Rising from the Ashes:

Jacksonville Chinese Quarter Site (35JA737) Data Recovery Excavations

By Chelsea Rose and Katie Johnson

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Findings: (+) Historic (35JA737)
County: Jackson
Township: 37S
Range: 2W
Section: 32
USGS 7.5' Medford West 1983
Project Type: mitigation
Project Acres: >1
SHPO Permit No.:1802
Accession Number: SOULA 2013.09

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Introduction

The City of Jacksonville, in cooperation with the Oregon Department of Transportation (ODOT), hired the Southern Oregon University Laboratory of Anthropology (SOULA) in preparation for streetscape improvements to the high traffic areas connecting the historic downtown shopping area with the Britt Gardens and Festival Amphitheater. The project included safety improvements, such as the instillation of sidewalks and streetlights, as well as other streetscape features and landscaping along a 400-foot stretch of Main Street between Oregon Street and OR 238, and a 650-foot stretch of First Street between Main and Fir streets (Figure 1). The project area of potential effect (APE) overlapped with four previously recorded archaeological sites (35JA737, 35JA756, 35JA831, and 35JA789), and in general, was a location considered as having a high potential for intact cultural resources. Significant archaeological finds made during Phase II testing led to data recovery excavations in the Chinese Quarter Site (35JA737) prior to project construction. Phase III data recovery was conducted under Oregon Archaeological Permit no. 1802. Artifacts collected from the Jacksonville Chinese Quarter Site data recovery excavations are being curated at SOULA under curation number 2013.09. All other findings associated with the Jacksonville First and Main Streets Sidewalk Project were described in a separate report (Rose and Johnson 2015).

Fieldwork was conducted in October of 2013. The data recovery plan was designed to excavate a 2 m by 2 m unit in order to characterize the deposits that had been observed by Ruiz and O'Grady (2008) and in the current project's Phase II testing (Rose and Johnson 2012). Data recovery excavation would mitigate the adverse impact to the significant deposits within the Chinese Quarter Site by recovering a sample representing slightly greater than 5% of the anticipated disturbance volume. While features such as landscaping and utilities precluded the excavation of a traditional square 2 m by 2 m unit, four contiguous 1 m by 1m units were excavated, and still provided the 'wide exposure' view that allowed for feature recognition and characterization of the dense material deposits within the project APE.

The data recovery units were built off of a deeply buried ash feature observed during Phase II archaeological testing. As a result of the excavations outlined in this report, this feature was determined to be the intact remains of a dwelling that burned on September 11, 1888. More than 26,000 artifacts were recovered from the house feature, including a robust faunal and botanical assemblage.

Archaeological excavations into the burned house feature shed light on what life was like for Chinese residents in Jacksonville during the height of the Exclusion Era. Information regarding foodways, medicine, recreation, and site structure will be presented in the report below. In addition, this project allowed for a variety of successful collaborations and partnerships. The results of which are peppered throughout the report, and a series of appendices provides the full reports of botanical, faunal, and chemical analysis conducted by a variety of scholars on materials from the Jacksonville Chinese Quarter Site.

Environmental Context

The current project area is located in the city of Jacksonville, Jackson County, Oregon, within Section 32 of Township 37 south, Range 2 west (Figure 1). Jacksonville sits in the southwestern edge of the Rogue River Valley at the base of the Siskiyou Mountains, approximately 1,560 feet above sea level. The Rogue River Valley is part of the Klamath Mountain physiographical province. The valley spans from Ashland to Grants Pass and is ringed by the Klamath Mountains to the south, the Coastal Range to the west, and the High Cascade Range to the east. The Rogue River and its many tributaries drain from these mountains through the valley. Jacksonville is located at the base of Timber Mountain on an alluvial landform of flood plains, river terraces, and alluvial fans. The city is framed on the south by Daisy Creek, and the west by Jackson Creek, both tributaries of the Rogue River, and the location of early gold discoveries in southern Oregon. The soils within the project area consisted of a Ruch silt loam (map unit 157B), which is typical of landforms in the area with a 2-7 percent slope (NRCS 2014).

Although today the project area is located within a landscaped urban environment, the natural setting would have traditionally consisted of oak, pine, Douglas fir, and hardwoods. A variety of faunal species live in or around the project area and include deer (*Odocoileus* sp.), elk (*Cervus canadensis*), black bear (*Ursus americanus*), and mountain lion (*Felis concolor*); small to medium sized animals such as coyote (*Canis latrans*), rabbit (*Lepus* sp. and *Sylvilagus* sp.), raccoon (*Procyon lotor*); and bird species such as grouse (*Tympanuchus phasianellus*), turkey vulture (*Cathartes aura*), and California and mountain quail (*Callipepla californica* and *Oreortyx picta*). The Rogue River and its many tributaries, including Jackson and Daisy creeks, are also host to anadromous salmon and steelhead populations (*Onchorhncus* sp.), as well as lamprey (*Lampetra* sp.), and trout (*Salmo* spp.).

The Rogue River Valley in general makes up the northern portion of the 'State of Jefferson,' a bio-geographical region that encompasses southwest Oregon and northern California. The State of Jefferson is an environmental and cultural landscape that reflects not only the shared geographical, geological, and biological characteristics of the region, but also its shared history, both Native American and EuroAmerican. The region's geomorphology and biota link the Cascade/Sierras with the Klamath Mountains and the Coast Range, and at a larger scale, the region is a boundary zone between the Pacific Northwest, California, and Great Basin physiographic provinces (e.g. Hannon 1990; Schoonmaker et al. 1997; Tveskov and Cohen 2006; Tveskov 2007). The region is geologically diverse. To the south and west are the Klamath Mountains which contain the remains of Paleozoic and Jurassic landscapes. These were upended through the subduction of the Juan de Fuca tectonic plate beneath the continent of North America to form a mountain range of faulted terrains intruded by granite and other igneous and metamorphic formations (Orr et al. 1992). This mountain range was later bracketed on the west by the Coast Range—a large wedge of Eocene and Miocene sediments uplifted by tectonic activity and plate subduction and interspersed with lava flows. The western side of the Cascade Range was formed 40 million years ago during the Oligocene, Miocene, and Pliocene epochs through volcanic activity and tectonic uplift. The undergirding of the Western Cascades is fundamentally volcanic: columnar or pyroclastic basalts, andesite, welded tuff, pumice, and ash are commonly exposed bedrock formations in the region (Smith et al. 1982; Orr et al. 1992). The High Cascades to the east are much more recent in origin, and high peaks such as Mount McLoughlin or Mount Mazama (the volcano that erupted 7,000 years ago to form Crater Lake) are the product of volcanic activity that began after four million years ago and continues to the present day.

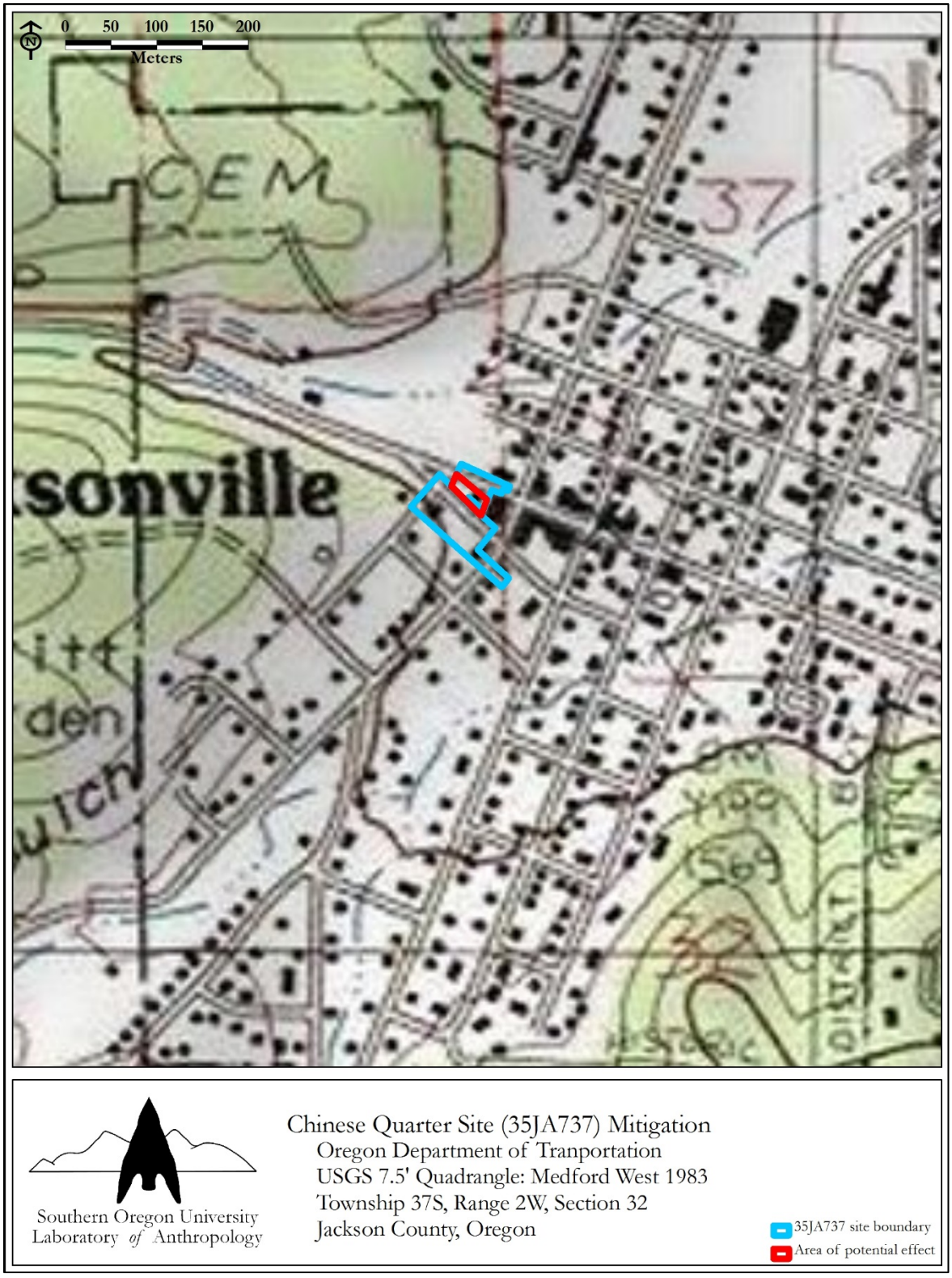


Figure 1. Locator map of the Chinese Quarter Site 35JA737 with the Phase III mitigation excavation location in red.

Previous Archaeological Investigations

The town of Jacksonville is well known for its nineteenth century past. Due to the level of architectural preservation and lack of modern development, most of the downtown has been incorporated into a National Historic Landmark district since 1966. The same factors that have preserved many of the town's buildings for over 150 years have also served to protect much of the subsurface archaeological resources in downtown Jacksonville. The presence of intact archaeological deposits, even in semi-disturbed areas such as roadways, has been documented by Rose and Johnson (2010, 2012, 2014, 2015), Johnson (2012), Schablitsky and Ruiz (2009), Ruiz and O'Grady (2008), and Goebel (1995).

Several projects have been conducted in and around the current project area. Most recently, Jeff Applen conducted archaeological testing at the Jacksonville Courthouse, which was first investigated by Ted Goebel in 1995. The testing occurred within the construction footprint of building improvements, and did not encounter any deposits of note (Applen 2015). Goebel's 1995 investigations at the courthouse consisted of a pedestrian survey and the excavation of a single 1 m x 1 m unit. Recovered artifacts included glass, brick, ceramic, and ferrous hardware (Goebel 1995). Each project interpreted the site as being disturbed due to construction events, maintenance, and the instillation of utility lines; however, both noted that the Jacksonville Courthouse site remains a high probability area for intact archaeological resources.

In addition to the courthouse excavation listed above, in 1994 Southern Oregon State College (now Southern Oregon University) also performed archaeological investigations at the Beekman House (470 East California Street) (Goebel 1995). The Beekman House (ca. 1876) investigations consisted of architectural and archaeological surveys, and subsurface testing in the back and side yards of the Beekman lot. Subsurface testing consisted of three 1 m x 1 m units, and an assemblage of glass, ceramic, ferrous metal hardware, and faunal material was recovered (Goebel 1995). The site was interpreted as being disturbed by landscaping and improvements to the buildings, but was considered to have a high potential for intact archaeological resources on the property.

Another recent survey in the vicinity of the Chinese Quarter Site project area was conducted by Jeff LaLande for the evaluation of the Jacksonville dam and related architectural features in preparation for the removal of the structure, which has been determined to be a high risk to residents located downstream (LaLande 2014). The built environment was not found to be eligible for listing on the National Register of Historic Places (NRHP) and the archaeological survey component of the project is scheduled to happen at a later date (LaLande 2014).

The project described within this report was conducted in association with the larger First and Main Street Sidewalk Project, which encountered two inadvertent discoveries along First Street (Rose and Johnson 2015). The first discovery was during the excavation for the storm drain running up the west side of First Street. A dense artifact deposit dating to the mid-nineteenth century was encountered, believed to be associated with the original Fisher Brothers warehouse store on the corner (and within the Fisher/ Brooks House Site 35JA831). The feature contained 59 alcohol bottles, two mining pans, shot glasses, and other items dating to the short-lived mining camp era along Main Street (Rose and Johnson 2015).

During the excavation of an American's with Disabilities Act (ADA) ramp connecting the sidewalk with the Britt Festival Amphitheater within the Britt Gardens archaeological site (35JA789), a robust feature was encountered that was believed to be the *in situ* remnants of the Britt Barn (Rose and Johnson 2015). Due to difficulties in accessing the deposits, the feature was recovered in conjunction with project construction. Historical photographs and artifacts indicated that the project encountered a shed-like extension on the barn that was improved for use as an agricultural activity area. Artifacts within the barn reflected a range of domestic, structural, and utilitarian items, all associated with the two generations of Britt family members on the site (Rose and Johnson 2015). At the same time that the City of Jacksonville and ODOT were making improvements to the streetscape, the Britt Festival was upgrading the infrastructure within the Jackson County-owned portion of the historic Peter Britt homestead (site 35JA789). SOULA conducted Phase II archaeological testing and archaeological monitoring within the festival grounds as part of the renovation project (Rose et al. 2014). Portions of the Britt Festival project area overlapped with the historic footprint of the Britt Barn and great care was taken in order to avoid disturbance to the feature. In addition to historic-era archaeological deposits encountered across the property (which falls within the southern portion of the Britt Gardens Site 35JA789), there was an inadvertent discovery of human remains within the project area (Rose 2014).

In preparation for the First and Main Streets Sidewalk Project, SOULA worked with utility companies needing to relocate active lines in preparation for the instillation of the storm drain and sidewalk infrastructure. As such, SOULA performed archaeological monitoring for the Rogue Valley Sewer Service line replacement in September 2013 (Rose 2013) and conducted archaeological monitoring and testing for the Avista Utilities gas line relocation in December of 2013 (Rose and Johnson 2014). During the Avista gas line relocation project, a cluster of nineteenth century Chinese artifacts were encountered, and construction was stopped pending archaeological testing. Subsequent test excavations indicated that the deposit was a shallow, artifact-filled trench which could have been associated with the construction of the Brunner Building extension in the nineteenth century (Rose and Johnson 2014). The discrete deposit was recovered, and the project was completed without further incident.

The Britt Gardens, or 'Britt Park,' is listed as a significant resource on the National Register of Historic Places (NRHP) nomination form for the Jacksonville Historic District. Between 2010 and 2011 SOULA conducted several archaeological investigations in the Britt Gardens Site (35JA789) in preparation for park improvement and redevelopment. SOULA's investigations into the historic Britt homestead, indicated that significant archaeological resources associated with all phases of the Britt family occupation remained. Data recovery excavations were focused on the foundation of the family home (ca. 1856-1960), the original cabin site (ca. 1852), outbuildings, and a large midden west of the house. Work on this report is ongoing, and all artifacts and documents associated with this project are currently undergoing analysis at SOULA under the curation number 2010.13.

The first informal investigations into the Jacksonville Chinese Quarters were done in February of 1974, when local resident Marshall Lango and Allan Lester (former curator of the Jacksonville Museum) excavated a Chinese privy located along the south side of Main Street. The location was identified using Peter Britt photographs, and the materials appear to date to between 1860-1880 (LaLande 1981:211). Much of the material collected from this excavation is curated at the Southern Oregon Historical Society (SOHS). A brief synopsis of Lango's privy excavation and the artifact assemblage can be found in LaLande (1981).

The Jacksonville Chinese Quarter Site 35JA737 was first formally investigated and defined in the summer of 2004, during archaeological work conducted in conjunction with ODOT construction along Highway 238 (see Schablitsky and Ruiz 2009). Over the course of the work, archaeologists from the University of Oregon Museum of Natural and Cultural History (MNCH) monitored construction, performed test excavation and data recovery, and observed and recorded over a dozen sites and several isolates across the larger project area. Sites recorded during the 2004 construction included: the California Street Historic Infrastructure Site (35JA726), the Planning Mill Site (35JA736), Chinese Quarter Site (35JA737), and refuse concentrations along Fifth Street (35JA727), D Street (35JA732), Third Street (35JA728), Oregon Street (35JA733), and California Street (35JA729, 35JA735).

The identification of the Chinese Quarter Site (35JA737) led the City of Jacksonville to fund additional archaeological testing in July of 2007. Archaeologists from the University of Oregon MNCH placed eight quarter test units (QTUs) along the north side of Main Street in the location of the historic Main Street Warehouse (35JA756) and the Chinese Quarter Site, from which they recovered thousands of artifacts. Excavations indicated that portions of Jacksonville's early commercial district and sections of the Chinese Quarters (ca. 1852-1910) are intact and capped with modern road fill (see Ruiz and O'Grady 2008). Some of the ashy deposits excavated during the 2007 project were similar to (and perhaps related to) the house feature excavation detailed within this report.

Cultural Context

Prehistoric Context

Detailed ethnographic overviews of the southwest Oregon region can be found in Tveskov (2000, 2007), Tveskov and Cohen (2006), Gray (1987), Drucker (1937), and Sapir (1907a, 1907b). Southwest Oregon is located in the southernmost portion of the Northwest Coast cultural area. Like their cousins elsewhere along the Northwest Coast culture area, the Penutian- and Athapaskan-speaking people of southwest Oregon lived in a society organized by kinship based social relations but with social ranking and an emphasis on wealth accumulation. They lived in permanent plank-house villages that were located along the main river trunks and resource-rich ecotones for the purposes of fishing for salmon or gathering acorns, two of their most important subsistence resources. The cultural ecology of the Native American people of southwest Oregon, however, required a high degree of residential mobility and the extensive use of a wide variety of plant and animal resources located in an array of riverine and upland habitats. Low elevation meadows and river terraces would have been visited on a seasonal basis by household groups to gather berries, camas, and other plant resources, or to hunt for deer, elk, and other mammals (Tveskov and Cohen 2006).

Archaeological research in southwest Oregon suggests that people have lived in the region for over 10,000 years (Connolly 1991; Winthrop 1993; Tveskov and Cohen 2006). Creating a cultural-historical framework for the region, however, is difficult. As a result of dramatic geomorphological processes (e.g. the rapid wasting of ancient terraces, the subsequent burial of sites in alluvial settings, and subsequent bioturbation from root or rodent action), very few well-stratified sites have been found or adequately reported. Furthermore, local soil conditions hamper the preservation of perishable organic material, often making it difficult to reliably radiocarbon date many archaeological deposits. Nonetheless, analyses of archaeological sites recorded or excavated in the region suggests that over the course of the Holocene, southwest Oregon was occupied by a society characterized by high residential mobility that took advantage of the seasonal and spatial patchiness of the local environment (Connolly 1991; Winthrop 1993; Tveskov et al. 2002; Tveskov 2004). By the late Holocene, Indian people began to anchor their settlement patterns around semi-permanent villages located along the main stems of the region's larger rivers and assume patterns of social relationships that, while still predicated on the independence of individual households, involved wealth accumulation, social ranking, and the seasonal mass harvesting and storage of salmon. The cause of this transformation—a local manifestation of a wider trend of increasing sedentism and social complexity all along the west coast of North America over the last 2000 years—is not clear. Whereas Winthrop (1993) hypothesizes that this change was the result of increasing population pressure, Connolly (1991) suggests that it was the result of the immigration of Athapaskan people into the region.

