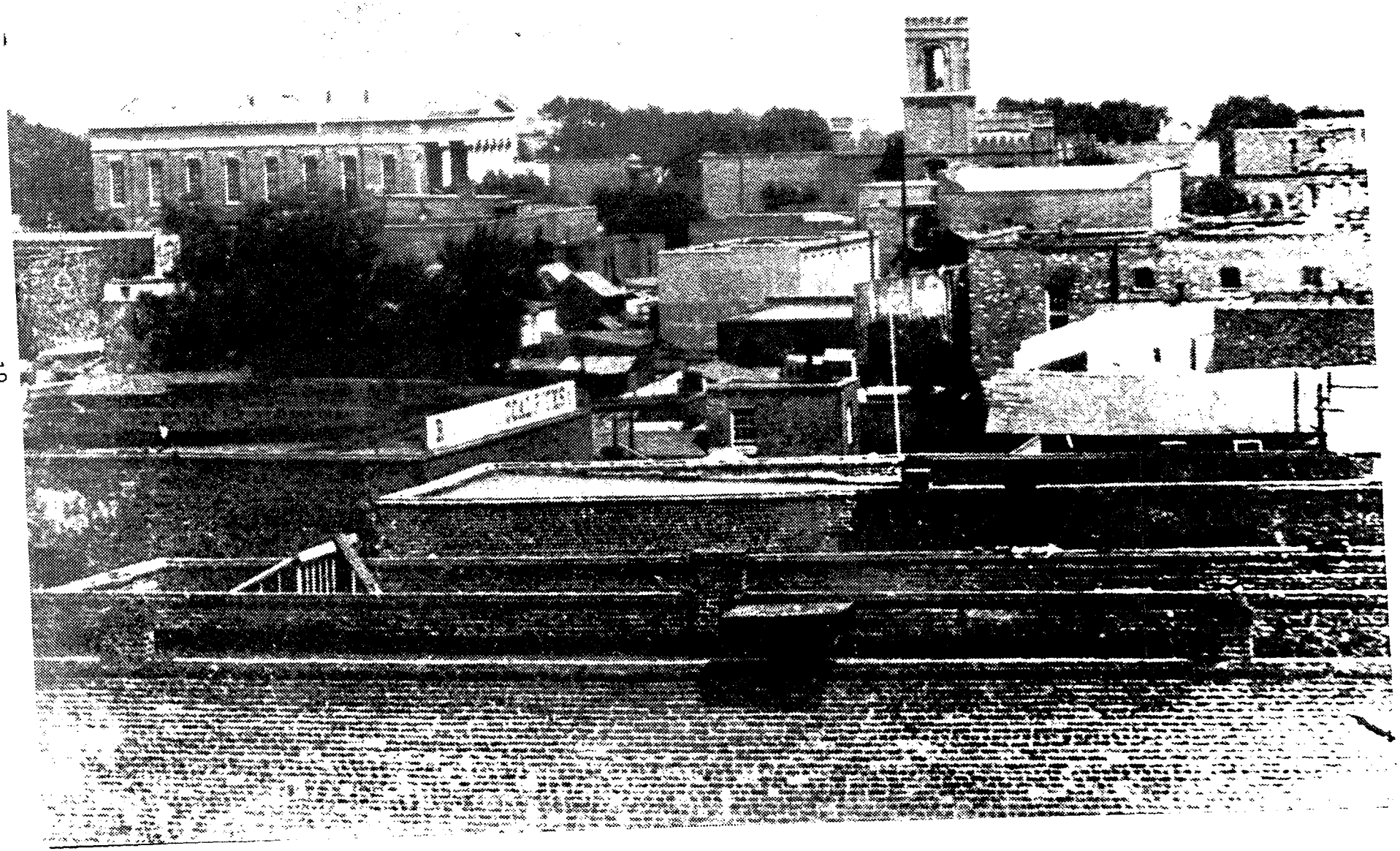


PLATE 1
Part of the I-J-5-6 block in circa 1859

> from the free circulation of air. As the manifest superiority of the new establishments commends itself to John's consideration, it needs no prophet to predict that the close of another year will witness the dissolution of the old shanties that still remain, and the erection of brick buildings in their stead. John must move along with the community generally. He has heretofore, in many ways, proven that he is innoculated with the spirit of progress (**Sacramento Daily Union:** 31 August 1855).

Ironically, "John" did "move along," but not in the spirit of progress indicated above. The increasing desirability of this property, in combination with the expansion of Sacramento, created a situation in which the Chinese "moved along" down I Street toward the slough. In 1855, the northern half of the IJ56 block formed the southern and the eastern boundary of the Chinese district. This district lay on low ground to either side of the I Street levee built around Sutter Slough; the north side of I Street from Front Street to 6th Street, where the levee turned north, was actually inside of this earthwork (Brienes, West & Schulz 1981: figure 1). Thus, the project area, being that quarter of the Chinese section nearest to the central business district and least liable to flooding, was the most favorable location for Chinese businesses. The north side of I Street between 5th and 6th streets was the focal point for the Chinese community, housing the Sze Yap Company building and the stores of the more successful Chinese merchants. These businesses and the number of Chinese merchants declined in the middle 1860s, as the occupational and residential patterns of their former clientele shifted from independent miners in the northern Sierra to wage laborers throughout the state. Meanwhile, the advantages of the area became apparent to other businessmen, who moved in as civic improvements and private endeavors upgraded the half-block area.

A lithograph of "I Street, 'Chinadom'" published in 1855 renders I Street and the project area as they appeared between the fires of 1854 and 1855 (Barber and Baker 1855:19; this report, cover). Although fanciful in some respects--including a man slipping in the street and two running dogs--this lithograph appears to accurately depict the placement and composition of buildings. Buildings on the north--left--side of the street were significantly more salubrious than those on the south side, which stood below the street's surface and had to be reached by walking down wooden plank bridges. Wood and canvas structures stood on the north side of I Street, while the composition of buildings on the south side could not be determined from the lithograph. These buildings, however, were probably constructed using a mixture of materials: wood, canvas, and iron. The lithograph and other historic records suggest that buildings on both sides of I Street were probably occupied by Chinese merchants, butchers, barbers, and restaurateurs at this time. Following the extension and enforcement of the fire ordinance, further construction in wood was severely controlled, and brick buildings became prominent on the block. Ad hoc wooden structures occupying the City's property would have been removed to make way for these new

constructions. George Baker's 1857 Birds-Eye View of Sacramento shows three 1855 brick structures and what appears to be a row of wooden buildings along the remainder of I Street to 5th. This period represents a transition in the half-block's occupancy. Brick structures facing 6th Street were occupied by the residences of successful businessmen. D.O. Mill's brick building facing the alley was also culturally aligned with the J Street community, and significantly possessed J Street addresses, although actually sited on I Street property. These tenements were apparently occupied by Caucasian working-class families and individuals, and not by Chinese. Tryon's I Street brick building housed a series of Chinese merchants until 1870, and the wooden buildings down I Street probably also housed Chinese businesses. These wooden buildings were replaced by a wood and coal yard by 1869. Occupancy data for 5th Street between the alley and I Street are unclear; but by 1870, this section was also no longer occupied by Chinese. Thus, within a 15-year period, the ethnic make-up and economic orientation of the half-block neighborhood had changed completely. Although due to the proximity of the Chinese community, which now stood between the "China (former Sutter) Slough" and I Street from 5th to 2nd, individual Chinese continued to live and work within the IJ56 block, but the neighborhood no longer was within the domain of "Chinadom." Plate 2 shows the neighborhood as it appeared in an 1869 "Bird's Eye View of Sacramento" (Britton and Rey 1870).

Chinese Merchants on I Street

For many reasons, the reconstruction of the business and occupancy history for I Street suffers from limitations not encountered on neighboring J Street. The Chinese occupants did not own property on this part of I Street, but lived on land belonging at first to "City Hall," and later to three well-known, local landholders: Henry Robinson, D.O. Mills, and A.G. Tryon. Lease agreements between these landowners and the Chinese could not be located in the Recorder's Book of Lease Agreements; in fact, no Chinese names were noted in the early lease books. Furthermore, Chinese merchants did not advertise in English-language newspapers at this time. Thus, although contemporary newspaper accounts placed the project area solidly within the confines of "Chinadom," documentary references to specific activities and residences within the area are few.

City directories, city tax assessments, and city business license books were searched for references to Chinese merchants on I Street between 5th and 6th. The results of this work are summarized on table 2. A number of problems are involved in using these records. The handwriting on assessment and business license books varies between bold copper-plate and spidery scribbles; this, in combination with inconsistencies in the spelling of Chinese names, made a certain amount of interpretation by the researchers

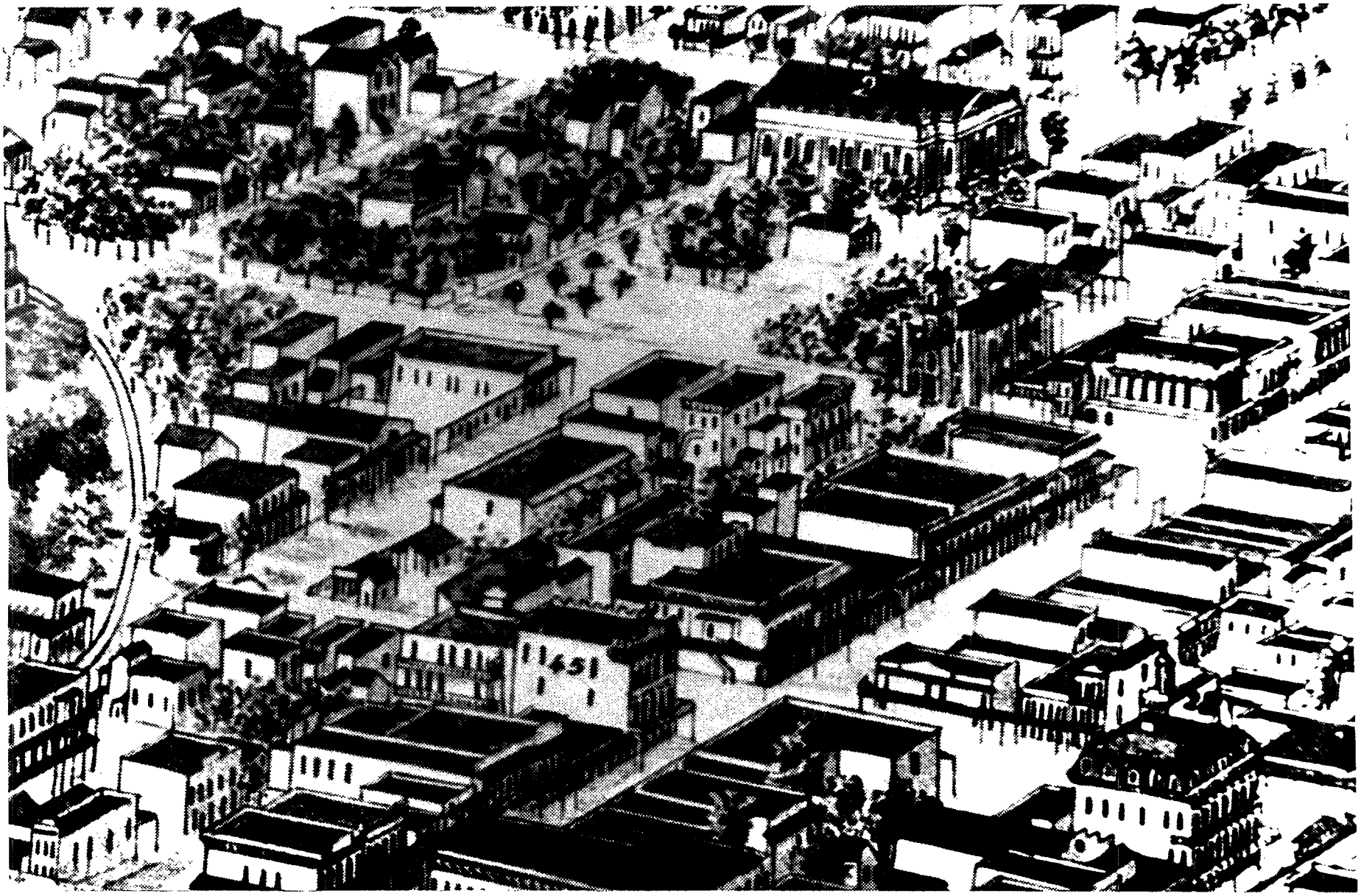


PLATE 2

Lithograph of the I-J-5-6 block in 1869

Table 2

SUMMARY OF DOCUMENTARY EVIDENCE ON THE IJ56 STREET MERCHANTS

Company	D1854	A1854	L1854	F1855	A1856	D1856	A1857	D1857	A1858	D1858	A1859	L1860	L1861
See Up, A. Thei	X			X									
Shang Lee	I/6	$1,700	X	$10,000	$2,000	I/5/6	N$ 300	X	N$1,200		N$1,400	I/5/6	
Wing Lee	I/5/6	1,500	X	6,000	1,800	I/5/6	S 1,000	X	160	I/6	S 1,500	I/5/6	I/5/6
Yu Chung Co.		2,000		10,000	N1,500	I/5/6	N 1,000	S	N 400		S 1,000	I/5/6	I/5/6
Wah Fong				6,000	3,000	I/5/6		X	5/I 400	I/6	S 1,000	I/5/6	
Yu Tuck				10,000	N1,200a	I/5/6	N 1,100	S					
Hop Yuen					I/5 600	I/cor 5	N 800	X	N 300		137 I 650	I/5/6	
Quong Chung					2,000b	I/5/6	S 1,000	X	N 1,400		N 1,400		
Quong Fat					1,800		S 800	148 I	1,200		S 1,000		
Tuck Lung						I/5/6							
Lep Chong (butcher)							S 100						
Wing Ling							I/cor 5 150						
La Yake									S 360				I/cor 5
Qua-Who							S 800						I/5/6
Long Sing									131I 1,200				I/cor 5
Wah Ying									144I 800				I/cor 5
Fong Hong											N 100		
Ten Yuen											S 900	I/5/6	
Long Lee													I/5/6
Hop Wo													I/5/6
Wo Hang													
Chung Key													
Foo Hang													
Quong Wo													
Quong Wo Tong Co.													

D = Directory
A = Assessment Rolls
L = Business License Day Book
F = Fire of 1855 (*Sacramento Daily Union:* 4 July 1955)
N = North Side of I Street
S = South Side of I Street
a = $3500 improvements; $5325 personal property added in pencil to assessment
b = $2000 Lot; $1800 improvements; $1500 personal property added in pencil to assessment
W = Wells Fargo Directory

Table 2 continued

Company	A1862	A1863	A1864	A1868	A1869	L1869	A1872	W1873
See Up								
Shang Lee								
Wing Lee	1481 I $1,500							
Yu Chong Co.	141 I 2,000	141 I $2,000		X	X	I/5/6		86 I
Wah Fong								
Yu Tuck								
Hop Yuen								
Quong Chung								
Quong Fat								
Tuck Lung								
Lep Chong								
Wing Ling								
La Yake	129 I 360	500						
Qua-Who								
Long Sing	I/cor 5 600	131 I 300		X	X		131 I	131 I
Wah Ying								
Fong Hong		131 I 250						
Ten Yuen	152 I 1,500	152 I 1,000	I/5/6 1,500	X		150 I		48 I?
Long Lee								
Hop Wo	87 I 150	87 I 300						
Wo Hang	128 I 600					I/5	I/5	134 I
Chung Key	131 I 300		I/3/4 100		X			
Foo Hang		I/6 500						
Quong Wo		126 I 200					131 I	
Quong Wo Tong Co.								131 I

inevitable. Records also did not always list street side, and rarely listed addresses; therefore, it is difficult to place these merchants within the block. Sacramento newspapers from the period 1855 to 1870 were scanned for references to the local Chinese community.

Quong Fat was the first merchant identified on the south side of I Street. In 1856, the value of his personal property was assessed at $1800. By 1858, his address was listed as 148 I, placing him in Tryon's brick building. It is probable that Quong Fat's business was the Chinese company referred to in the 1855 newspaper article as leasing the building. Quong Fat remained at that address until at least 1859; later Wing Lee, first noted in the 1854 tax assessment, was listed at 148 I in 1862. The 1859 tax assessment record listed five Chinese merchants on the south side of I, two of whom were probably located in the brick structure, with the remainder in the wooden buildings. By 1862, the number of merchants had decreased to two, both located in the brick building; one of these merchants, Ten Yuen, appeared in the records as late as 1870, when his address was listed only as I Street. The 1872 assessment record listed 21 Chinese merchants, none of whom gave addresses within the project area. An 1873 directory of Chinese merchants enumerated 29 merchants and four fish dealers in Sacramento. Twenty-six of these merchants had I Street addresses; three were located at the corner of I and 5th streets, with the remainer west of 5th Street (Wells Fargo 1873).

During this period, records indicate that I Street Chinese merchants prospered. The reported losses in the 1855 fire averaged around $8000 per merchant. Despite this financial blow, all five merchants recovered, two apparently even constructing their own brick structures. The 1856 tax assessments for Yu Tuck and Quong Chung were raised accordingly; the assessor added $3500 in improvements and $5325 in personal property to Yu Tuck's value; and $2000 in real estate, $1800 in improvements and $1500 in personal property were added to Quong Chung's worth. These figures represented considerable wealth at the time. Generally, those Chinese in brick buildings were more affluent and stable than their competitors in ephmeral frame structures. Along with the other influential Sacramento merchants, they received regular shipments of goods on the sloops docking in Sacramento (e.g., **Sacramento Daily Union:** 31 August 1858).

During this period, both Chinese and Caucasions often lived at their place of work. No firm documentary evidence, however, was found to show whether this pattern prevailed in the project area. That place of residence and occupation were not always the same is indicated by the case of a Chinese butcher who met with a fatal accident on the Sacramento Bridge. This man worked on I between 5th and 6th, but lived on I between 4th and 5th (**Sacramento Daily Union:** 2 July 1858). Census records do indicate that persons of like occupation tended to live together in the Chinese community. The 1860 census for the area listed 21 merchants spread over seven residences. These merchants appear to have lived in the same neighborhood, which also contained two doctors, four butchers, and 11

musicians. The 1857 assessments listed a butcher on the south side of I Street, while the Chinese theater was on I between 4th and 5th, supporting the identification of these enumerations as within and near our neighborhood. As the census enumerator recorded all Chinese as "Ah _____" (e.g., Ah Fong, Ah Fat, Ah Quong), it is nearly impossible to correlate this record with the names on table 2. Generally, three merchants lived together, sometimes accompanied by a clerk or cook, and in one instance by a doctor and a teamster. The merchants ranged in age from 20 to 50, and averaged about 34 years. No women or children lived in any of these, or neighboring, households. Three young Chinese women, with no listed occupation, lived on the outskirts of this Chinese enclave.

As the leading Chinese merchants within the community, these men were probably also influential members of the district companies. The Sze Yap Company appears to have been the main Chinese company in Sacramento during most of the period. This company formed late in 1851 and, by 1854, had an office in Sacramento. In the directory for that year, the "See Up Co." with "A. Thei" as "council" had its office on I Street between 5th and 6th streets. It was unusual for Chinese to own property at this time, but the "See Yep Co." was assessed for a parcel on the north side of I between 5th and 6th streets in 1856 and 1861; in the preceding and intervening years, no owner was shown on the city tax assessment maps (McGowan et al. 1979).

In the summer of 1854, members of four companies, including Sze Yap, banded together to fight the Yeong Wo Company (Barth 1964:94). One such battle, involving some six hundred warriors "armed with tin hats, bamboo shields, tin and iron swords and cutlass a la pick handles," transpired one hot September evening on I Street between 5th and 6th (**Daily Alta California:** 10 September 1854). Although the press described it as a free-for-all, it was more likely part of the struggle between "Canton" and "Hong Kong" companies which raged in Chinese California that summer. Marysville representatives of the "Canton" faction, of which Sze Yap was a part, sought the advantages of a favorable press and explained their differences to the local editors as follows:

> The Hong Kongites have prepared weapons and are anxious to get up a fight with the Cantonians, who, on the contrary, prefer not going to war. The former are engaged in business avocations, while the latter frequent houses of bad repute, and after nightfall sallying out for purposes of provoking difficulty, and perhaps robbing or stealing (**Daily Alta California:** 10 September 1854).

The Sze Yap Company building was the site of the 1855 fire; the company probably also owned the hospital next door, as these companies provided dormitories, hospitals, and "joss houses" for the use of their members. It appears that at least one of the brick buildings constructed following the fire was financed by Sze Yap Company members. An 1860 census enumeration showed "Ah Cheong" (Perhaps, Yu Chong?), "Ah Cow," and two other merchants living

together in what is believed to be the Sze Yap building in the middle of the north side of I Street between 5th and 6th. In 1862, emigrants from the Anping, Haiping, and Sinhwui districts separated from the Sze Yap and formed the Hop Wo Company (Barth 1964:96). Some street-fighting accompanied this split, and Ah Cow--a local "agent and business manager" for the "See Yup"-- was assassinated in an I Street gambling hall in July of that year. The local newspaper described Ah Cow as "a Chinaman of great distinction of character--brave, fearless and active in putting down anything like rascality among his countrymen." (**Sacramento Daily Bee:** 16 July 1862). Ah Cow had been well acquainted with the American court system. He once received a $4500 reward for his part in the capture and conviction of a Chinese murderer. Later, he had won a Chinese lottery, which the house refused to pay him, whereupon he went to the authorities and complained against the offenders for running a gambling establishment (**Sacramento Daily Bee:** 16 July 1862). For these and other reasons, Ah Cow had not been a popular figure with some Chinese groups. Ah Cow's funeral procession was quite large: "21 carriages, containing Chinese and some Americans" (**Sacramento Daily Bee:** 21 July 1862).

A documentary reference connecting the study-area Chinese merchants and a Chinese district company was not found. A dinner given in 1861 by two leading Chinese merchants for a party of influential Sacramentans may indicate such a relationship, if "Ah Tai" can be taken to be "A. Thei"--the 1854 Sze Yap councilor--and "Ah Teen" can be taken to be "Ten Yuen"--a merchant at 152 I Street.

Problems and conflicts within the Sze Yap company may have been yet another factor leading to the changes in the socio-economic orientation of the project area. The Sze Yap Company parcel across the street was unoccupied in 1864 and was sold to a non-Chinese by 1866. Thus, numerous changes from both within and without the Chinese community resulted in a new geographic focal point for the area's Chinese: I Street between 5th and 2nd streets.

PREVIOUS ARCHAEOLOGICAL RESEARCH

During the past 15 years, Sacramento has been the scene of numerous large-scale archaeological excavations. In fact, Schulz et al. (1980a:1) suggest that it may be "the most intensively investigated nineteenth-century urban site in the western United States." Despite this vast amount of excavation, no materials have been recovered to date from discrete archaeological features correlated, through documentary research, with Chinese occupation. The presence of a Chinese community has been indicated archaeologically by the large amount of Overseas Chinese material, particularly ceramics (Praetzellis and Praetzellis 1979b), recovered during these excavations. The volume of work done in Sacramento and the lack of a discrete type collection from a documented Chinese archaeological feature have increased the research value of the IJ56 block features.

Overseas Chinese material culture is quite distinctive; within the past few years, numerous archaeological excavations outside Sacramento have retrieved collections attributed to the Chinese on the basis of these distinctions. The degree to which these collections can be attributed to particular populations, activities, and dates vary. Some collections merely represent an anonymous Chinese at an unknown time past, while others are documented quite precisely. The following section will describe some of these collections and their associations.

Descriptive Reports

A 1967 archaeological salvage project in connection with Tucson, Arizona's urban renewal program yielded a large collection of Chinese ceramics representing nearly a century of occupation, beginning circa 1880. Olsen (1978) prepared a descriptive report on this collection, analyzing the wares according to their function, decoration, and mode of manufacture. The large sample size and long temporal range of the ceramics enabled Olsen to suggest a relative chronology for Chinese brown glazed stoneware wine bottles, to distinguish domestic and restaurant wares, and to reconstruct trade networks.

A large quantity of artifacts was recovered in 1969 from an abandoned Chinatown, occupied from about 1875 to 1930, in Yreka, California. Although preliminary work has been done on this collection (Helvey, n.d.), it has yet to be thoroughly analyzed. On

the basis of coins and tokens recovered here, Farris (1979:51) argued for the use of Chinese "cash" coins as small-value currency within the Overseas Chinese community.

One of the largest collections of Chinese ceramics from an archaeological deposit was recovered in 1979 during work on the San Francisco Wastewater Management Project. At least 560 vessels, believed to have been produced and deposited from 1880 into the early 1900s, were recovered from an area of fill on the San Francisco waterfront. On the basis of this large and diverse collection, Garaventa (1980, 1981) identified a number of varieties and sizes of vessels heretofore unrecognized within archaeological assemblages.

Major Archaeological Investigation Reports

The preceding studies are descriptive. Due to the lack of adequate archaeological and historical controls, the recovered artifacts may be viewed only as representatives of a particular type and not as associations representative of a particular household or activity, at one point or numerous points through time. Ventura, California, provided the scene for the "first systematic archaeological study of Chinese culture in the United States," directed by Greenwood (1978). In this case, the "site" was a city block containing archaeological remains spanning the spectrum from prehistoric times through the Mission Period to the twentieth century (Greenwood 1975, 1976). Two features associated with Chinese occupation were excavated--a trash pit and a backfilled well. The trash pit apparently contained primarily domestic remains discarded in the 1890s by the residents of a laundry, while the well deposit appeared to have been filled with the refuse of a second Chinese laundry when it was demolished around 1907, to which the neighborhood Chinese added their discards to fill the remainder of the void (Bente' 1976). A result of this project is a documented collection of artifacts for use in comparative studies (e.g., Chace 1976). The investigation used a synthetic approach, combining archaeology and history to address the question of acculturation: "To what degree did the Overseas Chinese adapt to life in an American community and which aspects of their culture endured the transplant?" (Greenwood 1978:42). Greenwood concluded that the Chinese emigration pattern and employment situation were such that interaction with the host community was, at this time, limited to the economic sphere:

> The Chinese culture thus remained essentially intact and it was Ventura which reacted--with hostility, fear, and overt actions which only served to reinforce the segregated settlement and the "foreign" ways (1980:120).

Their material goods, recovered archaeologically, indicated that the Ventura Chinese had maintained traditional ways (Greenwood 1980:121).

In 1977, the Nevada State Museum excavated a portion of a city block inhabited by Chinese from around 1900 until the 1930s in Lovelock, Nevada. This project recovered over 4500 identifiable artifacts, many of which are described and illustrated in a voluminous site report (Hattori et al. 1979). This collection, from a small Chinese enclave in the sparsely settled Great Basin, overlapped in time with the Ventura collection, providing good material for comparison. Based on comparative data from the two sites, Rusco (1979) suggested a differential rate in the acceptance and adaptation of American goods by the Chinese. Her conclusions included the following:

> 1. The use of predominantly Chinese ceramic tableware and food containers may have persisted longer among Overseas Chinese than the exclusive use of traditional cookware and eating utensils.
>
> 2. Traditional Chinese food preferences, adapted to locally available food supplies, also persisted longer than exclusive use of traditional cookware and eating utensils.
>
> 3. The use of Western condiments, prepared medicines, and alcoholic beverages preceded the extensive use of other Western bottled and canned products (Rusco 1979:648-649).

Summarizing the historical and archaeological studies of the Lovelock Chinese community, Rusco concluded:

> The archaeological remains at Ninth and Amherst reflect the historical information about Lovelock's small Chinese population. Material culture remains indicate a traditional Chinese domestic pattern adapted to rural western United States. Locally obtainable food, selected and prepared to Chinese taste, in western cookware, was usually served in Chinese dishes. There are indications that the occupants of the small cottages on the "wrong" side of the tracks in Lovelock practiced the virtues of industry and thrift, and were rewarded by a relatively comfortable standard of living (1979:652).

A study of railroad labor camps has provided a view of non-urban Chinese. Two camps, separated by a few miles and occupied simultaneously--one primarily by Chinese, and the other by Western Europeans--allowed Briggs (1974) to examine the similarities and differences in the material culture and in the settlement and subsistence patterns of these two groups. Using data from site mapping, surface collection, and the historic record, Briggs (1974:203) found that while maintenance activities at the two camps were, of necessity, similar, the "different cultures and constraints resulted in dissimilar social organization." In the realm of material goods, one group's artifacts came via the West Coast and China, while the other's originated on the East Coast and Europe.

These artifacts represent an "index fossil or horizon" for the year 1882, when, upon project completion, the camps were abandoned.

In their study of Death Valley's Harmony Borax Works, staffed by Chinese laborers during its period of operation from 1883 until 1888, Teague and Shenk have suggested that although isolated geographically, Harmony was an "urban satellite, dependent upon San Francisco for its survival" (1977:216). Most of the site's food and material goods, including orders from Chinese merchants, was shipped from San Francisco via railroad and supply wagons. Through this network, the Chinese maintained traditional foodways and did not depend upon locally available natural resources to any measurable degree (Teague and Shenk 1977:200). Many of the ingredients of these traditional meals, eaten in Chinese bowls, were shipped in brown glazed stoneware vessels; over 99 percent of the ceramics recovered from the site were Chinese in origin (Teague and Shenk 1977:98). Chinese laborers at Harmony did, however, adopt American tools and, to a lesser degree, American clothing and food (Teague and Shenk 1977:216).

Recent and On-Going Work

The Chinese were an integral part of western mining frontier settlements. Archaeological testing in connection with the construction of a water line in Idaho City uncovered a feature related to Chinese participation in the Boise Basin Gold Rush beginning about 1865 (Jones et al. 1979). As the presence of easily mined gold diminished around the Boise Basin and elsewhere in 1880, Chinese began to settle in Boise's Chinatown. In 1979, a portion of this area was excavated by the University of Idaho. One of their main research goals was to investigate the "process by which the Chinese became acculturated in American society" (Jones 1980:5). To date, a preliminary report has been completed on this work (Jones 1980), while a final report is in progress which will provide an "in-depth description of the artifacts... a chronology of Chinese ceramic pattern use and a view of economic acculturation among the Chinese at the site" using ceramic and faunal remains (Sprague 1981a:24). Specifically, the researchers will attempt to show that economic conditions may speed the acculturation process.

Recent archaeological surveys in the gold districts of the West have produced considerable data on Chinese mining and miners. D.L. Felton, of the California Department of Parks and Recreation, has inventoried the prehistoric and historic cultural resources of the Malakoff Diggins State Park, which includes a large portion of the former town of North Bloomfield (Schumacher 1977:57). This hydraulic mine, the largest in the state, employed hundreds of Chinese laborers before it was closed down by a court injunction in 1884. The Sawyer Decision of that year banned the dumping of mining debris into waterways, and thus made hydraulic mining illegal. Many Chinese, however, continued to operate small, remote hydraulic

endeavors. To the north, during reconnaissance in the Shasta-Trinity Forest, J. Baxter discovered two Chinese cemeteries: one intact and dating to the 1850s, and one vandalized and dating to the 1850s-1860s (Schumacher 1979:2).

Perhaps the most exciting piece of work in this domain is a recent thesis on Chinese mining in the Siskiyous (Sprague 1981b:43). In this study, Lalande integrated the results of archaeological survey and excavation with data contained in records of a merchant who had supplied the Chinese miners at one of the sites. The study looked at three areas of material culture changes:

> The subsistence pattern (food preference, personal grooming, wearing apparel), the settlement pattern (characteristic locations of habitation sites, construction materials and techniques, siting of structures relative to the cardinal directions), and the technological pattern (gold extraction methods as evidenced by hydraulic mining sites) (Sprague 1981b:43).

Lalande found little evidence of cultural change in food preferences or grooming habits; ready adoption of Western clothing; and a mixture of relaxation modes combining opium, Western liquor, and, to a lesser degree, Chinese "wines." The settlement pattern showed the adoption of American construction techniques and materials, combined with a tendency to maintain the native Chinese patterns of architectural siting. In the sphere of mining technology, Lalande found no difference in the hydraulic methods of Chinese and non-Chinese miners; tailings were found to be related to environmental factors and not to ethnic behavior patterns.

A recent study has taken a different approach. Tackling the question of acculturation and attacking the Ventura, Tucson, and Lovelock studies as supporters of the "obsolete and insidious 'sojourner thesis,'" Whitlow (1981:2, 63) proposed a "settlers theory." According to Whitlow (1981:15-17), the "sojourner thesis"--that the Chinese came to the United States only to make their fortune, at which time they would return to China--was initiated in the 1870s by political opportunists and reactionaries, as well as by economic factors. Whitlow claimed that the presence of many Chinese families in this country for generations negates the "thesis" and supports the notion that some Chinese, at least, came as "settlers." The archaeological recovery of American bottles and tin cans along with artifacts of Chinese origin in a trash pit associated with a twentieth-century Chinese bunkhouse was proposed as an example of "extrinsic acculturation" by the Chinese (Whitlow 1981:63).

Faunal analysis has become increasingly important to archaeological studies of the Chinese. Two approaches to the study of ethnicity have been developed by archaeologists analyzing faunal remains from Overseas Chinese cultural deposits. One of these is a "holistic" approach, best typified by Langenwalter's (1980) account of late nineteenth-century Chinese subsistence at the Lower China

Store, Madera County, California. Taking all relevant variables from this site into account, he concluded that both the faunal and artifactual data strongly supported the descriptive model of late nineteenth-century Far Western Chinese developed by Spier (1958a, 1958b). Langenwalter noted that considerable effort was expended by nineteenth-century Far Western Chinese to maintain their traditional diet, albeit with variations resulting from the replacement and/or supplementation of less easily obtained foods.

The other zooarchaeological approach to the study of Overseas Chinese ethnicity is a more particularistic one, which can be subdivided into two areas of study. One of these is faunal spectrum analysis, which consists of calculating the quantities of remains representing various types of animals and/or determining the presence of animal species unique to the diet of Chinese-Americans. Study of the animal remains from cultural deposits associated with late nineteenth-century Chinese-American communities in Ventura, California, and Lovelock, Nevada, has revealed the presence of high proportions of pig and domestic fowl (i.e., chicken and duck) remains (Dansie 1979; Simons 1980a, 1981b; S. Gust, unpublished data). Recent analysis of the bird remains from the late nineteenth-century Chinese community in Woodland, California, has also disclosed that domestic fowl make up the majority of these remains (D. Simons, unpublished data). Examination of the Lovelock, Nevada, fauna has also revealed the presence of various specialty items associated with traditional Chinese cooking and medicine, including turtle, bobcat, cuttlefish, and Asiatic pit viper (Dansie 1979).

The other particularistic approach to the study of Overseas Chinese ethnicity which has been utilized by zooarchaeologists is analysis of butchering practices and patterning. Recent study of the poultry remains from Lovelock, Ventura (Simons 1980a, 1981b), and Woodland (D. Simons, unpublished data) has revealed the presence of butchering patterns which can be directly correlated with present-day Chinese-American poultry-butchering practices. Examination of the butchering patterns characterizing the remains of large animals (i.e., cattle, sheep, pigs) from these sites, however, has not revealed any distinctive patterns which can be directly attributed to Chinese food-preparation practices (A. Dansie and S. Gust, personal communication 1981).

Currently, a number of promising archaeological studies of nineteenth-century Chinese are in the preliminary stages. Peter Schulz of the California State Department of Parks and Recreation is working on two late nineteenth-century Chinese fishing camps situated in Marin County. Thus far, the work has included initial documentary research, oral history, and test excavations of both sites (Schulz 1981). Recent archaeological work in the northern Sierras discovered several 1880s Chinese mining habitation sites (Praetzellis, in progress). In the southern Sierras, Greenwood (personal communication 1982) has located what may be the earliest archaeological site associated with Chinese gold miners discovered in the West to date. In Silver Reef, Utah, during the initial stages

of a long-term project conducted by the University of Pennsylvania, archaeologists tested a portion of that town's Chinese quarter and found a mixture of Chinese and Anglo-American items (Ayres 1981:40). Further afield, in New Zealand, Ritchie (1980) has been studying the archaeology of the Chinese mining era--circa 1865 to 1910-- in Central Otago. The associations of Chinese material culture found in New Zealand are in many ways similar to those found in the Western United States (Ritchie, personal communication 1981).

A number of reports on the archaeology of the Overseas Chinese are available; these possess varying degrees of sophistication in their use of excavation methods, documentary research, and theoretical orientation. Some of them are helpful as identification aids in materials analysis, while others provide the basis for comparative studies within a critical, well-defined theoretical perspective. The large number of recent projects soon to reach fruition should result in a major breakthrough in the integrative archaeological study of the Overseas Chinese.

RESEARCH DESIGN

Marley R. Brown III
Colonial Williamsburg Foundation

Kathleen Bragdon
Smithsonian Institution

General Considerations

The preceding review of archaeological work on Chinese sites in the Western United States indicates the current interest in the general problem of acculturation, that is, the extent to which the immigrant Chinese population began to accept the values, beliefs, and attitudes which characterized American culture during the second half of the nineteenth century (Jones 1980; Whitlow 1981). Thus far, historical archaeologists have successfully demonstrated the persistence of distinctive foodways patterns among Chinese immigrants in both rural and urban areas. This concern with the processes of cultural and social change affecting the Chinese is but one aspect of a more widespread interest on the part of archaeologists in the dynamics of cultural pluralism and social stratification within American society from the seventeenth through the nineteenth centuries.

Much archaeological research has focused on segments of the population which, because of their cultural and social backgrounds or limited economic means, were not fully incorporated into the mainstream of American society. Singling out Blacks, Chinese, and other ethnic and social minorities for study is most often justified by the argument that these groups are not represented in the conventional historical record, or are presented in an extremely biased light. As one of the few objective sources of data available for reconstructing the social and cultural life of these people, archaeological remains become very significant (e.g., Schuyler 1976, 1980).

Still, the archaeological study of cultural pluralism, and specifically of the Chinese in nineteenth-century America, has been fraught with simplistic assumptions about what archaeological data can reveal about the social and cultural life of these people. In preparing a research design for Chinese habitation sites in Sacramento, it is thus necessary to formulate questions which are (1) sensitive to the complexity of such processes as urbanization,

ethnicity, acculturation, and assimilation, and (2) realistic in terms of the known advantages and limitations of the archaeological and historical records. In addition, the research chosen for the features encountered on the IJ56 block should be structured to represent one specific application of the more general research strategy, proposed for the city of Sacramento as a whole, which has as its major goal:

> coordinating the archaeological sampling of households representing different ethnic, minority, and economic groups within urban residential neighborhoods with a detailed reconstruction of the process of residential differentiation during the transitional stage of urban growth... (Praetzellis et al. 1980:111).