The majority of the archaeological research efforts in southwest Oregon have been oriented towards the main trunks of the Rogue River, Umpqua River, or other major streams and tributaries (e.g. Pettigrew and Lebow 1987; O'Neill 1989; Connolly 1991; Connolly et al. 1994; Gray 2000). More recently, however, SOULA, in collaboration with the Medford District Bureau of Land Management, has focused on upland sites in the Western Cascades of the nearby upper Rogue River Valley (e.g. Tveskov et al. 2002; Tveskov and Cohen 2006). Archaeological research at the Windom Site, the Midnight Dig Site, and others in upland settings suggests that such sites are numerous, and

often located on well-drained terraces overlooking meadows that afford ready access to a wide variety of floral and faunal resources. Frequently, upland sites are dense palimpsests of cultural material, reflecting the long-term use of such locations by household groups over millennia for a variety of specific or general purposes such as quarrying lithic material, gathering acorns, or hunting deer and elk. The persistent use of these areas and the long-term stability of their occupation contrast with the changes in the use of lower elevation sites in the area. During the last 2,000 years, Native American societies developed more complex social interactions as evident in the associated material culture including large plank house villages and their associated artifacts. Throughout the Holocene, despite increasing social complexity and sedentism, activities in upland camps remained important for household subsistence and social experience.

Historic-era Context

To the best of our knowledge, Peter Skene Ogden—the famous Hudson's Bay Company fur trader—was one of the first EuroAmericans to see the Rogue River Valley when he led a 'fur brigade' into the region from the south during the winter of 1826-1827 (Davies 1961; LaLande 1987). Ogden traveled up the Columbia River from the Hudson's Bay Company's Fort Vancouver, and then traveled south to the Klamath River after exploring the Deschutes basin and the Harney Lake area. In February 1827, Ogden passed northward over the Siskiyou Pass, opening a route that would be used by Hudson's Bay Company 'Southern Brigades' for the next 20 years (LaLande 1987:67; Tveskov 2000; Tveskov et al. 2001). These expeditions were staged out of Fort Vancouver, and passed through Umpqua, Rogue, Shasta, and Klamath river valleys en route to the Sacramento River country in California.

EuroAmerican settlement in southwestern Oregon continued to increase gradually until 1846 when the Jesse Applegate-led South Road Company turned pre-existing Indian and fur trade pack trails into the viable wagon road known today as the Applegate Trail (Rose et al. 2011). This new route provided an alternative to the traditional Oregon Trail route along the Columbia River, bringing emigrants south from Fort Hall and up through southern Oregon and into the Willamette Valley. Although this route was only marginally successful as an emigrant trail, it proved invaluable in the settlement and development of the Oregon Territory after gold was discovered in California in 1848. The Applegate Trail proved to be a vital link between Oregon and California, as it provided the much needed infrastructure for the transportation of people, goods, and services to and from the gold fields (Tveskov et al. 2001; Rose et al. 2011). This route from the Willamette Valley to the Sacramento River, and ultimately to San Francisco, would later become known as the Oregon-California Trail.

Use of the Oregon-California Trail through the Rogue River Valley increased after gold was discovered in California. The response by Americans living in the Willamette Valley was enthusiastic, and thousands poured south to seek their fortune. Most of these men, representing perhaps two-thirds of the EuroAmerican population of Oregon, traveled south through the Rogue River Valley and many later returned via the same route. The gold rush, and the firm establishment of the Oregon-California Trail, had profound consequences. The increased frequency of use of the trail opened up southern Oregon to gold prospectors, who soon made strikes on the Illinois, Applegate, and Rogue River valleys in the first years of the 1850s. The antagonism between the Indians and the trappers and drovers of the previous decade blossomed into open hostility as the towns of Jacksonville, Ashland Mills, Crescent City, and Yreka were settled.

The signing of the Table Rock Treaty on September 10, 1853 was a watershed event. For the agents of the Federal Government, it was one of the first tests of the newly established reservation policy proposed by federal Indian authorities. For the pioneers of the Rogue River Valley, it provided clear title to their land claims: By federal law, the title of land un-ceded by a federal treaty remained in possession of the Indians. The Table Rock Treaty, negotiated principally by Palmer, Lane, and Takelma chiefs Joe and Sam and Athapaskan chiefs Tecumtum, George, and Limpy, established the Table Rock Reservation—the first Indian Reservation in the Pacific Northwest—on the north side of the Rogue River, between Evans Creek and the mouth of Little Butte Creek, and ceded some 1,900 acres of Indian land to the United States (Douthit 2002:101-102). Fort Lane was constructed on the south side of the river at this time, opposite the reservation.

In February 1856, the Indians remaining at Table Rock under the leadership of Chief Sam were marched on foot—with an escort of army soldiers to protect them from pioneer militias—to the new Grand Ronde Agency in the Coast Range of northwestern Oregon (Schwartz 1997:113; Douthit 2002:147). Army units proceeded down the Rogue River from Fort Lane, north from Crescent City, and south from Fort Orford, ultimately cornering and defeating the surviving 'hostile' Indians under the leadership of Chief John at the Battle of Big Bend in the Rogue River canyon that May. Following the surrender of John, George, and Limpy, the majority of the Indian people remaining in southwest Oregon were transported to the Coast Reservation from Fort Orford in the summer of 1856.

Jacksonville: The Queen City of Southern Oregon

The town of Jacksonville sits at the intersection of the Applegate Trail, the Oregon-California Trail, and the road to the coast. Therefore, it was an important hub in the mid-nineteenth century, tying together the routes to Crescent City, Waldo, and Kerbyville with the settlements in northern California and the Willamette Valley. In the winter of 1851, Indian Agent Alonzo Skinner's nephew and a hired hand discovered gold in Jackson Creek, near the site of present day Jacksonville (Kramer 1993, 1999; Rose 2009). Shortly thereafter, packers James Cluggage and James R. Poole got wind of the find, and by February of 1852 they struck gold in nearby Daisy Creek. Although Cluggage and Poole were not the first to find gold in southern Oregon, it was with their discovery that the word spread and the rush ensued. Cluggage and Poole each filed Donation Land Claims in the vicinity of their 'Rich Gulch' strike on Daisy Creek, and became instrumental in the establishment and expansion of a new little town. Table Rock City, a thriving camp of "tents, sheds, shanties and frail houses of split lumber" that sprouted at the base of the Daisy and Jackson Creeks (on what is now known as Main Street), was soon renamed Jacksonville after the newly formed Jackson County (Haines 1967:17).

When noted journalist James Mason Hutchings (of *Hutchings' Illustrated California Magazine 1856-1861)* passed through Jacksonville in 1855, he described the town as having a population of roughly 700 (made up of 22 families) and having "10 stores, three boarding houses, one bowling alley, one billiard [saloon], three physicians (and 300 men called Doctor!), one tin shop, one meat [market], one livery stable—shame on it—one church, one schoolhouse" (Hutchings 1855). The earliest incarnation of Jacksonville was nestled between Daisy and Jackson creeks on what became known as Main Street. Just a few short years after gold was discovered, merchants began to shift away from the tents to expediently built false-fronted buildings along Main and over to the more level California Street where they built new buildings out of brick.

The discovery of rich gold mines in the Rogue River Valley soon drew together thousands of people. They came within a month of the Cluggage and Poole discovery, it was estimated that 100-150 men were mining in and around Jacksonville, and by mid-summer, over 1,000 miners had arrived in the Rogue River Valley, prospecting "every spot where gold was likely to be found" (Walling 1884:359). The discovery of gold in southern Oregon quickly transformed the region, as the hills surrounding the Rogue River Valley were "whitened with the tents of thousands of eager hunters" who came "with packs upon their back, or leading horses loaded with miners tools, flour and bacon, frying pans, coffee pots, and blankets, over untraveled roads, up and down mountains, through forest and narrow gulches … through unbridged streams, and bottomless mud holes toward Jacksonville" (Walling 1884:359; Rev Thomas Fletcher Royal [1853] in Briggs 2002:15). By September of 1853, visiting Catholic missionary Father James Croke characterized the population in Jacksonville as "miners, packers, storekeepers, and gamblers, and…very few families" (Croke [1853] in O'Hara 1925:132).

Jacksonville, the "off-spring of the mines," became the county seat of newly formed Jackson County and "momentarily the largest city in the state and headquarters for express, mail, and stage lines" (Farnham 1855:50). Despite the early prominence of mining in the region, it was agriculture that would ultimately allow for permanent and sustainable development in the Rogue River Valley. As Jacksonville grew, a "perceptive observer would also have noted, beyond the coarse glamour of the mining camp, tilled fields and grazing herds, which, amid the gold boom of 1852, foreordained permanence for the embryonic community" (Farnham 1955:22). Agriculture may have initially developed to feed hungry miners, but farmers continued to expand and prosper, even as the mines waned.

Like many frontier mining camps, Jacksonville was settled exclusively in proximity to mineral resources, and was resultantly lacking in arable land and access to water or convenient travel routes. The town's location at the far side of the valley would haunt Jacksonville, as the much-anticipated railroad bypassed the town for the newly established town of Medford. Jacksonville retained some importance as a regional political center until 1927, when Medford was appointed the County Seat, and "the 'Queen City' of southern Oregon was forced to cede her crown to the nearby 'Pear City' of Medford" (Rose 2009:43). The rapid decline in Jacksonville's economy virtually halted much of the development and modernization of the city, thereby preserving its nineteenth century look and feel. Jacksonville residents would eventually recognize the historical integrity of the town, and in 1966 the majority of the town's core was registered as a National Historic Landmark District.

The Railroad

Although the railroad bypassed Jacksonville in 1884, a spur line was added a few years later that would connect the town to Medford. The same factors that deterred the mainline from reaching Jacksonville, namely topography and the lack of a viable freight industry, also hindered the progress of the small commuter line. The Medford and Jacksonville Railway Company was formed in 1890, and the track was laid and completed in early 1891 (Webber 1982:69-71). The Rogue River Valley Railway Company began operating on the new line in February of 1891, with two trips a day between Medford and a little train depot at the end of C Street (Webber1982:72). The line was soon extended one mile past Jacksonville to the Opp Quartz Mine and brick factory along the right fork of the Jackson Creek, whose freight helped provide financial incentive for the struggling railway.

In 1893 W.S. Barnum took over operations, running trains until 1915 when he sold out to a group installing electric car lines around the valley. The line continued to be economically unviable, and by 1925 the City of Medford purchased the line and it was permanently abandoned (Webber 1994:88-89). Some sections of the rail line were removed, and others merely paved over. Over the years, the pavement would erode exposing sections of intact rail lines. In 2004, archaeological monitors documented the Rogue Valley Railroad Site (35JA734), which consisted of a cluster of rails at the intersection of Fifth and C streets (Schablitsky and Ruiz 2009).

During the Depression the defunct railroad depot building was home of local gold miner 'Blackie' Wilson. Wilson tunneled in and under the town of Jacksonville during the depression, offering a ten percent cut to property owners who allowed him to tunnel in their yards (Applebaker 2008). Residents remember Wilson sitting on the porch of the old depot singing to his baby (McIntyre 2008). The depot building has since been restored and moved onto the corner of Oregon and C Street, and now serves as a visitor center for the town of Jacksonville.

Historical Context of the Immediate Project Area

The Jacksonville Chinese Quarter Site 35JA737

The Chinese Quarter was located along Jacksonville's Main Street, which as the name suggests, was home to the earliest incarnation of the town. A visitor passing through 'Table Rock City' in February of 1852, noted that the mines were rich, and "the camp was full of men, going and coming" (Klippel 1901: Chapter III). The rough mining camp quickly transitioned to a more permanent settlement. By spring of the same year, a small commercial district was established along Main Street:

> the principal places of business were, the round tent of Miller & Wills, situated east of the present site of the Karewski stone warehouse; W.W. Fowler, log house with canvas roof, opposite Miller &Wills' tent; one large square blue tent east of V. Schutz brewery; Kinney & Appler's clap board house on northeast corner of Oregon and California Streets; the last being the most pretentious house in town (Klippel 1901: Chapter IV).

The above description is worth noting, as many of the expediently constructed buildings of this era would later be occupied by Chinese residents and businesses, as white merchants shifted east to what would eventually become (and still is) the main thoroughfare, California Street. By the summer, the *Oregonian* described Jacksonville as "composed of tents, sheds, shanties and frail houses of split lumber" (July 3, 1852:3). By this time the town boasted a population of roughly 150, but thousands were mining in the surrounding hills. Most of the wooden cabins were originally used for commercial ventures, and the miners lived in temporary shelters. These include canvas tents, and structures described as "cross-cut saw tents," basically, a rough shelter consisting of a "simple plank lean-to with an open face" (Briggs 2002:23).

As the camp evolved, merchants began to construct "fireproof" brick buildings along Oregon and California streets, and the tents were packed up and moved further out to the next mining camp. By 1854, early Jacksonville businesses, including the bakery of Alexander & Knox, Appler's 'El Dorado Saloon,' and 'Fowler's corner,' followed the miners to nearby Sterlingville (Briggs 2002:20). The transitioning demographics along Main Street provided an opportunity for the Chinese miners entering the area, and by 1860, the Chinese Quarter was a bustling ethnic neighborhood.

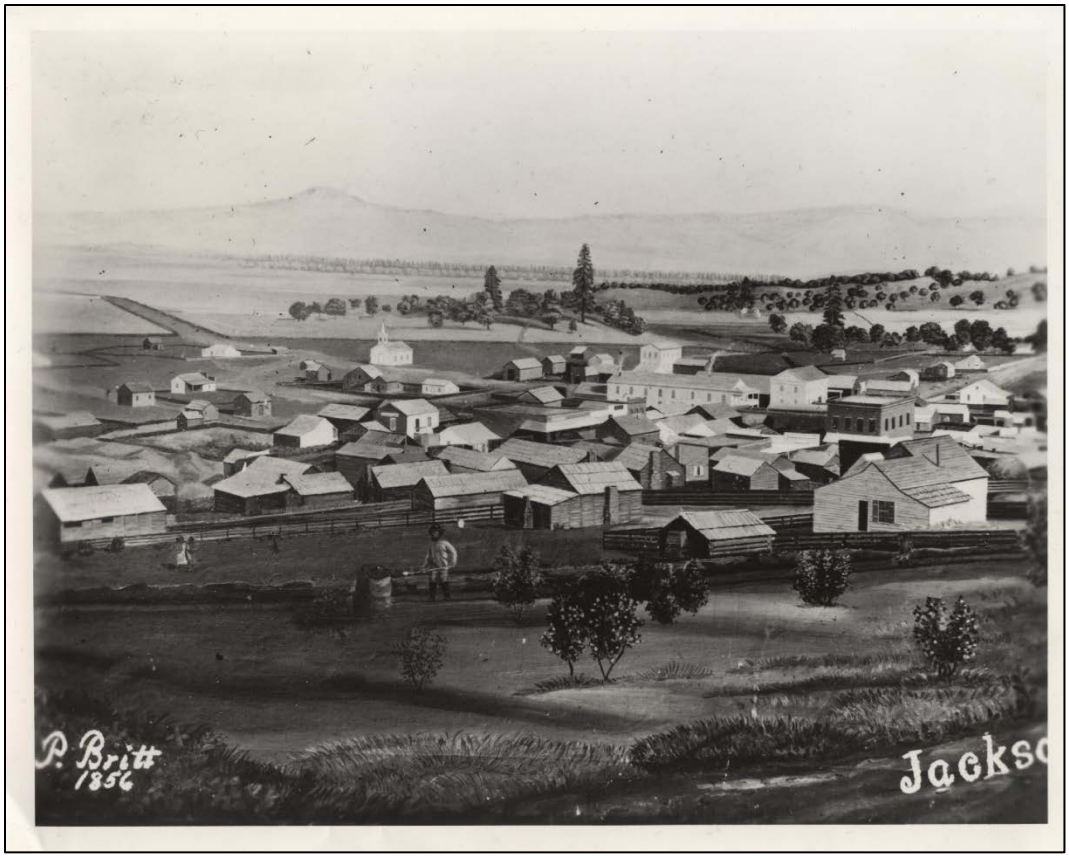


Figure 2. Peter Britt painting of Jacksonville based on a photograph taken in 1856, view northeast.

The discovery of gold in Daisy and Jackson creeks is what brought Chinese, along with those from around to world, to Jacksonville. Chinese migrants were firmly established within the California mining landscape by the 1850s, and southern Oregon functioned in many ways as an extension of the California gold rush. By the time gold was discovered in what is now Jackson and Josephine counties, Yreka was already a hub of mining activities, and home to a large Chinatown. In 1856 the *Sacramento Daily Union* wrote, "the Chinese are flocking into Southern Oregon in great numbers, and are working those mines which the Americans will not" (July 23, 1856). Reports to California papers from the Althouse mines in Josephine County describe the mines along Sucker Creek as having a "population of about four hundred, three-fourths of whom are Chinese" (*Alta California,* September 1857). *The Weekly Oregonian* for October 31, 1857 ran a letter to the editor stating that there were between 1,000 and 2,000 Chinese miners working in Josephine County and "buying out the Americans at big prices." Similar reports noted the large influx of Chinese miners:

> In all our tour we noticed that the Chinamen are gradually supplanting the white miners in this section of the country. China goods are in the stores, and China customers are, not infrequently, there also. It is impossible to ascertain what they are making, but they are mostly working diggings that have been deserted, or sold to them by white men (*The Oregon Reporter* May 27, 1865).

The above quote illustrates that the Chinese were not only making up a large portion of the labor force, but were also a boon to the local economy. Merchants clearly saw the benefit of carrying

Chinese goods, and the purchasing of such items is evident in the material culture deposits found across archaeological sites in the region. By 1867, the *Oregon Sentinel* reported that Chinese miners were in control of "all the mining ground on the right hand fork of Jackson Creek, and all on the left hand fork with the exception of one or two claims" (*Oregon Sentinel* April 27, 1867). These diggings were within a mile of Jacksonville, and the Chinese Quarter would have served as a home, supply hub, and social center for these miners.

While several factors make it difficult to get an accurate count for the early years in the Chinese Quarter, various accounts describe the neighborhood as being home to several hundred residents at its height. The population would likely have fluctuated throughout the year, as Chinese miners working the mines in the hills and tributaries surrounding Jacksonville would flood into town on holidays or weekends. Decline in local economic industries like mining, along with growing anti-Chinese sentiment across the West, led to population declines in many rural communities. In 1880, census taker Welborn Beeson reported just 49 out of Jacksonville's population of 1,699 as Chinese individuals (Beeson July 3, 1880). A decade later, Beeson only enumerated "12 Chinamen" out of the 1,194 people residing in Jacksonville (Beeson June 22, 1890). Jacksonville's general population continued to decline due to the railroad bypassing them in 1887, but the Chinese population specifically shrunk to just a handful of residents by the turn of the twentieth century.

Regardless, the height of the Chinese Quarter was likely in the late 1860s through the 1870s. In his reminiscences, neighbor Fletcher Linn wrote "there were three or four hundred living in one portion of China Town, located on California Street, just across the street to the south of my father's factory" (Linn nd:107). By the summer of 1871, the neighborhood is crowded enough to prompt the *Democratic Times* to complain:

> The condition of the gutter on California Street, near the China houses, above Oregon, demands the early attention of the Street Commissioner. The gutter is a stagnant pool of green, slimy water, filthy enough to breed a pestilence in that portion of town. Moreover, this water stagnates in the immediate vicinity of a spring which supplies drinking water to a large portion of the residents in the vicinity of that part of California and Oregon streets. Make the 'Heathen Chinee' keep their gutters clean (*Democratic Times* August 5, 1871).

While the crowded neighborhood may have created real (or perceived) infrastructure problems, the residents did support community safety measures like the Fire Department. City records describe "Chinaman Hall" paying $10 towards the fire fund for public buildings (City of Jacksonville Treasurer Book, October 1873:23).