As noted in the study of the Golden Eagle site (Praetzellis et al. 1980), the beginnings of the transitional stage in a city such as Sacramento are characterized by the lack of clear spatial separation between commerical and domestic land-use and the close proximity of residential groups composed of individuals and families from widely divergent cultural, occupational, and class backgrounds. It is a stage which may be viewed as intermediate between the pre-industrial city and the fully modern one. In a study of personal identity and social behavior in urban public spaces, Lofland (1973) observed that the limited spatial segregation of pre-industrial cities should result in "overt heterogeneity" or the dominance of "appearential ordering" as expressed through costume, body markings, and language. With industrialization, the growth of modern cities has been accompanied by the decline of appearential ordering and the use of locational ordering as the basis for social interaction.

> The modern urbanite, then, in contrast to his pre-industrial counterpart, uses location rather than appearance to identify strange others who surround him. In the pre-industrial city, space was chaotic, appearance ordered. In the modern city, appearances are chaotic, space is ordered. In the pre-industrial city, a man was what he wore. In the modern city, a man is where he stands (Lofland 1973:82).

Although the dichotomy between these two types of identification and social action is somewhat overdrawn in the above statement, it is clear that appearential ordering was an important basis of interaction in early Sacramento, as well as in other Western frontier cities.

The crowding of large numbers of immigrants in Sacramento into multi-household dwellings, surrounded by various commerical enterprises, makes it extremely difficult to correlate discrete refuse deposits with specific social groups or businesses identifiable from city directories and censuses. But it is within this transitional urban settlement stage that the potential for archaeological expression of ethnicity and class among the urban

residential population appears to be greatest. It is proposed that, in the absence of social distancing measures based primarily on spatial separation, individuals and groups in frequent face-to-face contact during the transitional stage would have depended heavily on the conscious manipulation of extrinsic symbols for group-boundary maintenance--symbols which often find their referents in behavioral and material form. Such boundary-maintenance mechanisms would have been especially pronounced among those groups, such as the Chinese, who were singled out for discrimination and persecution for reasons of their physical or obvious cultural distinctiveness in addition to their perceived position as an economic threat. Symbolic boundary maintenance would have been grounded in either the aggressive perpetuation of traditional behavior or in the adoption of non-traditional behavior to create new symbols of traditional identity. The latter may have involved varying degrees of participation in non-traditional activities.

The above general proposition is based on several assumptions about the nature of ethnic group formation and the social dynamics of ethnicity. Much recent thinking on the subject of ethnicity has emphasized the contextual basis of its definition; particularly in urban situations, ethnicity develops as an adaptive strategy for coping with conflict resulting from competition for valued and often limited resources and the unequal distribution of political power (A. Cohen 1969; R. Cohen 1978:391). This perspective has already been applied by at least one historical archaeologist to rural frontier contexts in the Far West (Hardesty 1980); it has been elaborated upon by others as part of a formal model of ethnic differentiation based upon the explicit use of ecological principles (Hannan 1979; Lauwagie 1979; Abruzzi 1982). These efforts have been directed toward the goal of explaining the conditions, rather than the specific processes by which they are maintained. Other scholars have focused on the latter problem, particularly the role of symbols in defining and maintaining group boundaries in situations of real or perceived environmental stress (i.e., Siegel 1970; Rowntree and Conkey 1980).

Although the development of a general model which integrates ecological principles, such as niche diversification (Abruzzi 1982), with those relating stress-response and symbolization to selective pressure (Rowntree and Conkey 1980) is beyond the scope of this study, many of the elements of such a model are especially appropriate to understanding ethnicity within the transitional period of urbanization in nineteenth-century Western American cities.

The above approach stresses the situational and selective nature of ethnicity and acculturation and particularly emphasizes the fact that the economic and political structure of the urban contact situation often results in the strengthening or reaffirmation of traditional identities, redefined in new institutions and symbolic forms. In the case of Overseas Chinese communities, one anthropologist has labeled this process "conservative change": "A dynamic process by which traditional institutions are modified or given new form but their functions

remain the same" (Watson 1975:200). In this view, the process of change affecting urban immigrant groups is no longer seen as a progressive, unidirectional phenomenon which ultimately results in the abandonment or loss of cultural traditions and full acceptance and participation in the social institutions of the larger society.

In considering the archaeological implications of this general proposition, it must be recognized that participation in non-traditional activities, or the pronounced lack thereof, is not necessarily related to these ethnic boundary-maintenance or resource-competition strategies. More importantly, while such evidence may be indicative of social change, it cannot be directly related to the broader processes of cultural change (i.e., acculturation). Archaeologists have long recognized that, given the nature of their data, they cannot directly observe such cultural phenomena as beliefs, attitudes, and values, but they can at least partially reconstruct patterns of behavior which were differentially participated in by particular social groups (Binford 1962, 1965). Thus, only those adaptive strategies of ethnic and class boundary maintenance and economic adaptation which find behavioral expression in material form are appropriate subject matter for historical archaeologists concerned with cultural pluralism and social stratification.

In the case of Sacramento and other nineteenth-century urban sites in the West, the definition of these behavioral patterns is complicated by several factors which relate mainly to the broad economic context of urban settlement, as well as to the more specific economic conditions of the social and cultural groups whose households are being sampled. As recently noted in an evaluation of the archaeological potential of the transitional phase of San Jose's urban development,

> Archaeological remains from households of this period will provide partial evidence of consumer behavior, that is, the participation of different social groups in the local expression of a national economic system. Depending on the availability and cost of different categories of manufactured goods, patterns of acquisition and disposal at the household level may, indeed, be related to factors of ethnicity and class, but the latter can only be demonstrated once the assimilative pressures contained in consumer products and marketing practices have been adequately considered. In order to define these assimilative pressures it is necessary to examine the consumer tastes of the predominantly middle class European-Americans who made up the great majority of the residential population (Theodoratus Cultural Research 1980:79).

In other words, aspects of the consumer behavior of households representing different ethnic and class backgrounds have to be firmly connected through a broad comparative study with the processes of ethnicity, class boundary maintenance, and other adaptive strategies

occurring in the urban context. Only then will it be possible to draw generalizations about such phenomena as cultural and social change. To make such connections, furthermore, it is necessary to control the economic factors which determined what consumer goods could be acquired and at what cost by individual households, as well as the character of their change through time (i.e., cycles of economic depression and recovery). Archaeological data which partially provide such controls have been forthcoming from Sacramento. Specifically, the inventory of the Warren and Cothrin stores, which burned in 1852, provide at least a partial index of available ceramics at that time (Praetzellis, unpublished data). Similarly, materials dating to the 1860s and attributed to the prestigious Golden Eagle Hotel can be thought of as the results of middle-class consumer behavior, albeit in an institutional setting (Praetzellis et al. 1980).

Other important variables must also be adequately considered in order to isolate ethnic and other boundary-maintenance strategies during the transitional period, as these processes are reflected in patterns of divergence in household consumer behavior. Some of these variables are demographic in nature, such as the age and sexual composition of households, or relate to dominant forms of social organization present, such as nuclear versus extended family structures. Other factors more immediately affect the economic situation of households, such as occupation of household members and the nature of property- and other wealth-holding.

Most of these variables can be identified, at least in general terms, from city directories, censuses, Sanborn fire insurance maps, city plats, and probate and tax records. Such information is often not exploited by historical archaeologists, either because the necessary research has not been done or, more commonly, because many archaeologists do not recognize the essential role such data must play in their research. Instead, many workers in this field are content to define statistical patterns in their artifactual and faunal material, label these patterns, and then search for them anew on other sites of the same period. In the absence of a detailed reconstruction of the demographic, economic, social, and cultural context of the households being observed archaeologically, such "pattern recognition" can shed little light on the manner in which consumer choices reflect the processes of ethnic boundary maintenance and other adaptive strategies which developed in Western cities during the transitional stage. Only by controlling these variables to the extent that the surviving documentary record allows will it be possible to isolate the archaeological correlates of significant adaptive strategies undertaken by culturally and socially constituted residential groups within the transitional zone of cities such as Sacramento.

Application of the Research Design to Block IJ56

Implementation of the research strategy which has been proposed for Sacramento will require the sampling of archaeological deposits known to belong to households whose members were of distinctly differing cultural backgrounds and differing occupational and economic levels. One obvious group present in many Western cities during the transitional stage were the immigrant Chinese. While this group has been subjected to archaeological study in a variety of contexts, little systematic correlation of detailed historical data on Overseas Chinese household and community composition with discrete and tightly dated archaeological deposits has been accomplished. Given the association of most of the features identified on the IJ56 block with a small group of Chinese merchants residing on the property during the period 1850 to 1870, these deposits may afford an opportunity to investigate incipient adaptive strategies employed by a very important and widespread type of Overseas Chinese settlement, "the sojourning community."

In spite of the growing corpus of research on Chinese sites in North America, few efforts have been made to correlate materials recovered from such sites with specific Overseas Chinese settlement-types or with specific segments of such communities. Recent radical criticism notwithstanding (Whitlow 1981:2), most early Chinese settlements in the Far West have been identified as "sojourner" communities, a settlement-type common to the Chinese emigration pattern for many centuries (Barth 1964:50; Omohundru 1978:114). The sojourner "clings to the culture of his own ethnic group...unwilling to organize himself as a permanent resident in the country of his sojourn" (Siu 1952:34). According to a study of a Chinese immigrant community in the Philippines,

> Sojourning involves periodic returns to the hometown, and for the Chinese, establishing organizations as bases in the overseas local[e] for receiving, placing, and dispatching migrants and their money (Omohundru 1978:113).

While the sojourner model has guided most archaeological interpretations of Chinese sites in North America, little attention has been paid to the specific components of Chinese sojourner-communities, most notably the Chinese merchant-middlemen, frequently connected with immigrant communities. A general model has been suggested which outlines the development and perpetuation of the middleman minority position; here, the decision to sojourn or to settle is influenced by several variables, including host hostility, minority group solidarity, economic position, and conditions in the homeland (Bonacich 1973). From the onset of Chinese settlement in North America, the merchant held a position of great influence. Although of relatively low status in traditional Chinese society, in America sojourning Chinese merchants "combined the prestige of mandarins, the wealth of the gentry, the authority of family heads, the status of scholars, and the power of creditors" (Barth 1964:81).

Furthermore, the control by the merchants of the Chinese secret societies--particularly the "Six Companies," which was responsible, among other things, for representing the Chinese communities in American courts--led many Americans to judge all Chinese by what they knew of these merchants (Sandmeyer 1973:12).

In his position as middleman, the Chinese sojourner-merchant acted as a sort of "culture broker" and, hence, a potential source for culture change as either a mediator or an innovator (Press 1969:207). It is likely, however, given the dynamics of Chinese ethnicity in America discussed above, that the Chinese merchant represented a conservative force, manipulating ethnicity for economic advantage, as well as to maintain his social position within the immigrant community. For example, in his study of more recent Chinese merchant communities in the Philippines, Omohundru (1978:129-133) suggested that the economic success of sojourning Chinese middlemen has been the result of a deliberate emphasis on cultural differences between the Chinese and their Filipino customers. Thus, incipient Chinese urban ethnicity in Sacramento may well reflect the economically motivated strategies common to other overseas merchant communities. Background historical data on the composition of these merchant households and on their economic status has been noted in an earlier section of the report. These data, together with more detailed information on the relative cost and availability of both imported Chinese and Euro-American-manufactured goods of the period, would, if available, permit a more refined view of the consumer behavior of these individuals. Aspects of the patterning evident in this behavior may then be evaluated in terms of the extent to which it suggests the manipulation of ethnicity for political and economic purposes.

Such an evaluation will, of course, depend in part on the broad comparative base referred to previously, consisting of discrete archaeological samples derived from deposits tied directly to other households residing immediately adjacent to Chinatown. It will also require more specific comparisons with other segments of the Chinese community, as their composition and economic position varied through time. These comparisons should involve the archaeological remains of other exclusively male households, such as those of laborers and other occupational groups, as well as materials from families residing within the community in the latter part of the century. In this way, it will be possible to critically examine the following conclusions regarding the process of cultural and social change affecting Sacramento's Chinatown during the period 1850-1900:

> those areas in American life to which the early immigrants seemed most adaptable are precisely the areas in which adoption of American practices permitted retention of a fundamentally Chinese way of life. Valley City's Chinese residents were accommodating themselves to some American institutions; they were utilizing American religious and judicial processes, but primarily to further Chinese ends. This type of accommodation does not demand shifts in value

orientation, nor does it signify a desire to embrace the ideology of the host nation (Weiss 1974:64-65).

The recovery and analysis of materials associated with the earliest sojourning middleman population represents a promising beginning for the archaeological study of the Chinese community in Sacramento, revealing the processes by which these people adjusted themselves to the physical, economic, social, and political context of the city's development during its transitional stage. Such archaeological research must necessarily focus on the behavioral aspects of ethnic boundary maintenance (i.e., the archaeological correlates of varying degrees of participation in American consumer practices on the part of the Chinese), rather than on the broader institutional and cultural dimensions of Chinese life which were essential to preserving identity in the midst of various assimilative pressures. But, in combination with extensive analysis of primary historical sources pertaining to this community, archaeology should provide at least a partial test of the statement that, during the period 1850 to 1900, "acculturation...did not occur" among Sacramento's Chinese (Weiss 1974:65).

Research Questions

Based on the preceding research design, the following site-specific research problems were identified prior to fieldwork:

1. The use and occupancy of lots facing on 5th Street and on I Street are poorly documented for the period prior to 1870. The archaeological features appear to date from this early period and may supply data on the demographic and economic character of the neighborhood's residents. Further study could also address the occupancy and land use of this half-block area prior to the 1854 fire, when reports specifically mention Chinese dwellings.

2. Each of the features containing Chinese material appears to have been deposited over a short time period, during which households of exclusively male merchants resided on the block; thus, they represent tightly datable assemblages associated with a significant Overseas Chinese settlement-type which may be used as a basis for comparison with Chinese sites throughout the West. Such comparisons could profitably be made with assemblages recovered from railroad, mining, and other rural sites, as well as with those from urban sites dating to a later period. To our knowledge, no pre-1860 Overseas Chinese collection has been excavated and analyzed by archaeologists working in the West. This factor vastly increases the research potential

of the IJ56 block features. A number of previously unrecorded Chinese ceramic forms were noted, during testing, as were a wide variety of basal marks, further indicating the potential of the features as comparative collections.

3. The early date of these features is also important to studies focusing on the adaptive boundary-maintenance and economic strategies employed by Chinese immigrants in their effort to adjust to Western urban environments. These features apparently date to the earliest period of Chinese immigration, when the first settlers, including sojourning middlemen, established a pattern of survival tactics and coping techniques which was passed on to the following waves of immigrants. These features may thus provide data on early Overseas Chinese patterns of consumption, spatial organization, and health and sanitary conditions during the first years of their adjustment to the urban West. The features may also supply information on early trade connections with China and the availability of Chinese goods, as well as the consumption of non-Chinese products. It has been suggested that the Chinese relied on domestic poultry as opposed to wild game birds at an earlier date than did other urban Californians. Bird bones from features on the IJ56 block could be used to test this proposition. It may also be possible to distinguish Chinese butchering practices and speciality items associated with traditional Chinese cooking and/or medicines on bones from these documented early Chinese features.

4. Historical archaeologists are attempting, often without success, to address the question of acculturation. It is possible that the study of refuse discarded by these early Chinese merchants in Sacramento may shed some light on the problem, if not on the acculturation process itself, by providing evidence of consumer behavior that can be linked to conscious strategies of ethnic boundary maintenance. Reconstructing the consumer context of these goods, such as their cost and availability, is essential to these studies. The question of cost and availability of both Chinese and Euro-American consumer goods for this period is a difficult, if not impossible, one. Archaeology, however, can give an index on availability, while relative costs may be inferred from the documentary record for some classes of artifacts. As place of residence and place of business are assumed to have been the same for most I Street merchants, it may not always be possible to distinguish domestic refuse from commercial refuse. Nonetheless, the choice by such a merchant to either stock or purchase for personal use certain Euro-American items (for instance, English ceramics) may be a good indicator of conscious participation in non-traditional activities, for the merchant had the access and the means to purchase

traditional Chinese ceramics. Such participation may, in turn, be related to mechanisms of identity maintenance employed by Sacramento's early Chinese immigrants.

The City of Sacramento Redevelopment Agency, and the Museum and History Division are in the initial stages of an on-going program of archaeological investigations. For this reason, research questions of a larger, neighborhood scale are particularly appropriate. It has been suggested elsewhere that on-site refuse disposal in discrete units--such as is exemplified by features 1, 4, and 5--would have occurred mainly during the city's "transitional" stage (Praetzellis et al. 1980:107-109). The nature of these features make it possible to use them to investigate refuse disposal at this period in Sacramento's development. By studying deposits of this type, correlations between patterns of disposal behavior and cultural and socio-economic affiliation can be determined, and change in the behavior of these groups can be measured through time. What were the functions of features 4, 5, 6, and 7? How did the residents of our study area cope with flood, trash and sewage disposal, and fire before these problems were managed by government officials? Did our area's differ from other neighborhoods' residents in their coping mechanisms? What are the archaeological manifestations of changes in neighborhood values, for instance, the "J-ification" of I Street?

ARCHAEOLOGICAL FIELD INVESTIGATIONS

Field Methods

The criteria by which areas to be excavated were chosen are outlined in the Project History section. In this section, the techniques used in the field are described so that the reader may be able to judge the status of the artifact collections as behaviorally discrete assemblages and the validity of interpretations made elsewhere in this report. Two procedures were used: trenching with heavy equipment, and exposing and excavating the features by hand.

The entire half-block was overlain by mixed soils and demolition rubble, which presumably had been trucked in as leveling for the parking lot. A backhoe/loader with a 24-inch trenching-bucket was used to strip 3 to 5 feet (.9 to 1.5 m) of the overburden from the areas to be investigated. Although the upper 2 to 3 feet (60 to 90 cm) of fill were heavily compacted as a result of this use of the lot for nearly 20 years, the nineteenth-century archaeological deposits did not appear to have been adversely affected by compaction. In the area of the main cluster of archaeological features, the backhoe carefully removed the overburden in two broad swaths. Here, the machine excavated down to a scattering of surveyor's flagging which had been placed just above the archaeological deposits during the testing phase to allow easy relocation. For safety reasons--and for convenience--an area around each feature was excavated to this level. To the west of the main complex, two privies (features 2 and 3) were exposed in a similar way and the trench which had been cut through part of Feature 3 during testing was re-excavated. In general, the aim of the backhoe work was to expose the nineteenth-century ground surface in plan, so that features could be excavated from the top down. This approach contrasts with techniques that call for the machine trenches to cross-section shallow archaeological deposits, which are then dug from the walls of the trench, and with methods in which hollow features are pedestaled--i.e., the layers of fill are left hanging in the trench, the surrounding soil having been removed--and excavated without reference to the relationship of the surrounding soil to the fill.

Next, the remaining few inches of imported soil were removed by shovel to reveal the undisturbed native soil stratum. Significantly, no trace of a developed A horizon soil was seen at this level. It is inconceivable that soil development had not occurred preceding the abandonment of this surface, since the marshy conditions in the pre-1850s era would have encouraged the formation of A0 and A1 horizons. Consequently, it seems likely that some

topsoil had been removed from the site, possibly during demolition clearance. If this was the case, it is likely that most, if not all, archaeological features were truncated. Next, the surface of the features and the surrounding soil were carefully trowel-scraped--not brushed--so that distinctions between native and fill soils could be seen. As a result, multiple phases of deposition of certain feature complexes were identified.

All the archaeological features were excavated stratigraphically, that is, according to the units in which they were deposited and in reverse order of their deposition. The deeper features--numbers 4, 5, and 7--were cross-sectioned: By removing half of the fill only, a sectional view of the remainder was exposed which could be used to interpret the fill pattern and guide the excavation of the remaining part. Although the authors agree with Harris' (1979) view that vertical control should be available from plan drawings alone, the old method of sectioning was used as a time-saving expedient in this case. Feature 1, a shallow ditch-like feature, was not excavated in this way because of its shallowness and the presence of horizontal, rather than any complex vertical, stratification. Here, each layer of soil was removed in its entirety before excavation of the next was begun.

Methods used to extract cultural material from the deposits also varied somewhat from feature to feature. All soil which could be assigned to a particular feature was screened. In an attempt to identify the presence of tiny artifacts or dietary debris in a layer--in particular, fish bones--1/8-inch (3-mm) screen was used on the first buckets of soil. When the initial screening did not yield significant materials, as was the case in most of the features, 1/4-inch (6-mm) screen was used for the remainder of the soil. Fish bone was observed in the fill of features 3,4, and 5; about 40 percent of those layers in features 4 and 5 which contained this material was passed through 1/8-inch screen. As soil conditions in Feature 3 made dry-screening quite difficult, about 65 pounds (143 kg) of the matrix was saved and later wet-screened through 1/16-inch (1.5-mm) mesh; this sample constituted about 15 to 20 percent of the available volume of the feature's fill. In retrospect, it would have been profitable to have taken similar samples for intensive extraction from the other fishbone-bearing strata, and this procedure is recommended to other workers.

A method of numbering archaeological layers for easy recognition was employed. All strata were given two or three digit numbers. In the case of the former, the first digit indicates the number of the feature of which the layer is a part, while the second refers to the layers in consecutive order, e.g., Layer 53 is the third layer recorded in Feature 5. (In the case of three digit numbers, the first two digits refer to the feature number.)

Excavation and Historical Associations of Archaeological Features

The goal of the IJ56 archaeological fieldwork was to obtain assemblages of materials which could be reliably associated with identified social units at a particular time in the past (Praetzellis et al. 1981:34). In this section, the structure and contents of each archaeological feature will be described; these data are then used in combination with documentary evidence in order to establish the historical associations of each feature and collection of artifacts. Analysis indicates that the two clusters of features investigated on the IJ56 block--numbers 1, 4, 5, 6, 7, and 111; and 2 and 3--have sufficiently dissimilar behavioral associations to warrant treating them separately in some of the following discussion. Feature locations on the block are shown on map 2. Figures 1 and 2 give a more accurate representation of their forms.

Feature 1

A 22-foot (6.7 m) section of this shallow, ditch-like feature was exposed and excavated. This feature's width averaged about 18 inches (45 cm); its depth varied between 4 to 12 inches (10 to 30 cm) in the drain proper. A roughly square depression was located at one point along the drain. This approximately 2-foot 6-inch (75 cm) square hole (ca. 25 inches--12.5 cm--in depth) may have been excavated as a trap to catch water-borne sediments. Its sandy fill--designated Layer 15--contained sherds from a minimum of two Double Happiness design bowls, as well as a single piece of a Chinese brown glazed stoneware vessel. It is unclear whether the fill was indeed the result of siltation, although its sandiness supports this possibility. Much of the rest of the feature contained an homogeneous sandy-silt fill--Layer 12--which, like Layer 15, was part of the trench's primary fill. This layer contained the greatest variety and number of artifacts of any stratum of the feature. The ceramic collection included a very large number of Double Happiness bowl sherds; other decorated, Chinese porcelain fragments and brown glazed stoneware sherds; and sherds of some white improved earthenware tableware forms. Glass artifacts included fragments of a proprietary medicine bottle and food containers. Faunal remains in Layer 12 included beef, pig, and sheep bones, as well as rat bone. Summarizing the artifacts from these fill layers, sherds of at least 40 Double Happiness design bowls dominated numerically; a domestic component is represented by glass and ceramic storage vessels and food bone.

Dug into this fill were two shallow scoops--layers 13 and 14--which contained similar materials to those from the primary deposit. Layer 14 was a sandy silt, very similar to Layer 12, about 8 feet by 2 feet by as much as 8 inches deep (2.4 m by 60 cm by 20 cm). The depression filled with this material was itself cut by another small hollow--containing Layer 13--which was approximately 2 feet wide by

11 inches deep (60 cm by 27.5 cm); part of this layer extended outside the excavated area.

The structure of this feature indicated that layers 12 and 15 were primary deposits, possibly laid down by water or even by intentional back-filling. The internal homogeneity of Layer 12 argues for natural deposition, since unless it were flled with redeposited native soil, one would expect some variation in the fill resulting from the different components in the soils used. Since the fill of Feature 1 proper had but two components and was not heavily stratified, it is believed to have been filled over a relatively short time. Had the trench lain open for several seasons, one would expect laminated sediments to have formed as the result of differential seasonal runoff. Dating the primary fill (layers 12 and 15) of this feature on the basis of artifacts alone is problematic because of the small quantity of datable artifacts. In addition, there is a likelihood that undetected intrusions were present, given the feature's large surface area and its seal of mixed overburden.

With these caveats in mind, the artifactual evidence provides a terminus post quem of about 1854 for this deposit. This date is based on the presence of two sherds of a Trent Shape saucer (1854-?) and an embossed fragment of an "Ayer's Pills" bottle (1853-?) (Freeman 1954:72; Wilson and Wilson 1971:18). The only tightly datable artifact from layers 13 and 14--the fill of two hollows which intruded into Feature 1 proper--was part of an embossed medicine bottle produced for druggist Charles Langley of San Francisco, probably between 1854 and 1862. Given the phenomenon of time-lag in archaeological artifacts--the difference between an artifact's date of manufacture and the point at which it finally enters the archaeological context--it can only be said that a "likely" date of deposition is the 1850s and 1860s. Fortunately, the documentary record can be used to refine this estimate.

Lot 3 on the IJ56 block--the area in which Feature 1 was located--was purchased from the City by A.G. Tryon before the fire of 1855. On 28 May 1855, Tryon sold part of this lot to Martha "English" (a.k.a., French, Smith). The boundaries of this parcel, which encompassed Feature 1, were described as follows: Commencing on the alley at the southwest corner of the city lot, running north 80 feet, east 20 feet, south 80 feet, and then west along the alley back to the place of beginning (Deeds P:481). As with many land transactions during this period in California, the sale was not recorded until some months later--13 August 1855. Significantly, this was after the fire of July 1855, which damaged part of the block, and after Tryon had begun construction on a large brick building facing I Street, at the north end of Lot 3. Martha "English" may have recorded the document to insure that the new construction did not impinge on her newly purchased plot. The City Tax Roll for 1856 listed "Martha French, widow," as possessor of "improvements" and "real estate" worth $100 and $200, respectively; the legal description of the parcel shows it to be the same as that purchased from Tryon the preceding year. The low value which was assigned to Martha French's dwelling (the

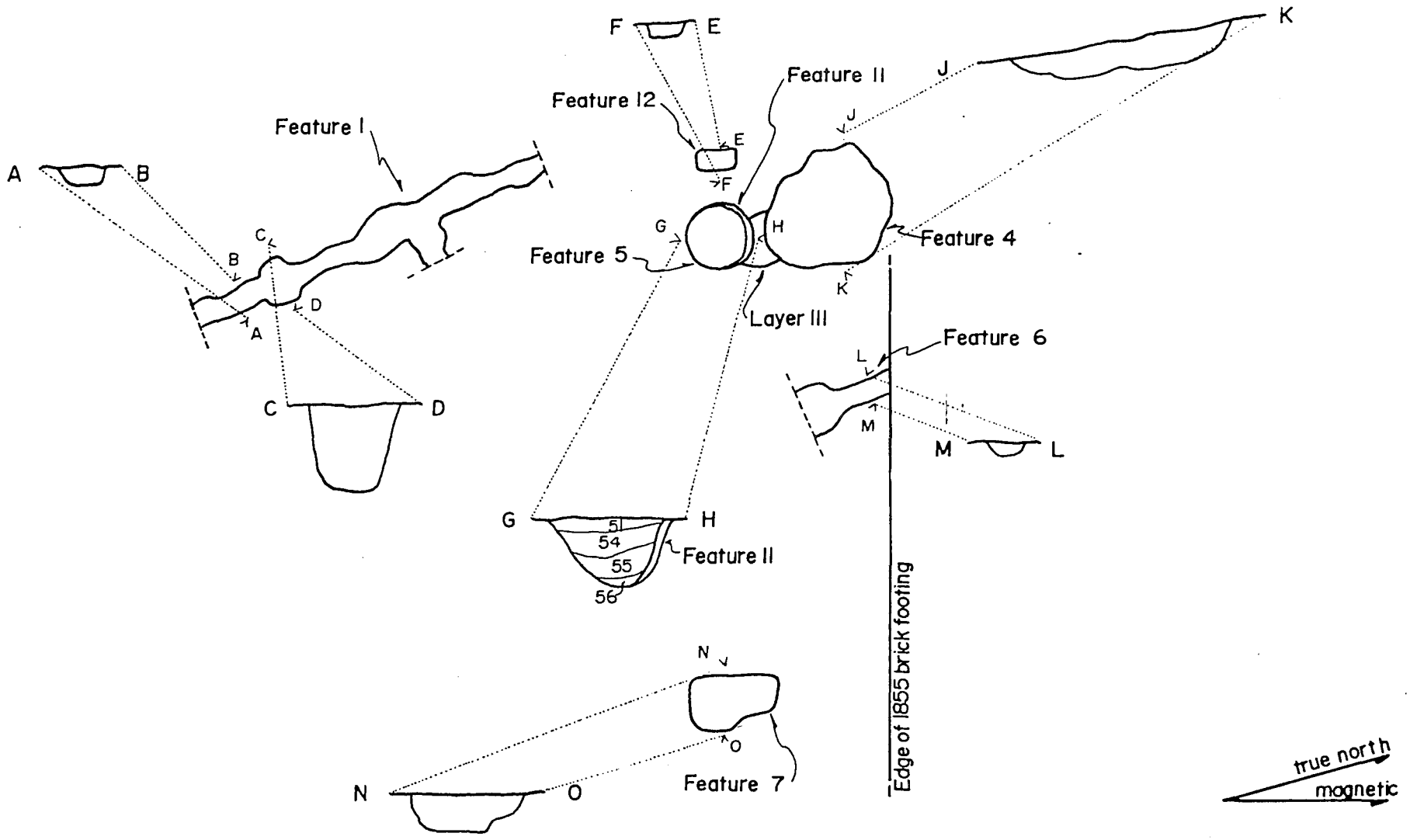


FIGURE 1
Features 1, 4, 5, 6, 7, 11, 12, & Layer III; plan and sectional views

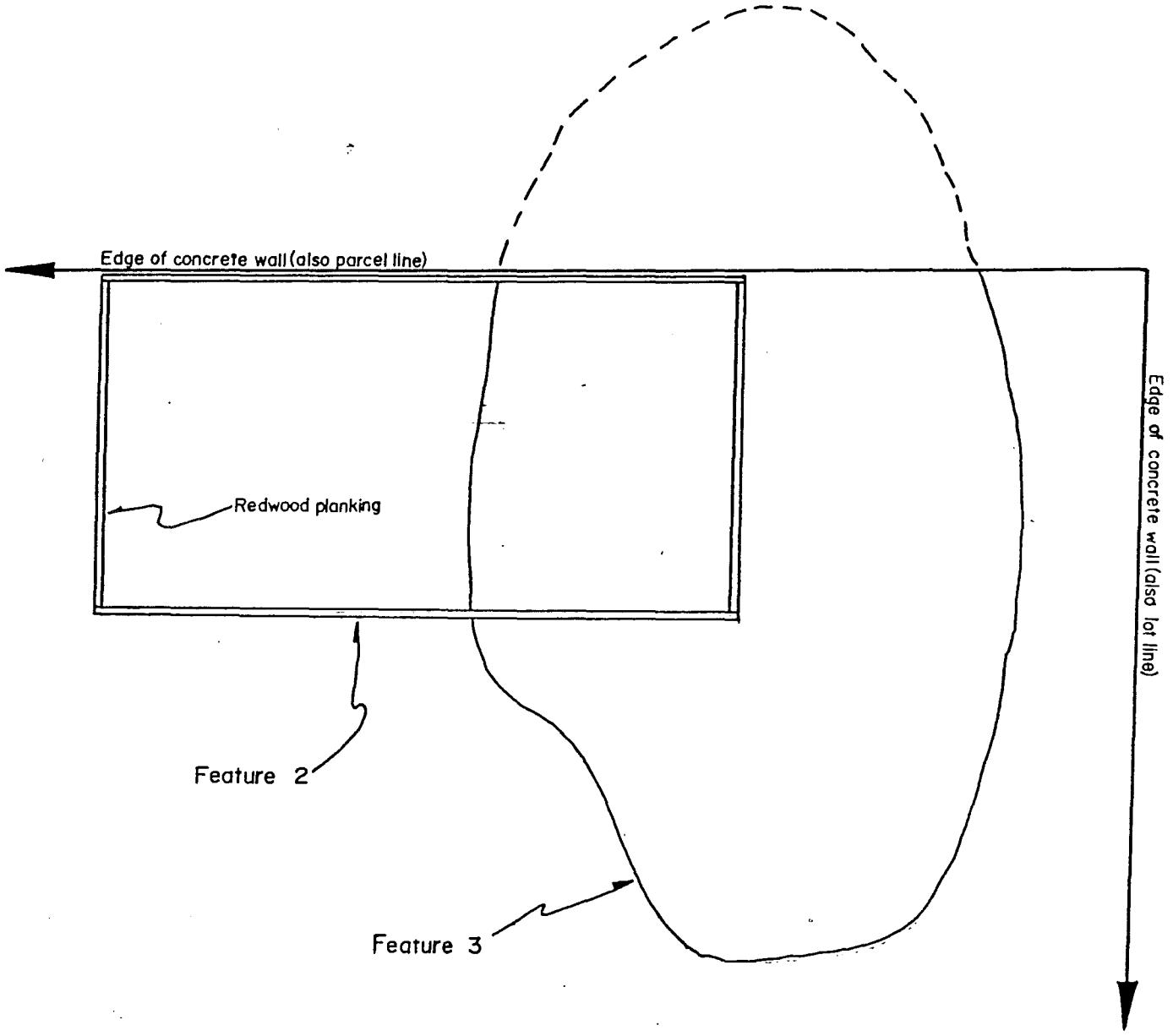
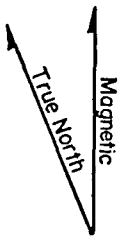
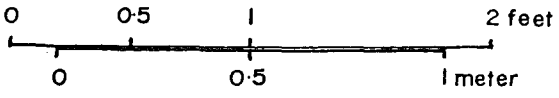


FIGURE 2
Features 2 and 3 plan view





"improvements"), strongly indicates that it was a wood-framed building rather than brick. The City's newly imposed building materials ordinance which specified the use of brick in this part of town was evidently selectively enforced. While some "combustible shanties," especially those occupied by Chinese, were dismantled by fire wardens as soon as they appeared, violations by Euro-Americans, like Martha French, were often overlooked. Several wood-framed buildings can be seen within the I Street half of the block on Weed's circa 1859 photograph (plate 1); unfortunately, the site of Martha French's house is obscured by an adjacent building on this photograph. Similarly, George Baker's 1857 Bird's Eye View does not show this particular spot clearly (Brienes, West & Schulz 1981:Figure 5).

The preceding discussion leads to certain interpretations of Feature 1, as well as the date of and possible reasons for its filling. There is little doubt that Feature 1 was constructed as an ad hoc drain. Such features have been identified archaeologically elsewhere in Sacramento (Praetzellis et al. 1980:70). Writing of an "Intolerable Nuisance" in San Francisco, a **Daily Alta California** (9 September 1854) correspondent described a drain which discharged its contents into a hole dug into the mid-block alley. Delicately avoiding an offensive level of specificity, the reporter stated that most of this waste water from the Chinese dwelling "...properly belongs to a receptacle of a different description." Several findings indicate that Feature 1 had been excavated and filled prior to Martha French's construction on the parcel and her subsequent occupation of it. The feature is assumed to have been dug out during the same period of the lot's development as another drain--Feature 6--which was certainly abandoned by late 1855. Both shallow trenches were of similar size, shape, and orientation to the block. It is likely that they would have run parallel to one another, approximately 20 feet apart, possibly defining the edges of a land-tenure unit recognized before surveyed brick construction began.

Both drains were oriented approximately to true north, that is, slightly less than 20 degrees west of the magnetic axis of Sacramento's street grid system. The artifacts contained in the feature's fill also give a clue to the date of deposition. Here, termini post quem are of less interpretive use than the nature of the collection itself. Although some of these materials were probably contributed by several inhabitants of the half-block, the preponderance of sherds from Chinese Double Happiness design bowls indicate that at least this component had a single source. The volume of duplication of this ceramic type suggests that the pieces were part of a storekeeper's damaged stock. Historic research reported elsewhere in this report has shown that this part of the block was occupied by Chinese merchants--who would have stocked these kinds of wares--from the early 1850s through most of the 1860s. On the assumption that neighboring residents would not have disposed of refuse on the parcel after its purchase in 1855 and subsequent occupation by Martha French, it seems reasonable to speculate that the primary fill of Feature 1 was deposited before this date. If this

deduction about the date of deposition is accurate, it could be speculated that the broken merchandise was an indirect result of the July 1855 fire, in which the loss of much commercial stock was reported (**Sacramento Daily Union:** 4 July 1855).

Feature 6

This shallow trench is considered here because of its deduced association with the preceding feature. Like Feature 1, Feature 6 was a shallow linear depression believed to have been an ad hoc drain. Only a 5-foot (1.5 m) section of its length was excavated. However, this sample was sufficient to determine that the angle of its alignment--15 to 20 degrees west of magnetic north--was the same as that of Feature 1. If extended, this trench would have run parallel to Feature 6, about 20 feet (6 m) to the east. The archaeological cross-section spanned a point where the drain had been widened and deepened, probably to form a sediment trap similar to the one identified in Feature 1. The ditch proper was 20 inches wide (50 cm) and 6 to 9 inches deep (15 to 22.5 cm). The portion believed to have been a silt trap was 36 inches wide (90 cm) by as much as 12 inches deep (30 cm). The feature contained a layer of silty sand, whose average grain size was significantly larger at the bottom than at the top of the fill. This arrangement indicates that the ditch filled up due to a natural process--probably inundation by flood water. It is important to note that the feature may have been truncated by a few inches during site leveling.

There was a roughly even occurrence of Chinese and Euro-American artifacts in the fill of this feature. The former included a Double Happiness bowl sherd and two whole, brown glazed stoneware storage vessels, as well as several sherds of unassignable forms of this type. The remaining ceramics were all British, transfer-printed, tableware fragments. One of these bore W. Adams and Son's "Damascus" pattern, produced around 1840 (Freeman 1954:85). Another early artifact was the base of an ale or porter bottle marked "Ricketts, Bristol". Smith (1981:151-152) reported that this mold mark was replaced in 1853. This is not to say that the bottle was necessarily made before this date, as it is conceivable that the mold's use could have continued until it became unserviceable or redundant. Faunal remains in Feature 6 consisted of bones from a local freshwater fish, the Sacramento perch; this animal was caught commercially during the nineteenth century.

The artifact distribution within this feature may reflect the way in which the trench was filled and abandoned. Excavation notes show that all the large and whole artifacts were positioned near or on the surface of the ditch, while the lower reaches contained but a few small items. From these data and inferences drawn from the soil structure, it is concluded that this shallow drain had been in regular use up until the time it was inundated. After this, the hollow, which

had remained partially unfilled, was used for refuse disposal. This pattern is in contrast to the distribution of materials in the primary fill of Feature 1, where there was no clustering at any particular elevation. Thus the abandonment and subsequent filling of the two features occurred in rather different ways, although the actual process by which Feature 1 was filled is unknown. The date by which Feature 6 had gone out of use is known accurately, however, as it is overlain by a brick footing constructed in 1855, which provides a terminus ante quem for the feature.

The land on which this drain was situated was part of Lot 3, purchased from the City by A.G. Tryon some time before the fire of 1855. It was the same lot on which Feature 1 was located. Shortly before the fire, Tryon had sold part of the southern end of the lot to Martha English (a.k.a., French). Following the fire of 1855, which destroyed several wood-framed structures occupied by Chinese on I Street, Tryon constructed a brick building 70 by 50 feet (21.3 by 15.2 m) on a northern portion of Lot 3 fronting I Street. This structure can be seen clearly on Weed's circa 1859 photograph (plate 1), and George Baker's 1857 Bird's Eye View, and the 1869 Bird's Eye-View (plate 2); it was still depicted on Sanborn Insurance Maps from 1895 to 1953. Measurements taken from the alley centerline to the wall footing which overlay Feature 6 leave little doubt that this was the southern (rear) wall of Tryon's building.

Feature 7

This small pit contained evidence in the form of superimposed soil strata to indicate at least three different phases of filling, one of which was produced by partial re-excavation. The original pit was rectangular, about 5 feet 3 inches by 2 feet 8 inches at the top, by 22 inches deep (1.6 m by 80 cm by 55 cm deep). The presence of some ash, charcoal lumps, and darkened soil in the bottom layer of fill--Layer 73--may indicate that the pit had been originally used as a fire receptable. Since the feature's walls were not altered by heat, it seems more likely that the fire-related materials were secondary deposits. Layer 73 also contained some brick and mortar fragments and Chinese and Euro-American ceramic sherds. Layer 74--the upper stratum of this earliest phase of pit fill--contained even fewer artifacts than did 73: a bone, some Chinese stoneware sherds, and a button. Stratigraphically superior to this early fill, and cutting into it, was a small roughly circular pit 3 feet (90 cm) in diameter and 1 foot 4 inches (40 cm) deep. This intrusive excavation, which destroyed the symmetry of the earlier pit, was filled with a layer of sandy silt--Layer 75-- very similar to the matrix of the remainder of the feature. In addition to some pieces of Chinese porcelain, glass sherds, and some iron fragments, this layer contained a relatively large number of brick and mortar lumps. Overlaying both this intrusive pit and the earlier deposit was a final cap of sandy silt mixed with clay lumps, which filled the upper few inches of the

rectangular pit. More iron lumps and bottle glass sherds were recovered here than from previous layers, but few ceramics, primarily Chinese stoneware, were present. Brick and mortar fragments were also present.

Unfortunately, no artifacts were taken from this feature which would permit a reliable estimate of its date of filling. Although almost all the ceramics are Chinese storage and tablewares of the same types common to features independently assigned to the 1850s, no such verification could be established for Feature 7. For this reason, and because of the multi-phased filling of the pit, its contents cannot be reliably assigned to any particular residential or commercial population. It is possible, however, to deduce the purpose of the original pit. The paucity of artifacts indicates that the pit was not dug for refuse disposal--or at least it was not used principally for this purpose. Its shape--rectangular, with three sides vertical and one sloped--suggests some specialized purpose. The feature was situated about 8 feet (2.4 m) south of Tryon's 1855 building. Unlike ditch features 1 and 6, Feature 7 was oriented at 90 degrees to the rear wall of this structure. Plotting its position onto the 1895 Sanborn Map, one can see that the pit would have been set west of the narrow alley which separated Tryon's building on Lot 3 from an adjacent structure on Lot 4. Considering this location, it is likely that the pit was excavated to bear the end of a support post for a lean-to or porch attached to the rear wall of Tryon's building.

Feature 4

This feature was a broad, shallow depression with an irregular base, about 5 feet in diameter by as much as 1 foot 6 inches deep (1.5 m by 45 cm). The fill, excavated as a single stratum, was designated Layer 41. It consisted of a mixture of mostly grey sandy silt, with occasional areas of pale yellow-orange silty sand. The grey soil was probably a secondarily deposited alluvium, possibly part of the A horizon, while the sandier unit strongly resembled the local sub-A stratum soil. Such a mixing could have occurred if the pit had been dug through the A horizon into the substratum, and subsequently backfilled with a combination of these soils. Another similar explanation, and one which is more favored by the authors, is that the depression was formed when a tree rootball was removed from the ground. This would also have caused the mixing of soils observed and would better account for the feature's broad but shallow form and the irregular contours of its base.

Most of the artifacts from this feature are Chinese, including a wide variety of decorated and undecorated porcelain tableware and brown glazed stoneware storage vessel forms, as well as part of an opium pipe bowl. In contrast, there are few Euro-American materials: some plain white improved earthenware, stoneware, and porcelain sherds, and transfer-printed earthenware. Of the latter,

two sherds are roughly datable: fragments of the "Temple" (circa 1850) and "Italian Garden" (1833-1847) patterns (Laidacker 1951:62; Sussman 1979a:202). Two glass liquor bottle bases have been dated to the 1850s or 1860s by their technological attributes. Faunal remains include bones from six species of fish, some of which originated locally, some from the San Francisco Bay, and one from China. In addition, pig, cow, sheep, and rat bones occurred.

It is believed that Feature 4 was filled at about the same time as the construction of the brick building on Lot 3. Part of the evidence for this involves the existence of 10 ceramic crossmends between this feature and Feature 5, a nearby trash pit whose filling apparently spanned the 1855 sequence of fire and rebuilding. If this interpretation is correct, it is possible that Feature 4 was created when a tree was removed to make room for the construction of the 1855 brick building's south wall, which passed immediately to the north. During the original excavation of Feature 4--regardless of the process by which this was achieved--an earlier refuse pit, Layer 111 (see below) had been disturbed and some of its contents brought to the surface. Some of these materials were then redeposited in Feature 4. This scenario would account for the similarity of fish remains between the two features, as well as a ceramic crossmend.

Feature 5

This pit was situated in the same part of Lot 3 as features 4 and 7. Feature 5 was 5 feet 6 inches in diameter and nearly 3 feet deep (1.65 m by 90 cm). It contained at least six distinct layers and many lenses, representing three phases of the feature's use as a refuse pit. As with all the hollow-filled features on the site, Feature 5 had been truncated to an unknown depth. Furthermore, a few inches of the uppermost layer were removed by the archaeologists to avoid possible contamination by the mixed overburden layer.

The top layers--51, 52 and 53--were composed of brick rubble and mixed soils to a depth of 8 to 10 inches (20 to 25 cm). Within these layers was a large quantity of food bone--mostly pig--as well as Chinese table and storage wares, and fragments of glass from wine, liquor, soda, condiment, and ale bottles. The next phase was represented by a single layer, up to 6 inches thick (15 cm), designated Layer 54. This stratum contained a small quantity but wide variety of domestic refuse, in a matrix of mostly wood ash. Pieces of corrugated sheet iron and nails comprised most of the artifacts from this layer; no brick was present. The lowest fill consisted of tan and brown silt strata--layers 55 and 56. Apart from the absence of brick and the presence of fish remains, the artifacts from this phase resembled those from the uppermost layers: much ceramic--mostly Chinese--bone, including most of the feature's fish remains, and wine, liquor, and food bottle fragments.

The contents of this pit appear to have been deposited within a year, since no evidence of clay lamination--the usual product of water-borne deposits--was found in the fill. Consequently, artifacts from all phases can be used to determine the date of deposition. Transfer-printed ceramic sherds of the "Temple" and "Italian Garden" patterns were produced in about 1850 and 1833-1847, respectively (Laidacker 1951:62; Sussman 1979a:202, 1979b:65). These sherds, however, may have been secondarily deposited in Feature 5, and consequently would skew any estimate of the pit's date which took them into account. Glass bottle fragments include an embossed Lea and Perrins stopper produced circa 1840 to 1877 and a black glass (dark olive) liquor bottle embossed "H.R./Bristol" which was made in a pre-1853 Rickett's mold (Smith 1981:151-152). A second base, also produced in a Rickett's mold, bore a central ring and dot pattern which commonly occurs in 1850s to 1870s contexts. In summation, assigning an early (1850s) date to this feature on the basis of the artifacts alone is conceivable, although as much of the argument would rest on the absence of common later types of material as on the presence of patently earlier pieces.

Fortunately, there are other methods available by which the fill can be dated--by its inferred relationship to other elements of the site and by the very structure of the feature itself, which may reflect historically documented events. The discovery of 10 ceramic crossmends between features 4 and 5 indicates that the pits had been open at about the same time. Similarly, one crossmend links features 5 and 6; this is an important temporal association, as Feature 6 had undoubtedly been filled by late 1855 and probably during a previous wet season. The sequence of events represented by Feature 5's three phases of fill may correspond with documented elements of the block's history. The earliest phase--layers 55 and 56-- contain the by-products of domestic activities; i.e., the consumption of fresh meat and bottled preserves, condiments, and beverages, as well as the use of mostly hollow tableware vessels. The next phase, which was represented by Layer 54--a stratum of wood ash, charcoal, nails and sheet metal fragments, and few domestic artifacts--suggests that a fire and possibly the demolition of an iron building occurred at this time. The contents of layers 51, 52, and 53 include much brick construction rubble, as well as a domestic component similar to the earliest deposit in the pit. A likely interpretation of this sequence is that domestic occupation, followed by fire and reconstruction in brick, occurred. Historic records document an identical succession of incidents in the years 1854 to 1855. On the assumption that the filling of Feature 5 dates to this period, it is likely that the refuse it contained was deposited by one of the Chinese merchants' households which occupied this part of Lot 3 both before and after landowner Tryon's 1855 construction of a brick building on the lot.

Feature 11

After the fill of Feature 5 had been removed, signs of an earlier deposit were seen in the pit's sides. On further investigation, it became clear that most of the contents of an older refuse pit--Feature 11--had been cleaned out to make room for what became the trash fill of Feature 5. This older pit would have been of a similar size and shape as Feature 5: about 5 feet in diameter by 3 feet deep (1.5 by 90 cm). It contained several soil layers representing two phases of use. The uppermost part consisted of several, superimposed layers of silty clay, separated by thin bands of humus. This material, which was up to 1 foot (30 cm) thick, contained no artifacts whatsoever. Below it, however, was a stratum of grey, sandy silt, Layer 112, which contained numerous food bones and some bottle glass and Chinese ceramic sherds. This sequence indicates that the pit had been originally used for refuse disposal and, after it was abandoned, it had filled up by natural processes before being re-excavated (Feature 5). No datable artifacts were present in the fill. Consequently, all that may be said of the age of Feature 11 is that it pre-dates Feature 5. If our assignment of Feature 5 to circa 1855 is correct, then Feature 11 is probably associated with Chinese households whose use of the immediate area has been documented to at least as early as 1854.

Layer 111

In spite of its prefix, Layer 111 was not part of the same deposit as Feature 11. Layer 111 was the fill of a shallow (no more than 1-foot [30 cm] deep) depression covering an area of up to 3 feet (90 cm) in diameter, situated between features 4 and 5. Its fill was an homogeneous grey sandy silt. Most of the artifacts it contained were sherds of Chinese brown glazed stoneware vessels. Euro-American manufactured artifacts included some British flow blue decorated earthenware sherds, sherds of three beverage bottles, and some nails. Faunal remains consisted of some pig, cow, and rat bones, and bones from four fish species. Of the latter, the most numerous were remains of the Chinese yellow croaker.

Once again, no tightly datable artifacts were forthcoming from the deposit. Nonetheless, stratigraphic data allow some conclusions to be made. Layer 111 was stratigraphically inferior to Feature 4 and Feature 11; it underlay the former and was cut by the latter. The existence of crossmends between ceramics from Layer 111 and features 4 and 5 suggest that the latter features received upcast created when Layer 111 was disturbed. It was suggested that this disturbance may have occurred when a tree was up-rooted, creating the Feature 4 hollow. In addition to the ceramic association, the fish-bone collections from Feature 4 and Layer 111 are very similar in terms of both the species represented and their proportional occurrence.

Significantly, yellow croaker elements were found in both contexts--the only appearances of bones from this species on the entire site.

Layer 111 is believed to represent the earliest domestic occupation uncovered on this part, perhaps all, of the site.

Feature 12

The last of the hollow, refuse-filled features from this part of the site was Feature 12, a shallow, rectangular depression, 1 foot 6 inches by 2 feet by 4 inches deep (45 cm by 70 cm by 10 cm deep), dug into the native soil. It is certain that this feature had been truncated during site leveling, although the extent of this is unknown. Its fill was an homogeneous, grey sandy silt. Several sherds of Chinese brown glazed stoneware and porcelain, some nails, and several pig bones were recovered from the fill.

On the basis of the artifacts present, it is not possible to determine the deposition date of the fill. In addition, no stratigraphic relationships can be inferred between Feature 12 and any other site component. Consequently, any speculations about the original function of the pit must come from inferences drawn from its structure and physical placement. Feature 12 was rectangular and its orientation was consistent with the shape of the lot. Thus, it is reasonable to assume that it was excavated intentionally--in contrast to Feature 4--and that its shape and alignment was purposefully designed. The pit was situated about 8 feet (2.4 m) south of the rear wall of Tryon's 1855 building, and several feet east of the structure's western edge. This location mirrored almost exactly the site of Feature 7, which is believed to have been a post pit associated with a porch which had been built at the rear of Tryon's building by 1869 (Britton and Rey 1870). Furthermore, the size and shape of Feature 12 approximated that of the bottom of Feature 7, although the latter was about 6 inches (15 cm) larger in both width and length. It is likely that both Feature 7 and Feature 12 were post pits. That no similar pits were found between these two does not argue against this position, as much of the intervening space was not cleared.

Feature 2

This feature was a redwood plank-lined privy, situated two lots to the west of the main complex of features. It was 6 feet 8 inches by 3 feet 8 inches (2 m by 1.10 m); the plank sides were as much as 3 feet (90 cm) high. The planks themselves, which had been milled but not planed, averaged 6 feet long by 1 foot 2 inches wide and 3/4 - 1 inch thick (1.8 m by 35 cm by ca. 2.5 cm). They were positioned

horizontally along the long axis and vertically at each end of the pit. The fill was a grey clay/silt mixture containing brick rubble, charcoal, ash, and numerous broken artifacts. Recent disturbance of the pit fill was indicated both by the mixed soils and the presence of very modern artifacts--aluminum beer cans and a flashlight battery, for example--throughout. It seems likely that the privy had been rifled by bottle hunters during the demolition of the block in the 1960s, and that these people had subsequently redeposited the unwanted artifacts back into the hole. Although the resulting collection is of little use for most archaeological purposes, the date of the feature's abandonment may be determined from it using the principle of terminus post quem, which in this case is likely to bias the date toward the present.

Three datable glass bottle fragments and one marked ceramic sherd were recovered. The former were: "Waltham and Bell, Sacramento" (1871-1879); "Owen Casey/Eagle Soda/Works/ Sac City" (1867-1873); "J. Doherty/ Boston Drug Store/ Sac" (1859-?) (Peter Schulz, personal communication 1982). The ceramic sherd was marked "E. and C. Challinor;" this device was used 1862-1891 (Godden 1964:137). On the basis of these dates, the feature could not have been filled before 1871 although contamination by later artifacts may have advanced this date somewhat.

According to City Assessors plats, Lot 1--the location of Feature 2--was the property of H. E. Robinson from 1851 until 1864, when it was sold to real estate entrepreneur D. O. Mills. In January 1865, Mills sold the south quarter of the lot, an area 40 by 80 feet (12 m by 24 m) to Joseph Browner (Deeds 36:513). This transaction is of particular importance, since the northern side of Feature 2 was found to be contiguous to the subdivision line created by this sale in the northeastern corner of Browner's property. This placement suggests that the privy was installed after this date.

As the archaeological collection from Feature 2 was seen to have little interpretive potential, no documentary research was carried out regarding Lot 1 during this period.

Feature 3

Immediately to the south of Feature 2 was another, earlier, privy, whose unobtrusiveness probably saved it from the predations of the bottle hunters who so completely devastated Feature 2. This privy, although situated adjacent to Feature 2, was remarkable for its dissimilarities to that feature: Whereas Feature 2 was lined, Feature 3 was not; while Feature 2 was sited in accord with the 1865 parcel line, Feature 3 straddled the line; and while Feature 2 had at some time contained a large number of semi-complete artifacts, Feature 3 yielded only a small number of fragments.

Most of Feature 3 was situated to the east of Feature 2, although part of its fill had been removed when Feature 2 was originally dug. Its fill was an homogeneous clay-silt; the grey-black color of this material was created by the recent infusion of a petrochemical product, which also gave the soil an unpleasant and pungent smell. Feature 3 was not completely excavated, as part of the fill extended north under a concrete wall which ran along the parcel division line. About 6 feet 8 inches (2 m) of the kidney-shaped pit was exposed; its maximum width was 2 feet 8 inches (80 cm), and its depth was 2 feet (60 cm).

A large variety, although a small quantity, of artifacts was recovered from the fill. Most of the ceramics were Chinese; both brown glazed stoneware and decorated porcelain sherds were present. Several improved earthenware sherds, probably from Britain, were also found. Glass sherds included pieces from condiment, mustard, and soda-water bottles. The condiment container was English and bore a registry mark which dated its production to the years 1845-48 (Zumwalt 1980:458). The mustard bottle was made in France after 1838 and bore the embossed mark "Louis Freres and Co." (Zumwalt 1980:285). The only other datable artifact was a hard rubber button marked "Goodyear's P=1851..." As this patent was valid for 14 years (Jones 1971:18), the button would have been made between 1851 and 1865. Other artifacts included two slate markers, several buttons, ball clay "TD" pipe fragments, and a gold finger ring of mid- to late-nineteenth century design. The faunal remains included food bones representing the use of pig, cow, sheep, and rabbit, as well as remains from five local fish species and one turtle bone. Seeds of 17 plant species, including some which are distinctive of southern Chinese cuisine, were extracted; other seeds represented locally available, native species. Parasitological study revealed the presence of numerous whipworm and Chinese liver fluke ova. A similar analysis of a sample from Feature 2 had negative results.

The approximate date of use of this feature can be estimated through artifact dates and the feature's location and stratigraphic position. From the manufacturing dates of the artifacts, an earliest possible date of deposition of 1851 can be determined. That the pit straddled a parcel line established by 1865 suggests that it was excavated before this subdivision occurred. In addition, the fill was cut by Feature 2, which must, therefore, post-date that privy.

Tenancy of this parcel is unclear for much of the period researched. Newspaper reports of the 1854 fire suggest that the area had been occupied by Chinese at that time. City directories provided the only data before 1860. The 1855-56 directory listed the "Hamberger Beer Saloon" on 5th Street, although the nearest cross street was not given. In the following year, the directory mentioned the "Old Fifth Street Lager Beer Saloon;" once again, the exact location of the establishment was not given. The earliest definite reference to the parcel's occupants was found on the 1860 census by following the enumerator's route down 5th Street past a number of

individuals whose precise place of residence is known from other sources. Saloon keeper Frank Blane and family were apparently residents of the parcel at this time. Mrs. Blane's tax assessment for the same year noted $100 in personal property only. A photograph taken of the area by C.L. Weed in about 1859 shows the Blane's single story, wood frame house/saloon on the corner of the parcel, although the area of Feature 3 is not shown clearly. At this time, Mrs. Blane took out a business license for the bar, which was described as being on 5th Street between I and J. The 1861-62 directory lists Frank Blane as proprietor of the "All Nations Saloon" at 17-5th Street. The next mention of this location was in the directory for 1866-67, in which Joseph Browner, the parcel's new owner, announced his "Lager Beer Saloon" at 15-5th Street. The discrepancy in numbering between 1861 and 1866 can be accounted for by an inferred change in the application of the city ordinance which controlled numbering. The original system prescribed which side of the street was to be odd-numbered and which even, and how numbers were to be assigned to parcels within a block (**Sacramento Bee:** 7 June 1860). In the following years, however, it was reported that the numbering system was not being followed. Specifically, houses were being numbered consecutively, without leaving a number for intervening vacant parcels. Consequently, as more structures were built, the system became unworkable and numbers had to be reassigned for the sake of consistency (**Sacramento Bee:** 25 October 1861).

The documentary evidence indicates that, at least after 1860 and possibly as early as the mid-1850s, the parcel was occupied by a series of saloons. The artifacts, however, indicate a domestic rather than a commercial pattern, as evidenced by a variety of materials with little duplication and a notable lack of liquor containers or other artifacts which one would necessarily associate with a saloon. Consequently, it is believed that Feature 3 had been filled during the 1850s, before the parcel's use as a saloon, and probably by Chinese.

Summary: The Features and their Historical Associations

Feature 1

A slit trench dug as an ad hoc drain. The feature was probably filled prior to 1856 with a combination of broken stock from a nearby Chinese store and domestic refuse from unknown sources.

Feature 6

Another trench, which would have run parallel to the first, and was presumably constructed for the same purpose. The two would have been about 20 feet (6 m) apart; both were oriented about 15-20 degrees west of magnetic north (i.e., ca. true north), the line on which the

lot divisions were established. This feature was undoubtedly abandoned by 1855.

Feature 7

A rectangular pit believed to have been excavated as a post pit for the construction of a porch which was built between about 1860 and 1869.

Feature 4

A shallow crater, perhaps formed when a tree was uprooted in 1855 to make way for a brick building. It contained refuse believed to have been associated with the block's Chinese residents, as well as upcast material from an earlier pit (Layer 111).

Feature 5

A refuse pit whose use may have spanned the period in 1855 during which major construction occurred on the lot. Much of the material from this pit is believed to have been associated with Chinese merchants' households.

Feature 11

The remnant of a refuse pit, most of which had been removed when Feature 5 was dug. Materials from this context are believed to have been associated with Chinese.

Layer 111

A refuse-filled hollow, earlier than features 4, 5, and 11. Materials from this stratum are believed to have been deposited by members of Chinese households.

Feature 12

A small, rectangular pit. Possibly a post pit associated with the same porch as Feature 7.

Feature 2

A wood-lined privy, possibly dating to the 1870s, although heavy disturbance makes almost any statement about this feature highly speculative.

Feature 3

An unlined privy. It contained a probable domestic assemblage of artifacts and faunal materials, possibly dating to the mid-1850s or before and associated with Chinese.

SPECIAL STUDIES

Archaeological materials recovered from IJ56 block excavations were cleaned, sorted, and catalogued by staff of the Anthropological Studies Center and by students in the S.S.U. Historical Archaeology class taught by Marley Brown. The artifact numbering system correlates with the site recording system. Each artifact, or group of like artifacts, was assigned a four-component number. The first two components (81-8) are part of an in-house system and designate the eighth assemblage assigned a lot number at the Anthropological Studies Center in 1981. The third component is the layer number, and the last component is the item or lot number within that layer.

Faunal remains were sorted into fish, mammal, and bird bone, and given to the appropriate specialists. A large soil sample from Feature 3 was wet-screened through 1/16-inch (1.5-mm) mesh; all residual material was saved, and sorted for small bones and seeds. The seeds were sent out for identification by a specialist. Small soil samples from features 2 and 3 were sent to a parasitologist in the expectation that soil from these privies would contain microscopic human parasite remains. The archaeological materials will be curated at the Sacramento Museum and History Division.

Bird Remains

Dwight D. Simons, Department of Anthropology
Sonoma State University

Identifiable bird bones representing six domestic and wild taxa were recovered from the archaeological features on the IJ56 block. The collection consists of a total of 23 specimens from at least 16 individual birds (tables 3 and 4).

Given the small sample size, little can be said in a positive sense regarding the dietary preferences of the early historic-period residents of the IJ56 block. The avifauna from this locality is an admixture of wild and domestic birds--an expected recovery in sites from this period. The small number of domestic poultry remains is in keeping with the scarcity of domestic fowl in California during the 1850s and 1860s. Their limited supply made chickens and turkeys quite expensive, resulting in a necessary emphasis on wild fowl as a source of poultry (Simons 1979, 1980a, 1980b). Given the apparent preference of late nineteenth-century Chinese-Americans for domestic fowl over wild birds (an interpretation supported by

Table 3

DESCRIPTION OF BIRD REMAINS

Snow/White-Fronted/Ross' Goose (*Anser* spp.)

81-8-41-1: Whole left ulna
81-8-53-1: Distal right humerus
81-8-73-1: Distal right humerus

Mallard/Gadwall/Pintail/Widgeon/Shoveler (*Anas* spp.)

81-8-33-1: Proximal left coracoid - straight cut through bone
81-8-33-1: Distal left ulna
81-8-51-1: Whole right tarsometatarsus
81-8-52-1: Distal carpometacarpus
81-8-78-1: Distal carpometacarpus

Green-Winged Teal/Cinnamon Teal (*Anas* spp.)

81-8-73-1: Distal left humerus

Domestic Chicken (*Gallus gallus*)

81-8-12-1: Left acetabulum of the synsacrum
81-8-13-1: Proximal right femur
81-8-13-1: Left scapula
81-8-33-1: Wing phalanx - singed
81-8-42-1: Distal left femur - straight cut through bone
81-8-52-1: Distal left tibiotarsus - possible gnawed end
81-8-55-1: Distal left coracoid - straight cut through bone
81-8-73-1: Distal left tibiotarsus
81-8-121-1: Proximal right carpometacarpus - butchering mark on proximal head

Domestic Turkey (*Meleagris gallopavo*)

81-8-12-1: Distal right humerus
81-8-55-1: Proximal left femur

American Coot (*Fulica americana*)

81-8-112-1: Distal left tarsometatarsus

Table 4

DISTRIBUTION OF BIRD REMAINS BY FEATURE

Avian Taxa	1	3	4	5	7	11	12
Snow/White-Fronted/Ross' Goose (*Anser* spp.)	0/0	0/0	2/1	1/1	1/1	0/0	0/0
Mallard/Gadwall/Pintail/ Widgeon/Shoveler (*Anas* spp.)	0/0	2/1	0/0	3/1	1/1	0/0	0/0
Green-Winged Teal/Cinnamon Teal (*Anas* spp.)	0/0	0/0	0/0	0/0	1/1	0/0	0/0
Domestic Chicken (*Gallus gallus*)	3/1	1/1	1/1	2/1	1/1	0/0	1/1
Domestic Turkey (*Meleagris gallopavo*)	1/1	0/0	0/0	1/1	0/0	0/0	0/0
American Coot (*Fulica americana*)	0/0	0/0	0/0	0/0	0/0	1/1	0/0
TOTALS	4/2	3/2	3/2	7/4	4/4	1/1	1/1

Numbers indicate Identified elements/Minimum individuals.

analyses of the bird bones from the Tucson, Ventura, Lovelock, and Woodland Chinese-American communities, Simons 1981b), it is not surprising that bird remains are so poorly represented in the archaeological deposits located on the IJ56 block.

The small sample size also makes it impossible to analyze the way in which poultry was butchered by the block's former inhabitants. Six of the bones had straight cuts, probably resulting from the use of cleavers or sharp, heavy knives. Two of the specimens were singed/burned, while two others bore evidence of having been gnawed. Given these few data, a butchering pattern analysis of the same sort performed upon the bird remains from Ventura, Lovelock, and Woodland (Simons 1981b) was not attempted.

Fish, Reptile, and Cephalopod Remains

Peter D. Schulz, Brienes, West & Schulz
Davis, California

Introduction

This section presents an analysis of the fish, reptile, and cephalopod remains recovered from the IJ56 block. The present collection is relatively small and consequently of limited value in itself. It derives, however, from the earliest bone assemblages yet recovered in the city, deposited by an ethnic population heretofore poorly studied archaeologically. Remains such as these are important because neither the composition of California's early fishery nor the diet of the state's first Chinese immigrants is well recorded in the documentary records of the time.

Methods

Of the investigated deposits, six features (1, 3, 4, 5, 6, and Layer 111) yielded fish remains. Earth from two substrata of Feature 3 and from all of the other deposits was passed through 1/8-inch (3-mm) mesh screens; 1/16-inch (1.5-mm) mesh was used for the third layer of Feature 3. The recovered material was saved, cleaned, and sorted, and the fish, reptile, and cephalopod remains were submitted to the author for identification.

Results

A total of 481 specimens was examined, and 397 were identified at least to superfamily. The identified remains represent at least 11 species of fish, as well as one species of turtle and at least one species of cuttlefish (table 5). This collection includes both freshwater and marine forms, and both native and imported species.

Yellow Croaker

The most abundant fish in the IJ56 block features was the yellow croaker or yellow flower fish (wong-fa-yü, **Pseudosciaena crocea**), native to the South China Sea. The tremendous yellow croaker population which existed in the last century in the vicinity of Canton were the basis of a vast fishery which involved hundreds of boats and thousands of men and constituted the main support of entire towns. The decline of the population is attributed to the practice of dynamiting to catch fry (Chu 1960). The yellow croaker is rated "an excellent food fish, being the traditional 'sweet sour fish' in the area" (Anderson 1972:112). The present specimens obviously represent dried fish shipped from Canton to California.

The remains of this fish in the I Street features are noteworthy because they do not represent the deposition of whole specimens. Of the 163 yellow croaker bones recovered, all are from the skull. Indeed, except for four otoliths and an exoccipital fragment, which derive from the base of the cranium, the bones are all from the front and side of the head (fig. 3).

Sacramento Perch

The second most common fish in the collection was the Sacramento perch (**Archoplites interruptus**). Until very late in the last century, this species was extremely abundant in the lakes and sloughs of the lower Sacramento-San Joaquin Valley, and its bones outnumber those of all other fishes in prehistoric Indian middens near Sacramento (Schulz and Simons 1973; Schulz, Wagner, and Domning 1976). They are also the most ubiquitously represented of fish in historic deposits in Sacramento, having been recovered from nearly all the nineteenth-century features studied to date (Schulz n.d., 1980). Unfortunately, these fish had little success in surviving the major habitat changes brought about by the reclamation of marshlands and the introduction of exotic fish species which began in earnest in the 1870s. They disappeared from the market early in the

Table 5

DISTRIBUTION OF FISH, REPTILE, AND CEPHALOPOD REMAINS BY FEATURE

Species	Common Name	1	3	3*	4	5	6	L.111	Totals
FISH									
Acipenser sp.	Sturgeon					1/1			1/1
Oncorhynchus tshawytscha	King Salmon				4/1			5/1	9/2
Cyprinoidea	Minnows or Suckers	2/-		78/-	1/-	3/-		1/-	85/-
Gila crassicauda	Thicktail Chub	1/1	9/3	6/3	1/1			1/1	18/9
Lavinia exilicauda	Hitch			2/1					2/1
Orthodon microlepidotus	Sacramento Blackfish					1/1			1/1
Ptychocheilus grandis	Sacramento Squawfish			8/3					8/3
Catostomus occidentalis	Sacramento Sucker		2/2	23/3					25/5
Sebastes sp.	Rockfish	1/1			2/1			1/1	4/3
Archoplites interruptus	Sacramento Perch	1/1	3/1	36/3	1/1	14/3	2/1		57/10
Pseudosciaena crocea	Yellow Croaker				120/12			43/4	163/16
Eopsetta jordani	Petrale Sole				5/1				5/1
Unidentifiable		2/-	8/-	28/-	33/-	16/-		1/-	88/-
REPTILE									
Clemmys marmorata	Pacific Pond Turtle	3/1	1/1						4/2
CEPHALOPOD									
Sepia sp.	Cuttlefish					11/11			11/11
TOTALS		10/4	23/7	181/13	167/17	46/16	2/1	52/7	481/65

* Indicates portion of Feature 3 screened through 1/16-inch mesh.

Numbers indicate Identified elements/Minimum individuals.

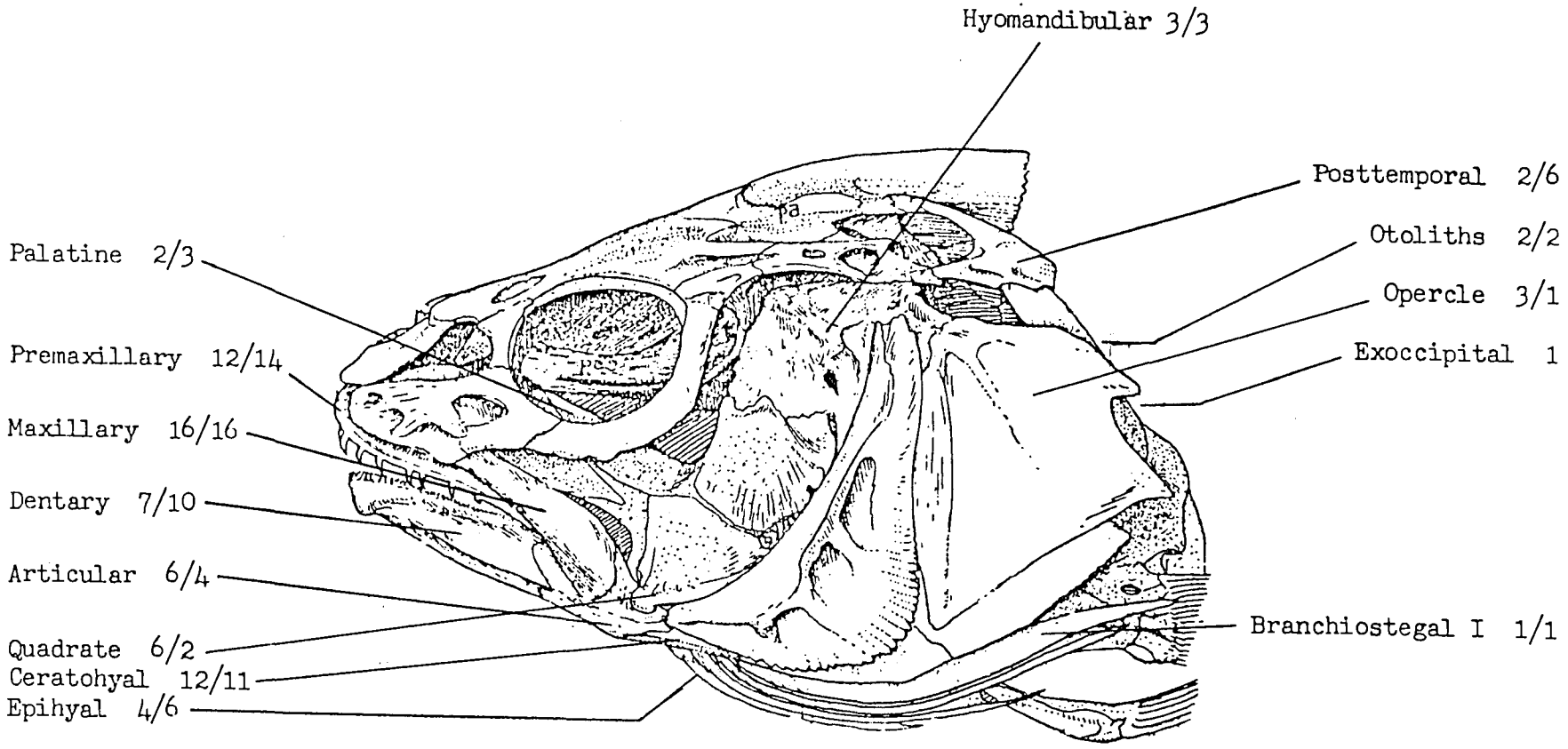


FIGURE 3

Croaker skull (Gregory 1933) showing frequencies of yellow croaker bones in Feature 4 and Layer III combined. Numbers indicate right/left elements.

present century, and are now rare throughout most of their native range.

Sacramento perch had an excellent gastronomic reputation in the last century, being generally rated one of the finest food fishes available in California, though there are some indications that it was more popular among Chinese than Euro-American consumers:

> This species...forms an important article of food not only to the white inhabitants of the district but also to the Chinese, who are particularly fond of it, catch it in immense numbers and forward it to their countrymen along the railroad, as far as the boundary of the State, or even beyond it. It is usually taken in fyke-nets, which are most effective engines of destruction. It is a very good fish for the table, unless taken in sloughs that, by the falling of the water, have become disconnected with the river (Lockington 1879:21).

> This species is known only by the name of "Perch,"...large numbers being shipped to the market in San Francisco. It is there bought and consumed mainly by the Chinese, who value it highly, paying for it more than for any other fish which they consume (Jordan 1884a:405).

Remains of Sacramento perch have previously been reported from a Chinese site in Madera County (Langenwalter 1980).

Thicktail Chub

The third most common fish in the collection is the thicktail chub (**Gila crassicauda**), a large minnow; it is also one of the most interesting, since it is probably now extinct. Reports of nineteenth-century fisheries suggest that this species was then a common component of the Sacramento fishery, although such reports have often confused various species of minnows under overlapping popular names. More definitive evidence is provided by studies of fish remains in local prehistoric middens: chubs are among the most numerous of fish species in the sites studied, and in one historic Patwin village on the middle Sacramento, they were the most abundant species in the fauna (Schulz and Simons 1973; Schulz, Wagner, and Domning 1976; Schulz 1979b). These studies lend considerable weight to reports that chubs were abundant in the lower Central Valley at least as late as 1888 (Collins 1892:123), but the population--like that of the Sacramento perch--seems to have gone into permanent decline shortly thereafter. Chubs were not even mentioned in studies of the early twentieth-century commercial fishery, and only two specimens have been observed by biologists since 1938.