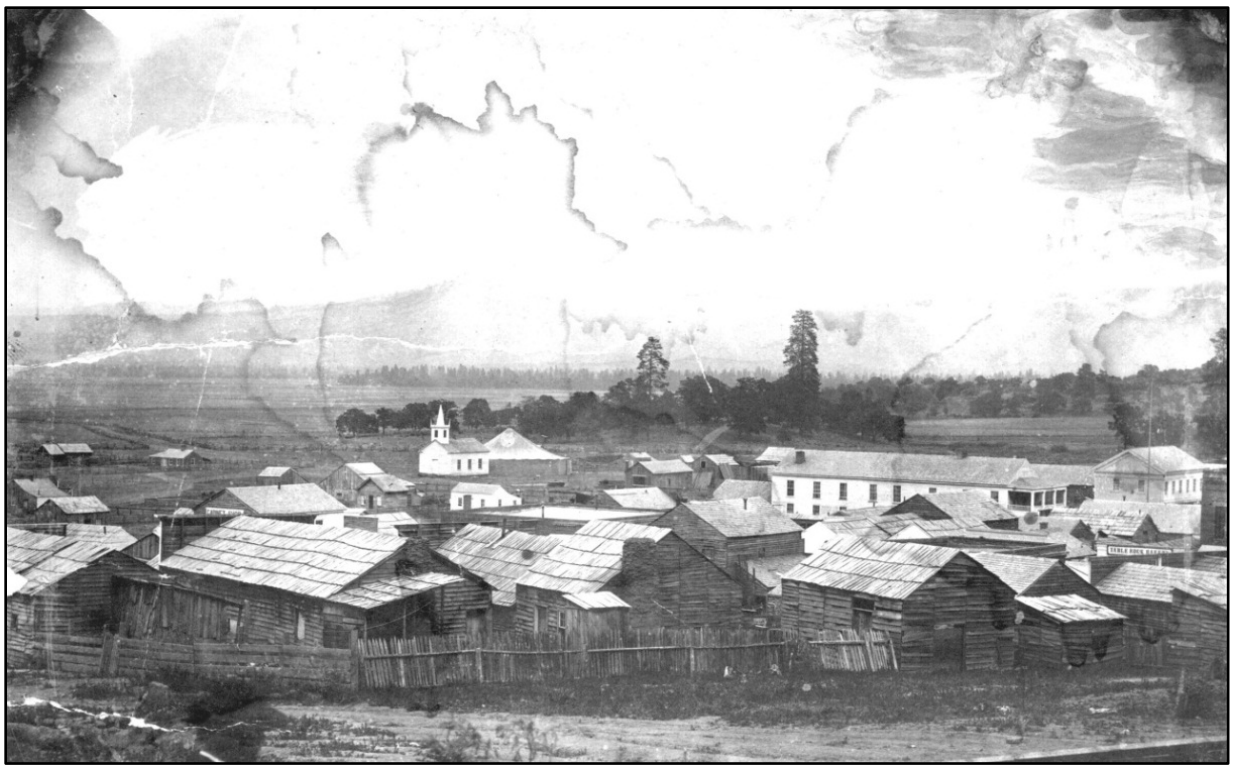


Figure 3. View north of the back side of the Jacksonville Chinese Quarter ca. 1855-1858. Photograph courtesy of the Southern Oregon Historical Society. Negative no. 5692.

Chinese in the American West

The Opium Wars, along with rampant population growth, natural disasters, political instability, and corruption made life difficult for the lower classes living in Guangdong, China, and its surrounding areas in the mid-nineteenth century. A massive peasant uprising known as the Taiping Rebellion (1850-1864) claimed twenty million lives and destroyed hundreds of cities in southern China. Extreme drought and flooding significantly impacted the agricultural production in Guangdong province and lead to food shortages that further increased poverty and starvation. However, while these pressures might have spurred emigration to a certain extent, the region had a long tradition of sending 'sojourners' overseas. Residents of the Guangdong province had been traveling to the gold fields of Borneo, and to the tin mines of Thailand, Malaysia, and Indonesia for decades before gold was discovered in California (Bronson and Ho 2015:1).

The discovery of gold in California in 1848 and its promise of wealth enticed many young men to 'temporarily immigrate' to what was referred optimistically as 'Gold Mountain,' or *Gum Sham*. Many who left for the western gold fields (be it from China, Europe, or the East Coast) had the romantic idea of returning from their adventure with money and prestige. While the desire to find the means for a better life on the frontier was not limited to China, when paired with turmoil in southern China, the narrative often describes the Chinese migrants more like desperate refugees compared to their manifest destiny-seeking peers. A critical reevaluation of the data suggests that this is inaccurate, and more a reflection of the rhetoric wherein the Chinese involved are seen as "passive victims, subject to forces beyond their control and profoundly ignorant of the systems in which they were trapped" (Bronson and Ho 2015:2). Instead, primary documents suggest that "in

North America almost all males (and a good many females as well) came voluntarily with open eyes" (Bronson and Ho 2015:2). Despite the hardships created by the separation of families, difficult journeys, and lack of job security, opportunities in North America were a calculated risk. Data gathered by historians Bronson and Ho (2015:3) showed that remittances could elevate a household between 45% to more than 100% higher than those not receiving money from overseas. Furthermore, this remittance system not only supported the families and home villages of Chinese men and women working in Oregon, but reinforced the transnational identities of the many residents who were active participants within two or more distinct communities.

By the 1880s, over 100,000 Chinese men and 3,000 Chinese women were living in the western American states, namely California, Oregon, Washington, and Idaho (Buckley Ebrey 1996; Wong 2004). By the late 1850s, the Chinese represented a significant portion of the miners working southern Oregon and comprised more than 8% of California's population between 1860 and 1880 (Daniels 1988). Like other mining populations, the majority of the Chinese immigrants were male. Prior to the 1882 Exclusion Act (discussed below), women were able to travel to the United States, but few did. Out of the several hundred Chinese listed in the Jacksonville area, less than two dozen were women.

Western historiography has largely stereotyped the Chinese immigrant diaspora into a monolithic group defined by a distinctly exotic suite of food, clothing, language, and material culture. In reality, although many Chinese migrants during this area came from the same region, they were not a homogeneous population. This nuance was irrelevant to those angry over labor competition, and many of the racial stereotypes still present today were solidified in the latter half of the nineteenth century when Chinese laborers were found to be a convenient scapegoat for frustrations on the mining frontier. An early missionary traveling through southern Oregon noted that the Chinese "all wear the same costume from a dignitary to a daily laborer; a skull-cap, a collar, a long blue coat, a belt, blue trousers, white stockings and cloth shoes with paper soles" (Father Francis Xavier Blanchet in Atwood 1976:18). To further perplex ignorant Western observers, the traditional Manchu hairstyle, "a shaven head with only a tuft of hair left from which a long queue hangs down their backs," was seen as distasteful and in direct opposition of any attempts by the Chinese to adopt an American lifestyle (Father Francis Xavier Blanchet in Atwood 1976:18).

Many of these stereotypes have been reinforced through rhetoric prevalent in early secondary literature, leaving many early 'scholarly' accounts of their participation in the gold fields biased and inaccurate:

> these peculiar people came early to Jackson County and mostly began work upon claims previously abandoned by whites—their universal custom—and made no effort to discover new claims… in a word, lived the life of all poverty stricken Chinamen far from home and friends. As in California, they came at first silently, labored quietly and hardly was their presence known until the stolid yellow face of 'John' peered from every bank and every worn-out placer (Walling 1884:348).

Contrary to the above sentiment, Chinese were left to take over secondhand claims due to local mining laws that forbade Chinese from staking original gold claims. Chinese living in Oregon were initially denied the right to vote, and only the Chinese that were residents at the time of the adoption of the Oregon Constitution (1857) could own real estate or mining claims (Atwood 1976:6). Oregon further targeted Chinese livelihoods, and in 1862 passed legislation stating that: "All

Chinamen and Kanakas engaged in trading, buying and selling foods, chattel, merchandise and all kinds of livestock and every kind of trade and barter among themselves in the State of Oregon shall pay for each privilege the sum of fifty dollars per month" (Atwood 1976:6).

In addition to restrictions such as these, Chinese were one of several minorities targeted in the Foreign Miners Tax of California, and the similar Oregon Poll Tax. In 1856, *The Sentinel* wrote of interest in a tax on Chinese miners, with the caveat that, "it should not be so heavy as the California tax. It would greatly aid in relieving that country from the existing heavy debt. Altogether, it is thought the Chinese will be an advantage to the country" (*Sacramento Daily Union* July 23, 1856). In 1862 the Oregon Poll Tax law was established, declaring that "each and every Negro, Chinaman, Kanaka, and Mulatto residing within the limits of this state, shall pay an annual poll-tax of five dollars for the use of the county in which such Negro, Chinaman, Kanaka, or Mulatto may reside" (Figure 4; Atwood 1976:7). Over the years the subject of Chinese taxation continued to be of concern for Oregon citizens, as the *Oregon Sentinel* September 1, 1866 wrote:

> we hope that during the present legislative session, the very important question of taxing the Chinese miners will not be overlooked… It seems unwise policy to allow a race of brutish heathens who have nothing in common with us, to exhaust our mineral lands without paying a heavy tax for their occupation. These people bring nothing with them to our shores, they add nothing to the permanent wealth of this country and so strong is their attachment to their own country they will not let their filthy carcasses lie in our soil. Could this people be taxed as to exclude them entirely, it would be a blessing.

Figure 4. A sample of the Jackson County Poll Taxes collected from Chinese miners and recorded in the Jackson County Commissioner's Journal. The above data is based on a tax of $3 per individual, per quarter. It is difficult to assess population based on the enumerated tax base, as many attempted to take advantage of their remote locations to avoid taxation: "our vigilant sheriff is after the transient Chinese residents of this county, who always endeavor to avoid payment of poll taxes and will collect several hundred dollars for them" (*Democratic Times* 2/3/88:3).

Despite the taxation and other racist legislation, the Chinese stayed in Oregon for many years. They were often without support of the state, but did garner sympathy from other early Oregon residents. In response to the Oregon Law prohibiting Chinese (or other minorities) from testifying against white men prior to 1962, The *Oregon Sentinel* June 2, 1866 wrote:

> The result was that mean, low, thieving whites frequently visited the mining camps of Chinamen in Jackson and Josephine counties and robbed the Chinamen and no white person being present, the robbers went unwhipped of justice. This was carried on to an alarming extent until the legislature of Oregon allowed Negro, Kanaka and Chinamen to testify in all the courts of Oregon. Soon after the passage of this law, three white men robbed a China camp in Josephine County. They were tried, convicted and went to the penitentiary primarily on the evidence of Chinamen.

Although Chinese were eventually allowed representation in the courts, presumably crimes against the Chinese and their holdings were significantly under-reported due to the overall racial climate in nineteenth century Oregon.

In addition to territorial, and later, state laws, local laws were created in an attempt to curb Chinese population growth. Laundries were a particular target for local municipal laws, as they were a common Chinese enterprise. Growing tensions towards Chinese (and the prevailing racial stereotypes) can be seen in the following article printed in the *Oregon Sentinel* on May 7, 1879:

> CHINESE MUST GO. Last week two of our enterprising Chinese having heard of the pure soft water of Ashland went to that town to start a washhouse. They didn't start it, however, but started back to Jacksonville just ahead of a yelling crown of men and boys who heard they had come to break ground for a Joss Temple in that pious city. Pursued by the angry crowd the heathen missionaries struck into a rapid trot, dropping bars of soap and other paraphernalia of their calling as they went.

Jacksonville passed an ordinance in 1881 targeting Chinese laundries. It stated that "every person or persons who shall set up or keep as a business, any washhouse or laundry within the corporate limits of Jacksonville, shall pay a quarterly license of no less than five dollars for keeping or setting up such a business" (Atwood 1976:10). City records indicate that several laundries were in operation in the 1880s, and the owners paid $4.50 quarterly. Laundry licenses were taken out under the following names: Lim Wang, Toy Loy, Toy Kee, Chin Chin, and Kwong Woo. City records also noted licensing fees collected for billiard houses, theaters, saloons, circuses, and from Chinese peddlers Ah Kee (1883), A. Chan (1886), and A. Chow (1884-1886).

Life in Jacksonville's Chinese Quarter

While several maps and a handful of photographs survive that document the Chinese Quarter, descriptions of life within its footprint are sparse and scattered. Through the use of census records, newspapers, and other primary documents, a loose framework of the neighborhood has been created. As described above, the Chinese Quarter was comprised of several expediently constructed wooden buildings lining both sides of Main Street between First and Oregon streets. With a few exceptions located outside of the neighborhood, the Chinese occupied no more than two

dozen buildings. The Sanborn Fire Insurance Maps do not always specify a buildings function, and other maps and illustrations tend to whitewash (both literally and figuratively) the neighborhood (i.e. The bird's-eye map and lithographs), making it difficult to infer certain aspects of the layout of the community (Figure 5). Regardless, it is clear that in addition to homes and group lodgings, several businesses and services were active within the quarter.

The 1860 census lists the majority of the residents as 'miners' with a 'clothes washer' and a few cooks noted. Within a decade, a variety of professions are noted, with residents working in occupations serving a variety of community functions on both sides of the Chinese Quarter lines. While mining remains the most prevalent occupation, more residents are listed as cooks and domestic servants (with some living in the neighborhood and others on site with employers). The number of laundries had expanded by the 1870s, most of which served the white residents of Jacksonville and the surrounding area. However, while the laundry might have relied on white customers, these businesses often also served as small community hubs and provided social services such as brokering employment opportunities. In addition, a number of occupations are listed that would have primarily served the Chinese community. These included a butcher, two barbers, a trader, hotel keeper, a carpenter, a handful of gamblers, and a doctor named Chung Kee. While the diversity of occupations is reduced by the 1880s (as is the population in general), the census indicates that Chinese residents are actively employed at a nearby hotel and in several laundries around town.

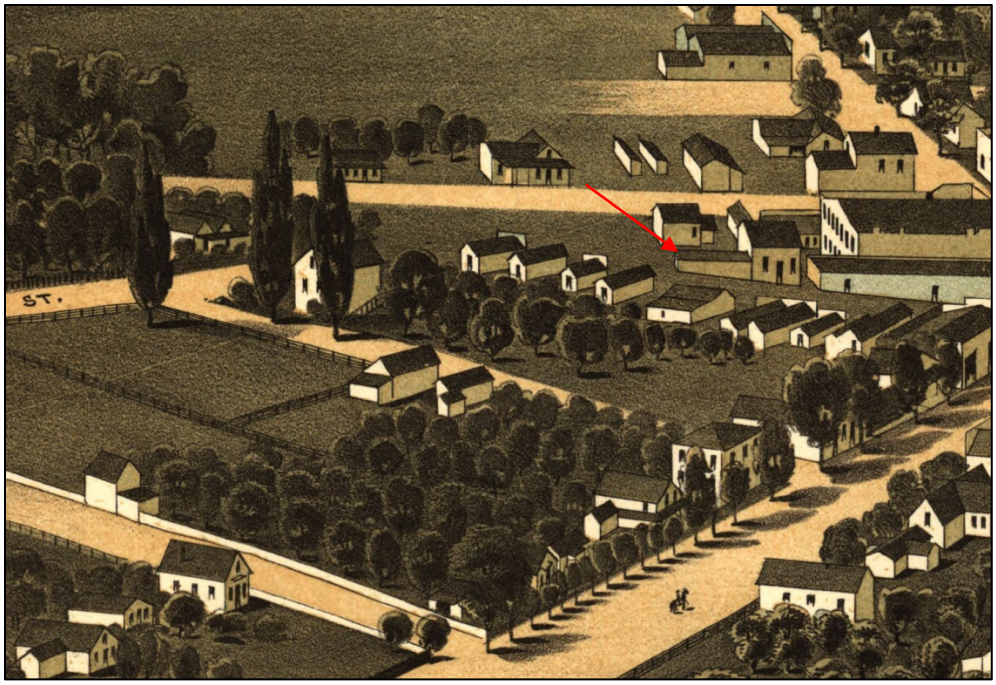


Figure 5. The above image is a close-up of the 1883 bird's-eye view of Jacksonville, showing the Chinese Quarter neighborhood. The red arrow is pointing to a stylized version of the house excavated in 2013, which is the subject of this report.

One such laundry was owned and operated by Lim Wang, who was born in China around 1830 (Figure 6). Wang's laundry was adjacent to the current excavations on the north side and also burned to the ground in the 1888 fire. However, Wang was able to move his operation to one of

the buildings that survived on the south side of Main Street, where he remained in business throughout the 1890s. Peter Britt makes regular entries in his diary through August of 1896 describing payments made to Lim Wang for laundry services (Britt Ledger 1894-1899, MS 170 box 3). Lim Wang paid a fee of $4.40 quarterly for his laundry license (Jacksonville City Treasurer nd). Census records indicate he lived alone prior to the fire, presumable in the back of his commercial space facing California Street.

A string of newspaper accounts illustrate some of the difficulties Wang faced during his life in Jacksonville. In December of 1881 "some thief stole a lot of washing belonging to D. W. Crosby from Lim Wang's clothes line one night this week. Mr. Wang made the loss good by paying for the clothes but no clue has yet been found to catch the thief" (*Oregon Sentinel* 10 December 1881:3). A few months later, Wang was being held in jail under the charge of larceny (*Oregon Sentinel* 12 February 1881:3), and was tried by a jury and found not guilty (*Oregon Sentinel* February 26, 1881:3). The specifics of the case were unclear, but perhaps it was related to additional laundry theft accusations.

The fire that broke out on September 11, 1888 was not the first fire to threaten Wang's livelihood, as just a few years earlier the paper reported: "A fire broke out in Chinatown this morning in a house occupied by Lim Wang the washerman and owned by Muller & Soloman. The fire department was on hand on time and the damage proved very slight" (*Sentinel* March 20, 1886:3). While documents indicate that Wang remained in town until the late nineteenth century, a notation on the back of the Britt photograph below stated that "Lim Wang just walked out of the laundry one day and went back to China, and was never heard from again" (Atwood 1976:23).

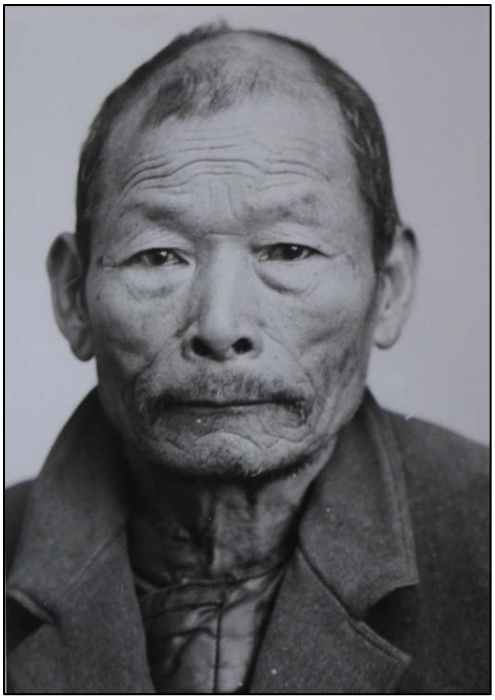


Figure 6. Peter Britt photograph of Lim Wang. Britt negative number 1154a, photograph courtesy of the Southern Oregon Historical Society.

In addition to the legal businesses operating in the neighborhood, a variety of covert services were also being provided. As previously mentioned, far fewer women traveled to the United States in the mid-nineteenth century. This was due to a variety of social, cultural, and economic reasons. Regardless, while not in the same number as their male counterparts, Jacksonville was home to a few dozen Chinese women at one time. The 1870 census lists 18 women between the ages of 18-30 (representing 12 households) listed as "keeping house." Some of these women were likely employed as prostitutes. A brothel on Third Street was busted in the 1870s (located in a building listed as a "China Hotel," where the Jacksonville fire station is today). In 1885 a Chinese woman and her associate named 'Moon' were arrested for operating a brothel, potentially the one at the China Hotel:

> IN JAIL. Marshal Curtis this week arrested a Chinawoman for keeping a bawdy house, and on the following day Recorder Huffer fined her $25 and costs. Failing to pay the fine she remains the guest of the city. In making the arrest the Marshal was interfered with by Chinaman 'Moon,' who resisted the officer and tried to take the woman away, for which he was arrested and paid $24 for the fun the next morning (*Sentinel* August 3, 1885 p3).