Nineteenth-century assessments of their gastronomic reputation differ, but, on the whole, chubs were not preferred by Euro-Americans and were one of the cheapest fish on the market (Schulz 1980). California Chinese, on the other hand, reportedly consumed them in quantity, the fish being reputed "a great favorite with the Indian and Mongolian races" (Dibble et al. 1884:7; Collins 1892:123).

Other Minnows and Suckers

In addition to the thicktail chub, remains recovered include those of three other minnows: hitch (**Lavinia exilicauda**), Sacramento blackfish (**Orthodon microlepidotus**), and Sacramento squawfish (**Ptychocheilus grandis**). Also present were bones of the Sacramento sucker (**Catostomus occidentalis**). All of these fishes were native to rivers and sloughs in the vicinity of Sacramento, and their remains occur commonly in prehistoric middens in the area (Schulz and Simons 1973; Schulz, Wagner, and Domning 1976).

Except for squawfish, which under the common name of pike was sometimes accounted a good table fish, these species were held in the last century in less than enviable regard. Consequently, they were also quite cheap and were sold (again perhaps excepting squawfish) primarily to Chinese consumers. Blackfish in particular are of interest in this context. They are too oleaginous and, like the other species here, too bony to find much of a demand on the Euro-American market. But they are reported to have been caught in great numbers for the Chinese population in the last century (Jordan 1884b). This pattern continues today, for blackfish form the basis of the state's last significant inland commercial fishery, being caught in Clear Lake and San Luis Reservoir and shipped primarily to San Francisco's Chinatown.

Sturgeon

California waters support two species of this fish, white sturgeon (**Acipenser transmontanus**) and green sturgeon (**A. medirostris**). Although the two species can not be distinguished on the basis of skeletal remains, the latter is much less common; in addition, it was the subject--at least among Euro-American fishermen--of extreme prejudice in the last century, the fish being widely reputed poisonous. The archaeological remains, consequently, probably derive from white sturgeon.

Traditional attitudes toward sturgeon in South China have been mixed. These fish grow to considerable size and are both relatively

rare and markedly different in appearance from other fish; they are considered dragons in the folk perception of at least some fishermen, who never kill them (Ting 1949; Anderson 1969). This attitude was not universal, however, for the fish were caught and consumed as a delicacy (Davis 1840:325). In California, Chinese as well as Euro-American fishermen were involved in the sturgeon fishery. As early as 1853, Chinese fishermen on San Francisco Bay were including sturgeon among their landings, which were reportedly intended for sale to their countrymen in the mines (**Chambers's Journal of Popular Literature** 21 January 1854:48). The abundance of the sturgeon population in the bay at that time, and the fact that demand was not high among the White population, resulted in relatively low prices for the fish. At least one observer noted that, in the 1870s, "this fish was so common that Chinamen and the poorest classes of people were the only consumers of the meat" (Leach 1917:170).

King Salmon

King salmon (**Oncorhynchus tshawytscha**) were popularly known in the last century as quinnat salmon or Sacramento salmon. The salmon fishery of the Sacramento was the first commercial fishery established on the coast and the most important in the state. It was also the basis of the first canning operation on the coast. Adult fish moved up the Sacramento from the ocean to spawn in two major runs, the spring run being larger than that of the fall and yielding fish of better flavor. Salmon were highly regarded, and their popularity was reflected in generally high market values.

Rockfish

Some 50 species of rockfish (**Sebastes** spp.) are native to San Francisco Bay or the adjacent coastal waters, where they occur in abundance. They vary greatly in commercial importance, but as a group they seem to have been highly valued in the last century, when they formed the main supply of fish in the San Francisco market (Hittell 1863:142). Rockfish were also an important component of the Chinese-run fishery which developed in Monterey beginning in the early 1850s; the fish were reported to have been dried for shipment to China (Hittell 1882:353; Wilcox 1898:643).

Petrale Sole

This fish (**Eopsetta jordani**), which occurs abundantly along the California coast, was rated one of the best tasting of the flatfish. It seems to have been the main product of the fishing village established in Monterey in the 1850s:

> In the markets of San Francisco it abounds throughout every month of the year, and in Monterey Bay is the most abundant of its tribe. Professor Jordan informs me that about 500 pounds weight of this fish are taken daily at Monterey alone by the Chinese, besides large quantities taken by the Italians. An examination of the stock in trade of the Chinese located near Monterey, proved that over nineteen-twentieths of the fish that dry on hurdles and flap in the wind around the hovels consisted of this fish...(Lockington 1881:25).

Turtle

The only reptile remains recovered were a few shell fragments of the Pacific pond turtle (**Clemmys marmorata**). These animals are abundant in the lakes and sloughs of the lower Central Valley, and their remains are a common element in prehistoric Indian middens in the vicinity of Sacramento (Schulz, Wagner, and Domning 1976). The inception of the market trade for them is unknown; by the closing decade of the century, between 1,000 and 2,000 dozen turtles were being sold annually in San Francisco, at $3.00 to $5.00 per dozen. Most of the supply was obtained from the delta (Smith 1895:286). Turtle shells were used as a febrifuge in Cantonese folk medical practice (Hooper 1929:148-149), but there is no indication that the present remains derive from any use of the animals except as food.

Cuttlefish

The final faunal form identified is the cuttlefish (**Sepia** sp.), the gladii of which were recovered from one feature. Cuttlebones found a variety of uses in Euro-American culture in the last century, ranging from beak-honing boards for parakeets to a calcium carbonate source for pharmacists, being employed particularly in the preparation of tooth powders (Wiegand 1875). In Cantonese medical practice, cuttlebones were powdered and used for rectal affections and amenorrhoea, and to stop the flow of blood from wounds (**Druggists Circular and Chemical Gazette** November 1890:258; Hooper 1929:149).

The present specimens, however, are simply food refuse; they are derived from dried cuttlefish imported from South China, where they are a common article of diet. Dried cuttlefish was being imported to California by the early 1850s (Spier 1958), and cuttlebones have been previously recovered from Overseas Chinese sites in Madera County and in Lovelock, Nevada (Langenwalter 1980; Dansie 1979).

Discussion

The most noteworthy aspect of the present collection involves the ethnic pattern which it represents. Except for salmon and turtles, all the species recovered in the IJ56 block features are listed in nineteenth-century accounts as being characteristically eaten by the state's Chinese residents. Some species (suckers and minnows) were even occasionally noted as falling within the dietary realm **only** of the Chinese, and this was doubtless the case with the imported items (yellow croaker and cuttlefish) as well.

The use of dried fish might seem anomalous in view of the widespread preference among Chinese consumers for purchasing fish alive or freshly killed (Wang 1920; Kan 1980; Fessler 1981). Dried or salted fish, however, was a regular part of the diet, both in Kwangtung and in California. Colquhoun, for example, noted that in South China, "with the poorest people, rice and salt cabbage or salt fish, with a **suspicion** of pork only, is the daily ration" (1883:78). Other observers suggest that use of salt fish was even more common:

> The consumption of salted provisions is very general and enables the government to draw a large revenue from the **gabelle** which it levies on salt. In consequence of the immense quantities of both sea and river fish which are daily caught, and the rapidly putrescent nature of that species of provision, a considerable portion is cured with salt, and dried in the sun, the **haut gout** which generally accompanies it being rather a recommendation to the taste of the Chinese. Indeed it is one of their most favorite as well as universal articles of food; and they even overcame their prejudice, or indifference for whatever is foreign, on the occasion of salted cod being introduced for two or three years in English ships... (Davis 1840:151).

In California, an early account noted San Francisco Chinese merchants purchasing dried fish from the northwest coast in 1851 (Easterby 1933:81). Spier's lists of food items imported from China in the 1850s does not include dried fish, but the present Feature 4 and Layer 111 faunas demonstrate that this trade was then underway, and Spier does record it for the 1870s (Spier 1958:130). It is noteworthy that a study of Chinese diet in the San Francisco Bay area

at the end of the century recorded use of salt fish in both working class and professional households (Jaffa 1901).

An aspect of the present collection which is of major interest involves the indications of relative cost, and hence of purchasing power, provided by the fish remains. It should be noted that no precise market values are available for these fish in the 1850s or 1860s, and that prices are likely to have fluctuated considerably with the volume of the landings or other vicissitudes. Nonetheless, some general indications of economic value can be tentatively suggested for the features on the basis of the fish remains and comparison of these materials with other categories of faunal evidence.

Gust (this volume) has identified the mammal remains from the features discussed here. Although six species of mammals are represented, a plurality of the bones in most of the features derive from pork. This is important, because it exemplifies the maintenance of an ethnic dietary pattern which varies markedly from contemporary patterns among other Californians, and because it permits us to apply to the present collections relative pricing standards then prevalent in China. Of five features analyzed both in Gust's report and in this study, features 1 and 3 contain too few remains of either kind to be of comparative use. Features 4 and 5, and to a lesser extent Layer 111, however, are potentially utilizable.

The primary criterion in comparing the two kinds of food is that, while both fish and pork are important and highly valued protein sources in South China, pork is much more expensive than most kinds of fish. One Chinese market listing from the middle of the last century, for example, includes prices for three kinds of pork and four kinds of fish. In this listing, prices for fresh pork and for ham are 13 and 60 percent higher than for salt pork, while prices for fish range from 11 to 47 percent **less** than salt pork (**Chinese Repository** February 1849:109). While these figures are for Shanghai rather than Canton, nonquantified contemporary observations leave little doubt that similar price relationships existed in both markets. Furthermore, in view of the relative rarity of fresh pork in California at the time, a similar pattern of valuation was probably in practice among Sacramento merchants as well.

Given these relative costs, the quantity of fish and pork remains in the three features is of interest. From Feature 5, a total of 347 pork and 35 fish bones was recovered, a ratio of 9.9:1. In Feature 4, on the other hand, 30 pork and 167 fish bones were found, a ratio of 0.2:1. Layer 111, finally, yielded a small sample: 7 pork and 52 fish bones, which provides a ratio of 0.1:1, similar to that in Feature 4. On the basis of these data, it may be suggested that the financial expenditure reflected in the Feature 5 faunal assemblage is distinctly higher than that exemplified by Feature 4 and Layer 111. On this basis, it may be posited that the depositing population (possibly a single household) responsible for the former feature was wealthier than that responsible for the latter two.

An independent test of this interpretation can be applied by turning to a consideration of the fish remains themselves. The relative cost of the different fish species in the collection have been previously noted. Sacramento perch in particular was reported as a well-esteemed table fish, for which both Chinese and non-Chinese consumers paid high prices. It is interesting, consequently, that among the deposits just discussed, Sacramento perch is common (40 percent of the fish bone) in Feature 5, while in the two putatively poorer features, its remains are virtually or completely absent.

Equally of note are the yellow croaker remains found in the latter two features. This fish, too, was highly regarded. Unlike the Sacramento perch, however, the croakers in this collection were purchased as dried rather than fresh fish. Furthermore, only the heads of the croakers are represented--a marked departure, if units of disposal here mirror units of consumption, from the usual practice of preparing fish whole. While fish-head dishes, prepared with the flesh as well, are part of Cantonese cuisine and considered a delicacy (Fessler 1981; Eugene Anderson, personal communication 1982), the present collection derived from dried fish would seem to have the opposite implication. Such meals, prepared as fish-head soup or clay-pot dishes, are more characteristic of very poor families in rural areas of Kwangtung (Wang Yin, Eugene Anderson, Carolyn Yee, personal communications 1982). It may be noted that the petrale sole bones, which also occurred in Feature 4, are probably from dried fish as well.

The mutually exclusive occurrence within the features of Sacramento perch and yellow croaker remains, consequently, seems to again reflect the same status dichotomy posited previously. One possible dicordant note in this interpretation is the presence of salmon vertebrae in Feature 4 and Layer 111. Salmon, as reported above, were generally valued and costly fish. Prices could vary greatly, however, especially in the 1850s before full-scale canning operations provided a wider market for especially large runs:

> In early days the run of spring salmon at times was very heavy, and the fishermen took more fish than they could dispose of, the only markets then being Sacramento and San Francisco. The freight from this city to San Francisco per steamer was twenty-five cents per fish. A great many fish spoiled before they could reach and be disposed of in the markets at the Bay...At times salmon sold for one bit a piece by the boat load, and often at that price they could not be sold, and they were thrown back into the river by hundreds (**Sacramento Record Union:** 9 February 1884:5).

The results of this study thus indicate that fish remains provide excellent evidence of ethnicity as reflected in dietary patterns, and that they are at least potentially useful indicators of status differentiation within the ethnic community. More systematic application or testing of the interpretations suggested here will require further archival evidence of mid-nineteenth-

century market values and more rigorous attempts to recover very small remains in future excavations, as well as clearer understanding of the sociological variables involved in traditional Cantonese food selection and preparation practices.

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Mammalian Remains

Sherri M. Gust, Biology Department
California State University, Los Angeles

Materials and Methods

Mammal bones were recovered from features 1, 3, 4, 5, 7, 11, and 12, and Layer 111. Part of Feature 3 (Layer 33) was screened through 1/16-inch (1.5-mm) mesh, but all other material was screened through 1/4 inch (6-mm). The condition of the bone was typical for Sacramento, with most surfaces corroded or flaking and prone to breakage. Cancellous bone bore evidence of severe destruction of unknown origin (possibly insects), in addition to the rodent-gnawing marks usual in urban sites.

Within the materials from each layer, fresh breaks and unfused epiphyses were matched up where possible. Identifications were facilitated by use of the comparative faunal collection of the Archaeological Laboratory, California Department of Parks and Recreation. Data were recorded specifying taxon, element, side, butchering marks, and other noteworthy items for each piece of identifiable bone.

Results

Identifications and Meat Preferences

Of a total of 835 mammalian specimens identified, the overwhelming majority are pork bones (table 6). Most of the features also had components of beef and mutton. Additional food items were rabbit and probably dog. The two tentative canid specimens were immature, making precise identification impossible; both have definite cut marks. There is no evidence that the rats recovered were utilized as food. The number of rat bones recovered is consistent with those from Euro-American sites in early Sacramento (Gust and Schulz, unpublished data) and relates to open trash pits as a food source for these rodents.

Both features 5 and 11, the only statistically significant samples, yielded more than 95 percent pork, with minor beef components. Features 4, 12, and Layer 111 have larger amounts of pork than other meat types, following this trend. Features 1 and 3 differ in having relatively more beef in proportion to pork. Interestingly, no pork was recovered from Feature 7.

Table 6

DISTRIBUTION OF MAMMALIAN FAUNAL REMAINS BY FEATURE

	Pig	Cattle	Sheep	Rabbit	Probable Dog	Rat	
	Sus	*Bos*	*Ovis*	*Lepus*	cf. *Canis*	*Rattus*	TOTAL
F. 11	238(9)	1(1)	3(1)	0	1(1)	0	243
L. 56	137		4				
L. 52	151		1				
L. 51	36	4				3	
L. 53	6	1				3	
L. 54	6	1					
L. 55	12		1		1		
F.5 total	347(12)	6(1)	6(1)	0	1(1)	6(1)	366
L. 11	3		1			1	
L. 12	7	15	2			12	
L. 13	7	7				2	
L. 14	5	3	1			1	
F.1 total	22(2)	25(2)	4(1)	0	0	16(3)	67
L. 31	9	2					
L. 32	7	4	1			1	
L. 33	8	4	4	16			
F.3 total	24(2)	10(1)	5(1)	16(1)	0	1(1)	56
L. 41	24	7	7			1	
L. 42	6	2	1				
F.4 total	30(1)	9(1)	8(2)	0	0	1(1)	48
L. 71		3	1		1	1	
L. 72		5					
L. 73		11	7			1	
L. 74							
L. 75		1		1			
F.7 total	0	20(1)	8(1)	1(1)	1(1)	2(1)	32
F.12	3(1)						3
L. 111	7(2)	5(1)				8(2)	20
TOTAL	671	76	45	17	3	34	835

Numbers indicate counts of identified elements. For feature totals the minimum number of individuals is given in parentheses.

A preponderance of hindlimb elements is evident in the pork samples from features 5 and 11 (table 7): Calculation of the minimum butchering units (M.B.U.s, Lyman 1979) shows 12 ham M.B.U.s for Feature 5 and 14 for Feature 11, in contrast to 9 and 3 shoulder M.B.U.s, respectively. Both features have few bones from the loin and almost none of the feet. Relative to sample size, Feature 5 has a more even representation of carcass parts, while the amount of ham in Feature 11 is pronounced. Element counts for beef are given in table 8. Features 5 and 11, which contained the largest number of mammal bones, yielded only 9% of the total beef bones at the site. Pork was obviously the preferred type of meat here. The unequal body-part representation, along with some features of butchering, indicate that meat cuts, rather than whole carcasses or side of pork, were purchased. Hams were the preferred meat cut with shoulders second. Pig's heads were apparently utilized, while pig's feet were not.

References on Chinese food habits in China and in the United States indicate that pork is considered the most important meat source, with beef present in the diet, but minor (China: Ball 1906; Tingle 1907; Headland 1914; Wang 1920; Buck 1937; Koo 1973. United States: Peabody 1871; Brooks 1882; Campbell 1908). This is entirely consistent with the results from features 5 and 11. The consumption of dogs and cats is a well-known practice in China (Ball 1906; Tingle 1907; Koo 1973), as is that of rats and mice. Ball (1906) indicated that social status is a factor in the latter. No direct statements were found regarding the consumption of rodents in North America. All other Chinese deposits studied by the author (Woodland, Tucson, Ventura, and Lovelock-Wells 1 and 2) have also been dominated by pork bones. The proportion of beef increases greatly through time at these sites, while the proportion of mutton also increases, but remains small.

Pork Butchering

All definitely identifiable butchering marks seen on pork bones from features 5 and 11 are considered in this analysis. The majority of the marks occur on the bones of the hindlimb. Even though more hindlimb bones are present than forelimb bones (table 7), the greater intensity of butchering on the former is undeniable. A pig carcass illustration is provided for reference (figure 4).

Only pork bones from features 5 and 11 were used in this study. The pork butchering in all other features is consistent with that described here. The only exception is a pork sirloin steak, hand-sawn, from Layer 14 of Feature 1.

Table 7

Sus scrofa (pig) ELEMENT COUNTS BY FEATURE

Element	Feature 11	5	1	3	4	12	S.L. 111
Scapula	7	9	1		1		
Humerus	6	15	1	2	1		
Radius	1	8				1	
Ulna	2	6		1	1	1	
Carpals		9					
Pelvis	29	25	1		3		1
Femur	53	33	2	1	3		2
Patella	8	6					
Tibia	25	39					1
Fibula	12	21		1			1
Tarsals	11	25	2	2	1		2
Atlas	2	2		1			
Axis							
Cervicals 3-7	3	8					
Thoracics		10		3	2		
Lumbars	8	16	4	3	1		
Sacrals		3					
Caudals		1					
Dorsal rib	3	13	2	1			
Midshaft rib	8	29	1		2		
Ventral rib							
Skull	7	18	2		10		
Mandible	13	12		1			
Isolated teeth	38	36	4	1	2		
Metapedials			1	4	1		
Phalanges		2	1	3	2	1	
TOTALS	238	347	22	24	30	3	7

Table 8

Bos taurus (cattle) ELEMENT COUNTS BY FEATURE

Element	Feature 11	5	1	3	4	7	S.L. 111
Scapula		1	1			4	
Humerus			1		1	2	1
Radius			2			1	
Ulna			1		1	3	
Pelvis			3	2	2		
Femur			2	1	1	3	
Tibia		2	1			1	
Atlas			1				
Cervicals 3-7		2			1		
Thoracic vert.			6	2		1	2
Lumbar vert.			2	1			2
Sacral vert.					1		
Caudal vert.						1	
Dorsal ribs		1					
Midshaft ribs			5	2	1	1	
Patella						1	
Carpals				2		2	
Tarsals	1						
Hyoid					1		
TOTALS	1	6	25	10	9	20	5

Implements

Marks of three tool types were seen in the IJ56 collection--hand-saws, cleavers, and knives. Complete cuts with hand saws and cleavers leave characteristic striations and deep scores and scrapes also show striations. Light cleaver scores leave V-shaped impressions in the bone. Knife scores appear as thin lines of indentation.

It should be noted that "cleaver," as used here, could refer to any cleaver-type tool, as "knife" could to any similarly functioning utensil. It is possible that the knife scores were in fact made by delicate wielding of a cleaver, but this is considered unlikely on the basis of their morphology.

Data

Most of the butchered pelves exhibit the distinctive pattern of cut marks illustrated in figure 5.I. Cuts A and D are merely variations in placement of what is, effectively, the same dividing stroke. Only 8 percent of the butchered pelves differ, having cuts as shown in Figure 5; II and III. Two pelves had cleaver scores: one had a single score on the ischial tuberosity, and the other had a few scores at the ischial end of the pubic symphysis.

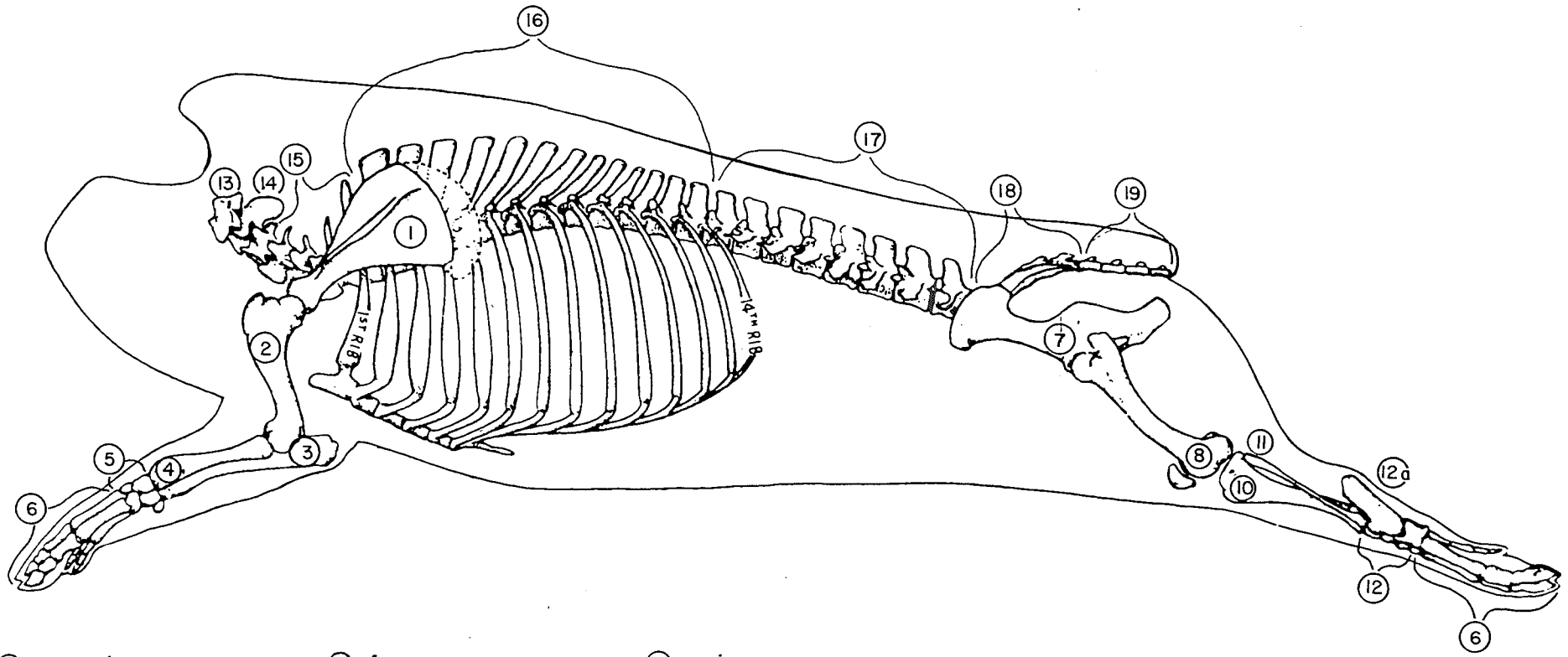
Very few butchering marks were seen on the femora. Two femora were cut across the lower shaft--one with a cleaver and one with a hand-saw. Multiple knife scores were present on the midshaft of one femur, while another had several cleaver scrapes directed proximally.

Two patellae had cleaver scores on their inner surfaces.

Cleaver cuts across the lower end of the tibia were the most common butchering on that element (figure 5). Additionally, seven tibiae had one or more cleaver scores along their shafts, and one had a couple of cleaver scrapes (plates 3a and 3b).

Definite patterning was found in the butchering marks present on the calcaneus, as seen in figure 5. Due to the pieces of bone on which they were found, all these cuts appear to be variations of a single dividing stroke. A few cleaver cuts were also present on the talus (figure 5).

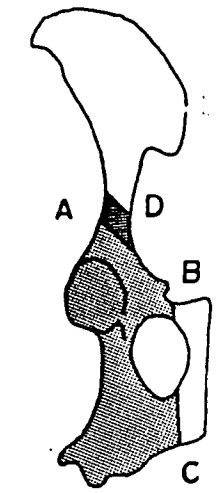
Only three scapulae possessed marks. All were cleaver scores on the glenoid area.



① scapula
② humerus
③ ulna
④ radius
⑤ carpals (wrist bones)
⑥ metapodials & phalanges
⑦ pelvis
⑧ femur
⑨ patella
⑩ tibia
⑪ fibula
⑫ tarsals (ankle bones)
⑫a calcaneus
⑬ atlas
⑭ axis
⑮ cervical vertebrae (3–7)
⑯ thoracic vertebrae
⑰ lumbar vertebrae
⑱ sacral vertebrae
⑲ caudal vertebrae

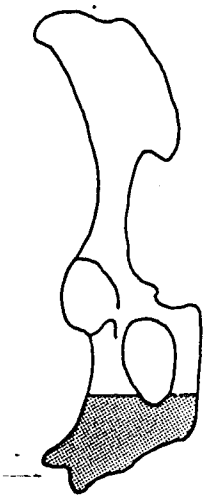
FIGURE 4
PIG CARCASS SKELETON

pelvis



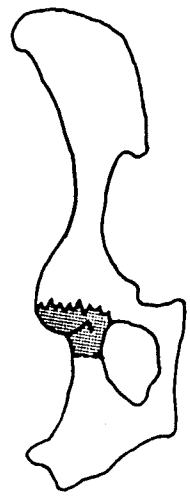
I

A,B,C - 3 occurrences
A,B - 2 "
D,B - 2 "
A - 2 "
B - 8 "
C - 2 "
D - 4 "



II

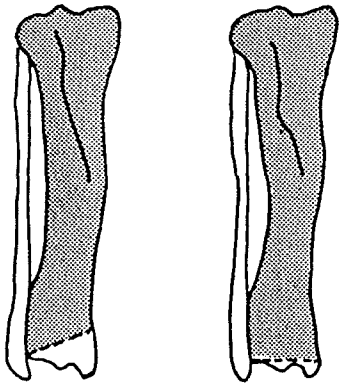
2 occurrences



III

1 occurrence

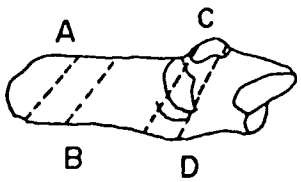
tibia



2 occurrences

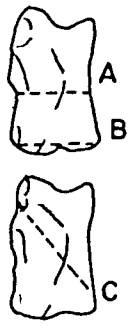
3 occurrences

calcaneus



A - 2 occurrences
B - 4 "
C - 3 "
D - 5 "

talus



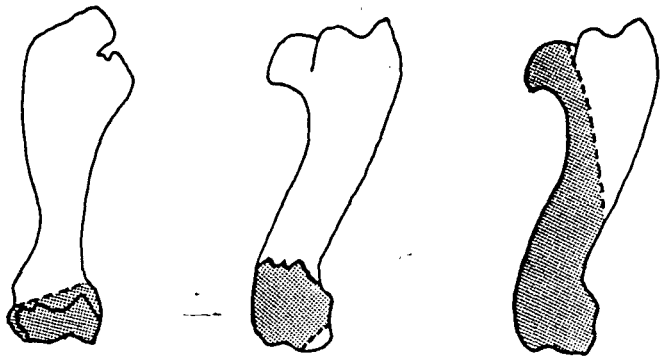
A - 1 occurrence
B - 1 "
C - 3 occurrences

——— = handsaw cut

------- = cleaver cut

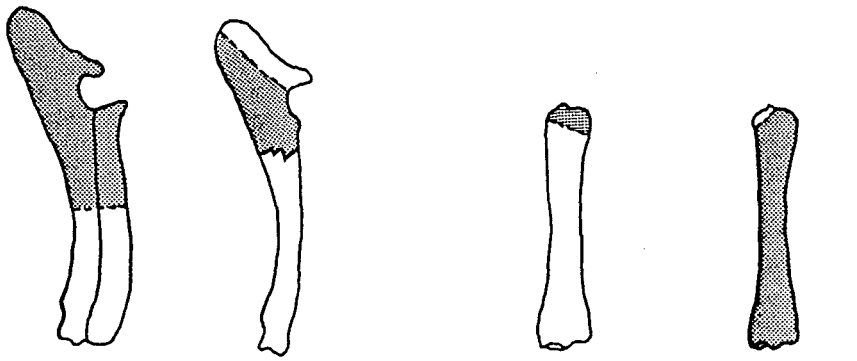
FIGURE 5
BUTCHERING CUTS

humerus



1 occurrence | 2 occurrences | 1 occurrences

radius and ulna



1 occurrence | 1 occurrence | 1 occurrence | 1 occurrence

----- = cleaver cut

FIGURE 5 (continued)
BUTCHERING CUTS

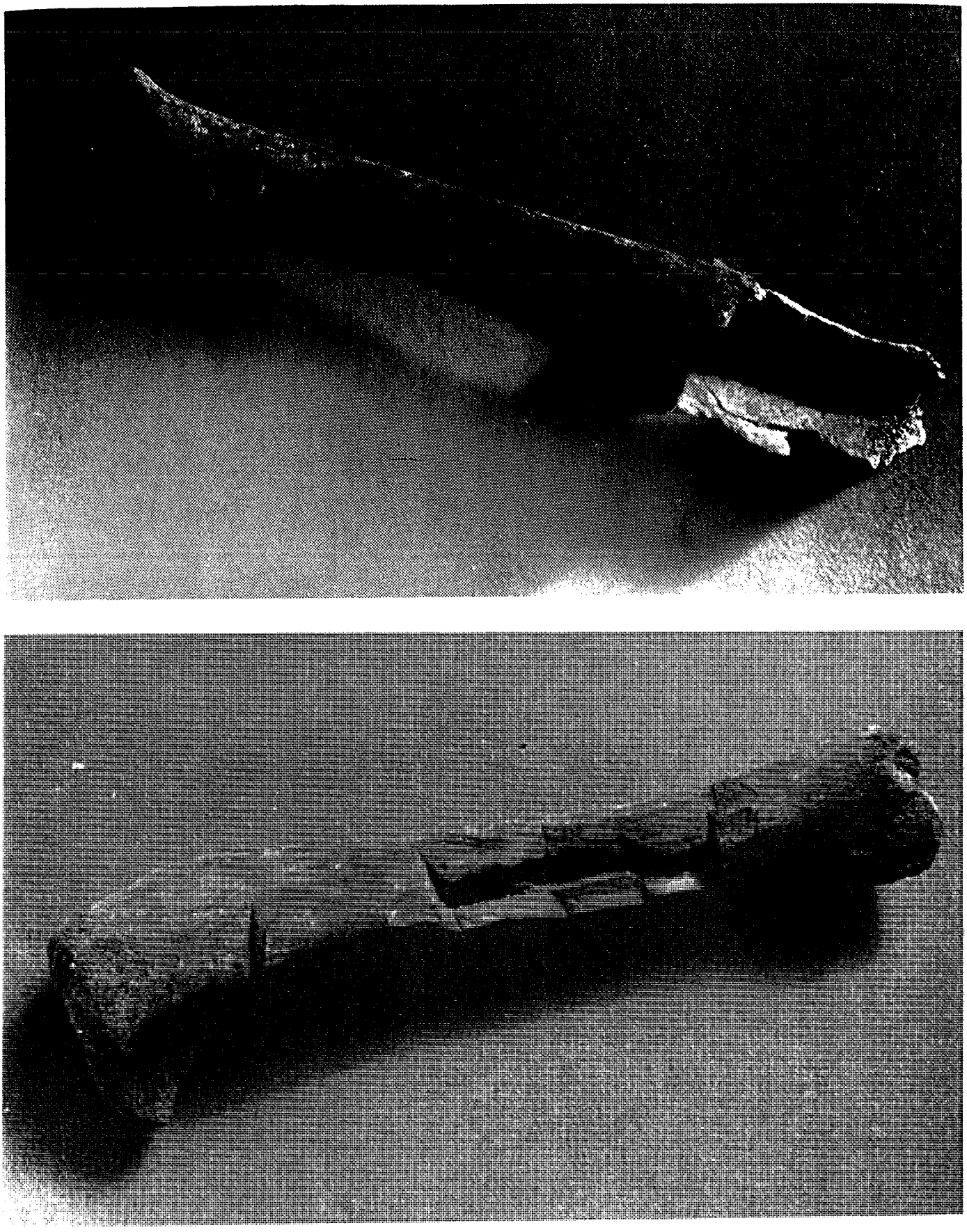


PLATE 3

Cleaver-marked tibias

0 1 2 cm

The few humeri with cleaver cuts are illustrated in figure 5. In addition, one humerus had cleaver scrapes on the upper shaft, and a few others had cleaver scores. Two were on the distal end, one at the midshaft, and one on the humeral head. Knife scores were present on the fronts and backs of the lower shafts of two bones (plate 4a).

A matched radius and ulna showed a continuous cleaver cut through their midshafts (figure 5). One ulna had a cleaver cut through the olecranon process, and another had a cleaver score at midshaft. Two radii were cleaved at the proximal ends (figure 5).

All the lower cervical (nos. 3-7), thoracic, lumbar, and sacral vertebrae were split down the midline by a cleaver. One atlas was cleaved on the right side, where it articulated with the axis, and vertically on the left side. Another atlas had marks which could be matched to those on two isolated occupital condyles, evidencing that the disarticulating blows were directed up into the skull. No subdivision of vertebrae was seen.

Only four ribs had butchering marks. Two were dorsal shaft fragments cleaved approximately 1 inch down the shaft from the rib head. The third was cleaved about 2 inches down, and the fourth, about half-way down the shaft.

No butchering was visible on the skull fragments recovered, except as noted above (the occipital condyles). Three mandibles were cleaved at the chin from below (plate 4b) and another fragment of that bone, a condylar process, had its medial surface cleaved off from above.

Discussion

The pelvis butchering pattern illustrated in figure 5.I, and the complex of marks on the distal tibia, calcaneus, and talus are classic cuts resulting from the making of "short-cut hams." Comparison of relevant portions of figure 5.I and 6 will demonstrate this clearly. At the top of the ham, the cut through the ilial shaft corresponds to cuts A and D from the IJ56 collection. Cut B-C results from trimming the pubic symphysis and surrounding tissues away from the finished ham, a process called facing. The cut at the lower end of the ham removing the foot cuts through the tibia, fibula, and calcaneus in figure 6. Variation in cut placement is to be expected here, as it is at the top of the ham. All the variation seen at IJ56 on tibiae and calcanei takes place within 2 inches. Due to their articulations with one another, the cuts of the distal tibia, talus, and calcaneus are related (refer to figure 4; the talus is the bone touching both the tibia and the calcaneus).

The sawn ischium (figure 5. II) represents a ham butt roast; the midshaft femur cuts, shank-portion hams. Both are standard meat products.

The cuts on the distal humerus and proximal radius-ulna likely result from dividing the arm and forearm at the elbow. The sample is very small, but the great variation in technique would seem to indicate home butchering. The multitude of cleaver scores and scrapes are felt to result from removing the meat from the bone by the cook.

Little can be said of the small group of butchering marks on the mandibles, ribs, and vertebrae, except that splitting of the last was a standard procedure.

But, is it Chinese?

Short-cut hams, butt roasts, and shank hams were common items in the Euro-American meat trade, and the patterning at the IJ56 site does not differ from that standard. There were numerous Chinese butchers up and down I Street (Wells Fargo 1873, 1878; Praetzellis et al. 1981), however, and it seems unlikely that Chinese merchants would direct their household help to shop in non-Chinese stores. The hams might have come into the Chinese butchering shops already cut and cured from a Euro-American packinghouse. While this possibility cannot be discounted, two Chinese slaughterhouses existed in Sacramento by 1873 (**Sacramento Union:** 11 January 1873) and may have been present earlier.

The use of cleavers to make the cut separating the ham and the foot might be construed as an indicator of Chinese ethnicity. This would be incorrect, however. Plate 5 is part of a panoramic illustration of a Chicago packinghouse. Note the use of cleavers at the bottom table to make the cut at the top of the ham and at the top table to remove the feet from the hams. Also note the use of knife and saw at the trimming-table (bottom left). The knife is used to make a smooth surface on the previously chopped meat, and the saw is used to the same end, where necessary, on the bone.

One author has stated that Chinese cleaver marks can be differentiated from European cleaver marks by differences in their scores and by the fact that irregularities on the cutting edge of Chinese cleavers leave striations on the bone which the broader blade of the European tool cannot duplicate (Langenwalter 1980:107). Reference to the forensic literature, however, documents cases where tools with much broader bevels than those found on cleavers, such as axes, leave characteristic striations matching imperfections on the cutting edge (May 1930; Mezger et al. 1930; Korpassy and Takacs 1943). In addition, personal experience with archaeological collections

a. Humerus, with cleaver marks

b. Mandible, with cleaver marks

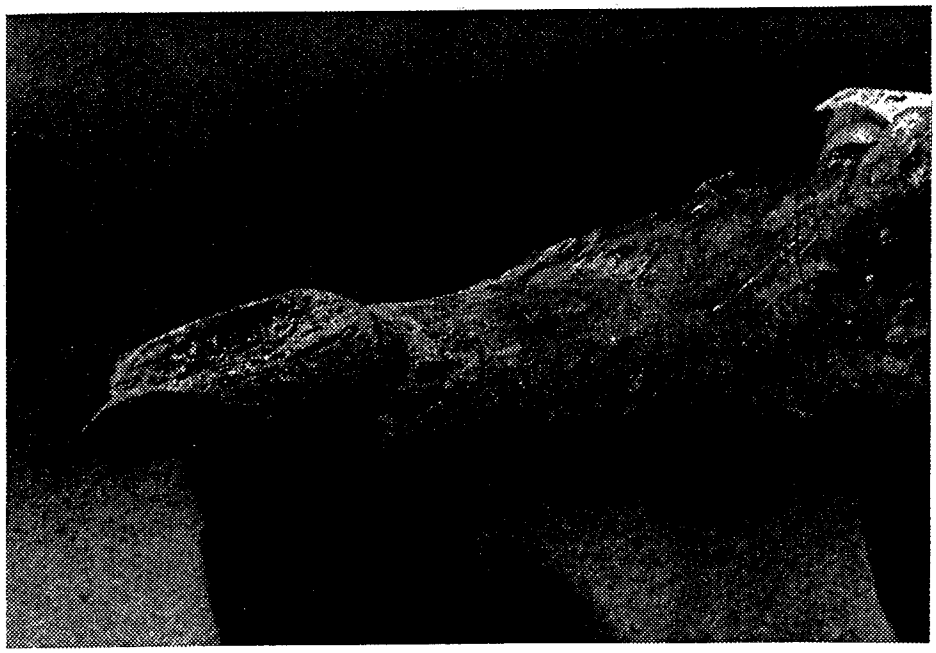
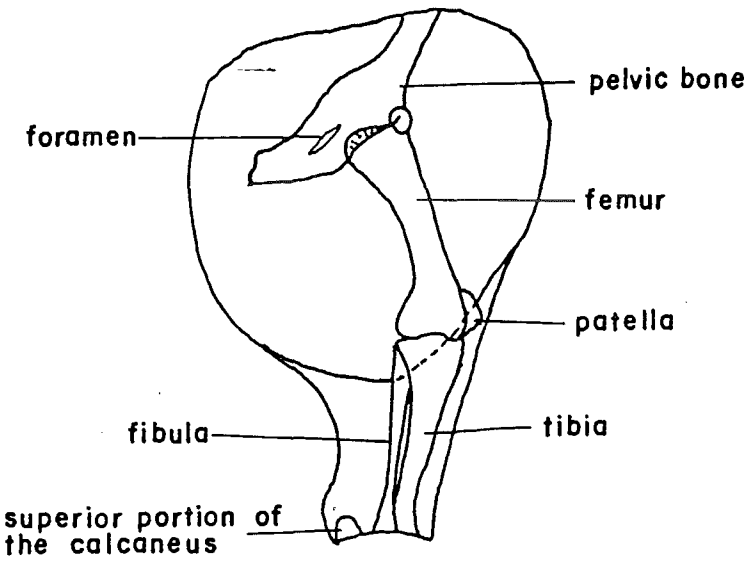


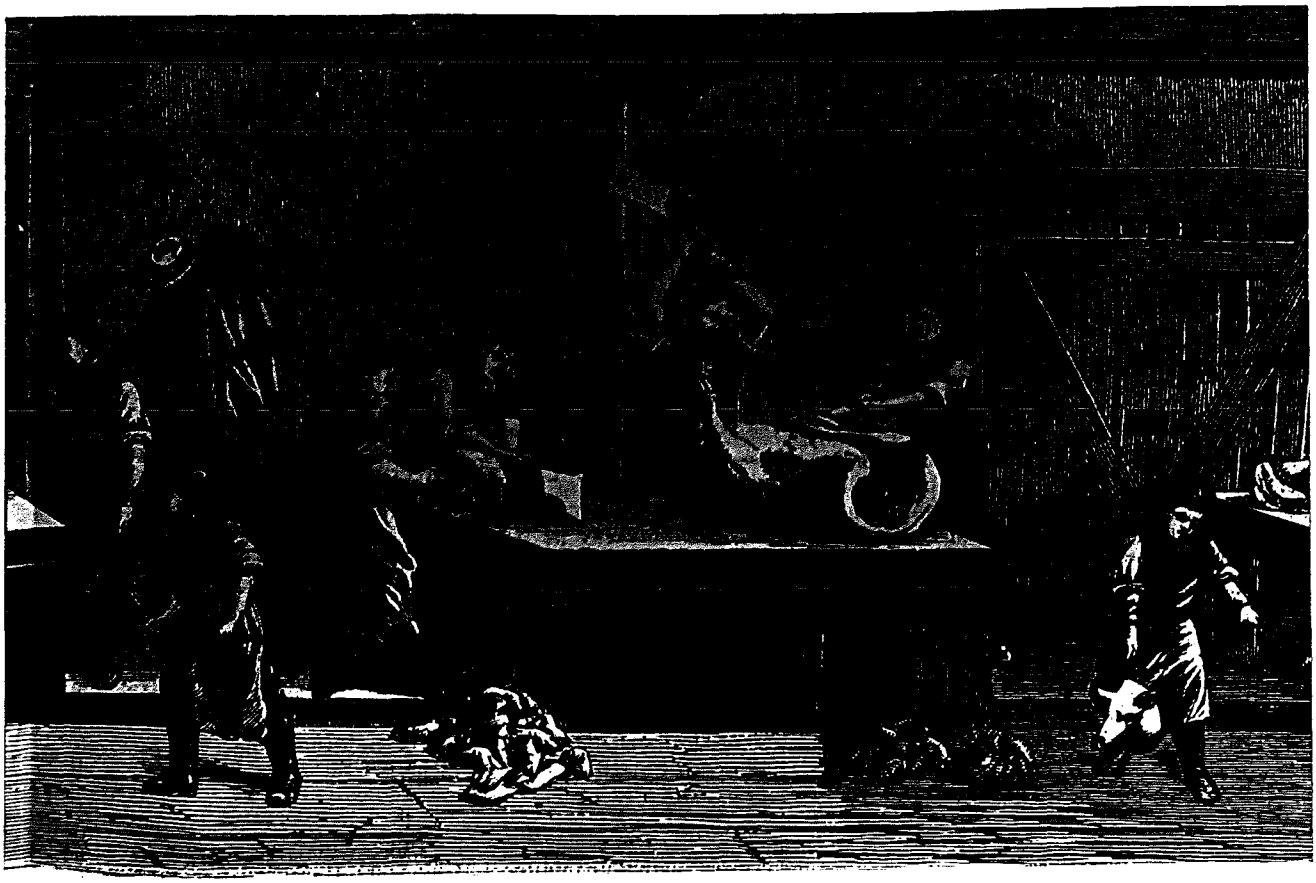
PLATE 4

0 1 2cm



Adapted from Eakins 1924:354

FIGURE 6
REGULAR AMERICAN SHORT CUT HAM (Diagrammatic, Showing Position of Bones)



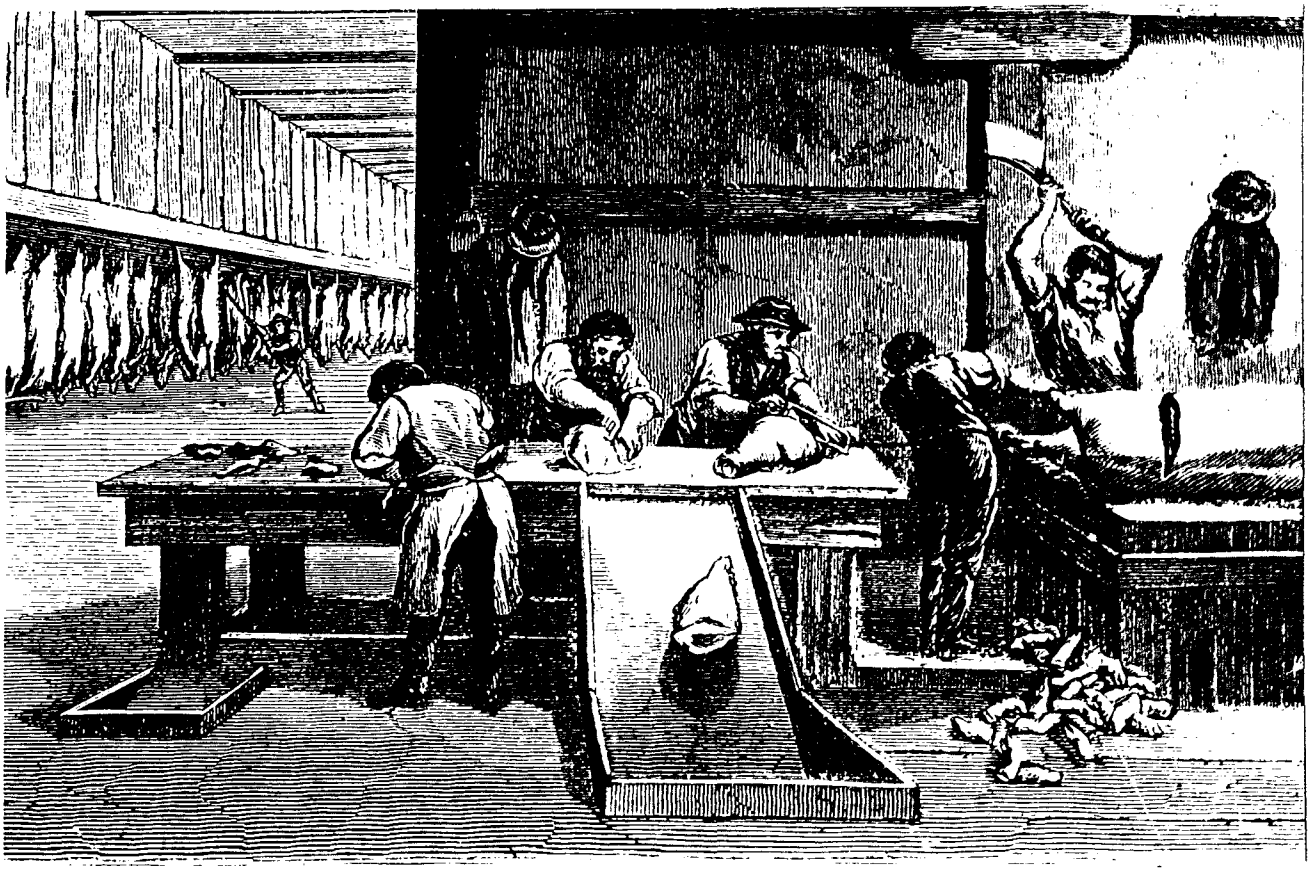


PLATE 5

Commercial butchering methods (Harper's Weekly 6 September 1873)

from Euro-American, Hispanic, and Chinese deposits have revealed no such differences in the cut surface or scores--all straight edged tools leave similar markings.

Even if such differences could be established, perhaps at the microscopic level, they would not necessarily reflect ethnicity. Of nine cleavers recovered from domestic deposits in the Yreka Chinatown excavations, only one was a classic Chinese cleaver. The eight others were American-made utensils of entirely different conformation.

The kitchen butchering, including the cleaver scrapes and scores, was almost certainly done by Chinese in the process of preparing meals. The basic purpose of such preparation is to insure that all food items are of a size and shape that can be easily taken up by chopsticks, as per the following:

> For the preparation of **ts'ai** [non-starches], the use of multiple ingredients and the mixing of flavors are the rules, which above all means that ingredients are usually cut up and not done whole...Pork, for example, may be diced, sliced, shredded or ground.... To prepare the kind of **ts'ai** that we have characterized, the chopping knife or cleaver and the chopping anvil are standard equipment in every Chinese kitchen, ancient and modern...to serve the cut-up morsels of the meat-and-vegetable dishes, chopsticks have proved more serviceable than...other instruments (Chang 1977:8).

Hence, the pattern seen here of many scores and scrapes to remove meat from the bone is surely Chinese in nature. It opposes the Euro-American pattern of the past and present, which consists of cutting completely through bones and cooking meat with the bone left in place. In this tradition, occasional cleaver marks--the result of splitting soup bones--are seen; even more rarely, knife scores and scrapes resulting from carving a joint of meat are present (Gust in press; Gust and Schulz, unpublished data). This kitchen butchering is common to other Chinese collections studied by the author, although much less intensive. No doubt the early time period represented by the IJ56 features and the consequent recent immigration of the Chinese who occupied the block is the reason for this.

Beef Butchering

Forty butchered beef bones were present in the IJ56 collection. All but one were hand sawn; the exception was a rib. Two of the sawn bones also had cleaver scores, similar to those on the pork bones, for removing meat. All of the butchering was standard.

Mutton Butchering

The butchering sample of sheep bone consists of five split vertebrae, an atlas-axis set showing disarticulating marks, a sawn radius, a steak bone (scapula-7 bone steak), and a metacarpal with knife scores.

Dog Butchering

One of these bones is a partial pelvis cleaved from the outer edge of the iliac crest to the inner acetabulum. The other is the left half of an atlas, split by a cleaver.

Economic Associations

The relative prices of meat cuts represented at a site have great potential for yielding information on the economic status of the depositing populations (Schulz and Gust, in press). While the data on early prices are rarely available, a few comparative figures for beef and pork sold in Sacramento on dates approximately at either end of the features' range--1851 and 1875--were found (table 9). Although the differing quantities listed and the paucity of beef prices available do not allow direct comparison, there is an indication that pork was significantly more expensive than beef.

As mentioned previously, the proportion of hams in features 5 and 11 is notable. They constitute by far the greatest amount of meat of all the dietary components. Obviously, the IJ56 residents could afford to purchase ham and preferred to do so. It is interesting that of the beef cuts represented, only three would be considered "prime" today. Since economics were apparently not responsible for the choices of secondary quality meat cuts, it is probable that cultural cuisine preferences were.

Table 9

PRICES FOR PORK AND BEEF IN SACRAMENTO--1851, 1875

	Daily Union			
	19 March 1851	13 May 1851	23 June 1851	31 July 1851
Beef, mess, per barrel	$14-18	$14-18	$10-12	$10-12
Pork, mess, extra, per barrel	$17-19	$18-25	$17-19	$14-15
Pork, clear, per barrel	$19-21	$22-24	$17-21	$16-17
Canvassed Hams, per pound	16-18¢	20-25¢	17-20¢	17-18¢

California hams, per lb.	13-14¢
Eastern hams, per lb.	14-18¢
Pork shoulders, per lb.	8-8½¢
Smoked beef, per lb.	8-9½¢
Mess beef, per barrel	$8-11
Prime pork, per barrel	$15
Prime mess pork, per barrel	$21
Mess pork, per barrel	$23
Clear pork, per barrel	$24
Extra clear pork, per barrel	$24

(*Daily Union* 7 January 1875)

Note: a barrel equals 200 pounds (Fulton 1900).

Concluding Remarks

Those aspects of the mammalian fauna which seem to indicate Chinese ethnicity are the high proportion of pork and the unique kitchen butchering. Both appear accentuated in this collection, probably due to the early time period represented. The butcher-shop meat cutting and the variety of meats are the same as those available to and used by Euro-Americans. Economic status as indicated the purchase of expensive meats was high.

Acknowledgements

The author wishes to thank Jeanette Schulz for the photographic work in this section and for the price data contained in table 9.

Parasitological Analysis

H.J. Hall, Department of Anthropology and Sociology
University of Queensland, Australia

Introduction

Parasitological examination of archaeologically recovered human fecal material has provided much useful information concerning the history of diseases, especially in the realm of helminthiasis (Wilke and Hall 1975; Hall 1977, 1978). This section concerns the results of an analysis of two sediment samples excavated from two probable privies (features 2 and 3) one of which is probably associated with Chinese residents of Sacramento during the 1850s.

Methods

The two sediment samples were received in a formalin solution within sealed glass bottles. Following procedures used in a previous analysis of similarly preserved specimens (Hall 1979), each bottle was thoroughly shaken and stirred and left to stand for at least two hours. This allowed the sediment to settle into layers (heavier and coarser materials settling towards the bottom and finer suspended sediments remaining nearer the top). One or two drops of sediment were placed under a glass coverslip on a microslide. Each preparation was then systematically searched in suspension, using a Leitz SM-LUX stereoscopic microscope (10 X ocular and 10 X objective lenses). Three slides were prepared from at least four depth-levels of the sediment in each bottle. Thus, a minimum of 12 microslides per sample was examined. Photomicrographs, both color and black-and-white, were obtained using a Wild Mkal photographic shutter assembly with a Leica 35-mm camera mounted on the trinocular head of the microscope.

Results

Both samples contained diverse organic and inorganic material, most of which was unidentifiable. Recognizable components included diatoms, pollen grains, and fungal spores. One sample, that from Feature 3, was found to contain parasites relating to human disease.

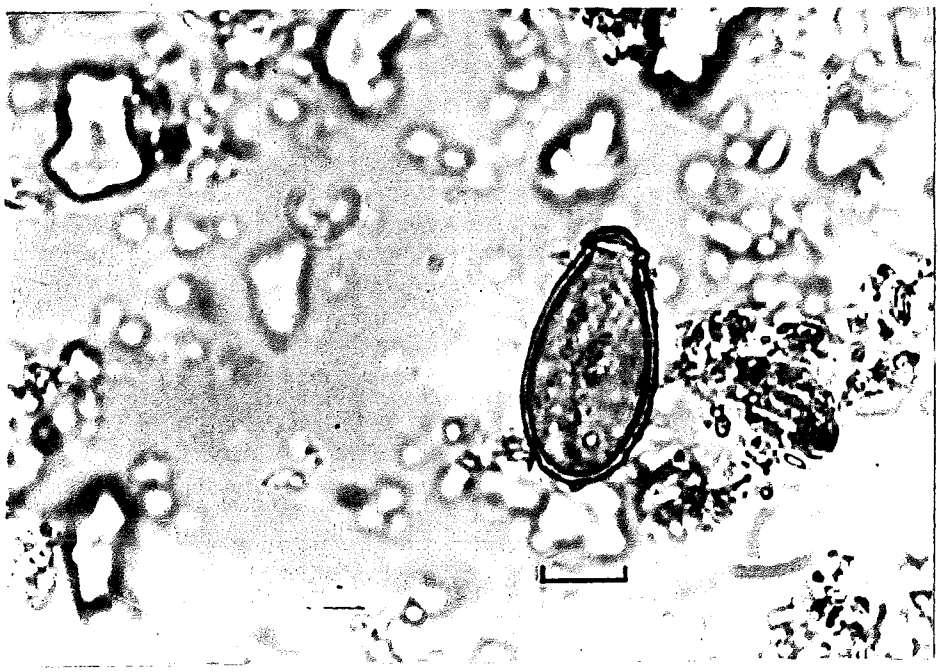
Two species were identified: Chinese liver fluke, **Clonorchis sinensis** (plate 6) and the common whipworm, **Trichuris trichiura** (plate 7).

Chinese Liver Fluke

Numerous ova of **C. sinensis** (Cobbold 1875 cited in Loos 1907) were observed in the Feature 3 sample. This species is a trematode worm which belongs to the family Opisthorchidae. Specimens were found in slides prepared from all levels of the sediment; as many as 37 eggs were observed on one microslide from the upper sediment layer of the Feature 3 sample. These eggs are broadly oval, yellowish brown (slides were unstained), and possess a moderately thick shell. The abopercular end exhibited a small boss, while the opercular end exhibited a convex operculum with a shouldered rim. Both features are distinctive of **C. sinensis.** Ova ranged in size from 28 to 32u in length by 12.5 to 16μ at the widest point. This range is quite consistent with that described for **C. sinensis** (Faust et al. 1968:141).

Identification was based upon a comparison of the specimens found in the Feature 3 sample with ova of several genera of flukes known to infect man whose morphologies are roughly similar (i.e., **Clonorchis, Opisthorchis, Heterophyes,** and **Metagonimus**). Differences in operculum shape and shell characteristics ruled out **Heterophyes** and **Metagonimus** as likely candidates (cf., Burrows 1965:158). Although the eggs of **Opisthorchis felineus** and **O. viverrini** are often mistaken for those of **C. sinensis,** being roughly the same size and shape, it is doubtful that either of these genera are represented in the Feature 3 sample. **O. felineus** eggs are usually narrower (11μ) and less symmetrical than those of **C. sinensis** (Burrows 1965; Harinasuta 1969). Further, **O. felineus** is most commonly found in Vietnam, Southeastern and Eastern Europe, and Asiatic USSR (Chandler and Read 1961:144). **O. viverrini,** a species endemic to Thailand, has eggs smaller (26μ x 13μ) than those of **O. felineus** (30μ x 11μ) or **C. sinensis** (27μ x 16μ). In sum, while it would have been preferable to base identification on mature adults rather than on ova, there is little doubt that the Chinese liver fluke, **C. sinensis,** is the species represented in the Sacramento sample. Bolstering this argument is the fact that the specimens were recovered from a privy in an area occupied by Chinese immigrants.

Chinese liver flukes require two intermediate hosts in order to complete their life cycle--snails and freshwater fish. Man is infected by eating raw or incompletely cooked fish. The species, which is endemic in China, Korea, Japan, and Indochina, invades the bile passage of its host. Eggs are evacuated in human feces and hatch after they are devoured by a particular operculate snail species. Third generation larvae (cercariae) leave the body of the snail and



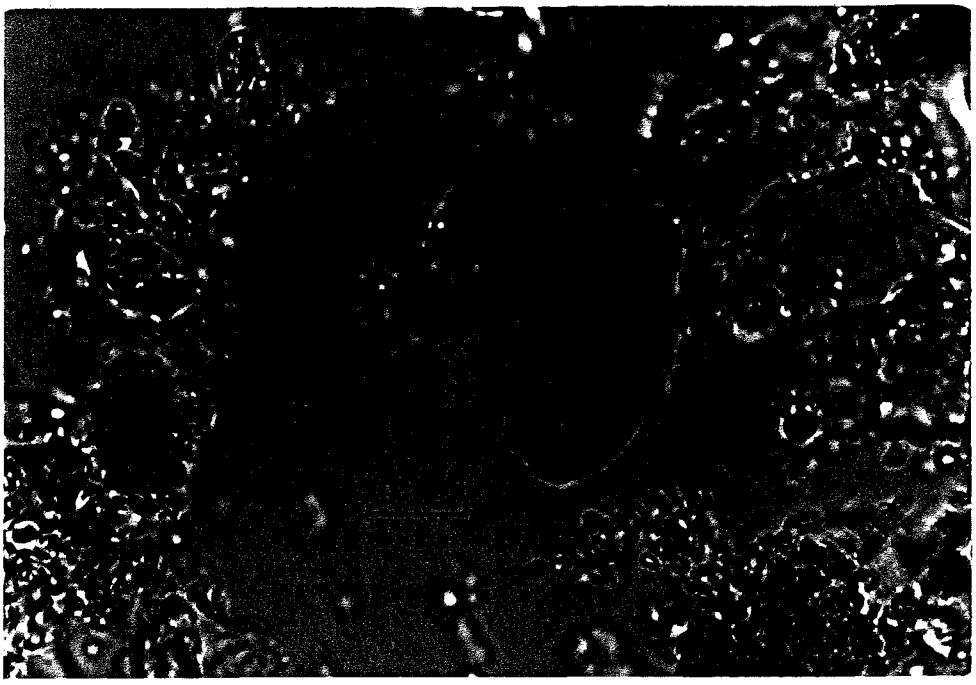


PLATE 6

Photomicrographs of Clonorchis sinensis ova; scale bar is 10 microns.

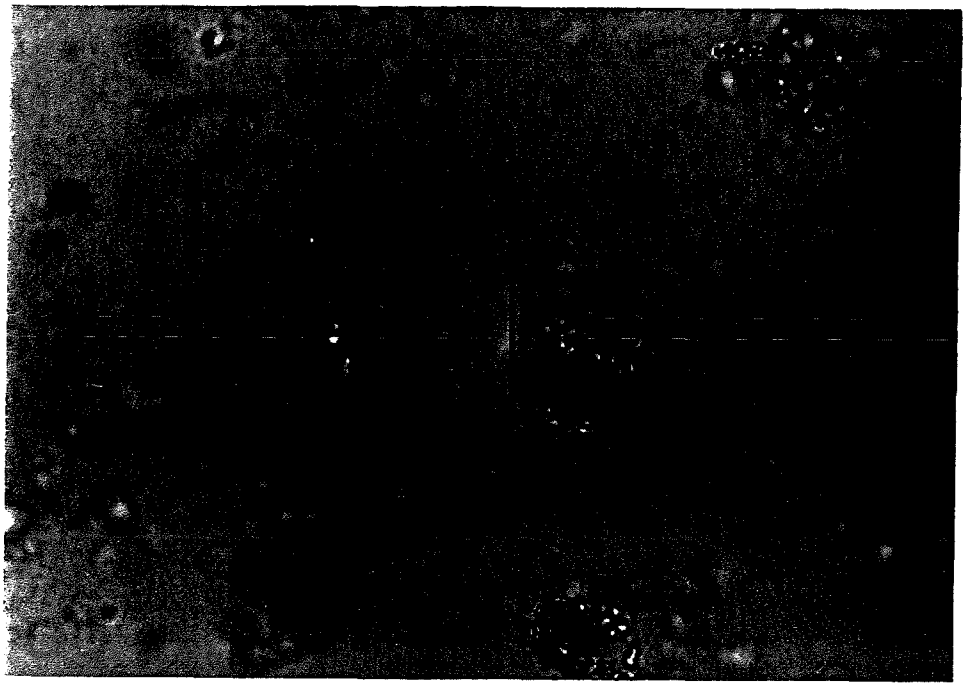


PLATE 7

Photomicrographs of Trichuris trichiura ova; scale bar is 50 microns.

swim about freely until encountering a freshwater fish of the family Cyprinidae, whereupon they enter the fish's body. If the fish is eaten raw by man, the larvae (metacercariae) become digested out of the flesh of the fish and move to the bile radicles, where they attach themselves and develop into adult worms which, in turn, lay eggs to begin the cycle anew (Faust et al. 1968).

Infection by **C. sinensis** is often long-lived--perhaps 25 years. In endemic areas such as China, the use of "night soil" and the repeated consumption of raw fish (even fish which had been pickled, dried, or smoked) serve to provide ideal conditions for maintaining heavy infections. Severity of symptoms vary according to the quantity of worms and duration of infection. Heavy infestations can lead to progressive liver breakdown, which may be fatal to the host (Chandler and Read 1961).

Since 1875, when the first case of **C. sinensis** infection was reported from the autopsy of a Chinese carpenter in Calcutta (Faust et al. 1968:140), infections have been found in Orientals throughout the world. The earliest known case was reported by this researcher after analyzing privy sediments from another excavation in Sacramento (Hall 1979), not far distant from the recovery locus of the samples reported herein. The discovery of large numbers of the eggs of this parasite in another Sacramento privy bolsters the claim made earlier by this writer based upon the recovery of a single egg. As literally thousands of Chinese immigrants came to work in Northern California in the nineteenth century (Lai 1978), one should quite expect many of these persons to have been infected with the liver fluke. Of course, these people were only the hosts; there was never any danger of reinfections or new infections, due to the absence in the U.S.A. of the intermediate host species. When these immigrants died, the disease died with them.

Whipworm

The Feature 3 sample also yielded numerous ova belonging to the human whipworm, **Trichuris trichiura** (Linnaeus 1771 cited in Stiles 1901). Specimens were found in nine of the 12 microslides examined, ranging in number from one to 24 per slide.

These eggs are characteristically barrel-shaped and measure, on the average, 22μ wide by 50μ long. Each pole exhibits the "blister-like" prominence so characteristic of **T. trichiura** ova (cf., Faust et al. 1968:222). These eggs were distinguished from those of similar shape belonging to other species, such as **Capillaria hepatica**, by their size and shell morphology. For example, **C. hepatica** eggs are larger (30-35μ x 51-67μ) and have an outer shell which is perforated by minute pores.

Whipworm infection in humans is cosmopolitan in distribution, although it is most common in warm and temperate-moist climates. This distribution is mirrored in the evidence from prehistoric recoveries of fecal material (see Wilke and Hall 1975 for review). **Trichuris** eggs have been recovered from New World sites dating to the sixteenth century (Pizzi and Schenone 1954; Pizzi 1957; Kliks and Shook 1977).

Whipworm eggs are evacuated in feces and, after a period of about three weeks, reach the infective stage. Eggs are taken into the host's mouth through contaminated foods or other objects placed in the mouth. Children are the most common targets as hosts, due to their inferior personal hygiene. Eggs hatch in the duodenum and eventually attach themselves in the cecum and appendix. Light infections are not harmful; however, heavy ones can produce a range of symptoms including appetite loss, nausea, diarrhea, anemia, bleeding of the mucosa of the bowel, and, in particularly chronic cases, prolapse of the rectum.

Given the predominance of whipworm infections among peoples with low standards of sanitation, it is not surprising to find **T. trichiura** so abundantly present in refuse of a so-called "Chinese shanty" dating to the middle of the nineteenth century. It is still found today (especially in warm, moist, southeast coastal areas), when sanitation standards are perhaps higher than ever before in our history.

Other Parasites

Two ova which are yet to be identified were found in the Feature 3 sample. The morphological similarity of the two predispose this writer to place them in the same species. Both exhibit transparent shells, within which embryos are observable. Both are roughly spherical, measuring 54μ by 51μ. These ova are not unlike those of some free-living soil nematodes. Until further investigations have been undertaken, they must remain within the category "unidentified ova."

Floral Remains

Identification by Elizabeth Honeysett,
Dixon, California

Seeds recovered from the Feature 3 soil samples screened through 1/16-inch (1.5-mm) mesh were given to the Elizabeth Honeysett for identification. A 10X dissecting microscope was used to examine and sort the seeds. Identifications were verified against a type collection, and several references were consulted (Hutchison 1946; Uphos 1968; USDA 1963, 1974; Robbins et al. 1970; Bailey 1971).

Identifications and numbers of specimens are given in table 10. All the seeds were weathered, unless otherwise indicated. Four kinds of gourds (two of which are Chinese), seven kinds of fruits, one Chinese spice, three kinds of weeds, and one ornamental tree are represented. A number of these items have a permanent place in southern Chinese foodways.

The Chinese winter melon (**Benincasa hispida**) has a common and interesting place in southern Chinese cooking. According to Anderson and Anderson,

> The winter melons are huge, dark-skinned, hard-rined, and used most characteristically as soup kettles: filled with various ingredients and sometimes carved on the outside into lovely designs, they are steamed, adding to the finished soup their faintly spicy flavor and their tendency to absorb overgreasy or overspicy tastes (1977:329).

The bitter cucumber or bitter melon (**Momordica charantia**) also plays an interesting role in southern Chinese cuisine. Anderson and Anderson described this gourd as follows:

> Light green and warty, with red-peeled seeds when ripening, this fruit is used in unripe stage, cut up and stir-fried with meat slices or shrimps or both; it brings out their flavors, while they seem to neutralize, partially, the fruit's bitterness. Bitter melon is an acquired taste, and one well worth the trouble of acquiring (1977:329).

These two gourds were probably grown at one of the Chinese truck gardens within the city limits. The exotic appearance and flavor of these gourds indicate that the Chinese gardeners catered, at least in part, to the local Chinese community. These gourds and the imported Chinese pepper suggest the spicy cuisine of South China.

Farmers in southern China were always quick to add new plants to their harvest; thus, this area cultivates a wide variety of introduced crops, including the eggplant and the tomato. Thus, these two food sources already had a place in the Chinese diet and were

Table 10

FLORAL REMAINS*

Scientific Name	Common Name	Number	Description
Arachis hypogaea	Peanut	1	shell fragment
Benincasa hispida	Chinese Winter Melon	48	seeds
Citrullus lanatus var. *citroides*	Citron	1	**
Datura stramonium	Jimson Weed	3	seeds
Ficus carica	Fig	122	seeds
Lactuca scariola	Prickly Lettuce	1	seed of doubtful age; may represent recent intrusion
Lycopersicon lycopersicum	Tomato	52	seeds
Momordica charantia	Bitter Cucumber	7	seed-coat fragments
Prunus avium	Cherry	1	pit
Prunus domesticus	Prune	2	pits
Prunus persica	Peach	1	pit fragment
Robinia pseudoacacia	Black Locust	1	seed of doubtful age; may represent recent intrusion
Rubus ursinus	California Blackberry	146	seeds
Scirpus sp.	Bulrush	1	seed of doubtful age; may represent recent intrusion
Solanum melongena var. *esculentum*	Eggplant	10	seeds
Vitis vinifera	Grape	2020	seeds
Zanthoxylum bungei	Chinese Pepper	1	seed

*From portion of Feature 3 screened through 1/16-inch mesh.

**Twenty-one seeds without seed coats could not be positively identified. Given their size and shape, they are probably citron or watermelon (*Citrullus lanatus*).

not new to the Chinese immigrants to Sacramento. Chinese immigrants were also used to a highly diversified and opportunistic fruit and vegetable base; the presence of a wide range of locally available species within their diet is, therefore, to be expected.

The most common seed within Feature 3, **Vitis vinifera**, is a European grape variety which was cultivated in California. Floral remains dating from a later period recovered from Chinese features at the Woodland Opera House site, show a continued use by the Chinese of both Chinese gourds and introduced fruit: California blackberry, grape, and fig dominate the sample, which also includes seeds from the Chinese winter melon and the bitter cucumber. In contrast to Feature 3, however, the Woodland sample contains a greater number of blackberry seeds and a lesser proportion of grape seeds (Honeysett, unpublished data).

ARTIFACT DESCRIPTIONS

The purpose of this section is twofold: To present the recovered assemblage in sufficient detail so that it may be used by future researchers as a comparative collection, and to provide the raw data upon which the generalizations and conclusions detailed in the concluding section are, in part, based. Although some researchers would not agree with this procedure (cf., Adams 1980:121), in the interests of cost-efficiency and to prevent the production of a redundant report, this section is not meant to be a complete description of the entire artifactual range derived from the excavation. Previous researchers have provided excellent descriptions of Overseas Chinese materials; their works are cited, rather than replicated. Detailed reports on nineteenth-century glass and ceramics are also now in wide circulation and need not be reproduced here. Some artifact types and forms or designs which we believe have not been fully covered in the literature are described here. Table 12 lists the salient features of artifacts recovered and provides citations to previous work where more detailed descriptions can be found.

Preliminary bottle identification was accomplished by Vance G. Bente' and Mary Hilderman Smith. The button and pipe descriptions which appear in this report were written by Janet Robinson-Rocha.

Buttons

Since textiles seldom survive in recognizable form in archaeological sites, buttons are usually all that remain to indicate the fashions worn by a site's occupants. Buttons can also be used as aids in reconstructing demographic profiles and as indicators of the residents' socio-economic status, as well as dating tools in some instances (Carpenter 1980:6-1).

Thirty buttons were recovered from the archaeological excavation. The majority of the specimens in the collection were made of white, opaque ceramic; several bone buttons, one rubber button, and one metal button were also recovered. A number of the ceramic buttons may be milk glass, an imitation of Chinese porcelain. Many of the ceramic buttons have a rough, glassy surface, which may be a result of a manufacturing process patented in 1850 (Carpenter 1980:6-6).

Twenty-six white, opaque, ceramic buttons appear in the collection. The majority of these buttons are of the type called

"inkwell" and have four center holes. Five hobnail ceramic buttons were identified; these specimens have raised dots around the face edge and three center holes.

Two bone buttons are part of the collection. One button (41-18) is medium brown, with a sunken panel, flat face, and convex back. The other (32-10) is dark brown and polished with a large sunken panel and a convex frontal edge and back.

The rubber button in the collection is black and biconical in shape. The shank, which is missing, was possibly a self-shank. The back side of the button has the raised lettering: "GOODYEAR'S P="; the remainder of the marking is illegible due to heat damage. This button is made of vulcanized rubber, a material produced by a process which was patented by Charles Goodyear in 1844. In 1851, Goodyear's brother, Nelson, obtained a patent to protect the process, which improved upon the manufacture of hard rubber (Houart 1977:103). The present example was covered by the later, 1851, patent. Several American manufacturers, such as the Novelty Rubber Company, India Rubber Comb Company, and Dickinson Hard Rubber Company, produced rubber buttons during the last half of the nineteenth century (Brown 1968:91). Rubber buttons were not popular in Europe, because "Europeans objected to the smell of the buttons" (Houart 1977:103).

The metal button, probably worn on a man's work clothes, is coin-shaped and probably cut from a sheet of rolled yellow metal (brass or bronze). The back of the button is decorated with an impressed border and a badly corroded quality or manufacturer's mark; the shank is broken. The face of this button may also have been decorated.

Further button descriptions and their proveniences are given in table 11. In comparison with other archaeological assemblages, the I Street features yielded a relatively sparse button collection. Recent archaeological excavations at the Golden Eagle site, a few blocks away, unearthed 200 buttons (Carpenter 1980:6-1), while the work in Lovelock, Nevada, recovered 742 buttons (Clerico 1979:438). Two conclusions are drawn from the paucity of buttons on the present site. Writing about the artifacts recovered from a Chinese laundry in Lovelock, Rusco (1979:648) concluded that the presence of Chinese ceramics, in combination with large quantities of buttons and small denomination coins, was a good indicator of a Chinese laundry, even in the absence of supporting documentary data. Although Chinese laundries were common in the 1850s in Sacramento, as elsewhere in the West, the small number of buttons recovered from the I Street feature is a clear indication that the residents of this half-block were not engaged as launderers.

On a less conclusive note, the low button yield may indicate the wearing of traditional apparel by the Chinese occupants of the site. In addition, the majority of the button assemblage is made up of shirt-size buttons indicating a predominately male population; few buttons of the type worn by women and children were recovered. Of course, Chinese women and children may have retained traditional dress longer

Table 11

BUTTON SUMMARY

Material	Type	Method of Attachment	Size (mm)	Quantity*	1	2	3	4	5	6	7
Ceramic (white opaque)	Inkwell	4 holes	9-11	15	2	4	0	0	1	2	6
	Inkwell	3 holes	8-9	2	0	0	0	0	0	0	2
	Hobnail, center dish	3 holes	10-11	5	0	0	0	0	0	0	5
	Saucer	4 holes	15-20	2	2	0	0	0	0	0	0
Bone	Sunken panel	4 holes	16-18	2	0	0	1	1	0	0	0
Metal	Stamped	Shank	15	1	0	0	0	1	0	0	0
Rubber	Biconical	Shank	13	1	0	0	1	0	0	0	0
			TOTALS	28	4	4	2	2	1	2	13

*Does not include buttons found during testing or two fragmentary ceramic buttons.

than Chinese men. As many of the Overseas Chinese archaeological sites excavated to date were related to Chinese laundries, where buttons signify site function and not socio-economic or demographic characteristics of the residents, the significance of the sparse recovery in relation to such characteristics can only become evident in the light of future excavations.