In addition to the accounts of prostitution, women can be traced in the documentary record in direct and indirect ways. Through birth notices (*Sentinel* June 27, 1885; *Democratic Times* May 13, 1871), marriage notices (*Democratic Times* April 24, 1885:3; *Mail Tribune* May 26, 1910 v1), and through a limited number of families listed in the census (Figure 7). Other mentions of women include a violence incident condemned in the local paper.[1]

Several twentieth century accounts describe the neighborhood's longtime resident Tsi Quoy, known locally as 'China Mary.' Tsi Quoy was particularly popular with young children in her older age, as all reported getting candy and nuts from her (Force 1973; Hartman 1973; Rumley 1977). Pinto Colvig, of clowning fame, recalls spending time with her on "rainy Saturdays:"

> sWhen I whiled away an hour or so up at China Mary's, and learned not only how to say & write HAPPY DAYS! A-la-Confucius, but also, the intricate art of rolling cigarettes cornucopia/ shape. Tobacco, in those days, came hard by to J-ville juveniles. (Yok' Eaton, my best source was usually in the calaboose) so, China Mary up on Punk Alley (upon whose shack I never did throw rocks (like the other kids) just to hear her scream and cuss in Chinese.) For her I ran errands—like down to Orth's Butcher Shop and bring her back a bucket of raw pig's feet at .10 cents a gallon… a sizeable soup bone and a gob of free liver for her cat. For this service I received a handful of litchi nuts, a sack of candied citron… and a coconut… and a pocketful of tobacco, which, smelled and tasted like a mixture of tea, gin, 2nd hand Opium smoke, burnt firecrackers, incense, and a most pleasant aroma popular among the "painted harlots" of that era known as MUSK! (Pinto 1963).

[1] "CHINAWOMAN STONED. Some boys threw a rock at a Chinawoman last Sunday and struck her in the face, cutting a fearful gash over her eye. A stop should be put to this kind of amusement and an example made out of the young hoodlums" (*Oregon Sentinel* May 16, 1877).

Figure 7. Peter Britt photograph of a young Chinese couple. While there is no specific information associated with the photograph itself, it could be the photograph Peter Britt wrote about in his diary from April of 1885, for which he was paid $5.00. The local paper wrote "A Chinese wedding, 'alles same melican man' took place yesterday, Justice Foudray officiated" (*Democratic Times* April 24, 1885:3).

In addition to throwing rocks to get Tsi Quoy to curse in her native tongue, local youth were fascinated by her bound feet: "She had these little feet, you know… And we would knock at the door and we could hear her coming—took a long while to get there, and she always had incense burning in the house" (Force 1973:21-23). Little is known about her origin, but in her advancing age she was a well-known fixture in the neighborhood, and was cared for by her community:

> Relief is asked for 'China Mary.' Tsi Quoy, better known as 'China Mary' who has lived in Jacksonville since the gold days of '49 is to receive a pension at the hands of the county. A petition has been circulated in Jacksonville asking that this be done, as the aged woman is apparently without means of support. China Mary came to Jacksonville with her lord and master over 60 years ago and is now almost the sole remnant of what was once one of the most populous Chinese camps on the coast barring San Francisco (*Mail Tribune* September 22, 1910:6).

There is a Chinese woman named Mary (no last name given) listed in the 1910 Census. Mary is further described as 50 years old, having had immigrated to the United States in 1890, and as a

homeowner with no mortgage. Despite some likely inaccuracies regarding Mary's age and immigration year, the fact that she is listed as owning her home is worth noting. Like others in the small community, Mary might have owned the building itself, but probably had no claim on the much more valuable plot of land that it stood on.

Celebrations in the Community

While the population fluctuated in the Chinese Quarter throughout the year, the most bustling time of the year was undoubtedly during the Chinese New Year Festivals. This was a time for celebration within the Chinese community, but it was also an important time for cross cultural interactions amongst Jacksonvillians. Fletcher Linn, who grew up across from the Chinese Quarter, wrote "the few hundred Chinese residents lived up to all the customs and traditions of their native homeland, having observed all their national holidays and giving particular attention to their burial ceremony at the death of any kinsmen" (Linn nd:108). A variety of newspaper accounts echo this sentiment, highlighting the Chinese Quarter was at its peak during the winter Chinese New Year festivals:

> CHINA NEW YEAR- The Celestial new year began last Sunday, and continued to be celebrated until yesterday. The air has been filled with the din of their heathenish music, and redolent of burning firecrackers. Everybody, save the long cued thieves themselves, are rejoiced at its close. (*Oregon Sentinel* 24 April 1858:1-3).
>
> CELESTIAL HOLIDAY. Monday, last, was the day which the Chinese commence counting the year. One the occasion they had a grand time, consuming a vast amount of whiskey and firecrackers. It is quite a novelty to watch them burn fire crackers, as they set fire to several bunches at a time, thus keeping up a continual roar for half an hour (*Sentinel* February 9,1867)
>
> The Chinese are preparing for their New Year, and chickens are in demand. As there are no hen roosts near, they are willing to pay from $9-$12 per dozen and find difficult work to obtain them at these prices (*Oregon Sentinel* February 10, 1883:4)
>
> Chinese New Year commenced last Friday and as yet the festive Mongolian has not finished celebrating. Their orgies continue day and night and still the average citizen is not satisfied (*Democratic Times* February 17, 1888:3).
>
> Chinese New Year began this week and Chinatown is fuller than usual. A considerable quantity of pork, poultry, *etc* is now being consumed by the average Mongolian to say nothing of the 'blandee' he encases during that period, which generally continues several days (*Democratic Times* January 31,1889).
>
> No one will give thanks more seriously than we that the Chinese New Year has come and gone. The infernal din occasioned by their firecracker demonstration was terrific (*Democratic Times* February 14, 1889:3)

The celebrations likely were a boon to merchants and ranchers in the area, who were able to import and supply Chinese residents with supplies needed for the festivities. Interestingly, the accounts from 1888 and 1889 indicate that the festival was continued after the northern part of the neighborhood burned, suggesting that the population in the larger area could still sustain a large celebration. A photograph taken by Peter Britt (Figure 8) indicates that white residents attended the celebrations as well.

Figure 8. A photograph of Chinese New Year celebrations along Main Street (view south east). The angle of the photographs suggests that it was taken from in front of the building excavated as part of this project.

The Fire

In the early hours of September 11, 1888, Jacksonville "was roused by the ringing of the fire bell, and the mountain sides were illuminated by the flames blazing through the roof of David Linn's planing-mill and furniture warehouse" (*Oregonian* September 13, 1888). This fire would prove disastrous for the northern block of the Chinese Quarter. Among the casualties of the fire were the mill, the home of W. J Plymale and Newman Fisher, and several "tenement houses." The properties were all uninsured, and newspapers reported the damage was assed at $20,000, with the bulk of the losses belonging to David Linn (*Oregonian* September 12, 1888:2). The officials determined the origins of the fire to be suspicious in nature, as "The engine and machinery had been thoroughly cleaned after use on Monday, and there were no combustibles near the fire box. A careful inspection of the premises was made by Mr. Linn after 10 o'clock on the previous evening, and not

the slightest trace of fire was discovered" (*Oregonian* September 13, 1888). A dog awoke a neighbor who witnessed someone fleeing the scene.

While the arsonist did not explicitly target the Chinese neighborhood, it could be argued that the result was nonetheless political. The fire department focused its efforts on the commercial buildings to the east and the white owned business on the block facing Oregon Street. Many of the Chinese-occupied shanties were vacant or dilapidated and deemed lower priority for the limited fire suppression resources. The state of the Chinese part of the neighborhood was partially due to the overall population decline, but it was also due to the fact that many of the Chinese residents could not own the buildings, which de-incentivized repairs and remodeling over time. In short, the neighborhood was ripe for a catastrophic fire:

> Within ten minutes of the first alarm the fire had communicated to the frame rookeries on the south side of California Street in the rear of Solomon's Store, and the most strenuous efforts were necessary to save Orth's brick block and the adjoining buildings. It being apparent at once, that water would be wasted on the burning tinder boxes [the Chinese-occupied buildings], a portion of them were torn down and all burned to the ground (*Oregonian* September 13, 1888).

Determining who was living within the northern block (Block 6) of Jacksonville's Chinese Quarter is a difficult task. Research illuminated a complex web of property owners, renters, squatters, and businesses (both EuroAmerican and Chinese) over time. As this area marks the oldest urban street in the town, it is unsurprising that some of the early property transactions are difficult to trace. Buildings were erected before the lots were surveyed and divided, and often times a building was owned by a different entity than the land it stood on. Regardless, by the time the block burned in 1888, the buildings were owned by a handful of people, none Chinese. The 1888 Sanborn Fire Insurance map is marked August—just one month before the fire—and indicates that many of these buildings were vacant at the time of the fire (Figure 9). There is no notation on the building in the project area, but the material culture recovered from the site indicates that it was occupied.

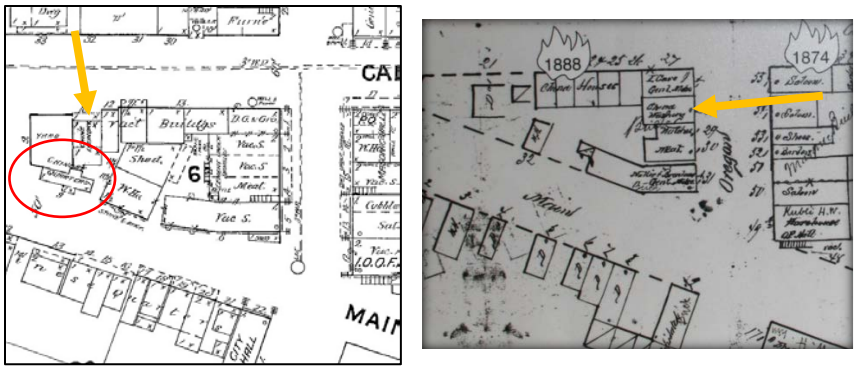


Figure 9. A close-up of the 1888 Sanborn Fire Insurance map (on left) with the project area outlined in red. The map notes that the building to the north of the project area was a laundry (noted in yellow), which was operated by Lim Wang up until the fire event. The image on the right is the unnamed map hanging in the Jacksonville Fire Department, with the Chinese wash house (noted in yellow).

There is some information about the adjacent building (to the north) which housed the laundry business of Lim Wang. A newspaper described Wang's business in their accounts of the fire: "Several parties lost some clothing in Lim Wang's laundry, the proprietor of which is a small loser" (*Oregonian* September 13, 1888). It is unclear what exactly this statement means: Was Wang able to recover equipment before the building caught fire? Was he considered a 'small loser' as he did not own the building itself? Or, was his loss considered unequal to those of his white neighbors for larger socio-political reasons?

While Wang's losses might have been underrepresented in the newspaper accounts, the losses of the resident/s of the small dwelling along Main Street were not mentioned at all. A mysterious mention is made of a haunted laundry, "C.W. Kahler owned the wash-house formerly occupied by Wong Goon, and haunted by his spirit since his death, as the celestials think" (*Oregonian* September 13, 1888). Wong Goon was an important local business man and labor broker, who died of consumption in 1887. He was described in his obituary as "both intelligent and honest in his dealings, and was for many years a resident of Jacksonville" (*Democratic Times* July 19, 1887). Although the mention seems to suggest the vacant laundry was within the area affected by the fire, the building in the project area was never listed as a wash house or laundry. However, the building marked "vacant" on the south side of Solomon's dry goods store (located on the southwest corner of California and Oregon streets) was described as a "wash house" on an undated map of Jacksonville hanging in the current fire department (Figure 9).

To date, it remains unclear who the occupants of the building in the project area were. A reconstruction of the property records were able to provide spotty information about ownership over time, and it appears that the lot in question (but perhaps not the *building*) was owned by Joseph Solomon at the time of the fire. After the fire, the remains of the northern block of the Chinese Quarter was covered in fill to allow for an extension of Main Street to what is now Highway 238. Perhaps there were initial plans to rebuild, however, with the railroad bypass, Jacksonville had begun a general economic decline, and there was little incentive for commercial construction.

Post Fire: The Final Years

By the late 1880s, most of the Chinese Quarter was bought up by whites and slated for removal. The *Sentinel* of June 26, 1886 wrote "The China Houses belonging to the estate of M. Colwell, deceased, were sold to Marshall Curtis last Saturday for $159." Just a few years later the *Democratic Times* wrote that Washington developer Cyrus Kinman "has purchased Mrs. Duncan's [now known as Hanna House] residence … paying $1400 therefor. He has bought some of the Chinese rookeries fronting his property on the north and will obliterate them. We are always glad to welcome such accessions as Mr. K" (October 17, 1889). The home of Tsi Quoy (China Mary), was potentially one of these buildings slated for demolition. Despite this trend towards urban renewal in the Chinese Quarter Site, portions of the neighborhood remained intact into the early twentieth century. The 1900 census population schedule lists a handful of residents along "A Street" (which was Main Street). The residents were listed with occupations such as the laundry trade, cooks, and a merchant (although no store front is ever listed on a Sanborn Map in the Chinese Quarter). While the 1900 census records provide more data about the residents than earlier ones (such as emigration dates), holes remain in the enumeration data. Firstly, it is difficult to trace known residents such as Tsi Quoy and Wah Kee. This could be due to a number of factors, but suggests that the data collection remained biased or haphazard within the Chinese neighborhood. Secondly, all of the individuals listed above gave an emigration date that is likely much earlier than their actual arrival to

the county. Taken at face value, all of the individuals came over as very young children. The motivations for this potential exaggeration could be related to strategies employed as a means of increasing the viability of one's immigration status, similar to the practice of 'Paper Sons' after the 1906 San Francisco earthquake.

A handful of oral histories conducted in the 1970s with native Jacksonvillians all remark upon the Chinese Quarter. The interviewers all explicitly ask about Chinese in Jacksonville (in most cases it was not volunteered), however, it does appear that the small population was a notable part of the early twentieth century community. Jacksonville resident Wesley Harman recalled "I first came here in 1910 and then they was here at least two years after that. I don't know how many … I walked up on what they called Chinatown … and it was just a lot of board shacks in there made out of one-by-twelves" (Hartman 1973:9). When asked how people in Jacksonville treated the Chinese, Harman replied "well, the people that I knew, especially my mother, she said 'the Chinese are good people. And always treat them right and everything, and they'd treat you right.' And that is the way I've always found it." (Hartman 1973:10). By 1930, all of the buildings in the Chinese Quarter were gone (LaLande 1981:295), but the northern portion of the block was little changed between the 1888 fire and the construction of a Veteran's Memorial Park in the 1990s.

Archaeological Methods and Findings

The City of Jacksonville and ODOT hired SOULA to perform archaeological survey and testing within the First and Main Street Sidewalks project area, in order to identify any cultural resources that might be adversely affected by the upcoming construction. To this end, SOULA archaeologists conducted fieldwork from October 26 to November 2, 2011, which included a total of 23 individual 50 cm by 50 cm Quarter Test Units (QTUs) excavated across the right-of-way along the north side of Main Street between Oregon and Highway 238, and the west side of First Street between Main and Fir streets. All units were excavated using 10 cm arbitrary levels, to a minimum depth of 50 cm below surface where possible, and all material was screened through 1/8-inch hardware mesh. The complete results of this project can be found in Rose and Johnson (2012).

Seven of these Phase II units were excavated along the north side of Main Street within the Jacksonville Chinese Quarter Site 35JA737 portion of the project area. A total of 2,704 artifacts were recovered from these units, representing several hundred individual items. Due to the presence of numerous utilities and paved surfaces, units could not be excavated at the traditional 10-meter intervals, instead, they were placed somewhat opportunistically along the right-of-way in locations as close to the proposed project impact areas as possible. This included working around streetscape features such as a memorial fountain, benches, an Americans with Disabilities Act (ADA) parking spot, and a paved pathway connecting the street to a restaurant in the historic Orth Building. Despite this, the units were effective at highlighting information about the site structure and key deposits within it that might be vulnerable to project construction.

Project impacts slated to occur within the Chinese Quarter Site included the excavation of a deep trench along the north side of the road for the installation of a storm drain and vault, and excavation and resurfacing of a sidewalk, curb, and the ADA parking spot. Profiles of the excavation units indicated that there were discreet disturbances associated with utilities across the roadside project area, but intact soils containing archaeological deposits were also present. In general, the findings echoed observations made in previous excavations in the Jacksonville Chinese Quarter Site 35JA737 by Ruiz and O'Grady (2008), and Schablitsky and Ruiz (2009), namely, that significant archaeological deposits were present across the project area. Due to the location of the Chinese Quarter Site at the heart of the project APE, these resources could not be avoided, and therefore, the adverse effect to the significant deposits encountered during test excavations was mitigated through the data recovery excavation described below.

As previous archaeological work within the Chinese Quarter Site had focused of the northern side of Block 6, SOULA's test excavations were able to provide new information about the distribution of subsurface deposits and tighten the actual site boundary. Excavations placed along the western side of Main Street (within the original Chinese Quarter Site boundary) encountered deep fill deposits, and helped illustrate the edge of the original landform and larger site transformation processes (Figure 10). During the height of the Chinese Quarter-era, Sanborn Fire Insurance Maps indicate that there were historically no buildings on the north end of Main Street (Block 6). Instead, First Street connected with California Street west of the Chinese Dwelling. The soil profiles support the assertion that after the 1888 fire, fill was imported to Main Street, and the grade was then raised and extended to where California Street transitions to Highway 238 today (which was historically in front of the Viet Schutz brewery). No buildings were ever constructed on this portion of the block. In the mid-1990s, the City of Jacksonville turned much of the north side

of Main Street into Veterans Memorial Park, portions of which included the construction of a water feature modeled after historical placer mining equipment, benches, and a commemorative sign in honor of the Chinese Quarter.

In addition to insight into site morphology, archaeological resources encountered during Phase II excavations included segments of a stacked rock feature (QTU 16), and a dense, artifact-filled ashy deposit (QTU 15/ QTU 17) believed to be associated with the historical fire event (Figure 11). A similar ash feature was encountered in the Ruiz and O'Grady (2008) units, which were located downslope just north of our excavations. The feature observed in QTU 15/QTU 17 was determined to be a significant archaeological resource within the Chinese Quarter Site and fell within an area slated to be impacted by project construction.

A data recovery plan was designed in order to mitigate the adverse effect to the site within this targeted area. As described above, the Phase II excavations were placed opportunistically in and around the unpaved portions of the project area. Much of the area adjacent to the Phase II feature of interest was capped by the original paved ADA parking spot. Therefore, prior to our Phase III excavations, the City of Jacksonville Public Works department removed the pavement, thereby allowing us access to the larger area of concern. The Phase III data recovery excavations were conducted with the goal of characterizing the nature of the ashy feature in an attempt to determine whether it represented a pit feature, structural remains, or midden. As such, a 2 m by 2 m wide exposure excavation was proposed. However, field conditions did not allow for the traditional 2 m by 2 m square form, instead, four contiguous 1 m by 1 m units (Unit 1 through Unit 4) were placed adjacent to the ash feature observed in QTU 15/17 to create a comprehensive subsurface view of the deposit.

Figure 10. Overview of the Chinese Quarter Site, view east down Main Street. Test excavations are in progress in what would be determined as sterile fill, to the west of the Chinese Quarter site boundary.