Ceramics

Ceramics comprise that class of artifact perhaps most cherished by archaeologists. Not only do ceramics possess attributes of form, decoration, and material which are aesthetically pleasing to both the archaeologist and his audience, these same attributes can be arranged into temporally diagnostic sequences which allow the archaeologist to date a site and to reconstruct certain aspects of past behavior. North American historical archaeologists apply a number of dating techniques--terminus post quem, terminus anti quem, and mean date (South 1978:68-82)--to western ceramics with good results. The conservative nature of the Chinese ceramic tradition, where the same techniques and decorative modes may continue unchanged for centuries, prevents the application of these dating techniques to much of the I Street collection, which is overwhelmingly Chinese in origin. This conservative tradition, however, allows the archaeologist to reconstruct aspects of the foodways of Overseas Chinese communities through the analysis of the sizes, shapes, and quantites of brown glazed stoneware vessels. Those temporally diagnostic western ceramics which were recovered supported feature dates derived from the analysis of historic events and site structure.

The terminology used in table 12 was taken from the Golden Eagle report (M. Praetzellis 1980) and has been used in numerous ceramic analyses by the present authors (e.g., Praetzellis and Praetzellis 1979a, 1979b). A number of useful descriptive reports on Overseas Chinese ceramics recovered from archaeological sites are available; they are referenced on table 12. In addition, Garaventa (1980) has compiled an excellent table which incorporates the ceramic terminologies of various authors and thereby eliminates much confusion. New vessel forms and decorative patterns are described below.

British Ceramics

Three temporally diagnostic transfer-printed ceramic forms were recovered from the I Street features. Feature 6 contained a

Table 12

ARTIFACT SUMMARY TABLE*

	Form	Decoration	Origin	Date	Sherds** (Min. Vessels)	References
FEATURE 1						
L. 11						
Ceramic						
Porcelain	bowl	Celadon	China		2	Chace 1976:523; Olsen 1978:17; Praetzellis & Praetzellis 1979a: fig. 4a, 1979b:fig. 68a; Whitlow 1981:fig. 5
Porcelain	small dish	Celadon	China		2 (1)	
Porcelain	bowl	Double Happiness	China		178 (15)	Praetzellis & Praetzellis 1979b: fig. 21c & 21d, 41b; Chace 1979; this report plate 8a
Stoneware, Brown Glazed	huge globular		China		1	Ferraro & Ferraro 1965; Chace 1976:521; Olsen 1978:33; Praetzellis & Praetzellis 1979b: fig. 21a and 21b
Stoneware, Brown Glazed	handle		China		1	
Stoneware, Brown Glazed	sm. storage		China		1	
Stoneware, Brown Glazed	lg. storage		China		1	
Stoneware, Brown Glazed	pan		China		1	
Stoneware, Brown Glazed	misc.		China		8	
Common Pottery		unglazed			1	
White Improved Earthenware	cup/bowl	blue floral print	U.K.		1	
White Improved Earthenware	hollow ware	mauve scenic print	U.K.		1	
White Improved Earthenware	plate		U.K.		1	
White Improved Earthenware	hollow ware		U.K.		7 (3)	
Glass						
Bottle	soda				1	
Bottle	liquor				2	
Domestic					1	
Metal						
Iron	nails				5	
L. 12						
Ceramic						
Porcelain	bowl	handpainted	China		4	
Porcelain	bowl	Celadon	China		3	
Porcelain	spoon	polychrome handpainted	China		1	
Porcelain	bowl	Double Happiness	China		479 (37)	
Stoneware, Brown Glazed	shouldered food jar		China		1	Ferraro & Ferraro 1965:21; Chace 1976: fig. 2; Praetzellis & Praetzellis 1979a:fig. 1b; Olsen 1978:fig 6; Whitlow 1981:45
Stoneware, Brown Glazed	lg. storage		China		1	
Stoneware, Brown Glazed	misc.		China		25	
White Improved Earthenware	saucer	blue scenic print	U.K.		1	
White Improved Earthenware	saucer	Trent Shape	Staffordshire	1854-	2 (1)	Freeman 1954:72; Wetherbee 1980:62
White Improved Earthenware	serving vessel	multi-sided	U.K.		3 (2)	
White Improved Earthenware	cup		U.K.		1	
White Improved Earthenware	plate		U.K.		1	
White Improved Earthenware	misc.		U.K.		7	
Glass						
Bottle stopper					1	
Bottle	pill		Mass.	1853-	2 (1)	"Ayer's Pills" Wilson & Wilson 1971:18
Bottle	pickles	cathedral			4	Wilson 1981:84
Domestic	chimney				4	
Metal						
Brass or bronze	coin		China		1	
Brass	small cartridge case		U.S.A.		1	
Iron	nails				approx. 140	
Other						
Bone	cutlery handle				1	
Kaolin	pipe stem				1	
Slate	pencil				2 (2)	
Porcelain	button				1	
L. 13						
Ceramic						
Porcelain	bowl	Celadon	China		1	
Porcelain	bowl	Double Happiness	China		131 (4)	
Earthenware	opium pipe bowl		China		1	Etter 1980
Stoneware, Brown Glazed	pan		China		1	
Stoneware, Brown Glazed	misc.		China		20 (3)	
White Improved Earthenware	misc.		U.K.		2 (2)	

*Includes artifacts found during testing.
**Sherds which fit together are counted as 1.
***Rims (bases)

Table 12 continued, Artifact Summary Table

	Form	Decoration	Origin	Date	Sherds** (Min. Vessels)	References
L. 13 (cont.)						
Glass						
Bottle	wine		France		1	
Domestic	tumbler				1	
Metal						
Iron	buckle				1	
Iron	nails				54	
Other						
Kaolin	pipe stem				1	
Porcelain	button				3 (3)	
L. 14						
Ceramic						
Porcelain	bowl	Celadon	China		1	
Porcelain	cup	Four Seasons	China		3 (1)	Chace 1976:525; Praetzellis & Praetzellis 1979b:fig. 42
Porcelain	bowl	Double Happiness	China		62 (5)	
Stoneware, Brown Glazed	huge globular		China		1	
Stoneware, Brown Glazed	misc.		China		14 (2)	
Porcelain	saucer	panelled	Europe		1	
Glass						
Bottle	medicine		San Francisco	1854-1864	2 (1)	"Charles Langley, Druggist"
Bottle	porter/ale				1	
Bottle	wine		France		1	
Domestic	stemmed glass				1	
Metal						
Iron	nails				24	
L. 15						
Ceramic						
Porcelain	bowl	Double Happiness	China		31 (2)	
Stoneware, Brown Glazed	?		China		1	
FEATURE 3						
Ceramic						
Porcelain	bowl	Double Happiness	China		1	
Stoneware, Brown Glazed	misc.		China		13	
Stoneware, Brown Glazed	?		China		1	
White Improved Earthenware	bowl	blue print	U.K.		1	
White Improved Earthenware	saucer		U.K.		3 (1)	
White Improved Earthenware	misc.		U.K.		4	
Glass						
Bottle	pickle	six-sided	England	1845-1848	2 (1)	Zumwalt 1980:458
Bottle	mustard		France	1838-	2 (1)	"Louit Freres & Co." Zumwalt 1980:285
Bottle	soda				1	
Metal						
Iron	nails				2	
Iron	hinge-like				1	
Gold	ring	etched, saw piercing			1	
Other						
Slate	markers				2 (2)	
Porcelain	button	4-hole			5 (5)	
Kaolin	pipe bowl	Patriotic TD			1	Humphrey 1969:13; Elling 1980: fig. 13; Anderson 1982
Kaolin	pipe stem				3	
Rubber	button	Shank	U.S.A.	1851-1865	1	"Goodyear's Patent"
Bone	button	4-hole			1	
FEATURE 4						
Ceramic						
Porcelain	bowl	Celadon	China		8 (2)	
Porcelain	bowl	Double Happiness	China		3	
Porcelain	bowl	blue handpainted	China		10 (4)	crossmends 4 and 5
Porcelain	sm. plate	blue handpainted	China		3 (1)	crossmends 4 and 5
Porcelain	sm. bowl	Four Seasons	China		7 (1)	crossmends 4 and 5
Stoneware, Brown Glazed	wine bottle		China		8 (7)	7 burned; Ferraro & Ferraro 1965:20; Briggs 1974:fig. 13; Adams et al. 1975:fig. 73; Chace 1976;fig. la; Olsen 1978:26; Praetzellis & Praetzellis 1979a: fig. la; Whitlow 1981:fig. 42
Stoneware, Brown Glazed	straight-sided jar		China		16 (1)	crossmends 4 and 5. Chace 1976: fig. 3; Praetzellis & Praetzellis 1979a:fig. 2b and 2c

Table 12 continued, Artifact Summary Table

	Form	Decoration	Origin	Date	Sherds ** (Min. Vessels)	References
TURE 4 (cont.)						
Ceramic (cont.)						
Stoneware, Brown Glazed	straight-sided jar lid		China		9 (2)	crossmends 4 and 5
Stoneware, Brown Glazed	shouldered food jar		China		5	3 burned
Stoneware, Brown Glazed	sm. soy pot		China		1	Ferarro & Ferraro 1965:20; Chace 1976:fig. 1b; Olsen 1978:36 Praetzellis & Praetzellis 1979a fig. 1d, 1979b:fig. 43a; Whitlow 1981:fig. 10. This report plate 8b
Stoneware, Brown Glazed	pan		China		1	
Stoneware, Brown Glazed	huge globular		China		1	
Stoneware, Brown Glazed	tripod vessel		China		1	This report figure 9d
Stoneware, Brown Glazed	high-necked jar, unglazed		China		4	Praetzellis & Praetzellis 1979b: fig. 67c. This report figure 9a
Stoneware, Brown Glazed	dish-shaped lid		China		5 (2)	1 burned. Chace 1976:fig. 1c and 1d; Praetzellis & Praetzellis 1979a:fig. 2c and 2f
Stoneware, Brown Glazed	misc.		China		84	27 burned
Stoneware, Brown Glazed	jar		China		7 (1)	crossmends 4 and 5. Praetzellis & Praetzellis 1979a:fig. 2k
Earthenware	opium pipe bowl, incised		China		1	Etter 1980
Porcelain	saucer	floral handpainted, guilded	Europe		1	
Stoneware	crock	salt glazed			1	
White Improved Earthenware	plate	Temple	Staffordshire	c. 1850	3 (1)	crossmends 4 and 5. Laidacker 1952:62; Williams 1981:53
White Improved Earthenware	chamberpot lid	Seasons	Staffordshire	1833-1847	3 (1)	crossmends 4, 5, 6, L. lll. Italian Garden variation, Copeland & Garrett. Sussman 1979a:202, 1979b:65
White Improved Earthenware	teapot	scenic print	U.K.		6 (1)	crossmends 4 and 5
White Improved Earthenware	misc.		U.K.		3	
Glass						
Bottle	liquor				(2)	
Metal						
Iron	cleaver				1	
Iron	nails				108	
Silver-plated bronze	spoon	etched			1	
Brass or bronze	button	impressed border			1	
Brass or bronze	coin		China	1666-1722	1	Hattori 1979:fig. 1a; Beals 1980:fig. 4b
Lead	foil					
Other						
Bone	toothbrush				1	
Bone	?				1	
Bone	button				1	
Porcelain	button				1	
TURE 5						
Ceramic						
Porcelain	bowl	Celadon	China		7 (1)	
Porcelain	sm. dish	Celadon	China		2 (1)	
Porcelain	spoon	Celadon	China		1	
Porcelain	bowl	Double Happiness	China		27 (4)	
Porcelain	bowl	blue handpainted	China		2 (1)	crossmends 4 and 5
Porcelain	bowl	blue handpainted	China		30 (2)	crossmends 4 and 5. 5 burned
Porcelain	sm. dish	blue handpainted	China		1	
Porcelain	sm. plate	blue handpainted	China		3 (1)	crossmends 4 and 5
Porcelain	wine pot	blue handpainted	China		26 (2)	24 burned. Olsen 1978:27; Praetzellis & Praetzellis 1979a:fig. 3d
Porcelain	wine cup	polychrome handpainted	China		1	
Porcelain	sm. bowl	Four Seasons	China		7 (1)	crossmends 4 and 5
Porcelain	spoon	Four Seasons	China		1	
Porcelain	lid, ginger jar	Canton Ware	China		3 (1)	
Stoneware, Brown Glazed	wine bottle		China		11 (9)	9 burned
Stoneware, Brown Glazed	straight-sided jar		China		16 (1)	crossmends 4 and 5
Stoneware, Brown Glazed	small soy pot		China		3 (3)	
Stoneware, Brown Glazed	shouldered food jar		China		13 (2)	8 burned
Stoneware, Brown Glazed	dish-shaped lid		China		24 (4)	
Stoneware, Brown Glazed	pan		China		3	burned
Stoneware, Brown Glazed	huge barrel		China		15 (1)	Chace 1976:522; Praetzellis & Praetzellis 1979b:fig. 12. This report figure 8d
Stoneware, Brown Glazed	lid to huge barrel		China		5 (1)	Chace 1976:522; Praetzellis & Praetzellis 1979b:fig. 78a
Stoneware, Brown Glazed	large barrel		China		31 (2)	10 burned
Stoneware, Brown Glazed	huge globular		China		5 (1)	
Stoneware, Brown Glazed	jar, unglazed		China		53 (2)	
Stoneware, Brown Glazed	high-necked jar, unglazed		China		9	

Table 12, continued, Artifact Summary Table

	Form	Decoration	Origin	Date	Sherds** (Min. Vessels)	References
FEATURE 5 (cont.)						
Ceramic (cont.)						
Stoneware, Brown Glazed	unidentifiable		China		6	4 burned
Stoneware, Brown Glazed	?w/ring base, unglazed		China		3 (2)	1 burned
Stoneware, Brown Glazed	misc.		China		632	106 burned
Stoneware, Green Glazed	jar		China		7 (1)	crossmends 4 and 5
Stoneware, White Glazed	jar		China		5	
Stoneware, Brown Glazed	straight-sided jar lid		China		9 (2)	crossmends 4 and 5
Common Pottery	unglazed				1	
White Improved Earthenware	plate	Temple	Staffordshire	c. 1850	3 (1)	crossmends 4 and 5
White Improved Earthenware	chamberpot lid	Seasons	Staffordshire	1833-1847	3 (1)	crossmends 4, 5, 6, L. 111
White Improved Earthenware	teapot	blue scenic print	U.K.		6 (1)	crossmends 4 and 5
White Improved Earthenware	misc.	blue print	U.K.		5 (4)	
White Improved Earthenware	misc.		U.K.		14	8 burned
Stoneware	bottle		Europe		1	
Glass						
Bottle stopper	sauce		U.K.	1840-1877	1	"Lea & Perrins" Zumwalt 1980: 269-272; Lunn 1981
Bottle	wine		France		20 (17)***	Armstrong 1980:plate 10-9a
Bottle	porter/ale				3 (5)	Armstrong 1980:plate 10-10
Bottle	porter/ale		Bristol	prior to 1853	1	"H. R. Bristol" Smith 1981: 151-152
Bottle	brandy				1	
Bottle	champagne		France		1 (2)	Wilson 1981:19
Bottle	food				1	
Bottle	ketchup				1	
Bottle	soda				1	
Bottle	medicine				1	
Domestic	opium lamp cover		China?		1	Bentè 1976:480
Metal						
Lead	foil					
Iron	nails				1050+	
Iron	spool				1	
Brass or bronze	sm. fastener				1	
Iron	possible cooking apparatus				1	
Iron	file				1	
Iron	bolt				1	
Iron	sheet metal					
Other						
Bone	handle				1	
Porcelain	button				2	
Leather	heel				2	
Brick						
FEATURE 6						
Ceramic						
Porcelain	bowl	Double Happiness	China		1	
Stoneware, Brown Glazed	wine bottle		China		1	
Stoneware, Brown Glazed	sm. shouldered food jar		China		1	
Stoneware, Brown Glazed	misc.		China		6	
White Improved Earthenware	bowl	Damascus	Staffordshire	c. 1840	3 (1)	W. Adams & Son. Freeman 1954:85.
White Improved Earthenware	chamberpot lid	Seasons	Staffordshire	1833-1847	3 (1)	crossmends 4, 5, 6, L. 111
White Improved Earthenware	plate	brown print	U.K.		1	
Glass						
Bottle	ale/porter		Bristol	prior to 1853	1	"Ricketts Bristol"
Bottle	liquor				2 (2)	
Metal						
Iron	nails				8	
FEATURE 7						
Ceramic						
Porcelain	bowl	Double Happiness	China		5	
Porcelain	cup	blue handpainted	China		1	
Porcelain	bowl	blue handpainted	China		1	
Stoneware, Brown Glazed	wine bottle		China		1	
Stoneware, Brown Glazed	huge globular		China		1	
Stoneware, Brown Glazed	globular		China		2	
Stoneware, Brown Glazed	sm. straight-sided jar lid		China		1	
Stoneware, Brown Glazed	misc.		China		100	
White Improved Earthenware	misc.		U.K.		2	
Glass						
Bottle	porter/ale				1	
Bottle	peppersauce				1	Wilson 1981:fig. 315; Zumwalt 1980:455
Domestic	chimney				1	
Domestic	cup				1	

Table 12 continued, Artifact Summary Table

	Form	Decoration	Origin	Date	Sherds** (Min. Vessels)	Reference
FEATURE 7 (cont.)						
Other						
Kaolin	pipe	Patriotic TD			1	
Porcelain	button				13	
Metal						
Iron	nails				26	
Iron	buckle?				1	
LAYER 111						
Ceramic						
Stoneware, Brown Glazed	wine bottle		China		1	
Stoneware, Brown Glazed	dish-shaped lid		China		1	
Stoneware, Brown Glazed	jar	unglazed	China		1	
Stoneware, Brown Glazed	misc.		China		27	1 burned
White Improved Earthenware	plate	flow blue	U.K.		1	
White Improved Earthenware	misc.	flow blue	U.K.		1	
White Improved Earthenware	chamberpot lid	Seasons	Staffordshire	1833-1847	3 (1)	crossmends 4, 5, 6, L. 111
Glass						
Bottle	liquor				1	
Bottle	soda				1	
Bottle	wine		France		1	
Metal						
Iron	nails				10	
FEATURE 11						
Ceramic						
Porcelain	wine pot	blue handpainted	China		1	
Stoneware, Brown Glazed	dish-shaped lid		China		1	
Stoneware, Brown Glazed	misc.		China		3	
Stoneware, White Glazed	misc.		China		1	
Glass						
Bottle	wine		France		1	
Metal						
Iron	nails				24	
FEATURE 12						
Ceramic						
Porcelain	bowl	Double Happiness	China		2	
Porcelain	spoon	polychrome handpainted	China		1	
Stoneware, Brown Glazed	straight-sided jar		China		1	
Stoneware, Brown Glazed	misc.		China		9	3 burned
Metal						
Iron	nails				13	

deep plate decorated with the "Damascus" pattern, made by W. Adams & Sons of Staffordshire, England, around 1840 (Freeman 1954:85). Six sherds, representing one to four plates, of what is believed to be the "Temple" pattern were recovered from features 4 and 5. This identification is based on a fragmentary basal mark (...EMPLE) and a written description of the Temple pattern produced by Podmore, Walker & Co. circa 1850 (Williams 1981:53). This blue transfer-printed vessel has an Oriental scene in the center with flowers around the rim. Podmore, Walker & Co. worked in Staffordshire from 1834 to 1859 (Godden 1964:501) and produced "an endless variety of admirable patterns" in Imperial Ironstone China adapted to ordinary purposes "so that they may become the everyday surroundings of the artisan as well as the educated man of taste" (Jewitt 1883:563).

The third form is represented by nine red transfer-printed sherds from one to three chamberpot lids, recovered from features 4, 5, 6, and Layer 111. This lid is unmarked but is believed to be the "Italian Garden" variation of the "Seasons" pattern made by the Staffordshire firm of Copeland and Garrett from circa 1833 to 1847 (Sussman 1979a:214, 1979b:65). Copeland and Garrett (a.k.a., Spode) was a large ceramic exporter and, from 1836, the main ceramic supplier to the Hudson's Bay Company. It continued in this capacity until the 1850s in the United States and until the early twentieth century in Canada (Sussman 1979a:7).

Chinese Ceramics

In addition to the usual varieties of ceramics which have become indicators of Overseas Chinese occupation sites, a number of new and unusual forms were recovered. A relatively large number of vessels exhibit kiln marks, including some brown glazed stoneware forms, which, when found heretofore on later period sites, are very rarely marked. Those items which we have not found in the literature on Overseas Chinese ceramics are described below.

One of the most striking features of the present ceramic assemblage is the predominance of the Double Happiness bowl (plate 8a). According to Chace (1979), this pattern is typical of early work camps--Donner Pass (1865-1869) and some gold-mining camps--but has not been found at late urban sites--e.g., Ventura, Lovelock. Chace suggested that this limited distribution might be explained by "drastic shifts in the emigration and supply patterns during the Punti-Hakka wars (1856-1868)."

The Double Happiness pattern is painted in blue in three places on the circumference of the white porcelain bowl. The **shuang hsi** or Double Happiness motif, common in Chinese decorative arts, expresses the wish for both happiness itself and for longevity (Chavannes 1922:23). This combination reflects the value that the Chinese

a. Double Happiness design bowl

b. Small spouted jar

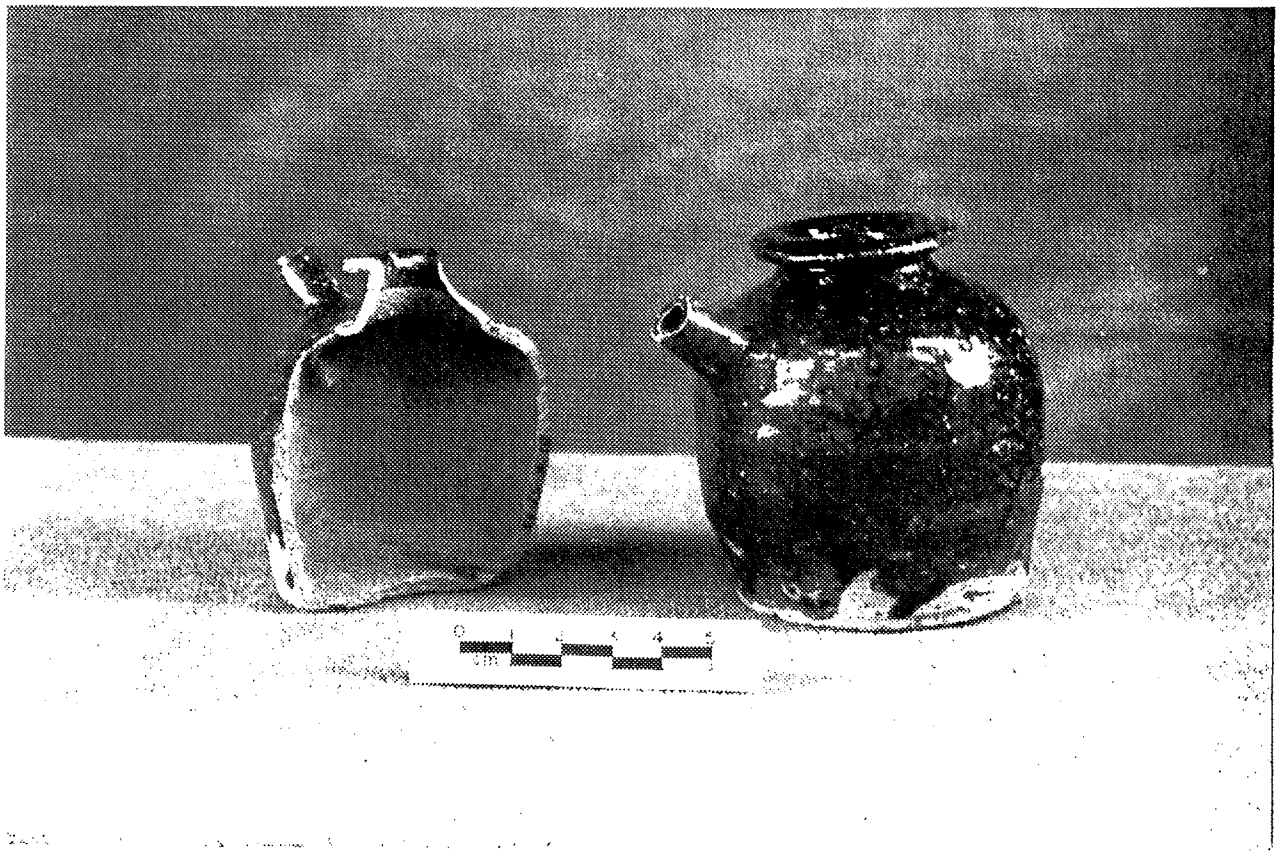


PLATE 8

place on long life and their respect and honor for persons of great age. It has been suggested that the figure alternating with the Double Happiness characters may be the **Jo-mu** or Jo Tree, sometimes called the "Jewel" Tree (Petry 1981:5). The star-like flowers of this tree were said to light up the world before the sun rises; it was the tree of darkness upon which the moon climbs the sky (Bulling 1952).

Only three of the more than 50 Double Happiness bases are unmarked. The remainder possess kiln marks, apparently from four different kilns. These marks were translated by Mr. Stephen Little of the San Francisco Asian Art Museum as follows: **li de** or 'clever virtue,' **ying mei** or 'brave beautiful,' **li ren**, or 'clever benevolence/humanity,' and **ho sheng** or 'harmony life.' (figures 7a to 7d).

A number of other fragmentary blue handpainted porcelain vessels, typical of the mid-nineteenth century, were also recovered. These include a bowl (figures 8a to 8c) which is decorated with another conventional Chinese art motif: the bat (figure 8a). The Chinese word for 'bat', **fu**, is pronounced the same as the word **fu**, meaning "happiness." Through this pun, the bat has come to represent happiness and, like the character **fu**, is often portrayed in stylized form on household items (Chavannes 1922:21).

Chinese brown glazed stoneware vessels, also called **jian you** (Olsen 1978) and **min gei** (Ferraro and Ferraro 1965), were used to contain a variety of food products exported from China and used by Overseas Chinese groups throughout the world. Three sizes of shouldered food jars were recovered from the I Street features. They would have contained any of a variety of preserved vegetables--salted garlic, salted radish, salted onion (Chace 1976:519)--sweet gerkins, soy bean cheese, and shrimp paste (Olsen 1978:32). The huge globular jars, owing to their great size, undoubtedly contained large quantities of some regularly used material--wine, peanut oil, soy sauce, or wine vinegar (Olsen 1978:33). It is probable that the small, straight-sided jars contained medicine, candy, aniseed, or other seasonings (Olsen 1978:33). The original contents of two other vessel forms--the soy pot and the ginger jar--would have been less restrictive than their generic names suggest. Soy pots or spouted jars may have also contained fine black vinegar or thick molasses, while ginger jars were also used to store and transport preserved chopped garlic, preserved sliced turnips, preserved green onions, sweet gerkins, green plums, and preserved fish (Olsen 1978:35-36).

Various sizes of all of the above varieties, in addition to the ubiquitous Chinese wine bottle, were recovered during excavation (table 12). Noteworthy vessels and apparently new forms are described below.

Small soy pots (plate 8b) are not unique to Sacramento; they have also been recovered from San Francisco (Garaventa 1980). The I Street examples, however, are particularly crude and lopsided, and vary considerably in size and color of glaze.

Huge barrel-shaped jars (figure 8d) are often found on Overseas Chinese archaeological sites, but they are rarely sufficiently intact to allow measurement. The present example is fairly complete, and a lid from the same feature neatly fit upon it. Both jar and lid possess kiln marks. The lid's mark is indecipherable, but the jar (55-3) is from the **li k'ai** or 'clever/profit to open/to find' company (figure 7e). Two wine bottle bases (51-18) in the collection also possess this mark.

Five Chinese wine bottle bases within the collection possess kiln marks, a feature which has not been noted on samples from more recent sites. All of these were deciphered, at least in part, by Mr. Little. One mark (41-7), **li tong** (figure 7g) or 'clever company,' suggests the same kiln as the three vessels discussed above. A seal script mark on another example (7-2) may be read 'made by the good picture company' (figure 7f). The last fragmentary example (41-7) appears to read **kou li** or 'if strong' (figure 7h).

A number of apparently rare, thin-walled, fine-grained, unglazed and partially glazed stoneware vessels were also recovered. While these specimens were too fragmentary to illustrate, the high-necked vessel shown in figure 9a (Praetzellis and Praetzellis 1979b:fig. 67c) is believed to be one of the forms. Another of these thin-walled vessels (54-14) possesses a fragmentary kiln mark which was translated as **ji ri** or 'made by sun.'

Figures 9b to 9f and 10b illustrate a number of portions of unknown vessel types which suggest a previously unacknowledged range of Chinese stoneware vessel forms.

Glass

As historical research on glass containers advances (e.g., Schulz et al. 1980b), it is predicted that glassware will replace ceramics as the most useful artifact class for site interpretation. Glass containers are more reliable dating devices because they proceed more rapidly through the cycle of manufacture, distribution, use, and discard. They also can aid in reconstructing the eating and drinking habits, as well as the socio-economic status, of a site's occupants. Care must be taken, however, in interpreting glass artifacts in isolation. For example, the present collection includes both glass and ceramic wine bottles and food and medicine containers. The glass and ceramic collections must be viewed as a whole in order to gain a clear picture of the former inhabitants'

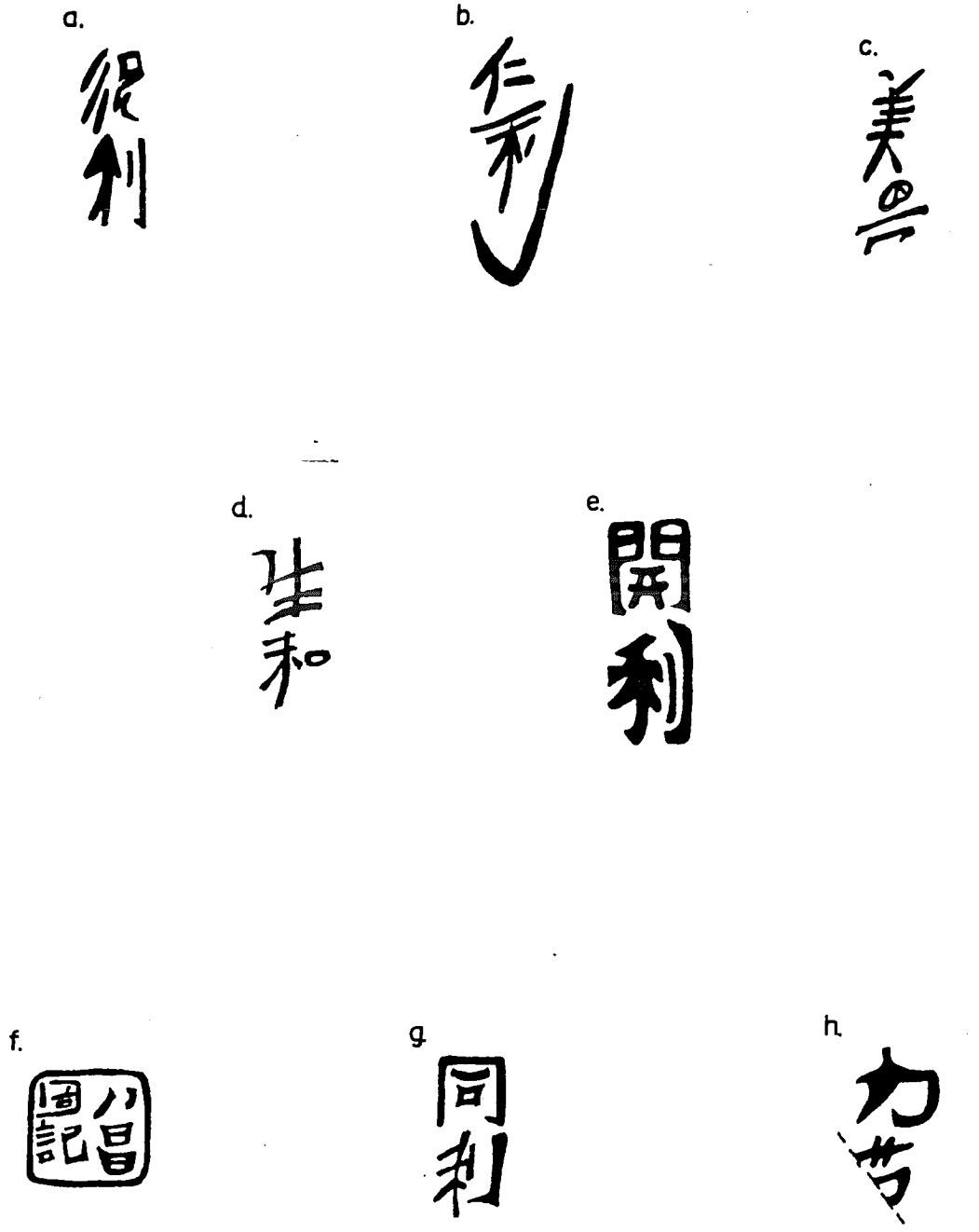


FIGURE 7
Marks on Chinese ceramics

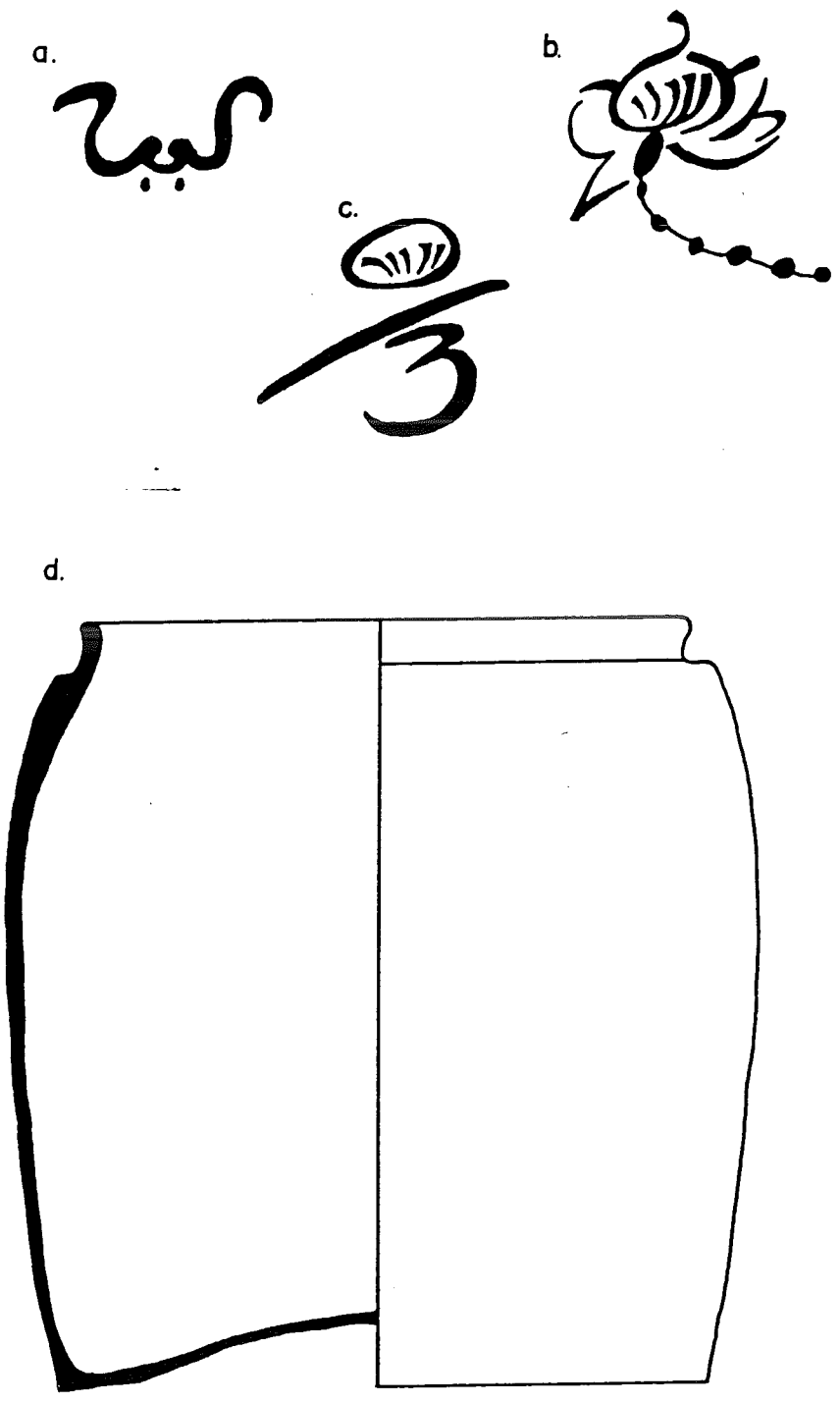


FIGURE 8
Chinese ceramic decoration and form

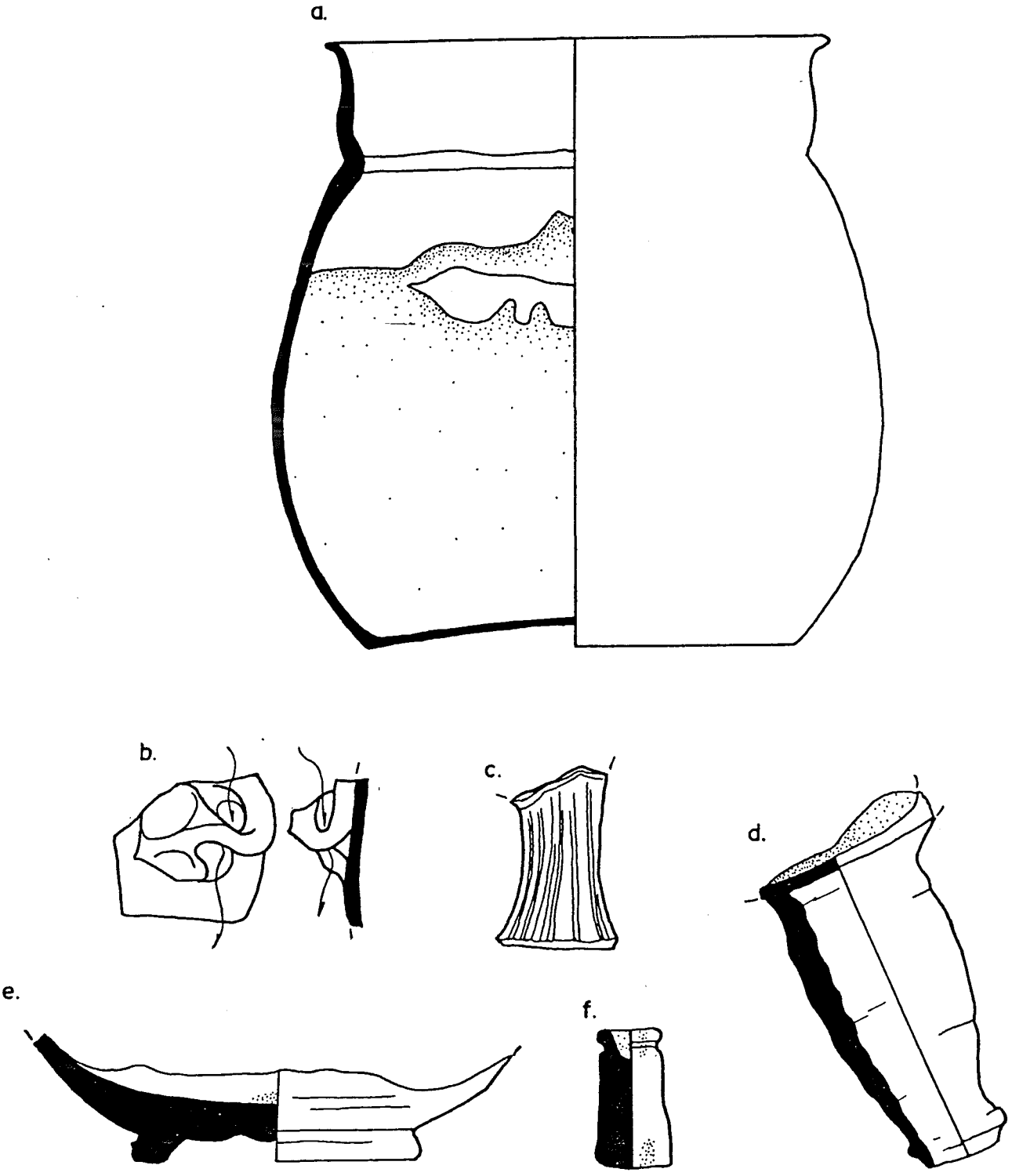
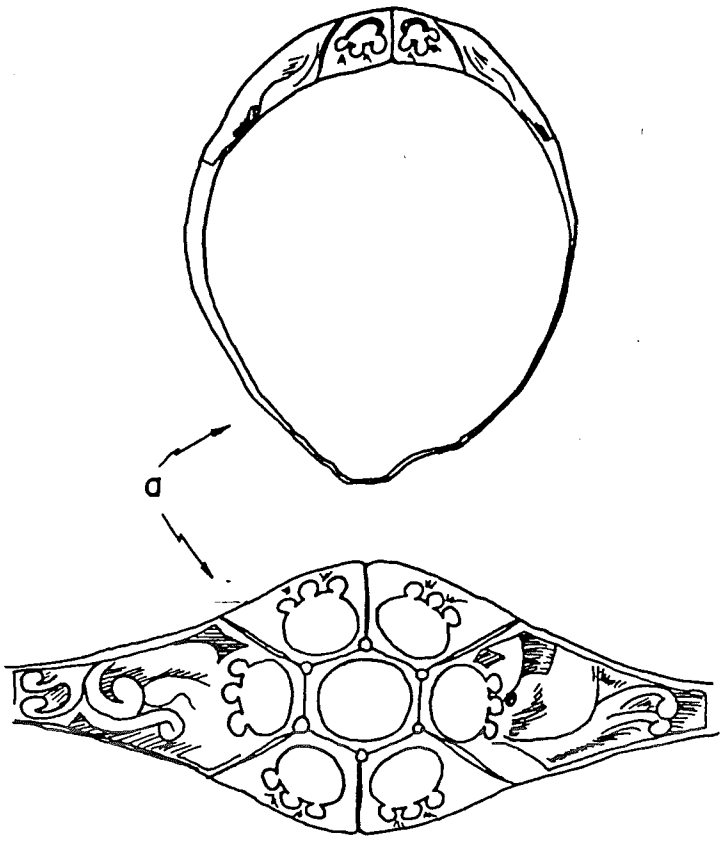