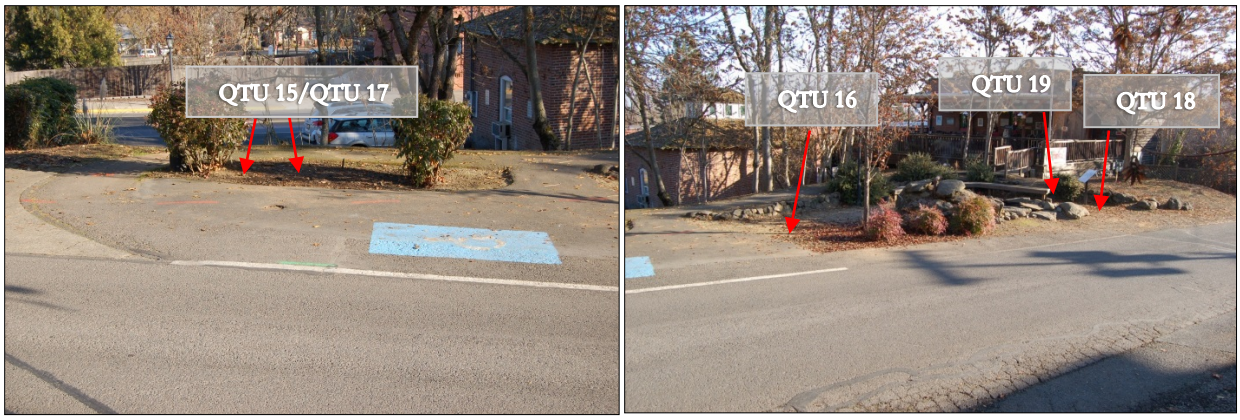


Figure 11. Location of Phase II excavations along the north side of Main Street in the Chinese Quarter Site. Phase III excavations were conducted in the area shown on the left and expanded off of QTU 15/ QTU 17. The right image shows units excavated in an area that could be avoided during construction. QTU 16 and QTU 19 contained intact archaeological deposits associated with the Chinese occupation of the block, but QTU 18 was within a disturbed gas line trench.

In order to best describe the archaeological features encountered during the excavations, the 1 m by 50 cm test unit (QTU 15/QTU 17) and the adjacent Phase III units will be discussed as a single feature. As indicated above, the placement of the data recovery units targeted the ash feature encountered in test excavations. As such, the units were located adjacent to QTU 15/ QTU 17 in order to chase out the observed feature deposits (Figure 14). Unit 1 was positioned to the northwest of the test unit, but due to the presence of a large holly bush and lamp post, the northern half of the unit was offset 40 cm to the east. Once the cultural surface was encountered in Unit 1, the additional units were placed accordingly. To the north of Unit 1 there was a paved sidewalk (not slated for removal) and the sloped area leading down to a small parking lot along California Street. Regardless, the excavations focused on the southern side, which was where the feature was most visible in the profile and the area most vulnerable to construction impacts. Unit 2 was placed south of Unit 1, and Unit 3 was placed to the west, with a 1 m gap in between. This spacing strategy was done in order to allow for the widest view possible of the feature area. Once the units were excavated to the feature surface (as determined by the presence of ash), it was clear that Unit 4 was best placed between Unit 2 and Unit 3, allowing for a 1 m by 3 m long contiguous trench, with Unit 1 off to the north. This alignment proved fortuitous, as it allowed us to access two distinct activity areas within the site.

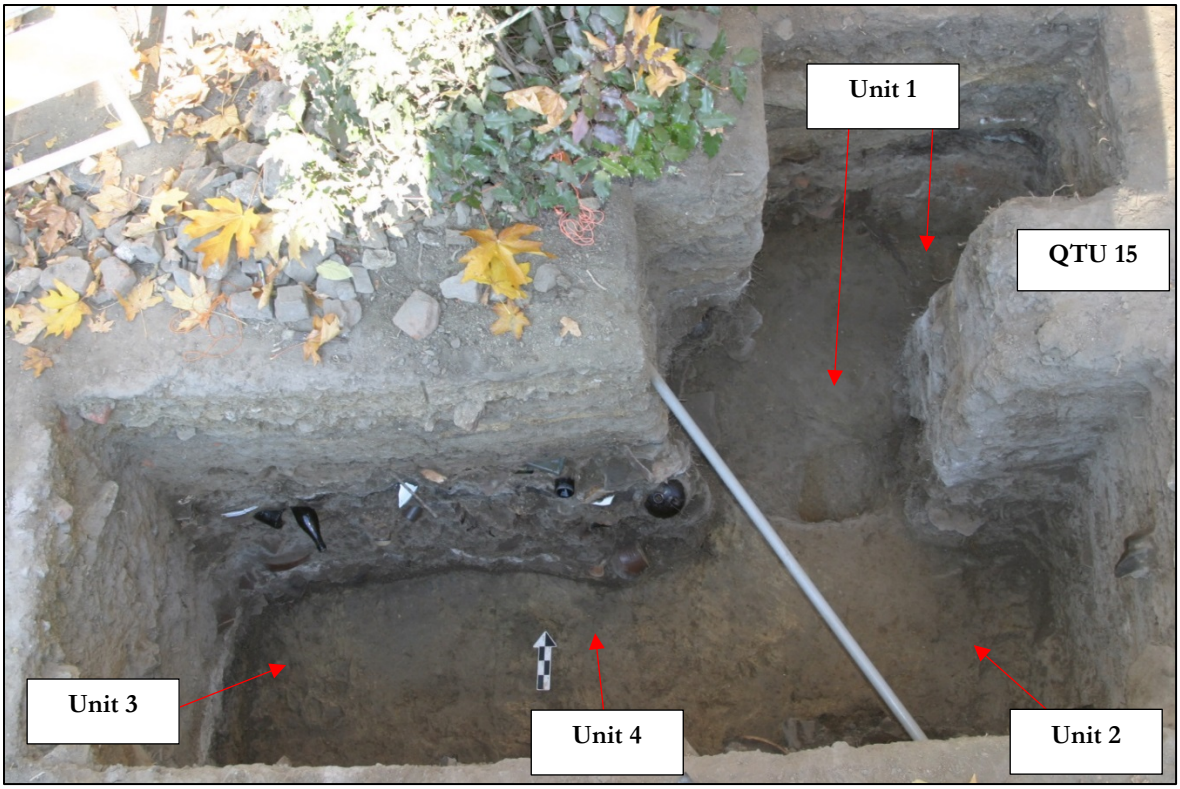


Figure 12. Overview of the data recovery excavation trench, with individual unit designations noted. QTU 17, the eastern half of the QTU 15/17 unit, is out of frame and therefore not listed above.

All of the data recovery units encountered the artifact-filled ash deposits found in previous excavations, indicating that the feature observed during testing was not a privy or pit feature, but was likely associated with the Chinese Dwelling that burned in 1888. While artifacts were present throughout the entire excavation, a distinct ash layer marked the top of the house feature strata within each unit. Discrete disturbances were also encountered, including a shallow PVC power conduit running across Unit 2 (as can be seen in Figure 14 above), and landscaping and streetlight instillation in the vicinity of Unit 1. However, these disturbances were largely above the intact house feature deposit. In general, the feature was encountered between 60-80 cm below datum (50-70 cm below the modern ground surface).

As per our methods outlined in the data recovery plan, the feature was excavated in 10 cm arbitrary levels. All material was screened through 1/8-inch hardware mesh. In order to best capture the stratigraphy within the feature, all units were taken down incrementally and photographed and mapped at key horizon points. The datum for the entire excavation was placed off of the northwestern corner of the south half of Unit 1, at 10 cm above the ground surface. Once the feature was encountered, all units were excavated using hand tools, and bulk soil samples were taken from each unit every 10 cm. In addition, bulk soil samples were taken opportunistically from distinctive strata within levels. A description of the soils encountered within the individual units is provided below:

QTU 15/17: This unit was comprised of two adjacent 50 cm by 50 cm QTUs, creating a 1 m by 50 cm excavation trench. This not only allowed for a better look at the rich deposit initially encountered in QTU 15, but was also needed in order to access the deep deposits in this area. QTU 15 (the west half of the trench) was excavated to 140 cm below the ground surface, and QTU 17 (the eastern half of the trench) was excavated to 110 cm below surface (Figure 14). The unit numbers are not contiguous as QTU 16 was established elsewhere prior to the unit being expanded. A dense historic layer began at roughly 40-45 cm below the surface, which transitioned into the ashy, artifact-filled feature (originally described as Feature C) by 60 cm below the ground surface. What was originally interpreted as (sterile) dense compacted "reddish brown clay" and stone, is now believed to have been highly fired clay bisque and stone flooring pavers observed in the adjacent unit. Due to the difficulty in accessing the deep deposits in the limited space, the excavation did not reach the bottom of the feature during testing.

Unit 1: Unit 1 was excavated to 170 cm below datum (160 cm below the surface). The unit was placed to the north and west of the 1 m by 50 cm QTU 15/17 test excavation. Due to established park vegetation, the unit was bisected and the northern half was offset by 40 cm to the east. The top layers of the unit were comprised of rich organic topsoil associated with the nearby landscaping, transitioning to uniform sterile shale fill between 30 to 50 cm below datum. The shale fill was likely imported in the late nineties, during the instillation of the adjacent Veterans Park and streetside infrastructure. The fill was on top of a layer of the historic-era fill, a dark brown heavy clay silt mottled with yellow/orange granite sand. Pockets of ash began to appear in level 6, and by level 8 there was course rubble with decomposed granite, gravels, and silty loam interspersed. The sediment transitioned to fine ash interspersed with medium brown silty loam for the remainder of the feature, with a few exceptions. The northeastern quad contained a thick layer of high fired clay bisque, under which the feature floor consisting of a horizon of large, flat stones and bricks were encountered. Subsoil is present across the unit by 170 cm below datum.

Unit 2: Unit 2 was excavated to 160 cm below datum (150 cm below the surface). The top layers of the soil matrix within the unit consisted of decomposed granite fill, transitioning to the same imported shale fill layer present in Unit 1. The unit transitions to a dark gray ashy layer at roughly 35 cm below datum, and then shifts to a medium to dark brown silty clay mottled with pockets of yellow decomposed granite and pockets of ash. The south side of the unit became increasingly ashy between 40-50 cm below datum, and the remaining layers in the feature consist of an ashy matrix mottled with brown silt. Intact floor boards are present in level 15, along with pockets of high fired earthen bisque along the southeastern portion of the unit (as was seen in Unit 1 and QTU 17).

Unit 3: Unit 3 was excavated to 160 cm below datum (150 cm below the surface). Unit 3 was placed one meter west of Unit 2 (the gap would later become Unit 4). A portion of the unit was located under the original sidewalk leading to the La Fiesta Mexican restaurant, housed on the second floor of the historic Orth building. As was seen in the other units, the top layers consisted of the uniform shale fill to a depth of roughly 40 cm below datum. Unlike the other units, the northwest corner of the unit sloped to the north in a manner consistent with the larger landform pattern. The shale transitioned to a mottled layer with rubble and artifacts by 50 cm below datum. Soils observed above the feature within this unit consist of tannish brown loam with charcoal and mottled ash pockets. Ash is present throughout the unit by 70 cm and is interspersed with layers of light brown silt. Intact floorboards are present in level 15, and a dark yellow brown hardpan subsoil is present 5 cm below the wood. The west side of the unit is visibly sloped (see Figure 15), and as a result,

intrusive artifacts from the historic fill layers above the burn feature were present in this part of the unit up to 90 cm below datum.

Unit 4: Unit 4 was excavated to 160 cm below datum (150 cm below the surface). This unit was originally reserved in the event Units 1-3 had a feature that would merit exploration. However, it was determined that the best use of the unit was to place it between Unit 2 and Unit 3 in order to allow for a single trench and continuous feature profile. Soils observed on the top of the unit consisted of a medium yellow brown decomposed granite sand, which was imported to level the paved parking space in this area. The sand transitioned to the imported shale fill observed in the other units. A utility trench (for an electrical conduit) was running across the northeastern corner of the unit. Trench fill associated with the utility line was screened separately from the intact soils. Regardless, the disturbance was not deep enough to impact the burned house feature deposits. The unit transitions to a mottled dark brown silty loam with pockets of the sandy granite fill. The dark medium brown loam continues (and becomes increasingly compacted, likely due to the parking space) until the ashy matrix is encountered in layer 6 (60-70 cmbd). The ashy matrix continued until the floor boards that were encountered in level 15, just four centimeters above the yellow brown hardpan subsoil.

In general, the excavation appears to have revealed the northern portion of the small building shown in the Sanborn Fire insurance map of the project area (see Figure 9 above) and referred to throughout this report as the Chinese Dwelling. The map indicates that the dwelling had a small extension off of the northern wall. Archaeological features, supported by artifact distribution, suggest that the excavation straddles these two distinct areas in the building's footprint (Figure 14).

The ashy matrix associated with the burned Chinese Dwelling appeared roughly between 60-70 cm below datum across the site, with the intact deposits encountered at shallower depths on the east side, and up to 80 cm below datum on the west (Figure 14 through Figure 17). Due to the historic-era modification to the landform, it is unclear how steep the original slope was during the occupation of the building. The soil profile in Unit 3 was sloped to the north, and might have been a reflection of the original ground surface or the product of erosion or weathering in that area prior to the construction of the Veterans Memorial Park adjacent to the site in the 1990s (when the shale fill was brought in to the site).

The original building floor was encountered at roughly 150-160 cm below datum across the unit (140-150 cm below ground surface). Intact wood flooring was found *in situ,* with nails in place and floor board segments running different directions across the trench (Figure 18). This could suggest that flooring was collected and installed opportunistically, or that the directional change (at roughly the west side of Unit 4) is a sign of a different part of house or structural addition. Units were excavated at least 5 cm below the intact floor boards to determine whether additional deposits were present. The distinctive subsoil was encountered across the units, making it clear that the deposit was fully recovered within the units.

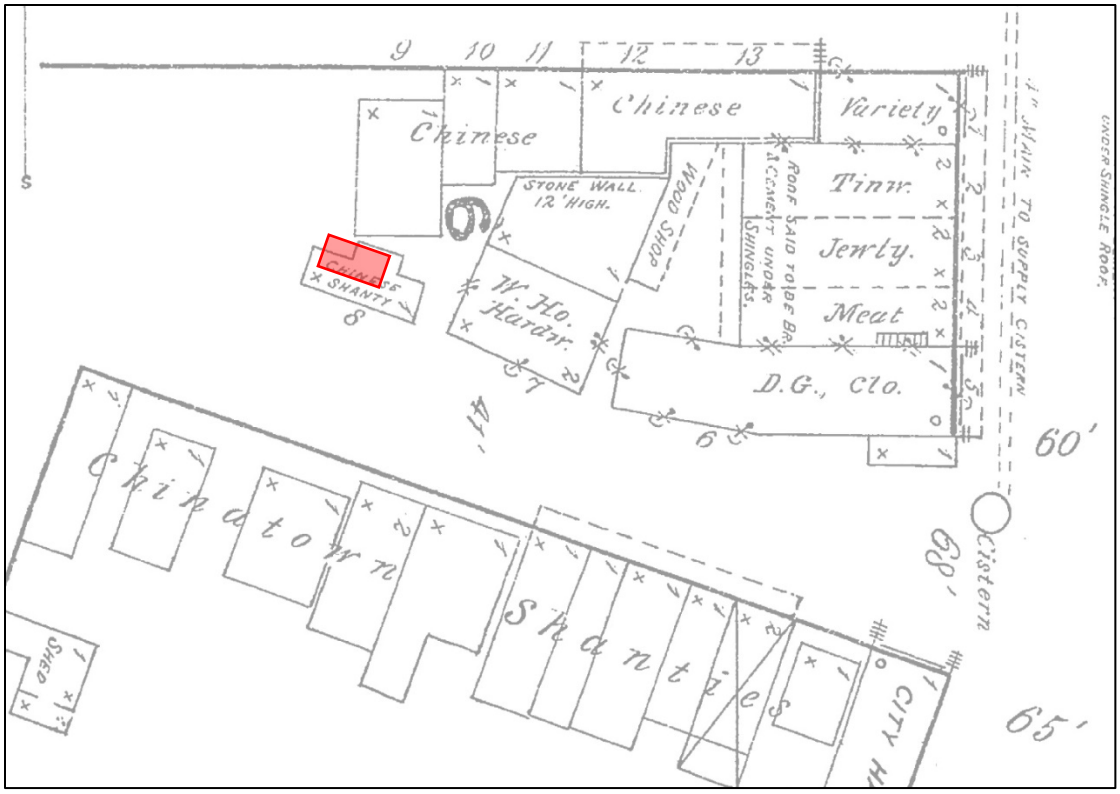


Figure 13. A close up of the 1884 Sanborn Fire Insurance Map with the approximate location of the excavation within the Chinese Dwelling. Features within the excavation reflect that the excavation unit straddles two distinct activity areas, likely the main house and the extension off the north wall.

Archaeological features, artifact distributions, and fire science (described below) aided in the interpretation of the historical layout of the home. The northeastern excavation units (QTU 15/QTU 17 and Unit 1) were located in the room off the northern wall of the building, which is believed to have served as the dwelling's kitchen. This portion of the house experienced high heat during the historical fire event. Excavation units in this portion of the building contained a thick layer of high fired clay bisque, which was at first believed to be a restrictive natural feature. However, when a pickaxe was used to remove the compacted soils, it was clear that it was a byproduct of the fire, and within the archaeological deposit. As the clay bisque strata was unique to the northeastern units, this indicates that the fire not only burned hotter in this area but that there were more soils intermixed with the artifact deposits due to either the hillside construction, disturbance, or other taphonomic processes. This 'shelf' of compacted bisque was encountered in the eastern sides of Unit 1, QTU 15/ QTU 17, and Unit 2.

A near complete assemblage of door hardware and a shallow linear depression was found between Unit 1 and Unit 2, suggesting that this area was where the room off of the north wall met with the main part of the house. The southeastern portion of the excavation units (Unit 2) appeared to have experienced more direct heat from the historical fire than the adjacent units. The fire behavior in this unit is attributed to this being part of a more open area within the house, and an assemblage of heat altered artifacts associated with recreational gaming suggest that there could have been a table in this portion of the building.

The units in the western portion of the dwelling (Unit 3 and Unit 4) also contained distinctive attributes. The northern portion of these units were not only where the bulk of the artifacts were recovered from, it is also where the artifacts were the best preserved (Figure 17). This suggests that this area was dominated by a large shelving unit or cupboard, which would have protected items from the fire. A more in-depth description of the fire science used for the project is presented below.

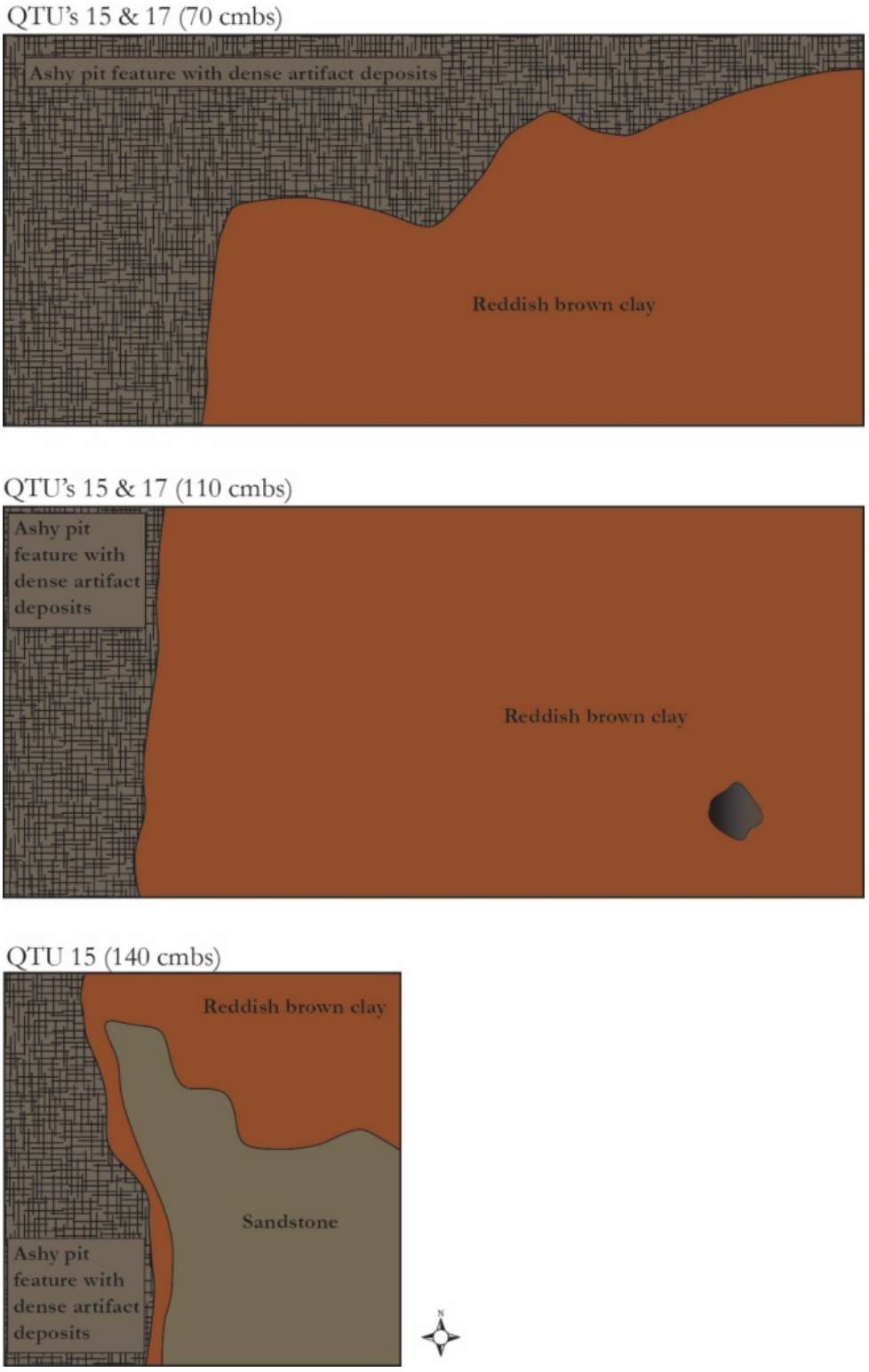


Figure 14. Plan views of feature within QTU's 15 and 17, with the reddish brown clay bisque visible. Reprinted from Rose and Johnson 2012.

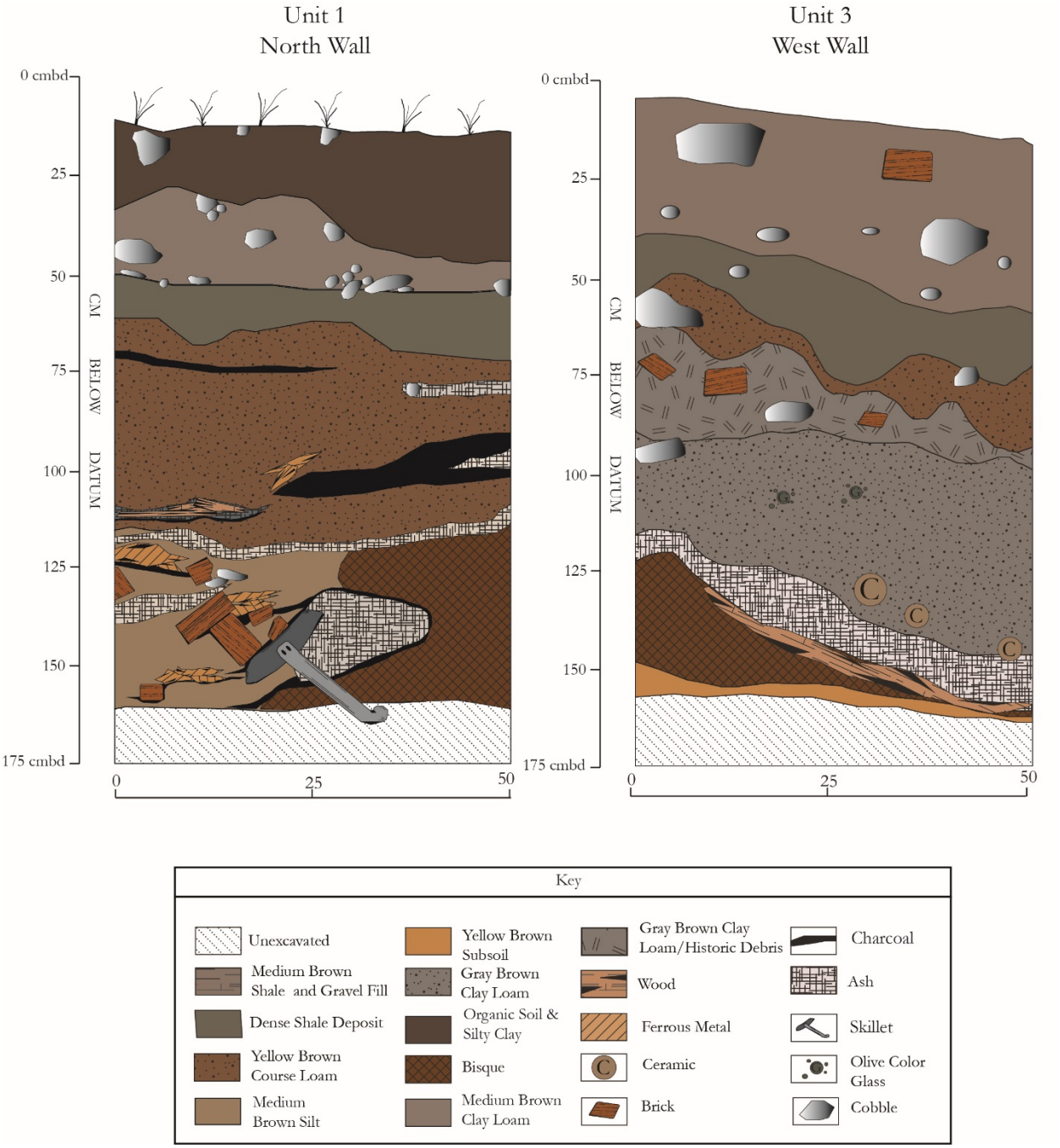


Figure 15. Profile illustrations from data recovery units. The North wall of Unit 1 (on left) shows the handled cooking pan associated with the cooking activities in this part of the house. The West wall of Unit 3 is pictured on the right and shows the slope and the higher ash content in the trench units in comparison to Unit 1.

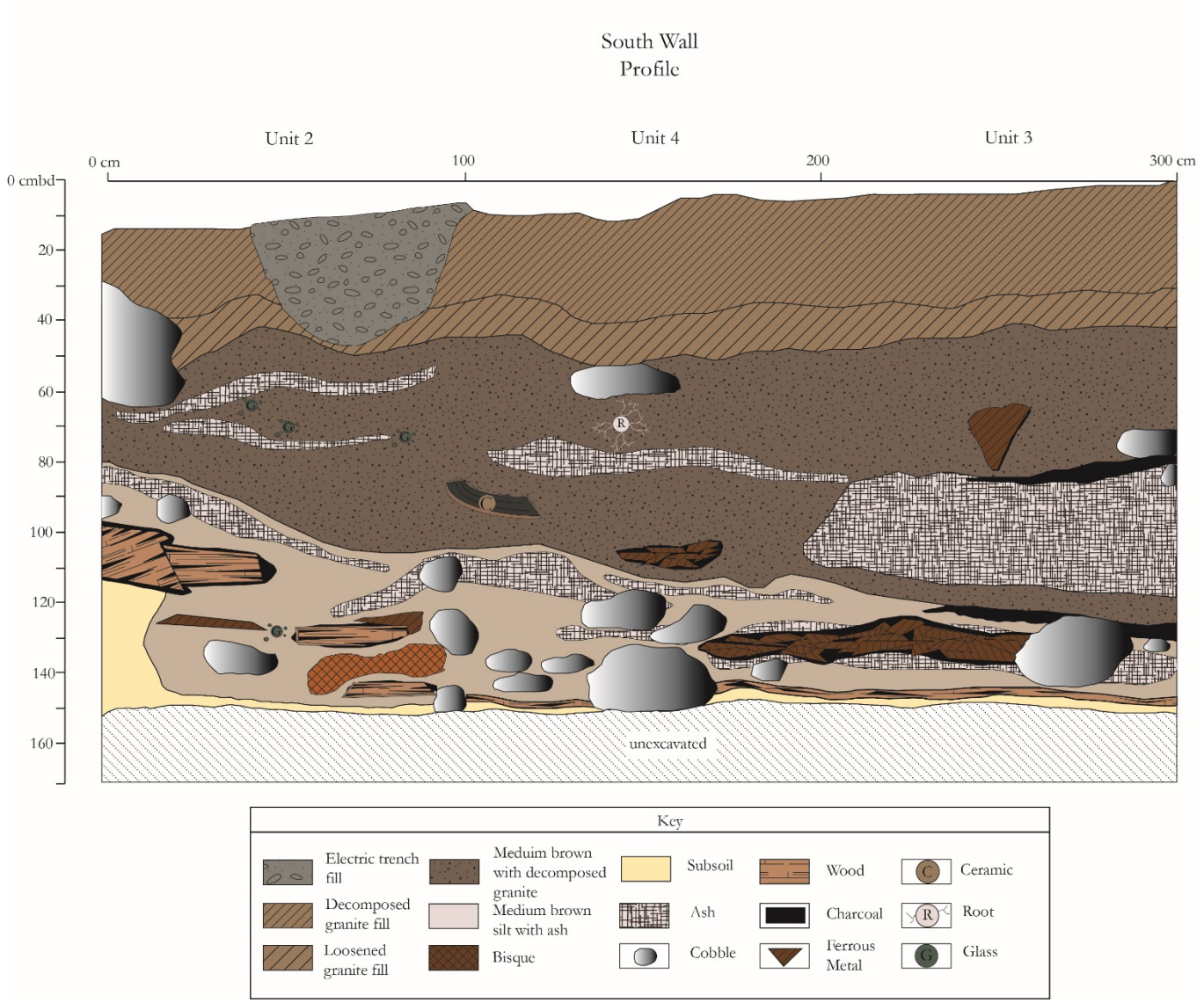


Figure 16. South wall profile illustration of Unit 2, Unit 4, and Unit 3. This wall would have been facing the interior of the house, and therefore had less concentrated artifact deposits than a cupboard or shelf.

Figure 17. Profile of the north wall of Unit 3 (left) and Unit 4 (right), with the strata outlined in black. The dense artifact deposits are more effectively showcased in a photograph than a profile illustration. The horizons of dense artifacts can be seen, perhaps as a reflection of the shelving the artifacts were once housed on.

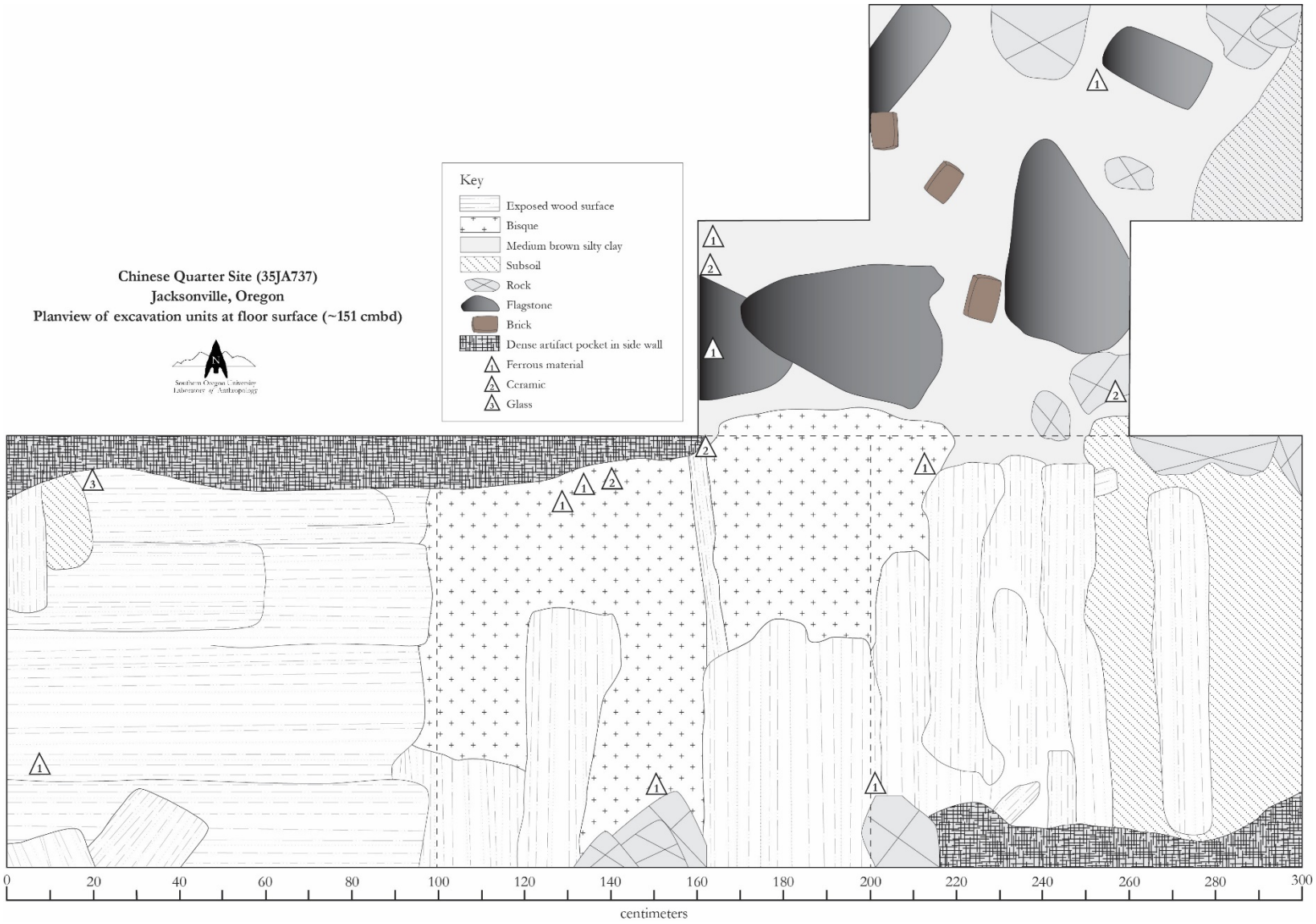


Figure 18. Plan view of the data recovery units at the floor level. Note the different floor board configuration across the trench, and the stone flooring in Unit 1. These indicate distinct activity areas within the building.

Fire Science in the Jacksonville Chinese Quarter

As described above, the data recovery excavations were focused on a dense artifact-filled ash feature, believed to be associated with a Chinese-occupied dwelling that burned in 1888. In order to interpret the taphonomy of the historical fire event and its impact on the building and contents, we consulted the Jacksonville Fire Department during the excavation. Jacksonville Fire Chief Devon Hull and his team became a big asset during the project, allowing us to incorporate fire science into the interpretation of the site. This aided in the determination of whether the feature reflected a post-fire clean up event—in which the material culture from across the site was redeposited and buried—or if it in fact represented an *in situ* feature created as the building burned in place.

Fire Chief Hull explained the way in which fires often function within a household context (whether in modern or historic times), including how fires tend to burn in layers, how sediments would theoretically accumulate, and how to tell the "depth of char" in wooden beams which can help indicate the direction and proximity of the heat source and the duration of exposure. The following information and subsequent interpretation was gained through conversations with Hull and through fire forensic resources found online.

Much of the soil matrix within the burned feature was comprised of various types of ash, which obviously reflected the fire event. However, within this ash were pockets of heat altered material, alongside perfectly preserved materials—materials that would have theoretically been vulnerable to high heat (i.e. faunal, ceramics, glass, etc.). Fire temperatures can fluctuate greatly depending on location, the type of fire, and even objects within the burning room. In general, the hot gas layer of a fire ranges between 1,000-1,800ºF (600-1,000°C), the floor temperature is usually greater than 3,290ºF(1,800°C), areas of smoldering combustion are less than 1,115ºF (600°C), and glowing coals are less than 2,400°F (1,300ºC) (Cafe 2007). Modern fire investigators determine the speed and growth of a fire by visible damage at the scene. Like archaeologists, fire investigators often use material culture to identify fire behavior. For example, spalling of plaster or glass breakage can reflect a rapid heat increase, whereas a slow burn will result in wood charring and glass that is softened, rather than shattered (The Forensic Library 2015; Cafe and Stern 2004). A quick "depth of char" test can be done on burned wood using a paperclip. According to Fire Chief Hull, this test can indicate the amount of time wood was exposed to heat, as an estimated temperature range and burn time can be calculated based on how deeply the wood is charred. In addition, other aspects of fire behavior can be inferred. For example, if the exterior of a beam is burned but the core is intact, the burn is secondary and not near the fire's point of origin. An average fire can reach temperatures of 1,400-2,200ºF (800-1,200°C). However, radiant heat of just a few hundred degrees can burn or char wood, without direct contact with fire. As such, burned wood or charcoal—which are often signifiers of a hearth or fire activity in archaeological contexts—might not be the best evidence in classifying historical fire events.

Within a structure, the fire matrix often behaves within a fairly predictable way: through layering. If a fire deposit is intact, the rising heat would cap the deposit in a layer (or multiple layers) of white ash. Black soot and charcoal reflects incomplete combustion, whereas the white, powdery ash reflects complete combustion and is a byproduct of access to oxygen. In the case of the burned Chinese Dwelling, we had complex stratigraphy comprised of dense horizons of unburned artifacts and charcoal, interspersed with layers of fine white ash. This pattern can be typical within a household context, as protected (or even semi-protected) items on a shelf or cupboard, or even items sheltered by something as ephemeral as a cloth, can be left virtually unaltered by a fire.

Layered horizons of unburned artifacts were recovered from along the northern portion of the excavation trench, an area which has been interpreted as a shelving unit or cupboard of some sort. This hypothesis is further supported by the various fragments of sheet metal found in this area, the seams and openings of which suggest storage vessels and other household containers. Distinct clusters of artifacts were found in association with these sheet metal fragments, such as a pile of pig mandibles encountered in Unit 4 between 100-110 cm below datum (Figure 19). As the shelving collapsed, the fire was snuffed out or left smoldering in these areas. Artifacts were protected from the heat within these pockets, and the matrix of ash interspersed with unburned artifact horizons was created. As stated above, smoldering combustion temperatures are typically around 1,000ºF (600°C), which is below the heat threshold to melt common materials such as glass.

Figure 19. The cluster of pig mandibles and associated artifacts recovered from Level 10 of Unit 4. A small Chinese brown-glazed stoneware jar can be seen to the left, and was also associated with the shelving deposits.

Conversely, items that were exposed, out on a table, or within a more open part of the house, would be within an area where the fire had ready access to oxygen. These items were therefore more likely to be exposed to a greater degree of heat alteration (Cafe and Stern 2004). The open areas within a fire can range from between 1,472ºF (800°C) in the 'open gas layer' to 3,286º (1,808°C) at the floor layer. This hot floor layer resulted in the high fired earthen bisque deposits encountered along the eastern portion of the excavations. The western portion of the floor was protected by the collapsed shelving, which not only preserved the artifacts on the shelves but also capped and insulated the floorboards. In addition to the bisque, other indicators of the structural layout (as seen through fire behavior) included a concentration of heat altered gaming related items, suggesting that this was a portion of the house used for recreational activities. A coin purse, Asian and EuroAmerican coins (including a melted stack of quarters), gaming pieces, dice, a Winter Green tea cup, and liquor bottles were recovered from this area in higher numbers (Figure 20). If these items were on a table, or in use when the fire started, they would be more exposed, and therefore be more vulnerable to fire damage. The fused quarters and melted glass bottles and gaming pieces in this area reflect exposure to a temperature greater than 1,650ºF (900°C).

Figure 20. The burned feature artifact cluster from the southeast corner of Unit 2. A Winter Green tea cup, stack of quarters, alcohol bottle and burned wood can be seen, suggesting this area might have been used for recreational activities such as gaming.