FIGURE 9
Chinese ceramics

figure a
0 2 4 inch
2 4 6 8 10 cm

figs. b-f
0 1 2 inch
1 2 3 4 5 cm



b

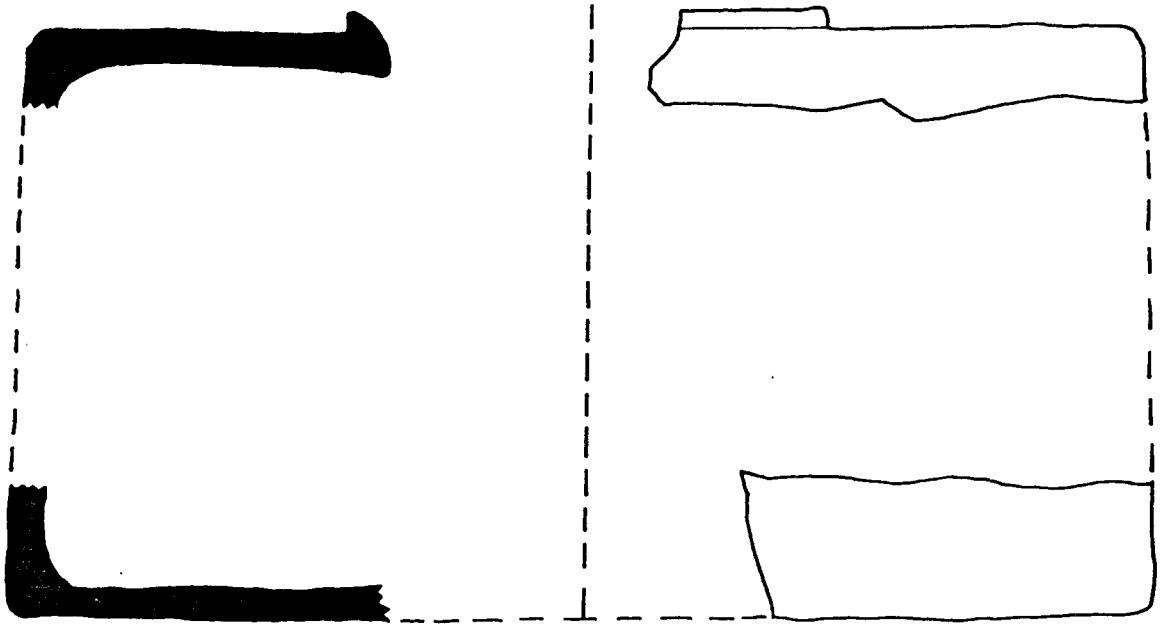


FIGURE 10
Metal and ceramic artifacts

fig. a 0 5 10 inch
0 15 30cm
fig. b 0 2 4 inc
0 5 10cm

foodways, alcohol consumption, and medicinal needs. Furthermore, glass and ceramic do not exhaust the varieties of possible containers; for example, brandy, whiskey, and lager beer were shipped in wooden barrels.

Characteristics of the glassware from the archaeological features are listed in table 12; table 13 shows the distribution of glass by feature. Very few glass artifacts possessing short-lived, temporally diagnostic characteristics were recovered. Thus, the glass, like the ceramic artifacts, provide only a general temporal range; negative evidence from the collection, however, can lend support to dates from other sources. Generally, the presence of some pontils and the absence of amber/brown glass, western bitters, and plate-mold embossing suggest a pre-1870 date for the assemblage as a whole. The feature discussions detail the use of glass in combination with other sources for dating.

The most common bottle in the collection is the French wine bottle. It is uncertain, however, whether these bottles actually contained French wine. Empty French wine bottles were imported and filled with California wines; they were occasionally even labeled as French wine for better marketing. One shoulder seal, "Haut Sauterne" was recovered. The department of Gironde, of which Bordeaux is the capitol, was one of the largest producers of fine wine in the world; it supplied California with most of its wine from the Gold Rush through the 1870s. These wines were marketed by Bordeaux wine merchants, who at times fraudulently labeled wines and unscrupulously sold inferior products. Despite this misrepresentation, the reputation of Bordeaux wines was so great that such names as Barsac and Sauternes became synonymous with fine wines (Schulz et al. 1980b:77). Thus, it has been argued that a shoulder seal, recovered in Old Sacramento, designating "Haut Barsac" and lacking the name of the grower, vineyard, or merchant was probably a fraud, containing a "white wine of mixed parentage and less than mediocre quality" (Schulz et al. 1980b:91). The same argument could be made for the marked example in this collection.

The "black glass" porter/ale bottles in the collection may have contained a wider variety of liquids than implied by the name, including wine, cider, brandy, or stout. At least two of these bottles were made by the Ricketts Company in Bristol, England. The only glass artifact which may be Chinese in origin is what appears to be an opium lamp cover.

Table 13

DISTRIBUTION OF BOTTLES & GLASSWARE*

Description	Origin	1	3	4	5	6	7	111	11
CONDIMENTS									
Peppersauce	Western						1		
Worcestershire sauce	England				1				
Ketchup					1				
Food					1				
Mustard	France		1						
Pickle	England		1						
Pickle	Western	1							
ALCOHOLIC BEVERAGES									
Porter/Ale	Western	1		2	5	2	1	1	
Wine	France	2			20			1	2
Brandy	Western				1				
Porter/Ale	England				1	1			
Champagne	France				2				
SODA WATER									
Soda/Mineral Water		1	1		1			1	
MEDICINE									
Medicine					1				
Pills	Massachusetts	1							
Medicine	San Francisco	1							
MISCELLANEOUS									
Chimney Lamp		1							
Cup								1	
Opium lamp cover								1	
Tumbler					1				
Stemmed glass		1							
		1							

*Numerals represent minimum number of vessels.

Metal

A number of unusual metal artifacts were recovered from the IJ56 block features, including two coins, a cleaver, a file, a silver spoon, a gold ring, and a possible cooking apparatus, similar in shape to an hibachi.

Two Chinese "cash" coins of brass or bronze were recovered. These square-holed coins belong to a coinage tradition which persisted in China for about 2000 years. The distinctive square hole was a result of the minting process:

> Cash coins were cast rather than struck, resulting in small projections on their edges where the molten metal encountered the mold. In order to eliminate these casting irregularities, the coins were placed on a square rod or bar and turned against a file or chisel to smooth the edges (Beals 1980:58).

Chinese coins possess both reign-title marks and mint marks. In China, the purchasing power of these coins was low, and they were commonly circulated in string rings of 10 or 100. This tended to protect the coins from wear and, in combination with the conservative Chinese coinage tradition, enabled them to remain in circulation for long periods of time. Thus, coins from lengthy and stable seventeenth- and eighteenth-century dynastic reigns remained in circulation well into the twentieth century.

The reign mark on the Chinese coin from Feature 4 appears to date to the **K'ang Hsi** reign ('Currency of the Period of Steady Prosperity'), from 1662 to 1722 (Hattori 1979:fig. 1a; Beals 1980:fig. 4b). The mint mark on this coin, which measures 27 mm in diameter, could not be deciphered. Chinese coins of this reign are not uncommon in the West and have been recovered from archaeological sites in Boise, Idaho (Jones 1980:fig. 22b), Oregon (Beals 1980), Lovelock, Nevada (Hattori 1979), and in Ventura (Kleeb 1976), Yreka (Farris 1979), and Old Sacramento, California (Farris 1980). Nothing remains of the reign or mint mark on the smaller second coin, which measures 20 mm in diameter. Besides possessing varying talismanic value, these coins were probably used as small denomination currency within the Overseas Chinese community (Kleeb 1976; Farris 1979) and were also used as ornaments by the Northwest Coast Indians (Beals 1980).

On the basis of Langenwalter's (1980:107) description, the cleaver from Feature 4 would appear to be Chinese in origin. Chinese characters, found on other cleavers, were lacking on this heavily corroded example. Part of an iron file was recovered from Feature 5. This was a "flat-bastard" type, 5/16 inch thick by an estimated 1 foot 6 inches long (8 mm by 45 cm). One good-quality silver-plated brass tablespoon with a cast-decorated handle was found in Feature 4. The manufacturer's mark on this spoon could not be deciphered.

While wet-screening the soil sample from Feature 3, one of the site's more intriguing artifacts was discovered: a gold ring (figure 10a). This ring exhibits attributes of Victorian popular jewelry and is believed to be Euro-American in origin. This woman's ring is about size 5-1/2 in modern ring measurements. The ring may at one time have borne a jeweler's mark, which has since worn off. The shoulders of the ring are decorated with saw-piercing and engraving, a common feature of Victorian jewelry (Bradford 1959:83). The stones, which are missing, were probably either pearls, turquoise, amethysts, or even diamonds; a claw-set mount was used. Most of the tiny brackets which formed the setting were broken off, indicating that the stones may have been forcibly removed.

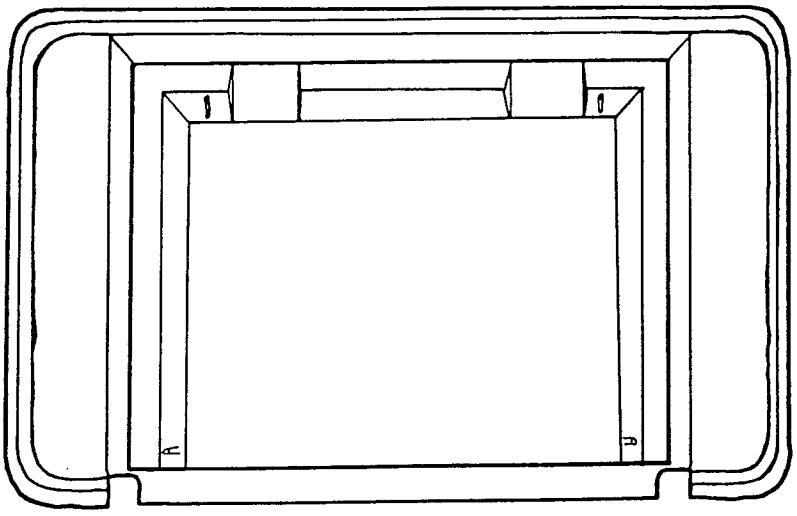
Another puzzling artifact is a cast iron box, roughly rectangular with an open top, which may have been used as a cooking apparatus; it had been discarded whole into Feature 5 (see frontispiece and figure 11). Several anthropologists familiar with Chinese material culture were consulted in an unsuccessful attempt to determine the original function of this item.

Pipes

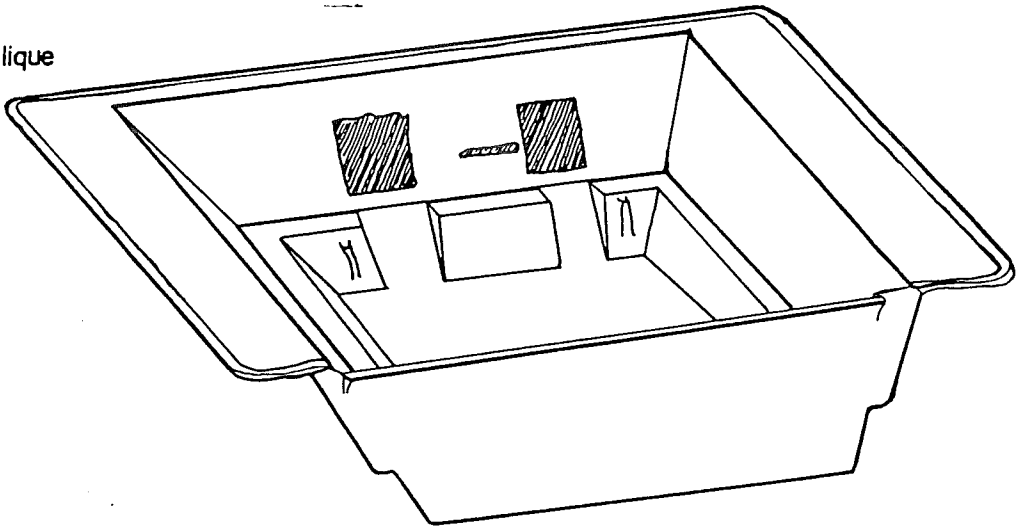
The pipes in this collection are few in number, but diversified. Four pipe bowls appear in the collection: two white clay, one glazed ceramic, and one wood. Six white clay stem fragments and one pipe mouthpiece of an unidentifiable material were also recovered. White ball-clay (kaolin) pipes were popular in America in the eighteenth and nineteenth century. Chamber's Encyclopedia described the white, ball-clay pipe as "too well known to need description" (1890:661). White clay pipes were fragile and, because of their low cost, were readily disposed of when chipped or worn. The ordinary clay pipe was first solely imported from pipe-making centers in England (Elling 1980:13-1), and later imported from France, Scotland, Holland, and elsewhere. American production reportedly began in 1820, with the earliest recorded manufacturing by Thomas Smith of New York City in 1847. The high tariff during the Civil War stimulated further manufacturing of the clay pipes (Encyclopedia Americana 1971:108). During the second half of the nineteenth century, the first wooden pipes were introduced, but clay pipes continued to be manufactured into the twentieth century (Elling 1980:13-2).

The use of pipemakers' marks can serve as a dating technique, but there are limitations for nineteenth-century sites. Prior to the mass-production of pipes, pipemakers usually marked their products with established symbols or initials (Humphrey 1969:13). After large-scale production became established, however, the pipemakers' marks were either discontinued or plagiarized. An example of this

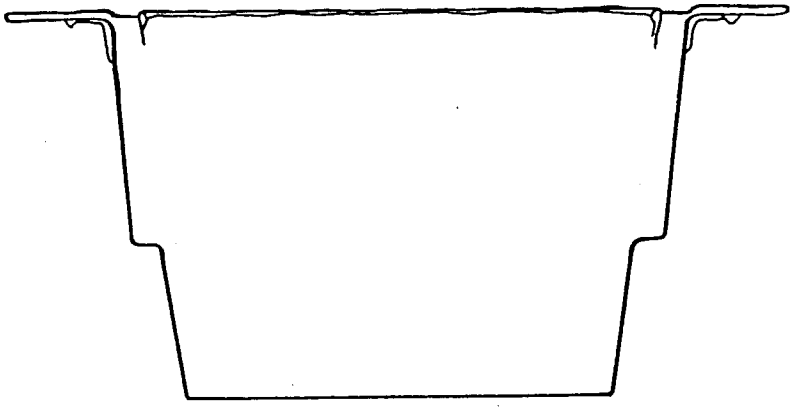
Plan view



Oblique



Elevation



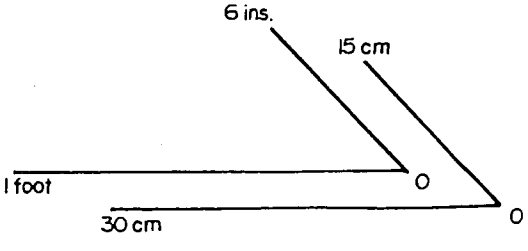


FIGURE 11
Cast iron artifact

shift is the TD pipe, samples of which are in the collection. The TD mark was the original maker's initials, dating to the middle of the eighteenth century; by the nineteenth century, however, this mark had become synonymous with a type of pipe (Elling 1980:13-3). Thus, makers' marks are an unreliable means for dating, especially after the eighteenth century. Decorated clay pipes, such as the Thirteen-Star Patriotic pipe termed by Humphrey (1969:25), could become a datable type, once more information on their origin and more comparative archaeological data are available.

Three TD pipes appear in the collection: one a plain TD pipe and the two Thirteen-Star Patriotic pipes. The plain bowl measures approximately 4.34 cm in height, 2.4 cm in width, and from .24 to .37 cm in bowl thickness. A crude "TD" mark in raised lettering appears on the left side of the bowl, facing the smoker. A small dot is on each side of the "T" at its base. The "T" measures .56 cm in height, .42 cm in width; the "D" measures .55 cm in height, and .45 cm in width. The mold line has been burnished on the bowl, but is unburnished along the spur and stem. The spur at the bowl base has a raised "38" measuring .30 cm in height, to the left of the mold line beneath the "T". The stem fragment measures 1.50 cm in length, with a diameter of approximately .82 cm. The bore size measures 4/64 inch.

The Thirteen-Star Patriotic Pipe bowl, measuring 3.74 cm in height and 2.24 cm at its widest point, has a raised "TD" mark facing the smoker. The TD mark is encircled by 13 six-pointed raised stars, seven stars to the right of the mold line and six stars to the left. The diameter of the star circle is approximately 2.29 cm. The "T" measures .52 cm in height and the "D" .53 cm in height; each measures .46 cm in width. The mold line is unburnished on the bowl and spur, but burnished on the stem. A leaf motif runs along both sides of the mold line on the bowl only. The bowl has a 12.49-cm long stem fragment attached to it, with a diameter of .88 cm at the bowl and .57 cm at the butt end. The bore size measures 4/64 inch.

Six pipe-stem fragments appear in the collection, two of which have stenciled markings. One frgment has "71" and "Christie" stenciled on one side and "Glasgow" on the other; "Christie" and "Glasgow" are each enclosed by a square-dot motif. Another fragment bears the mark "McDou..." All but one of the stem fragments have burnished mold lines and a bore size of 4/64 inch; the unburnished fragment has a bore size of 6/64 inch.

The ceramic bowl has a dark brown glaze; it measures 4.10 cm in height, 3.10 cm in width, and approximately .49 cm in thickness. The bowl, which has a diameter of approximately 2.65 cm, forms into a stem of approximately 1.45 cm in diameter. The bowl appears to have been made for use with a detachable stem.

A decomposed wood bowl, formed for use with a detachable stem, is also part of the collection. The wood is defoliating, which makes measurement difficult. The type of wood could not be identified.

A mouthpiece, dark brown, shiny, and of an unidentified material, was also found. The function of the mouthpiece is undetermined; it may be either a cigar holder or a pipe-stem fragment.

CONCLUSIONS

The concluding section will draw upon many diverse data sources in addition to the archaeological materials, in an effort to address the problems posed in the research design.

Site Specific Questions

An understanding of the date, structure, formation, and contents of each feature is essential prior to their use as comparative collections. Some features lack tight associations and therefore possess limited value for comparative studies. Features 7 and 12 are, apparently, post holes from a back porch and not trash-filled features. The original provenience of the artifactual material within them, especially Feature 7 which was re-excavated at least once, is therefore uncertain. This lack of strict provenience, in combination with a dearth of temporally diagnostic artifacts, render these two features of little value for purposes of comparison. Although the temporal range of Feature 6 is known precisely, the dubious provenience of artifacts contained in its fill render this feature an unlikely candidate for comparative studies: This abandoned drain filled with water-borne silt and neighborhood refuse over a short period of time. Human agents were more clearly responsible for the filling of Feature 1, a second drain running parallel to Feature 6. Here, the broken ceramic stock of a Chinese merchant, probably damaged during the 1855 fire, was discarded into the drain, which was no longer required due to new construction on the lot. The ceramics, in particular the Double Happiness bowls, are therefore associated with each other and with a particular event in time (plate 9a). The commercial nature of this association delimits the range of questions and comparisons to which materials from this feature may be applied.

Human agents are also clearly responsible for excavating and filling features 5 and 11. Both features have been associated with the early Chinese merchants on the block. As described previously, Feature 11, which had almost exclusively contained pork bones, was re-excavated as Feature 5 and filled with household refuse, damaged stock, and construction debris from the previous wood/iron building. The ceramic assemblage from Feature 5 contains both large and small Chinese brown glazed stoneware vessels and some tableware, mainly Chinese but also some of English manufacture (plate 9b). Ceramic crossmends indicate that Feature 4, a root ball hollow, was also filled at this time. Layer 111, under Feature 4, was part of an earlier feature, also related to the Chinese occupation, whether it represents sheet refuse or a trash-filled area could not be determined. These features contained, in part, the domestic remains of these merchants. Features 4 and 5 are dated to late 1855; Feature

11 and Layer 111 to an earlier period, probably sometime after 1852. Keeping in mind the formation and structure of each feature, these features may be profitably used as comparative collections.

Feature 3 was situated on a parcel not associated with Chinese merchants, but with the general Chinese community of the same period. The terminal deposit from this privy was probably removed during the construction of the wood-lined privy, Feature 2. Thus, the Feature 3 assemblage was deposited during the privy's active use-life and was limited mainly to small objects which accidently fell in and to readily decomposable kitchen refuse. The discard of pork bones, such as those found in features 5 and 11, would have severely shortened the privy's use-life. Thus, features 3 and 5 are not directly comparable. In fact, all of the features on the site are quite different in terms of their formation processes and are, therefore, most profitably studied as complementary and not comparable units.

Aside from providing an index of availability, the presence of large numbers of Double Happiness bowls in Feature 1 may provide the opportunity to study ceramic production in China. Fifty-two marked specimens of this pattern were recovered: 23 marked 'brave beautiful,' 28 marked 'clever benevolence,' and one marked 'clever virtue.' The large sample from the first two kilns may represent the remains of a single shipment from China. From this, it may be possible to isolate the style of individual craftsmen as the rendition of various aspects of the pattern vary noticeably within the sample. It may also be possible to view labor-specialization within the shops, as different design elements may have been painted by different craftsmen. Neither of these analyses were within the scope of the present study, but both could be attempted by future researchers.

The earliest known case of Chinese liver fluke infection was reported from Feature 3 soil samples (Hall, this volume). The recovery of large numbers of eggs from this parasite and from the human whipworm parasite indicate that a portion of Sacramento's Chinese community suffered from a number of unpleasant and possibly fatal diseases. Feature 3 also contained the only evidence, documentary or archaeological, of the possible presence of Chinese women on the site: the gold ring. Chinese families and individuals commonly invested their wealth in gold jewelry, which could be sold when necessary (Williams 1941:215). Of course, there are other ways besides its loss by a resident female by which the ring could have made its way onto the site.

Chang (1977:6-11) described a number of distinctive characteristics of Chinese cooking, including the use of multiple ingredients and flavors, cut up and mixed to form numerous dishes varying in appearance, taste, and smell. This mixture makes Chinese cooking notably flexible and adaptable, for individual ingredients can be added or subtracted depending upon their availability or the economic status of the cook. The Chinese exploit a wide range of plant and animal resources, which increases during times of stress;

a. Ceramics from Feature 1

b. Ceramics from Feature 5

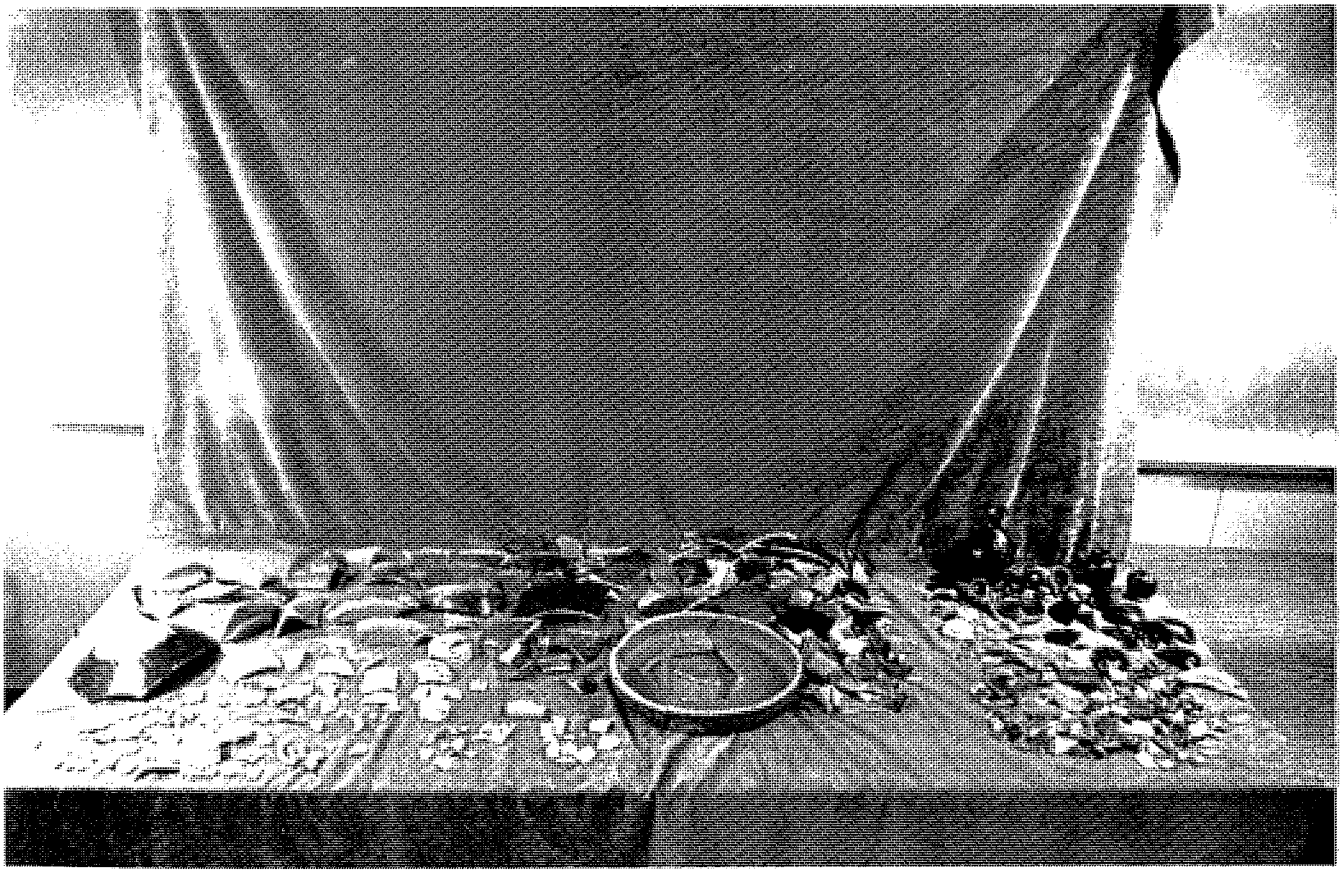


PLATE 9

they also rely heavily on a great number and variety of preserved foods (Chang 1977:9). Many of these distinctive characteristics can be seen in the floral and faunal remains from features 3, 4, 5, and 11, and Layer 111. The "kitchen butchering" pattern identified on the pork bones is clearly an initial step in the preparation of numerous dishes, some of which may have included imported Chinese peppers and locally grown Chinese gourds. The adaptation of a wide resource base to a specific style of cooking is shown in the use of locally available fruits and fish, while the large number of brown glazed stoneware vessels shows a continued reliance on imported preserved foods. On the IJ56 block, more pork and fish bones were recovered than beef or bird bones. This pattern is also distinctive of Chinese foodways. In South China, pork is the most important animal food, while fish forms the second main source of animal protein (Anderson and Anderson 1977:334-336).

The presence of dried Chinese yellow croaker fish heads in Layer 111, the earliest deposit on the site, may reflect the labor shortage and unavailability of goods during the early gold rush period. Initially, when most of the population was engaged in mining, men rarely engaged in raising or catching local food resources, due to the greater profit believed to be forthcoming from mining. Most food was imported and sold at high prices. The yellow croaker does not show up in the features dating to the middle 1850s, by which time Chinese fishermen supplied the market with local species. The contents of Feature 3 indicate that Chinese truck gardens had also been established by this time.

Although good data on the relative value of pork cuts have not been recovered for this early period, the predominance of ham within features 5 and 11 may indicate the purchasing power of the merchant community. The French wine and champagne, and the British porter/ale bottles from Feature 5 are clear indicators of high status. British porter and ale were consistently higher priced than locally brewed lagers; a bottle of porter or ale was priced from 75 cents to $1.00, while a glass of lager cost 5 cents. Champagne was consistently the highest priced alcoholic beverage, as well as the single highest priced item, on contemporary menus (Askins 1978b), selling for from $2.50 to $5.00 a bottle.

Transitional Stage

Several events indicative of the transitional stage of urban growth were observed within the project area, including a shift from ephemeral wood and canvas structures to permanent brick buildings, and from unlined privies to wood-lined ones. These changes coincided with the firm establishment of parcel boundaries and an orderly, city-wide street-numbering system. There are some indications that prior to the later arrangement, which was mandated

by city officials, structures and property boundaries had been sited according to a different set of principles, possibly Chinese in tradition.

A potentially important area in the study of Chinese immigrant communities is examining the use of geomantic principles by this group. Geomancy, or **feng-shui**, is the practical art of positioning and designing cultural features in harmony with the forces of nature. In this way, the beneficial effects of good **feng-shui** are garnered and potential ill effects of a bad site are avoided. In practice, decisions ranging from building orientation and position in relation to water and mountains, to the arrangements of doors and windows and even certain moveable furnishings within the building, could be determined with reference to geomantic principles. Ethnographers have recorded that this practice was extremely widespread in pre-revolutionary China (Yang 1945, Feuchtwang 1974), entire cities being laid out on this principle. Although specifics vary according to the geomantic properties of a given site, certain rules are widely recognized: Town layout--and consequently building orientation--should be strictly north-south (Feuchtwang 1974:3). Since the geomancer's compass accounted for magnetic declination (Feuchtwang 1974:30), the preferred alignment would be to true north. A good building site is near to calm water, which is preferably to the south. The front of a good site faces the south; the rear is to the north (Feuchtwang 1974:2, 134).

Merchants, it seems, were and are particularly concerned with manipulating natural forces by means of geomancy in order to ensure good business. Writing of a contemporary Overseas Chinese merchant community, Omohundru states that geomantic principles "...are understood by most merchants and practiced by many. Geomancy influences...the selection of storefronts and the placement of doors, cash safes, desks and stoves in the store" (1981:84). The importance of good **feng-shui** in the layout of commercial establishments is also emphasized by ethnographers Graham (1961) and Yang (1945).

The use of geomantic principles by Chinese in the Western United States has been recognized by at least one researcher, Jeff Lalande, in Oregon (Sprague 1981:43). The implications of this approach may be significant indeed. With knowledge of geomantic principles and the importance attached to auspicious siting, it should be possible to analyze the layout of Chinese immigrant communities to determine the extent to which these principles were being used. Thus, we may be able to critically examine the assumption that the location of towns' Chinese sections were determined solely because they were 'low rent' districts. The situation of Sacramento's Chinatown in relation to Sutter Slough is certainly worthy of study from the geomantic perspective. While most analyses on the level of general community layout would be best approached through data contained in historical records, when these are available, details of isolated or undocumented manifestations of geomancy may be available only through archaeological research.

With reference to the present study, there is evidence to suggest that geomantic principles were used to orient a structure on the IJ56 block in the period before property lines were firmly established. Features 1 and 6 were shallow trenches which, if continued, would have run parallel some 20 feet (6 m) apart; both were oriented toward true north, in contrast to the magnetic alignment of the city's streets and, consequently, property lines. On the assumption that these features were dug as drains to channel water from the block, it is likely that they paralleled existing structures on the lot. Thus, it is speculated that during the early 1850s--a period during which Chinese occupation of the half-block is well documented--buildings were oriented true north-south, a geomantically favored alignment. While the evidence for geomancy in this case is somewhat equivocal, it does serve as an example of how the use of these principles may be manifested archaeologically. Of course, should similar phenomena be noted in other areas which have associations with Sacramento's early Chinese residents, the notion that geomancy was used as an alternative method of city planning during the transitional stage would gain credence.

Intersite Comparison

One of the most striking characteristics of the assemblage is the strong predominance of Chinese artifacts. Discounting faunal remains, the only western goods which appear in any quantity are liquor bottles and clay tobacco pipes. The Chinese merchants evidently preferred western liquor to Chinese rice "wine." Later Overseas Chinese sites in Ventura and Lovelock also show a greater consumption of western alcoholic beverages. By this time, however, cost and availability may have had more influence upon consumer choices, as the American liquor business was now more developed and the importation of alcoholic beverages was on the decline.

The vast majority--95 percent--of the items in these functional classes and IJ56 features listed on table 14 were Chinese in origin. Except for Feature 3, Chinese tableware dominates the collection. Preserved Chinese food and spices were also clearly preferred over western bottled food. Chinese food containers predominate on later Overseas Chinese archaeological sites as well (table 15), although the exclusion of tin cans from the sample probably distorts the figures toward a higher proportion of Chinese products. Both the Lovelock and Ventura collections have a larger proportion of western ceramics than the IJ56 features.

Table 14

FUNCTIONAL CLASS AND ORIGIN BY FEATURE*

Functional Class	Feature				
	1 Chinese/Western Sherds (%)	3 Chinese/Western Sherds (%)	4 Chinese/Western Sherds (%)	5 Chinese/Western Sherds (%)	Total Chinese/Western Sherds (%)
Tableware	898 (98)/21 (2)	1 (11)/8 (89)	31 (69)/14 (31)	108 (79)/28 (21)	1038 (94)/71 (6)
Food Containers	77 (99)/1 (1)	13 (76)/4 (24)	134 (99)/1 (1)	853 (99)/3 (1)	1077 (99)/8 (1)
Beverage bottles	0 /7 (100)	0 /1 (100)	8 (80)/2 (20)	11 (29)/27 (71)	19 (34)/37 (66)
Smoking paraphernalia	1 (33)/2 (67)	0 /4 (100)	1 (100)/0	1 (100)/0	3 (33)/6 (67)
TOTAL	976 (97)/31 (3)	14 (45)/17 (55)	174 (91)/17 (9)	973 (94)/58 (6)	2137 (95)/122 (5)

*Includes all items of ceramic, clay, glass, and metal within the functional classes listed.

Table 15

VENTURA AND LOVELOCK: FUNCTIONAL CLASS AND ORIGIN BY FEATURE

Functional Class	Ventura Trash Pit 1 1890s Chinese/Western Vessels (%)	Ventura Well 1 ca. 1907 Chinese/Western Vessels (%)	Lovelock Well 1 1910-late 1930s Chinese/Western Sherds (%)	Lovelock Well 2 1920-late 1930s Chinese/Western Sherds (%)
Tableware	27 (69)/12 (31)	98 (72)/38 (28)	57 (19)/239 (81)	69 (49)/72 (51)
Food containers[1]	33 (100)/0	36 (86)/6 (14)	245 (92)/22 (8)	294 (95)/17 (5)
Beverage bottles	10 (45)/12 (55)	20 (3)/566 (97)	3 (3)/83 (97)	21[2] (13)/138 (87)
Smoking pharaphernalia	3 (100)/0	13 (100)/0	20 (48)/22 (52)	2 (50)/2 (50)
TOTAL	73 (75)/24 (25)	167 (21)/610 (79)	325 (47)/366 (53)	386 (63)/229 (37)

[1] excluding tin cans

[2] including 1 Russian beer bottle and 7 Japanese beer bottles

Chinese Merchants

A recent study of San Francisco's Chinatown described the resident Chinese merchants in a manner which could have been applied to their forerunners in Sacramento over a century ago:

> The merchant-businessmen are the leaders of Chinatown. They sit on the board of directors of every association in Chinatown's establishment. They are active in the Chinese Six Companies, the family and district associations, the Chinese Chamber of Commerces, and form a virtual interlocking directorate of leadership within the community (Nee and Nee 1972:405).

These contemporary merchants are the most financially successful members of the Chinese community; they are well-travelled, busy in civic endeavors, and entertain Caucasian American friends. The earliest leaders of San Francisco's Chinatown played the same successful role. They joined other San Franciscans in promoting civic improvements, entertained American politicians and businessmen, and travelled to Europe (Barth 1964:98-99). The important early Sacramento Chinese merchants also functioned as boundary people and maintained constant communication with both the press and politicians in regard to events within their community. They brought Chinese malefactors to justice and represented the Chinese in the legal system. The Sacramento Chinese merchants organized religious festivals, funerals, feasts, and other community activities. These served to maintain traditional ethnic values within the community and to reinforce cultural distinctions between the Chinese community and Sacramento at large.

The Chinese merchants carefully manipulated ethnic distinctions to promote their position within their community and the position of both themselves and the Chinese community within the larger society. The following description of a banquet given in 1861 by Sacramento Chinese merchants, including one from the project area, shows that these men were not politically naive. In their role as boundary people, they exhibited an intentionally exotic, yet subtly altered and thereby unthreatening, face to boundary types from White society:

> Three o'clock was the hour appointed and being punctual we were met at the door by our hosts, Ah Teen and Ah Tai, and conducted into a room, hung around on one side with Chinese business cards--each of which consisted of black cyphers on a strip of turkey red paper edged with gold, about 6 inches wide by 40 inches long--while on the other hung a painting of a Chinese panther, whose skin none but the Emperor dares sit upon, and likenesses of four of the eight Chinese Wandering Jews of the Celestial spheres, who were transferred from earth many thousands of years ago, and who are said to have been terrible fellows in their time, and are supposed to be

not much better yet. In an outer room, in fact in the public store, was a fine painting of a "Josh" or Chinese God, set into a niche made of wood, and a lamp burning at its feet, so that it might observe what was going on around. The table was set with cloth, knives, forks, plates, spoons and napkins, very much like ordinary tables; with celery in glasses and salt in cellars, but there was no bread or butter or potatoes or chop sticks to be seen.... (**Sacramento Daily Bee**: 7 December 1861).

This dinner reportedly consisted of 26 courses, each served with its own plate, spoon, etc. Champagne was brought out several times--the brands all different and all first class. The editor of the **Sacramento Bee**, one of the guests, described the courses as follows:

1. Lichequom, nuts of a glutenous vegetable saccharine substance
2. Laqunquow, nuts much like the first, only not so palatable
3. Numichow, rice whisky
4. Tingmuchow, rice rum
5. Moiquelow, rice rum
6. Yunna, birds nests, with eggs hard boiled, the royal dish of China
7. Quichl, fishes gills, fishes tails, fishes bones and a little Chinese parsley jellied and intermixed
8. Champagne, Mumm
9. Tuyungki, Chinese fricassie with Chinese sauce
10. Ap, fricassee duck
11. Champagne, Sillery
12. Bougee, date fish with mushrooms
13. Champagne, Mousseux
14. Thinmi, a kind of sea-weed, hashed, sauced, and cooked
15. Goieow, eyes, gills and flesh of fishes
16. Champagne, Heidseick
17. Lunni, rice-cakes or ground rice cooked with butter
18. Aploo, fried duck, a la Chinese
19. Chingoo, fried pork, or "pork for the million"
20. Yunminhep, sweetmeats
21. Champagne, Cliquot
22. Ling-kou-kong, fish soup
23. Tea--the real Chinese article
24. Pinlong, sweet meats, something like dates without the taste or stone
25. Champagne
26. Cigars

This interesting article was quoted at length for a number of reasons. It poses real problems for the interpretation of mixed artifact assemblages. Does the use of western ceramics and alcoholic beverages in this case suggest acculturation or the reinforcement of traditional ethnic values? Within the Chinese cultural tradition,

food is viewed and used as a symbol of various subgroups within the population and of various social situations. For example, distinct styles of cooking are representative of different regional, ethnic, economic, and occupational groups within China (Chang 1977:15). Food is also used to express subtle nuances in the relationship between partaking parties: "The role of food as social language is determined by an interplay of the status of the interacting parties and the occasion of the act" (Chang 1977:16). For example, when mid-nineteenth-century Chinese merchants of Kiangsu and Chekiang entertained guests, they followed a clear ritual of a sixteen-, ten-, or an eight-dish meal, depending upon the status of the occasion (Spence 1977:277). Birds' nests, an element of most gourmet meals in China, were a favored dish in such status displays (Spence 1977:273). The Sacramento banquet was evidently an important occasion and part of a long-standing Chinese tradition. The dishes served may also indicate the regional affiliation of the merchants. Faunal remains from the site may also be viewed as indicators of regional food traditions and of symbolic or ritual displays.

Historical and archaeological data indicate that during the 1850s the Chinese community was fairly self-sufficient and isolated economically from the wider community. Goods imported from China and products sold locally by Chinese gardeners and fishermen supplied a large portion of the needs of the Chinese miner and the service community upon which he was dependent. Despite this seeming self-sufficiency, the Chinese community was ultimately dependent on the continued acceptance of the host community. The wide range of social activities offered in Sacramento's Chinese section in the 1850s not only reinforced ethnic identification on the part of the Chinese, it attracted the notice and often the praise of the wider community, thus promoting good will. For example, a "Chinese Regatta," in boats built and manned by Chinese, attracted a considerable crowd as "boatmen propelled their skiffs with extraordinary rapidity and acquitted themselves very creditably" (**Sacramento Daily Bee:** 28, 29 March 1857). In the spring of 1857, the editor of the **Daily Bee** highly recommended the Chinese Theater, where "men about town, Chinamen, judges, bummers, legislators and niggers huddle together promiscuously in increasing numbers nightly, to witness the antics of these singular people" (10 April 1857). The editor likened the misfortune of missing their performance to not having witnessed the proverbial "elephant." Opinions, perhaps based on politics, differed as to the aesthetics of their show: The editor of the rival **Sacramento Union** urged those who had never witnessed the Chinese Theater to "give them a call," while maintaining that "former patrons will require no urging to induce them to stay away" (12 August 1858).

Likewise, there was always an interest in the wider community for things Chinese as curiosities. In 1860, Sacramento's Chinese Bazaar offered "tokens of love and friendship...rare and beautiful specimens of the handicrafts of the Flowery Kingdom." Its proprietor was said to be very polite and spoke good English, thus ladies could browse here without the "annoyances that would ordinarily attend such an amusement" (**Sacramento Daily Bee:** 10

December 1860). Thus, items of Chinese origin made their way into numerous households.

In conclusion, this report emphasizes the complexities in interpreting relationships between material remains and cultural or social processes. Conclusive results will not be forthcoming from individual sites. Numerous contols, extracted from the documentary record, and comparative collections recovered from well-controlled archaeological contexts are required before it will be possible to frame generalizations about cultural or social change based on the interpretations of these sites. The results of this investigation represent a good beginning for such a long-range study in the form of an assemblage of known chronological and sociocultural associations. This report has also suggested a number of problems and prospects such a study might entail.

Recommendations for Future Research in Sacramento

In keeping with the idea of long-range goals and based in part upon our past mistakes, the authors would like to make the following suggestions for future projects:

(1) The project should be scheduled to allow sufficient lead time between the acceptance of the contractor's proposal and the start of fieldwork. At least two months are recommended. It should also be remembered that Sacramento's climate determines that some times of the year are more suitable than others for the efficient performance of fieldwork; the heat of the summer and the winter rains should be avoided whenever possible.

(2) Small faunal and floral remains and the parasitological analysis of soil samples recovered from the site produced some of the most valuable data in the present study. The retrieval of small items, while time-consuming, produced worthwhile results. The writers recommend that large soil samples be taken from every feature for wet-screening with 1/16-inch (1.5-mm) mesh and for other special studies as indicated.

(3) The collection of oral history is a realm which has heretofore been neglected in our work in Sacramento. It is a potentially very informative source, which should be explored in future projects.

(4) From the outset of full-scale archaeological excavation, the inevitable public interest should be encouraged and directed. This can be achieved through on-site and post-excavation interpretive displays, public talks, and the careful

exploitation of the news media. In addition to a professional report, it is recommended that contractors should be required to produce a small report directed toward the interested lay person. A small quantity of these could be distributed to libraries and schools, and sold through local bookstores. The writers believe that, in the long term, the future of public-financed archaeology will be decided on the basis of the public's interest. It is essential to show the lay public that they are getting something worthwhile for their money.

REFERENCES CITED

Abruzzi, William S.
1982 Ecological Theory and Ethnic Differentiation among Human Populations. **Current Anthropology** 23(1):13-37.

Adams, William H.
1980 Review of Teague and Shenk: Excavations at Harmony Borax Works: Historical Archaeology at Death Valley National Monument. **Historical Archaeology** 14:120.

Adams, William H., Linda P. Gaw, and Frank C. Leonhardy
1975 Archaeological Excavations at Silcoot, Washington: The Data Inventory. **Reports of Investigations**, No. 53. Laboratory of Anthropology, Washington State University.

Anderson, Dean L.
1982 A Revised Temporal Context for Thirteen Star Patriotic Style White Clay Pipes. Paper presented at the 15th Annual Meeting of the Society for Historical Archaeology, Philadelphia.

Anderson, Eugene N.
1969 Sacred Fish. **Man** 4(3):443-449.

1972 The Ethnoichthyology of the Hong Kong Boat People. **Asian Folklore and Social Life Monographs** 19:39-146.

Anderson, E.N., and Marja L. Anderson
1977 Modern China: South. Pp. 317-383 in **Food in Chinese Culture.** K.C. Chang (ed.). New Haven and London: Yale University Press.

Armstrong, Jane Russell
1980 Glassware. In **Historical Archaeology at the Golden Eagle Site.** M. Praetzellis et al. (eds.). Anthropological Studies Center, Sonoma State University, Rohnert Park.

Askin, Dorene
1978a "Awful Conflagration!" Fires in Sacramento 1849-1900. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

1978b Representative Menus from Nineteenth Century California Restaurants. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

Askin, Dorene, continued
1978c Meat Slaughtering in Sacramento 1849-1885. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

Ayers, James (ed.)
1982 Current Research: Southwest. **Society for Historical Archaeology Newsletter** 15(1):40.

Bailey, L.H.
1971 **Manual of Cultivated Plants.** New York: Macmillan Company.

Ball, J. Dyer
1906 Food. Pp. 287-292 in **Things Chinese.** 4th Edition. New York: Chas. Scribner's Sons.

Barber and Baker (publishers)
1855 **Sacramento Illustrated.** Sacramento: Barber and Baker.

Barth, Gunther
1964 **Bitter Strength: A History of the Chinese in the United States 1850-1870.** Cambridge: Harvard University Press.

Beals, Herbert K.
1980 Chinese Coins in Six Northwestern Aboriginal Sites. **Historical Archaeology** 14:58-72.

Bente', Vance G.
1976 Good Luck, Long Life. Pp. 457-496 in **The Changing Faces of Main Street.** Roberta Greenwood (ed.). Redevelopment Agency, City of San Buenaventura.

Binford, Lewis
1962 Archaeology as Anthropology. **American Antiquity** 28: 217-225.

1965 Archaeological Systemics and the Study of Culture Process. **American Antiquity** 31:203-210.

Bonacich, Edna
1973 A Theory of Middlemen Minorities. **American Sociological Review** 38(5):583-595.

Bradford, Ernle
1959 **English Victorian Jewelry.** New York: Robert M. McBride Company

Brienes, Marvin
1979 Sacramento Defies the Rivers: 1850-1878. **California History** 58(1):3-19.

Brienes, West & Schulz
1981 Research Design for Archaeological Test Excavation on the IJ56 and IJ67 Block, Sacramento. Ms. on file, Sacramento Museum and History Division, Sacramento.

Briggs, Alton King
1974 The Archeology of 1882 Labor Camps on the Southern Pacific Railroad, Val Verde County, Texas. Unpublished Master's Thesis, University of Texas at Austin.

Britton and Rey (publishers)
1870 Birds Eye View of the City of Sacramento. Drawn by Augustus Koch.

Brooks, William
1882 A Fragment of China. **The Californian** 6(31):13-15.

Brown, Dorothy Foster
1968 **Button Parade.** Des Moines: Wallace-Homestead.

Buck, J.L.
1937 Nutrition. Pg. 413 in **Land Utilization in China.** Chicago: University of Chicago Press.

Bulling, A.
1952 **The Meaning of China's Most Ancient Art.** Leiden, The Netherlands: E.J. Brill.

Burrows, Robert B.
1965 **Microscopic Diagnosis of the Parasites of Man.** New Haven: Yale University Press.

Campbell, Helen
1908 Side Lights on Chinese Cookery. **Boston Cooking School Magazine** 13(4):175-176.

Carpenter, Neysa
1980 Buttons. In **Historical Archaeology at the Golden Eagle Site.** M. Praetzellis et al. (eds.). Anthropological Studies Center, Sonoma State University, Rohnert Park.

Chace, Paul G.
1976 Overseas Chinese Ceramics. Pp. 509-530 in **The Changing Faces of Main Street.** Roberta Greenwood (ed.). Redevelopment Agency, City of San Buenaventura.

1979 Appendix to the Overseas Chinese Ceramics (1976).

Chamber's Encyclopedia
1890 Tobacco Pipes. Vol. VII. New York: Collier Publishers.

Chan, Sucheng
1981 Occupational Structure and Social Stratification in Chinese Immigrant Communities in Nineteenth-Century Rural California. Paper presented at the 96th Annual Meeting of the American Historical Association, Los Angeles.

Chandler, A.C., and C.P. Read
1961 **Introduction to Parasitology.** 10th Edition. New York: John Wiley and Sons.

Chang, K.C. (ed.)
1977 **Food in Chinese Culture.** New Haven and London: Yale University Press.

Chavannes, C.
1922 **De l'expression des voeux dans l'art popularie chinois.** Paris: Editions Bossard. Translated as **The Five Happinesses** by Elaine Spaulding Atwood. New York: Weatherhill, 1973.

Chu, C.Y.
1960 The Yellow Croaker Fishery of Hong Kong and Preliminary Notes on the Biology of **Pseudosciaena crocea** (Richardson). **Hong Kong University of Fisheries Jounral** 3:111-164.

Clerico, Sheryl
1979 The Lovelock Buttons. Pp. 436-495 in **Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada.** E. Hattori et al. (eds). Nevada State Museum Archaeological Services Reports, Carson City.

Cohen, Abner
1969 **Customs and Politics in Urban Africa: A Study of Hausa Migrants in Yuruba Towns.** Berkeley: University of California Press

Cohen, Ronald
1978 Ethnicity: Problems and Focus in Anthropology. **Annual Review of Anthropology** 7:379-404.

Collins, J.W.
1892 Report on the Fisheries of the Pacific Coast of the United States. **United States Commission of Fish and Fisheries, Report of the Commissioner,** 1888:3-384.

Colquhoun, Archibald R.
1883 **Across Chryse.** London: Sampson Low, Marston, Searle, and Rivington.

Dansie, A.
1979 Beef, Bobcat, and Other Beast Bones: Faunal Remains from Lovelock's "Chinatown". Pp. 349-410 in **Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada.** E. Hattori et al. (eds.). Nevada State Museum Archaeological Services Reports, Carson City.

Davis, John Francis
1840 **The Chinese: A General Description of China and Its Inhabitants.** London: Charles Knight & Company

Dibble, A.B., R.H. Buckingham, and J.D. Redding
1884 Report. **California Commissioners of Fisheries Report,** 1883-1884:3-17.

Eakins, Horace S.
1904 **Military Meat and Dairy Hygiene.** Baltimore: Williams and Wilkins Company

Easterby, Anthony Y.
1933 Memoirs of Captain Anthony Y. Easterby. **Society of California Pioneers Quarterly** 10:57-84.

Elling, C. Michael
1980 Clay Tobacco Pipes. In **Historical Archaeology at the Golden Eagle Site.** M. Praetzellis et al. (eds). Anthropological Studies Center, Sonoma State University, Rohnert Park.

Encyclopedia Americana
1971 Pipe Tobacco. Vol. 22. New York: Americana Corporation.

Enos, John S.
1887 Ruling Retail Price List for Twelve Months Ending October 31, 1886, in the City and County of San Francisco. In the **Second Biennial Report of the Bureau of Labor Statistics.** Sacramento: State of California.

Etter, Patricia A.
1980 The West Coast Chinese and Opium Smoking. Pp. 97-101 in **Archaeological Perspectives on Ethnicity in America.** Robert L. Schuyler (ed.). Farmingdale, New York: Baywood Publishing.

Farris, Glenn J.
1979 "Cash" as Currency: Coins and Tokens from Yreka Chinatown. **Historical Archaeology** 13:48-53.

1980 Coins and Tokens of Old Sacramento. **California Archaeological Reports** 19:23-45.

Faust, E.C., P.C. Beaver, and R.C. Jung
1968 **Animal Agents and Vectors of Human Disease.** 3rd Edition. Philadelphia: Lea and Febiger.

Ferraro, Pat, and Bob Ferraro
1965 Min Gei. **The Antiques Journal** 20: 21-29.

Fessler, Stella Lau
1981 **Chinese Seafood Cooking.** New York: New American Library.

Feuchtwang, Stephan D.
1974 **An Anthropological Analysis of Chinese Geomancy.** Vientiane, Laos: Vithagna.

Freeman, Larry
1954 **Ironstone China.** New York: Century House.

Garaventa, Donna
1980 Chinese Ceramics from a San Francisco Dump Site. Paper presented at the 13th Annual Meeting of the Society for Historical Archaeology, Albuquerque.

1981 Ceramics from Chinatown's Tables: An Historical Archaeological Approach to Ethnicity. **In** Behind the Sea Wall: Historical Archaeology along San Francisco's Waterfront. A. Pastron et al. (eds.). Ms. on file, San Francisco Clean Water Project.

Godden, Geoffrey A.
1964 **Handbook of British Pottery and Porcelain Marks.** New York: Bonanza Books.

Graham, David C.
1961 **Folk Religion in Southwest China.** Washington D.C.: Smithsonian Institution.

Greenwood, Roberta S. (ed.)
1975 **3500 Years on One City Block.** Redevelopment Agency, City of San Buenaventura.

1976 **The Changing Faces of Main Street.** Redevleopment Agency, City of San Buenaventura.

Greenwood, Roberta S.
1978 The Overseas Chinese at Home. **Archaeology** 31(5):42-49.

1980 The Chinese on Main Street. Pp. 113-123 in **Archaeological Perspectives on Ethnicity in America.** Robert L. Schuyler (ed.). Farmingdale, New York: Baywood Publishing.

Gregory, William K.
1933 Fish Skulls: A Study of the Evolution of Natural Mechanisms. **American Philosophical Society Transactions** 23(2):75-481.

Gust, Sherri M.
in press Problems and Prospects in Nineteenth Century California Zooarchaeology. **Contributions to Anthropological Studies** 3, Center for Anthropological Studies, Albuquerque.

Hall, H.J.
1977 Prehistoric Human Parasites: The Paleoscatological Evidence. Paper presented to the 48th Australia and New Zealand Association for the Advancement of Science Congress, Melbourne, Australia.

1978 Antelope House: A Paleoscatological Perspective. Unpublished Ph.D. Thesis, The University of Chicago.

1979 A Liver Fluke from Old Sacramento Privy Sediment. Ms. on file, Cultural Resource Management Unit, Department of Parks and Recreation, Sacramento.

Hannan, Michael
1979 The Dynamics of Ethnic Boundaries in Modern States. **National Development and the World System.** In Meyer and Hannan (eds.). Chicago: University of Chicago Press.

Hardesty, Donald
1980 Historic Sites Archaeology on the Western American Frontier: Theoretical Perspective and Research Problems. Paper presented at the 13th Annual Meeting of the Society for Historical Archaeology, Albuquerque.

Harinasuta, Chamlong
1969 Opisthorchiasis in Thailand: A Review. Pp. 253-265 in **Proceedings of the Fourth Southeast Asian Seminar on Parasitology and Tropical Medicine, Schistosomiasis and other Snail-Transmitted Helminthiasis.** C. Harinasuta (ed.). SEAMEC, Bangkok.

Harrington, J.C.
1978 Dating Stem Fragments of Seventeenth and Eighteenth Century Clay Tobacco Pipes. Pp. 63-65 in **Historical Archaeology: A Guide to Substantive and Theoretical Contributions.** Robert L. Schuyler (ed.). Farmingdale, New York: Baywood Publishing.

Harris, Edward C.
1979 **Principles of Archaeological Stratification.** New York: Academic Press.

Hattori, Eugene M.
1979 The Lovelock Coins. Pp. 414-435 in **Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada.** E. Hattori et al. (eds.). Nevada State Museum Archaeological Services Reports, Carson City.

Hattori, Eugene M., Mary K. Rusco, and Donald R. Tuohy (eds.)
1979 **Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada.** Nevada State Museum Archaeological Services Reports, Carson City.

Headland, Isaac T.
1914 **Home Life in China.** London: Methuen and Company.

Helvey, Pamela
n.d. Archaeological Investigations at Yreka Chinatown. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

Hittell, J.S.
1863 **Resources of California.** San Francisco: A. Roman and Company

1882 **The Commerce and Industries of the Pacific Coast.** San Francisco: A.L. Bancroft & Company

Hooper, David
1929 On Chinese Medicine: Drugs of Chinese Pharmacies in Malaya. **Gardens' Bulletin** 6(1-5):1-163.

Houart, Victor
1977 **Buttons: A Collector's Guide.** New York: Charles Scribner's Sons.

Humphrey, Richard V.
1969 Clay Pipes from Old Sacramento. **Historical Archaeology** 3:12-13.

Hutchison, Claude
1946 **California Agriculture.** Berkeley: University of California Press.

Jaffa, M.E.
1901 Nutrition Investigations among Fruitarians and Chinese. **United States Department of Agriculture, Office of Experiment Stations, Bulletin** 107:1-43.

Jewitt, Llewellyn
1883 **The Ceramic Art of Great Britain.** London: J.S. Virtue & Company

Jones, Stacy V.
1971 **The Patent Office.** New York: Praeger.

Jones, Timothy W.
1980 Archaeological Test Excavations in the Boise Redevelopment Project Area, Boise, Idaho. **University of Idaho Anthropological Research Manuscript Series** No. 59. Laboratory of Anthropology, University of Idaho, Moscow.

Jones, Timothy W., Mary Anne Davis, and George Ling
1979 Idaho City: An Overview and Report on Excavation. **University of Idaho Anthropological Research Manuscript Series** No. 50. Laboratory of Anthropology, University of Idaho, Moscow.

Jordan, David Starr
1884a The Sun-Fishes and Their Allies. Pp. 404-407 in **Fisheries and Fishery Industries of the United States.** Sect. 2, pt. 6. G.B. Goode (ed.) Washington: U.S. Government Printing Office.

1884b The Carp Family--Cyprinidae. Pp. 616-618 in **Fisheries and Fishery Industries of the United States.** Sect. 2, pt. 6. G.B. Goode (ed.). Washington: U.S. Government Printing Office.

Kan, Johnny
1980 **Eight Immortal Flavors.** San Francisco: San Francisco Examiner.

Kleeb, Gerald
1976 Analysis of the Coins from a Chinese Trash Pit in Ventura. Pp. 497-508 in **The Changing Faces of Main Street.** Roberta Greenwood (ed.). Redevelopment Agency, City of San Buenaventura.

Kliks, M., and E.M. Shook
1977 Eggs of **Trichuris sp.** and a Taenoid Tapeworm from a 16th Century Latrine in Guatemala and Notes on the Antiquity of Intestinal Helminthoses in the New World. Unpublished Ms.

Koo, Linda C.
1973 Traditional Chinese Diet and its Relationship to Health. **Kroeber Anthropological Society Papers** 47-48: 116-117.

Korpassy, B., and F. Takacs
1943 Bedeutung der auf das Schadeldach tangential einwirkenden Hiebe für die Bestimmung des verletzenden Instrumentes. **Archiv für Kriminologie** 112:4-9.

Lai, H.M.
1978 Island of Immortals: Chinese Immigrants and the Angel Island Immigration Station. **California History** 57(1):88-103.

Laidacker, Sam
1951 **Anglo American China.** Part II. Private Printing, Bristol.

Langenwalter, P.E.
1980 The Archaeology of Nineteenth Century Chinese Subsistence at the Lower China Store, Madera County, California. Pp. 102-113 in **Archaeological Perspectives on Ethnicity in America.** Robert L. Schuyler (ed.). Farmingdale, New York: Baywood Publishing.

Lauwagie, Beverly Nagel
1979 Ethnic Boundaries in Modern States: Romano Cavo-Lil Revisited. **American Journal of Sociology** 85:310-337.

Leach, Frank A.
1917 **Recollections of a Newspaperman.** San Francisco: Samuel Levinson.

Lockington, W.N.
1879 Report upon the Food Fishes of San Francisco. **California Commissioners of Fisheries Report,** 1878-1879:17-58.

1881 Report upon the Edible Fishes of the Pacific Coast, U.S.A. **California Commissioners of Fisheries Report,** 1880:16-66.

Lofland, Lyn H.
1973 **A World of Strangers: Order and Action in Urban Public Space.** New York: Basic Books.

Lunn, Kevin
1981 Identification and Dating of Lea and Perrins' Worcestershire Sauce Bottles on North American Historic Sites. Paper presented at the 11th Annual Meeting of the Conference on Historic Site Archaeology, Columbia, South Carolina.

Lyman, R. Lee
1979 Available Meat from Faunal Remains: A Consideration of Techniques. **American Antiquity** 44(3): 536-546.

May, L.S.
1930 The Identification of Knives, Tools and Instruments. **American Journal of Police Science** 1(3):246 ff.

McGowan, Joseph A., Julie Dominguez, Chester Grant, Edith Pitti, Susan Searcy, and Cynthia St. Louis
1979 Report on the Historical Development of City of Sacramento Block Bounded By: I and J, 5th and 6th Streets: 1850-1920. Ms. on file, Sacramento Museum and History Division, Sacramento.

Mezger, O., F. Hasslacher, and P. Frankle
1930 Identification of Marks made on Trees. **American Journal of Police Science** 1(4): 358 ff.

National Meat and Livestock Board
1976 **Lessons on Meat.** Chicago: National Meat and Livestock Board.

Nee, Victor G., and Brett de Bary Nee
1972 **Longtime Californ': A Documentary Study of an American Chinatown.** New York: Pantheon Books.

Olsen, John W.
1978 A Study of Chinese Ceramics Excavated in Tucson. **The Kiva** 44(1):1-50.

Omohundru, J.T.
1978 Trading Patterns of Philippine Chinese: Strategies of Sojourning Middlemen. Pp. 113-136 in Economic Exchange and Social Interaction in SE Asia: Perspectives from Prehistory, History, and Ethnography. Karl Hunter (ed.). **Michigan Papers on South and Southeast Asia** 13.

1981 **Chinese Merchant Families in Iloilo.** Athens, Ohio: The Ohio University Press.

Peabody, A.P.
1871 The Chinese in San Francisco. **American Naturalist** 4(11):660-664.

Petry, William M.
1981 The Double Happiness Bowl. Paper prepared for Anthropology 325, Sonoma State University, Rohnert Park.

Pizzi, T.
1957 Estudio Parasitologico. Pp. 22-23 in **La Momia del Cerro el Plomo**, Grete Mostny (ed.). Santiago: Museo Nacional de Historia Natural, Boletin 27(1).

Pizzi, T., and H. Schenone
1954 Hallazgo de Huevos de **Trichuris trichiura** en Cantenido Intestinal de un Cuerpo Arquelogico Incaico. **Boletin Chileno de Parasitologia** 9(3):73-75.

Praetzellis, Adrian, and Mary Praetzellis
1979a The Lovelock Ceramics. Pp. 140-199 In **Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada.** E. Hattori et al. (eds.). Nevada State Museum Archaeological Services Reports, Carson City.

1979b Ceramics from Old Sacramento. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

Praetzellis, Mary
1980 Ceramics. In **Historical Archaeology at the Golden Eagle Site.** M. Praetzellis et al. (eds.). Anthropological Studies Center, Sonoma State University, Rohnert Park.

Praetzellis, Mary, Adrian Praetzellis, and Marley R. Brown III
1980 **Historical Archaeology at the Golden Eagle Site.** Anthropological Studies Center, Sonoma State University, Rohnert Park.

Praetzellis, Mary, and Adrian Praetzellis with Marley R. Brown III and Kathleen Bragdon
1981 Test Excavation and Research Strategy for IJ56 Block: Early Chinese Merchant Community in Sacramento, California. Ms. on file, Anthropological Studies Center, Sonoma State University, Rohnert Park.

Press, Irwin
1969 Ambiguity and Innovation: Implications for the Genesis of the Cultural Broker. **American Anthropologist** 71(2):205-217.

Ritchie, Neville
1980 The Excavation of a Nineteenth Century Chinese Mining Settlement at Cromwell, Cental Otago. **New Zealand Archaeological Association's Newsletter** 23(2):69-85.

Robbins, W.W., M. Bellue, and W.S. Ball
1970 **Weeds of California.** Sacramento: California Department of Food and Agriculture.

Romans, John, and P.T. Ziegler
1974 **The Meat We Eat.** Danville, Illinois: The Interstate Printers and Publishers.

Rowntree, Lester B., and Margaret W. Conkey
1980 Symbolism and the Cultural Landscape. **Annals of the Association of American Geographers** 70(4):454-475.

Rusco, Mary K.
1979 Summary and Discussion: Ninth and Amherst, Lovelock, Nevada: History and Archaeology. Pp. 635-653 in **Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada.** E. Hattori et al. (eds.). Nevada State Museum Archaeological Services Reports, Carson City.

Sandmeyer, Elmer Clarence
1973 **The Anti-Chinese Movement in California.** Chicago: University of Illinois Press.

Schulz, Peter D.
n.d. Nineteenth Century Fish Remains from Old Sacramento. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

1979a Research Design for Historical Archaeology on the J/K/6/7 Block, Sacramento. Ms. on file, Sacramento Museum and History Division, Sacramento.

1979b Fish Remains from a Historic Central California Indian Village. **California Fish and Game** 65(4):273-276.

1980 Fish Remains. In **Historical Archaeology at the Golden Eagle Site.** M. Praetzellis et al. (eds.). Anthropological Studies Center, Sonoma State University, Rohnert Park.

1981 Archaeological and Historical Investigations at 19th Century Chinese Shrimp Camps in Marin County. Paper presented at the 15th Annual Meeting of the Society for California Archaeology, Bakersfield.

Schulz, Peter D., and Sherri M. Gust
in press Faunal Remains and Social Status in Nineteenth Century Sacramento. **Historical Archaeology.**

Schulz, Peter D., Richard B. Hastings, and David L. Felton
1980a A Survey of Historical Archaeology in Sacramento. **California Archaeological Reports** 19:1-23.

Schulz, Peter D., Betty J. Rivers, Mark M. Hales, Charles A. Litzinger, Elizabeth A. McKee
1980b The Bottles of Old Sacramento: A Study of Nineteenth Century Glass and Ceramic Containers. **California Archaeological Reports** No. 20.

Schulz, Peter D., and Dwight D. Simons
1973 Fish Species Diversity in a Prehistoric Central California Indian Midden. **California Fish and Game** 59(2):107-113.

Schulz, Peter D., Hugh M. Wagner, and Daryll P. Domning
1976 Vertebrate Fauna of Site CA-Sac-329, Sacramento County, California. Pp. 129-141 in **Archaeological Excavations at Sac-329, Near Walnut Grove, Sacramento County, California.** W.E. Soule (ed.). California State University Foundation, Sacramento.

Schumacher, Paul J.F. (ed.)
1977 Current Research: Pacific West. **Society for Historical Archaeology Newsletter** 10(1):54-66

1979 Current Research: Pacific West. **Society for Historical Archaeology Newsletter** 12(2):20-21.

Schuyler, Robert L.
1976 Images from America: The Contribution of Historical Archaeology to National Identity. **Southwestern Lore** 42(4):27-39.

Schuyler, Robert L. (ed.)
1980 **Archaeological Perspectives on Ethnicity.** Farmingdale, New York: Baywood Publishing.

Siegel, Bernard J.
1970 Defensive Structuring and Environmental Stress. **American Journal of Sociology** 76(1):11-38.

Simons, Dwight D.
1979 Avifaunal Remains from the 1978 Excavations in Old Sacramento, California. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

1980a Avifaunal Remains from Historic Period Archaeological Deposits in Old Sacramento, California. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

1980b Bird Remains. In **Historical Archaeology at the Golden Eagle Site.** M. Praetzellis et al. (eds.). Anthropological Studies Center, Sonoma State University, Rohnert Park.

1980c Historic Period Ethnicity Determined from Butchering Patterns. Paper presented at the 14th Annual Meeting of the Society for California Archaeology, Redding.

1981a Historic Period Bird Remains from the Woodland Opera House, Woodland, California. Ms. on file, Cultural Resource Management Unit, California Department of Parks and Recreation, Sacramento.

Simons, Dwight D., continued
1981b Ethnicity in Butchering. Lecture given to the Anthropology Club of San Jose State University and the Santa Clara Archaeological Society, San Jose.

Siu, Paul
1952 The Sojourner. **American Journal of Sociology** 58(1): 34-44.

Smith, Hugh M.
1895 Notes on a Reconnaissance of the Fisheries of the Pacific Coast of the United States in 1894. **United States Fish Commission Bulletin** 14:223-288.

Smith, Mary Hilderman
1981 An Interpretive Study of the Collection Recovered from the Storeship NIANTIC. Report prepared for the National Trust for Historic Preservation and the National Maritime Museum Association.

South, Stanley
1978 Evolution and Horizon as Revealed in Ceramic Analysis in Historical Archaeology. Pp. 68-82 in **Historical Archaeology: A Guide to Substantive and Theoretical Contributions.** Robert L. Schuyler (ed.). Farmingdale, New York: Baywood Publishing.

Spence, Jonathan
1977 Ch'ing. Pp. 259-295 in **Food in Chinese Culture.** K.C. Chang (ed.). New Haven and London: Yale University Press.

Spier, R.F.G.
1958a Food Habits of Nineteenth Century California Chinese. **California Historical Society Quarterly** 37(1):79-84, (2):129-136.

1958b Tool Acculturation among Nineteenth Century Chinese. **Ethnohistory** 5:97-117.

Sprague, Roderick (ed.)
1981a Current Research: Pacific Northwest, Boise Chinatown. **Society for Historical Archaeology Newsletter** 14(2):23-24.

1981b Current Research: Pacific Northwest. **Society for Historical Archaeology** 14(4):43.

Sussman, Lynne
1979a Spode/Copeland Transfer-Printed Patterns Found at 20 Hudson's Bay Company Sites. **Canadian Historic Sites History and Archaeology** No. 22.

Wetherbee, Jean
1980 **A Look at White Ironstone.** Des Moines: Wallace-Homestead.

Whitlow, Janice
1981 Soya Sauce, Bean Cake, and Ginger Ale. Chinese Material Culture, and an Anthropological Approach to Historic Sites Archaeology. Senior Honors Thesis, San Jose State University.

Wiegand, Thomas S.
1875 Os Sepiae. **American Journal of Pharmacy** 47(1):7-10.

Wilcox, William A.
1898 Notes on the Fisheries of the Pacific Coast in 1895. **United States Commission of Fish and Fisheries, Report of the Commissioner,** 1896:575-659.

Wilke, P.J., and H.J. Hall
1975 Analysis of Ancient Feces: A Discussion and Annotated Bibliography. **Occasional Publication,** University of California Archaeological Research Facility, Berkeley.

Williams, Petra
1981 **Flow Blue China: An Aid to Identification.** Jeffersontown, Kentucky: Fountain House East.

Wilson, Bill, and Betty Wilson
1971 **19th Century Medicine in Glass.** Amador City, California: 19th Century Hobby and Publishing Company.

Wilson, Rex L.
1981 **Bottles of the Western Frontier.** Tucson: University of Arizona Press.

Yang, Martin C.
1945 **A Chinese Village.** New York: Columbia University Press.

Zumwalt,Betty
1980 **Ketchup, Pickles, Sauces: 19th Century Food in Glass.** Fulton, California: Mark West Publishers.

Sussman, Lynne, continued
1979b The Ceramics of Lower Fort Garry: Operations 1 to 31. **Canadian Historic Sites History and Archaeology** No. 24.

Teague, George A., and Lynette O. Schenk
1977 Excavations at Harmony Borax Works: Historical Archaeology at Death Valley National Monument. **Western Archaeological Center Publications in Anthropology** No. 6.

Theodoratus Cultural Research
1980 Historic Resources Overview for the San Antonio Plaza Redevelopment Area. Prepared for the Redevelopment Agency, City of San Jose.

Ting, Han-Po
1949 Notes on a Sturgeon from the Min River, China. **Copeia** 1949(1):65-68.

Tingle, Lilian
1907 Food Notes in Shantung, North China. **Boston Cooking School Magazine** 12(4):155-159.

Uphos, J.C.
1968 **Dictionary of Economic Plants.** New York: Stechert-Haftner.

U.S. Department of Agriculture
1963 **Identification of Crop and Weed Seeds.** Handbook 219. Washington, D.C.:USDA.

1974 **Seeds of Woody Plants in the United States.** Handbook 450. Washington, D.C.: USDA.

Wang, Chi Che
1920 Is the Chinese Diet Adequate? **Journal of Home Economics** 12(7):289-293.

Watson, James L.
1975 **Emigration and the Chinese Lineage: The Mans in Hong Kong and London.** Berkeley: University of California Press.

Weiss, Melford
1974 **Valley City: A Chinese Community in America.** Cambridge: Schenkman Publishing Company.

Wells, Fargo & Co.
1873 **Directory of Chinese Merchants in San Francisco and Sacramento in Chinese and English.** San Francisco: Britton & Rey.

1878 **Directory of Chinese Merchants in San Francisco and Sacramento in Chinese and English.** San Francisco: Britton & Rey.