In addition to the collapsed shelving in Units 3 and 4, and the material culture associated with recreational activities in Unit 2, Unit 1 also contained a unique archaeological signature. Unlike the wooden floorboards observed in the main excavation trench, Unit 1 had flat, smooth, stone flooring. A complete set of door hardware (knob, rim lock, hinges, and so forth) was recovered in the area between Unit 1 and Unit 2, in addition to a shallow trench feature, which might have had some structural function associated with a doorway. This strongly suggests a door was once present and places the larger excavation configuration within the rough footprint illustrated on Sanborn Fire Insurance Maps. As previously stated, the 1884 and 1888 Sanborn maps of the building indicate that there was a small room or addition located off of the north side of the building, and we believe that Unit 1 and QTU 15/ QTU 17 fell within this portion of the building footprint. A large structural beam with attached siding was encountered within Unit 1 and reflects an exterior wall that had collapsed inwards during the fire event (Figure 21). This area also contained a higher heat signature than Unit 3 and Unit 4 and had the earthen bisque along the eastern edge.

The artifact and botanical assemblage suggests that this part of the building was historically used as a kitchen. A large globular jar was sitting on the stone floor, as well as an *in situ* ferrous metal wok, found in association with a loose configuration of brick on top of the flagstones. Other items related to cooking included a handled pan (seen in Figure 15 above), a cleaver, faunal remains, and the botanical remains. The structural beam was collapsed onto the jar and wok feature, which were clearly sitting at floor level when the fire broke out. As the fire occurred in early September, this area could reflect use as a summer cooking area, and was perhaps fully, or partially, open to the elements. The door hardware (which included a lock) suggests that the kitchen area was distinct and could be closed off from the rest of the house. The stacked brick and wok configuration reflects both an expedient and economical way to cook food without using much fuel or the need to build a hot fire.

Figure 21. Plan view of Unit 1 excavation in progress with the globular jar base, structural beam, and wok noted. Other artifacts can be seen across the floor horizon, including a Four Seasons Flowers bowl and a pig mandible (bottom center), and the base of a Chinese brown-glazed stoneware jar (below globular jar base).

Fire science was not only used to investigate the taphonomy and site structure of the Jacksonville Chinese Quarter, but it was also used to inform more detailed analysis of the fire and its impacts on the material culture of the site. As described above, fire investigators often use temperature markers on specific items to track the origin, temperature, or duration of fire exposure within a house. As such, information about melting points can be found for a range of common metals (Figure 22), and a scale of heat distortion can be found for glass objects (Figure 23). While the melting points of metals seemed pretty straightforward, the glass data presented a more nuanced way to determine temperature within a site, based on a range of heat alteration on a discrete artifact type. As exposure to a range of temperatures has a predictable effect on glass, we translated this information into six main categories (Stages 1-6), in order to operationalize classification (Figure 24). Recognizable modification, such as cracking or crazing, begins with temperatures as low as 195°F (90°C), and can progress up to a point wherein the glass returns to a liquid state at just over 1,600° F (900°C) (Table 1). For reference, water boils at 212°F (100°C). Terminology and modification markers are presented below.

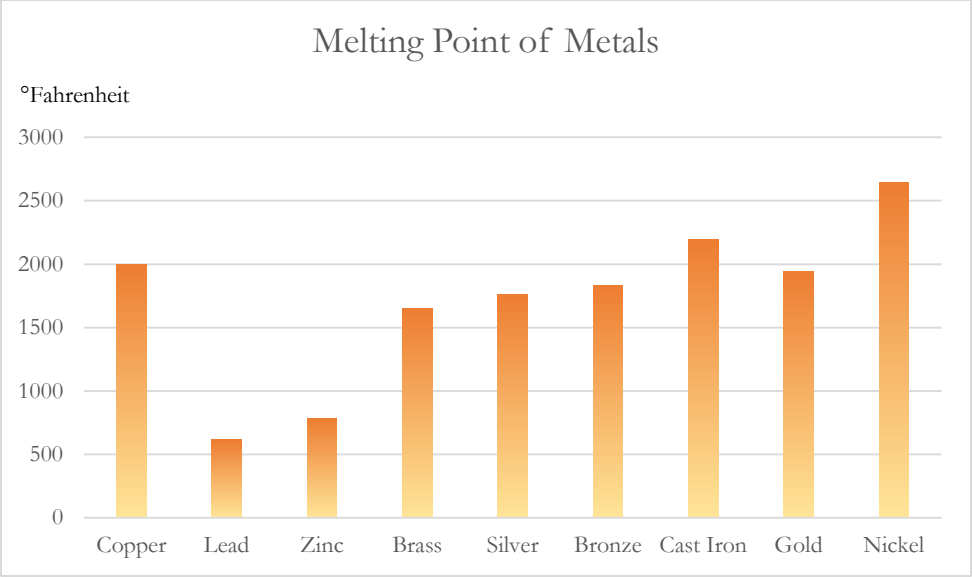


Figure 22. Melting point of common metals (Cafe 2007).

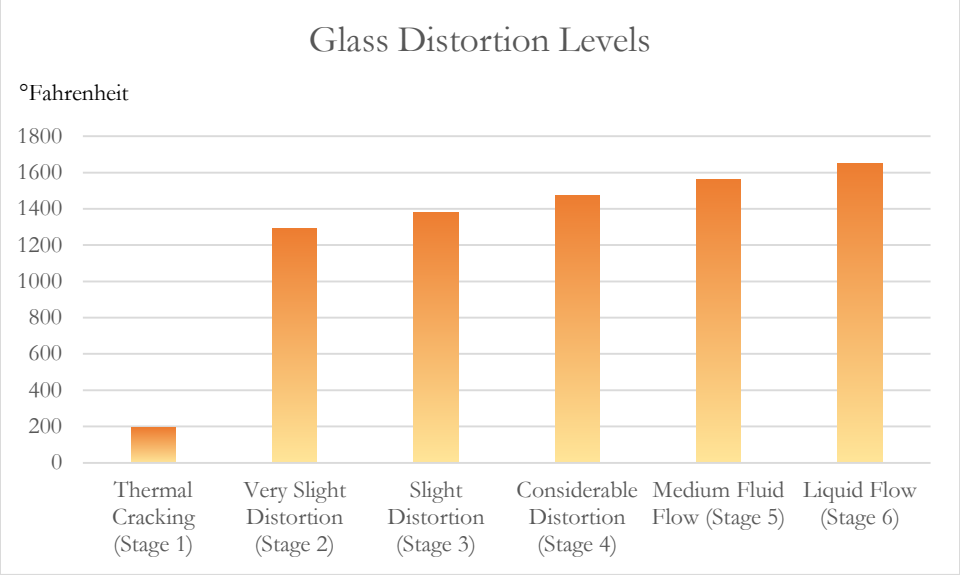


Figure 23. Stages of glass distortion when exposed to high heat (Cafe 2007). These temperatures reflect the melting points of soda glass, not Borosilicate glass (like modern Pyrex), which is designed to withstand higher temperatures.

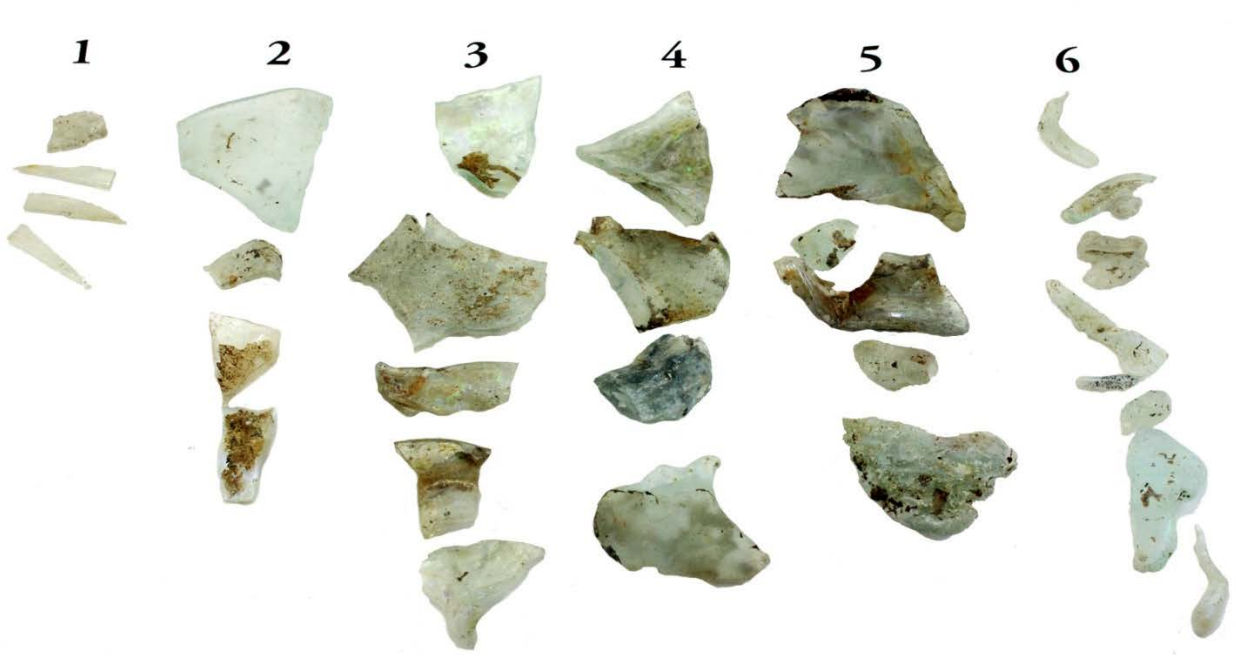


Figure 24. Visible stages of glass distortion (adapted from Cafe 2007).
From left: Stage 1-Thermal Cracking, Stage 2- Very Slight Distortion, Stage 3-Slight Distortion, Stage 4- Considerable Distortion, Stage 5-Medium Fluid Flow, Stage 6-Liquid Flow.

Table 1. Heat alteration on glass artifacts, as seen through stages of thermal modification (Adapted from Cafe 2007).

Classification	Distortion Level	Temperature (°F)	Description
Stage 1	Thermal Cracking	195-250	Glass retains shape, but is cracked or crazed
Stage 2	Very Slight Distortion	1,292	Glass retains recognizable shape, but corners and body are slightly warped or softened
Stage 3	Slight Distortion	1,382	Body is warped, the edges are softened and thickened
Stage 4	Considerable Distortion	1,472	Glass is folded, warped, and some bubbling is visible
Stage 5	Medium Fluid Flow	1,562	Glass distortion reaches the point where the form is no longer clear in spots, and can look like lava
Stage 6	Liquid Flow	1,652	Glass is liquefying. There are drips, blobs, and flowing edges

This classification system was applied to the 751 glass artifacts recovered from the Chinese Quarter. This count reflects the artifact count, not minimum vessel count (MNI). In some cases, several glass fragments were fused into a single fragment, further making the number somewhat arbitrary. However, we used the glass as a means to sample the temperature variations across the excavation. Due to the potential variability in heat exposure within a small area, or even on a single

artifact, the highest level of alteration was noted as a means to reference that the heat goes *up to* a certain point. Maximum temperatures were seen as a better indicator of fire behavior within the small, enclosed area, as the percentage of glass modification stages within each level also produced data, but did not seem as meaningful. In any case, the results did mirror other observations, indicating that the hottest part of the fire within our excavations was within Unit 2 (Figure 25). This was evidenced not only by the largest number of heat altered glass (representing more than 70% of the total assemblage), but the Unit 2 assemblage was also modified to the greatest degree (both literally and figuratively).

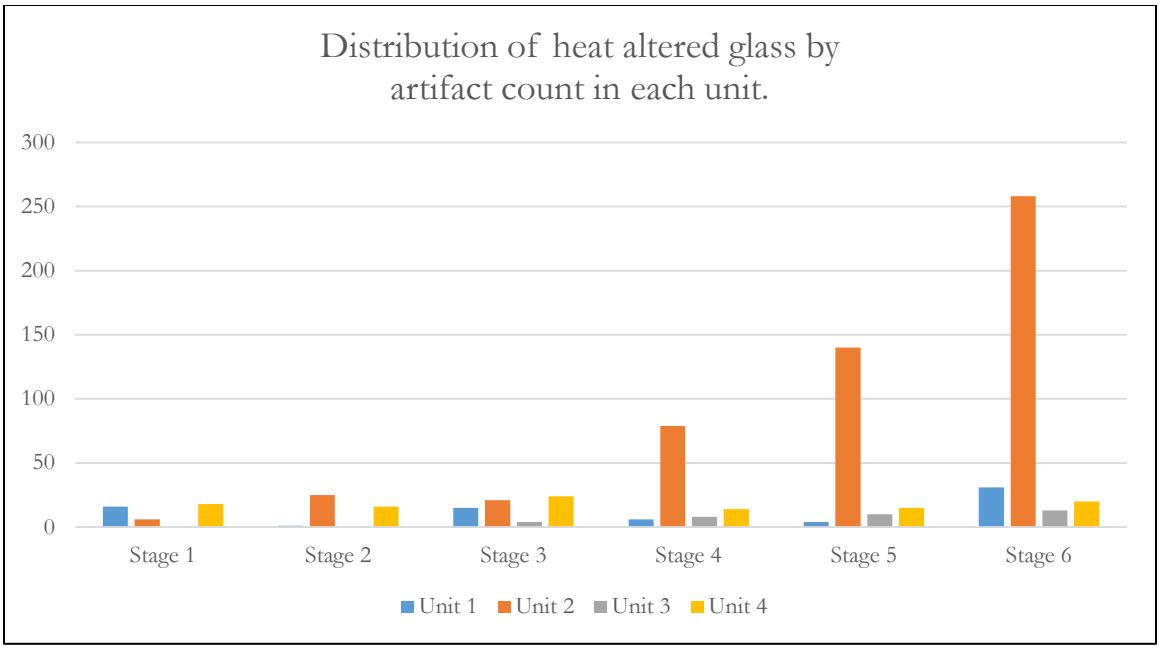
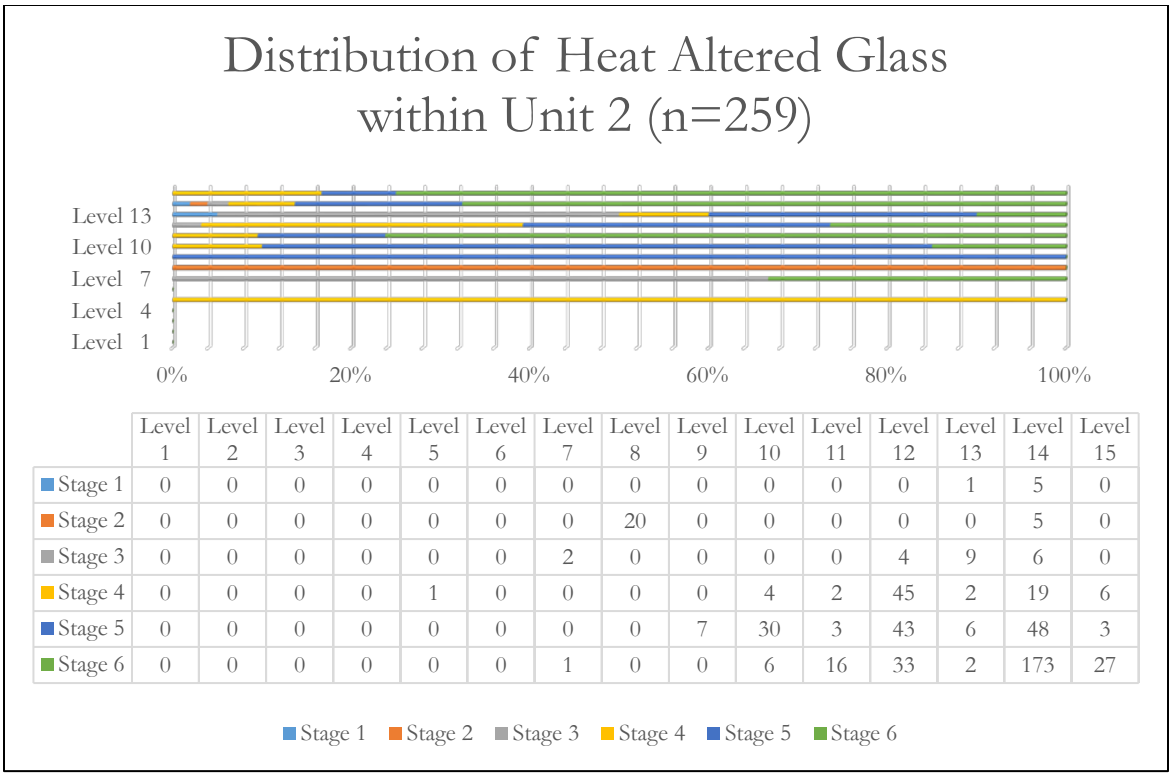


Figure 25. Distribution of heat altered glass across the four excavation units. The graph clearly shows that Unit 2 had the highest number of heat altered glass, but also had a large number of glass exposed to the highest heat level.

However, while this information proved interesting and useful, the data from the glass modification analysis within Unit 2 seemed less productive due to the variety of potential variables. The temperature exposure and artifact modification clearly rose with depth. Figure 26 shows the distribution of heat (by percentage) within each level, and Figure 27 presents the same data in a more traditional format, and more clearly indicates that the glass assemblage is increasingly heat altered with depth. This pattern is in keeping with fire behavior (as floor temperatures commonly reach a temperature of over 3,270°F) and is further evidenced by the high fired bisque in this area of the excavation.



	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14	Level 15
Stage 1	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0
Stage 2	0	0	0	0	0	0	0	20	0	0	0	0	0	5	0
Stage 3	0	0	0	0	0	0	2	0	0	0	0	4	9	6	0
Stage 4	0	0	0	0	1	0	0	0	0	4	2	45	2	19	6
Stage 5	0	0	0	0	0	0	0	0	7	30	3	43	6	48	3
Stage 6	0	0	0	0	0	0	1	0	0	6	16	33	2	173	27

Figure 26. The above figure shows the range of temperatures within the unit, as reflected by the percentage of heat altered glass within Unit 2 by level.

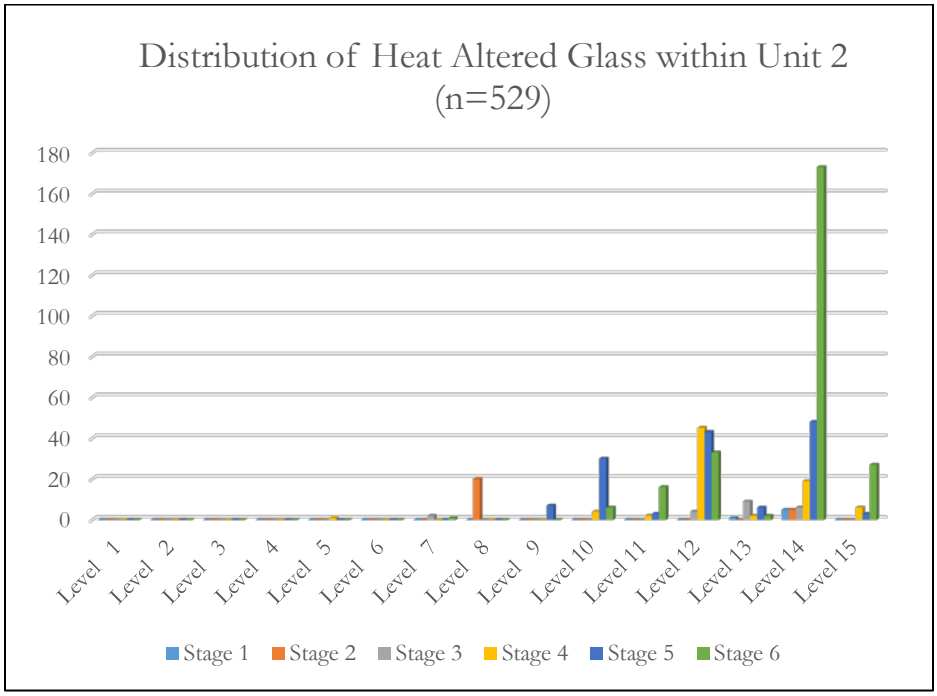


Figure 27. This chart presents the same data as Figure 26, but instead of percentage by level, each Stage of glass modification is broken up by count.

In summary, using fire science to interpret the Jacksonville Chinese Quarter site feature provided important information about the site formation processes. This not only allowed for a better understanding of the fire event, but also insight into the layout of the household when it burned. Thanks to the Sanborn Maps, we know the rough footprint of the house, and distinctive structural features have allowed us to place our excavations within that footprint. Fire science has allowed us to further infer the spatial layout of the house, including the types and placement of furniture, partially through the fire behavior and its distinctive artifact signatures. In addition, without insight into the variability of a fire, we might have come to the wrong conclusions about the house. The abundance of unburned items might have led us to believe that the deposit was disturbed, or the result of a post-fire secondary context. Instead, we have used that variability as a tool to rebuild the furniture and have attempted to reconstruct the nineteenth century home to its pre-fire state.

The creation of scale of heat alteration on glass artifacts was also useful, but the concept would benefit from additional experimentation. The glass scale system would theoretically be useful when applied to artifacts from *across* an archaeological site. When not limited to within a discrete excavation like this one, the information regarding the distribution of heat altered materials would allow for larger patterns of fire behavior to be recognized across a site, such as hot spots, potential origin, and structural or furniture items that modified the impacts and behavior of a fire.

Artifact Analysis and Findings

More than 26,000 artifacts were recovered from excavations within the burned house feature (in addition to faunal and botanical specimens). This number includes the 2,050 artifacts collected during Phase II excavations of QTU 15/17, and the 24,000 artifacts collected from the data recovery units. The feature encountered during excavation is believed to be the intact remains of the Chinese Dwelling burned on September 11, 1888. As outlined above, the intact feature was encountered between 70-80 cm below datum, and a total of 21,500 of the artifacts (around 83%) were recovered from within the intact feature deposit. All artifacts were cataloged and curated at the Southern Oregon University Laboratory of Anthropology under curation numbers 2011.13 (for Phase II excavation units) and 2013.09 (for Phase III data recovery units).

Artifacts were organized and analyzed using a slightly modified version of the Sonoma Historic Artifact Research Database (SHARD) created by the Anthropological Studies Center at Sonoma State University. This classification system is based on the artifact typology originally proposed by Stanley South in 1977 and allows for material culture to be placed into four broad functional categories: *Activities, Domestic, Personal,* and *Structural.* The functional categories are divided into subcategories which allow for organization of artifact types into discrete searchable groups. The *Activities* category covers artifacts related to writing, transportation, firearms, and commerce. The *Domestic* category contains artifacts related to the home, cooking, and food consumption. The *Personal* category encompasses artifact types such as toys, clothing, grooming, and health, and items related to social drugs such as tobacco and alcohol. The *Structural* category covers artifacts related to building materials, hardware, and fixtures. Artifacts having multiple potential uses (such as bottle glass, wire, or flat glass) are assigned to an *Indefinite Use* category. Material that could not be identified (i.e. amorphous fragments of metal or wood) was assigned to an *Unidentified* category. Artifact discussions below will note when discussing the assemblage in terms of total artifact count (n=number of artifacts recovered) and minimum number of individual items (MNI) represented.

A large amount of non-diagnostic ferrous sheet metal, likely associated with cans, containers, and buckets but too friable to be reliably identified, was recovered from the excavation units. This material was weighed in bulk within each provenience, resulting in roughly 70 pounds of ferrous material. The diagnostic attributes associated with these containers (i.e. seams, ends, and handles) were catalogued separately. Several ferrous metal items in the assemblage underwent metal conservation in order to stabilize them and to aid in the analysis. SOU students Kyle Crebbin and Heidi Dawn used electrolytic reduction (electrolysis) to stabilize and restore iron artifacts in the least destructive manner possible. Rusted artifacts were placed within an electrolyte bath (containing water and soda ash) and attached to a negative charge. A piece of rebar was used as a sacrificial iron and attached to a positive charge. When attached to a current, the rust on the artifact was detached and transferred to the sacrificial iron. All artifacts were photographed before and after treatment, and progress was checked daily. Once the artifact surface was restored as much as thought possible, artifacts were thoroughly dried and coated in mineral oil to prevent future rusting.

Other items, such as charcoal, earthen bisque, and structural materials like plaster, mortar, and brick fragments, were sampled to indicate presence, but not given individual counts as they were highly fragmented and would result in an arbitrary number not be helpful in assessing a MNI count. Faunal and botanical material was removed from the general artifact catalog and was analyzed separately. Botanical analysis was conducted by Jaime Dexter Kennedy from the University of

Oregon (Appendix A) and Virginia Popper of Massachusetts University, Boston (Appendix B). These efforts each focused on only a sample of the botanical material and bulk samples collected, and the remainder of the bulk and botanical samples will be curated with the rest of the collection. Faunal items were processed in-house under the direction of Katie Johnson, and an overview of the results will be presented within Appendix C of this report. A detailed analysis of the more than 50 lbs. of faunal material is ongoing, and received the 2015 Heritage Commission Grant through the State Historic Preservations Office of the Oregon Parks and Recreation Department. This grant will cover the cost of a detailed faunal analysis and the creation of a faunal comparative collection to be housed at SOULA. Portions of these results will be presented within the discussion below, and the complete botanical and faunal reports will be included within the appendices.

Artifact Assemblage

More than 26,000 artifacts were recovered from the Chinese Quarter Site. Of these, roughly 20,000 artifacts came from the intact remains of what is believed to be the Chinese-occupied dwelling that burned to the ground on September 11, 1888. Over 3,500 artifacts reflect items of Asian manufacturing and import, such as ceramics, coins, and tool fragments. The artifact assemblage will be discussed within their respective functional category (Figure 21). In general, the assemblage is dominated (by count) by artifacts assigned to the Structural (42%) and Indefinite Use categories (33%). However, while the Structural category reflects the artifact MNI pretty accurately, the count is largely comprised of individual nails and therefore not necessarily as meaningful in comparison with other aspects of the assemblage. Conversely, the 7,858 items assigned to the Indefinite Use functional category represent an inflated number (by count) as it is dominated by non-diagnostic container glass, ceramic sherds, and items that could be assigned to more than one functional category.

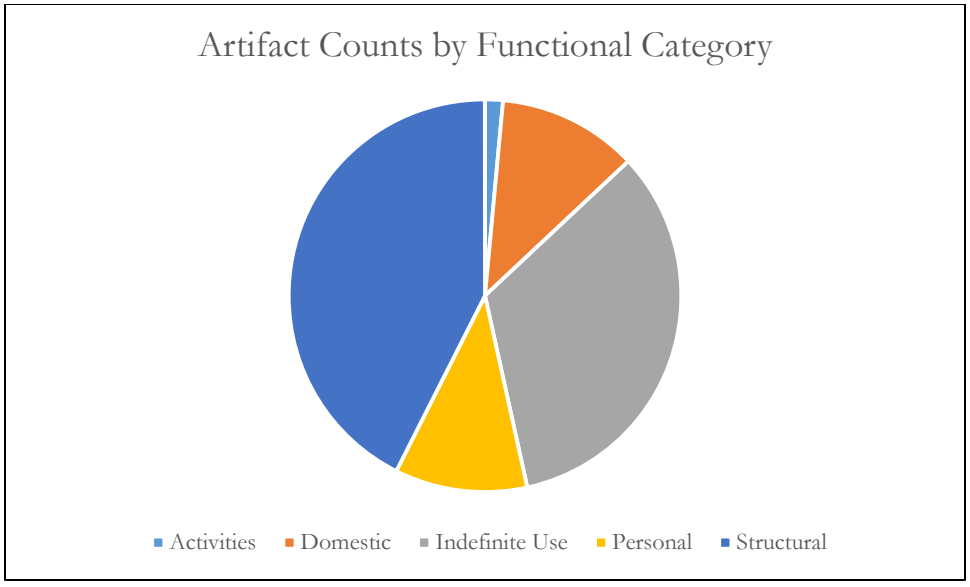


Figure 28. The Phase III artifacts as divided by functional category. The largest categories are comprised of the Structural and Indefinite Use categories, which represent a combined 75% of the assemblage.

Artifacts Assigned to the Indefinite Use Category

The Indefinite Use category serves somewhat as a classification catchall for non-diagnostic and ambiguous items. However, while items within the Indefinite Use group can be difficult to categorize, they can still provide important, and often temporal, information. For example, several of the Containers within this group had manufacturers maker's marks, which might not indicate brand or contents but does provide a date range of use. Bottles and jars can contain a variety of materials that are associated with different functional categories. While many items found in domestic assemblages such as this one reflect food and beverage containers, they can also contain industrial oils, chemicals, and medicines. For this reason, when a bottle or jar is too fragmented to reflect its original use or contents, or is too generic to be attributed to a single use, it is assigned to the Indefinite Use category. More than 5,000 artifacts were assigned to the **Miscellaneous Containers** category and included a variety of glass bottle and jar fragments, metal can fragments, and barrel hoops and straps.

More than 120 artifacts were recognized as modern in age, and included Styrofoam, plastic sheeting, and foil wrappers. The majority of the items were recovered from the upper levels, but some small foil and plastic fragments were found in association with rodent disturbance in the deeper levels.

An assemblage of generic **Fasteners** within the Indefinite Use category included small tacks, hooks, eyebolts, and brackets, which could have been used in a variety of contexts ranging from furniture, to transportation, to machinery. The **Metal Items** consisted of wire, coils, screens, rods, strapping and chains, which all could have multiple uses. Two brass chains made of interlocking rectangles were recovered (Figure 22). The chains could have been used to support light to medium weight objects and are similar to modern lamp chains. An historical photograph shows a similar type of chain affixed to a hanging basket in San Francisco's Chinatown. In addition to container glass and fasteners, more than 70 pounds of non-diagnostic ferrous sheet metal was recovered. This bulk sheet metal likely reflected cans, buckets, and other ferrous metal containers.

Figure 29. Two brass chains with rectangular links (*specimens 2013.09-4591*, and *2013.09-0530*).

Artifacts Assigned to the Activities Category

The Activities category usually represents a small portion of an historic-era assemblage, yet it is often an important one. Specialized items falling within this group can provide insight into commercial, agricultural, or daily activities taking place within any given household. A total of 337 artifacts were assigned to the Activities functional category. Of these, the majority were associated with **Gaming** (28 %) and **Commerce** (20%). These groups likely overlap, as the Asian coins in the assemblage were not used as currency, but could have served as gaming pieces. Other groups within the Activities assemblage include **Agriculture, Firearms, Printing, Tools, Transportation,** and **Writing**.

The **Commerce** category consisted of more than 70 coin and coin fragments (representing a minimum of 72 individual coins) recovered from the Chinese Quarter Site. Due to the extreme heat in Unit 2, several coins were fused together making an exact count difficult. Of these, 14 were United States currency, the remainder of the coin assemblage was comprised of Asian coins (Vietnamese *Dong*, Chinese *Wen*, Japanese *Mon,* and Hong Kong *Mil)*, which could have served a variety of non-monetary uses (Table 2). The Asian coin assemblage was sent to Kevin and Marjorie Akin for analysis. The table below reflects their coin identifications and interpretations. Ten of the 14 United States coins in the Jacksonville assemblage were associated with the Chinese Dwelling feature (the remainder were from within the shallow disturbed fill contexts), and more than half of

the assemblage (37 of the 72 minimum number of individual coins) represented coins manufactured in Vietnam. The remainder of the coins were made in China (n=11), Hong Kong (n=1), or were too corroded or fragmented to be identified to a region within Asia (n=9).

Asian coins are commonly recovered from Chinese contexts across the American West, with Vietnamese *Dong* common only after the 1880s due to a shortage of Chinese *Wen* in Guangdong (Costello et al. 2008:145). Once the preferred brass *Wen* was again available, the less desirable *Dong* were phased out, "Consequently, it was only for a short, tightly defined period-about 1885 to the 1890s that large quantities of zinc Vietnamese *dong* circulated in Guangdong province," and therefore, the American West (Costello et al. 2008:145).

The *Dong* is often produced out of zinc, unlike other brass or iron coins, and can be more fragile when recovered archaeologically. As seen with this assemblage, the *Dong* is often broken, and the script can be difficult to read due to corrosion. The Asian coins would have had a very low monetary value in their country of origin at the time of their manufacture, as "both *Dong* and *Wen* were produced in the billions and were so common that even today they are not very valuable" (Costello et al 2008:144). Despite the low monetary value of the *Dong* and other Asian coins, they were prized for many other uses. The coins were used as part of five behavioral systems including trade, traditional Chinese belief, gaming, folk medicine, and decoration (Akin 1996:102).

Only recently has coin use in medical practices been archaeologically recognized, but coins have (and continue to be) used in therapeutic rubbing and for teas to extract zinc—a well-established health supplement. A teapot in the Southern Oregon Historical Society (SOHS) has the outline of a coin in the bottom, indicating that the practice of boiling coins was used locally. All of the Vietnamese coins with the highest zinc content in the Jacksonville assemblage were heavily corroded, although it is difficult to determine whether they were used as a remedy or for one of the other established uses.

Coins were also used for decorative, spiritual, or ritualistic purposes. This aspect can be particularly difficult to recognize archaeologically, as cloth or string connecting coins is less likely to survive. Several coin purse fragments were recovered in the assemblage, many in the vicinity of coins, suggesting the coins could have originated from these purses.

Table 2. The following table shows the results of the Jacksonville Chinese Quarter Site 35JA737 coin assemblage analysis conducted by Kevin and Marjorie Akin.

Catalog number	Origin	Coin	Date	Comment
2013.09-0161	Asia			Broken in ½
2013.09-0206	Vietnam	*Dong*	1848-1883	*Tu Duc Dong* of 8 van
2013.09-0260a	China	*Wen*	1736-1795	*Qian Long,* Board of Works Mint, Beijing
2013.09-0260b	Vietnam	*Dong*	1802-1820	*Gia Long Dong* of 7 *Phan*
2013.09-0384a/b	China	*Wen*	1736-1795	*Qian Long*
2013.09-0384c	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-0537a/b	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-1152	United States	Dime	1967	
2013.09-1214	United States	Nickel	1986	
2013.09-1445a	Vietnam	*Dong*	1848-1883	*Tu Duc Dong* of 8 *Van*
2013.09-1445b	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-1485	Vietnam	*Dong*	1848-1883	*Tu Duc Dong* of 8 *Van*
2013.09-1486	China	*Wen*	1644-1661	*Shun Zhi,* Board of Revenue Mint, Beijing
2013.09-1561	United States	Quarter	/	
2013.09-1564	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-1606	China	*Wen*	C1855	*Dao Guang*
2013.09-1607a	Vietnam	*Dong*	1802-1820	*Gian Long Dong* of 7 *Phan*
2013.09-1607b	Vietnam	*Dong*	1820-1841	*Minh mang*
2013.09-1608a	Vietnam	*Dong*	1848-1883	*Tu Duc Dong* of 7 *Phan*
2013.09-1608b	Vietnam	*Dong*	1802-1883	
2013.09-1682	China	*Wen*	1736-1796	*Qian Long,* Board of Revenue Mint, Beijing
2013.09-1744	Vietnam	*Dong*	1820-1841	
2013.09-1936	United States	Quarters	<1888	Stack of 8 Fused Quarters
2013.09-2037	Asian	Coins	<1888	6-10 melted coins
2013.09-2293	Vietnam	*Dong*	1802-1820	*Gia Long Dong* of 7 *Phan*
2013.09-2571	Vietnam	*Dong*	1820-1841	*Ming Mang*
2013.09-2725	Asia	/	/	
2013.09-2734	China	*Wen*	1796-1820	*Jia Qing* Board of Works Mint, Beijing
2013.09-3294	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-3575	United States	/	1968	Dime
2013.09-3576	United States	/	/	Penny
2013.09-3637	China	Kwong Shui	1875-1908	
2013.09-3780a/b	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-3806	United States	Dime	1843	Seated Liberty Dime
2013.09-3963	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-4062	Vietnam	*Dong*	1848-1883	*Tu Duc Dong* of 8 *Van*
2013.09-4080	China	*Wen*	1736-1795	*Qian Long,* Suzhou Mint
2013.09-4097	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-4108	Vietnam	*Dong*	1802-1820	*Gia Long Dong* of 7 *Phan*
2013.09-4173	Vietnam	*Dong*	1848-1883	*Tu Duc Dong* of 8 *Van*
2013.09-4315	China	*Wen*	1662-1722	*Kang Xi*
2013.09-4316	Vietnam	*Dong*	1802-1820	*Gia Long*
2013.09-4317a	Vietnam	*Dong*	1802-1820	*Gia Long Dong* of 7 *Phan*
2013.09-4317b/c	Vietnam	*Dong*	1820-1841	*Ming Mang*
2013.09-4318	China	*Wen*	1736-1795	*Qian Long*
2013.09-4363	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-4478	Vietnam	*Dong*	1820-1841	*Gia Long Dong* of 7 *Phan*
2013.09-4535	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-4661	Vietnam	*Dong*	1802-1820	*Gia Long Dong* of 7 *Phan*
2013.09-4723	Vietnam	*Dong*	1820-1841	*Minh Mang*
2013.09-4724	Hong Kong	/	1866	"One Mil"
2013.09-4767	Vietnam	*Dong*	1802-1820	*Gia Long Dong* of 7 *Phan*
2013.09-4849	Vietnam	*Dong*	1820-1820	*Minh Mang*
2013.09-5005	Vietnam	*Dong*	1802-1820	*Gia Long*
2013.09-5082	Asia	/	/	
2013.09-5121	Vietnam	*Dong*	1802-1883	

*the shaded entries represent coins found within the fill layers above the intact ash feature associated with the Chinese Dwelling.

The most common—and most easily recognized archaeologically—use for Asian coins was in association with gaming. While American currency would be used for making bets, the Asian coins would serve as counters or gaming pieces in *Fán T'án* and other games (Culin 1891:4, 10; in Aiken 1992, 1996; Costello et al. 2008). Several of the coins within the Jacksonville collection were broken (possibly intentionally) into halves, quarters, and even thirds. This same practice was

observed in earlier investigations at the site, and it was thought to have reflected an attempt to make change or smaller tokens (Schablitsky and Ruiz 2009:78). However, as Asian coins had such low monetary value, and were kept in groups on strings, it is unlikely that they would be purposely broken into smaller valued fragments (Kevin Akin, personal communication). Coins may have been intentionally broken for, or by their use in, medicinal applications, or more likely, they were broken through the taphonomic archaeological processes. The Jacksonville Chinese Quarter coin collection was dominated by the more fragile zinc Vietnamese coins and appears consistent with use in a gaming type assemblage.

A total of 126 artifacts could be confidently linked with **Gaming** activities at the site. These included nine Chinese bone dice, 18 cut brass markers or tokens, two fragments of an ivory disc token, and more than 90 glass gaming pieces (Figure 30 and Figure 31). The total number of glass gaming pieces is difficult to assess, as many of the artifacts from Unit 2 were fused together due to the extreme heat in that part of the house during the historical fire event. The distribution of the gaming artifacts across the excavation units shows that Unit 2 had the highest concentration of gaming related items. The gaming pieces could reflect a variety of popular pastimes, including both games of chance and games of strategy. The **Gaming** assemblage recovered from the Jacksonville site (including the Asian coins) is similar to ones found across Chinese sites in California (Praetzellis and Praetzellis 1997; Camp 2004; Chang 2004; Costello et al. 2008), Nevada (Jolly 2012), and Oregon (Maddoux 2015). Glass gaming pieces are usually considered black or white, although the 'black' ones can vary in color. Black gaming pieces are said to be more valuable, representing a value of $5 versus the $1 white pieces (Culin 1891:41). The Jacksonville Chinese Quarter Site assemblage contained ten black glass gaming pieces, two green glass gaming pieces, and more than 80 white opaque glass gaming pieces. In addition to the traditional gaming suite of artifacts listed above, marbles, which are normally categorized as children's toys, could also be a reflection of adult gaming practices (Camp 2004). Three marbles were recovered from the assemblage, two of which were found deep in TU 4 and could be confidently linked with the Chinese occupied house. This included a hand painted porcelain marble, common between 1850-1910, and a handmade glass marble with a polychrome ribbon design, dating to between circa 1846-1901 (Samford 2012).

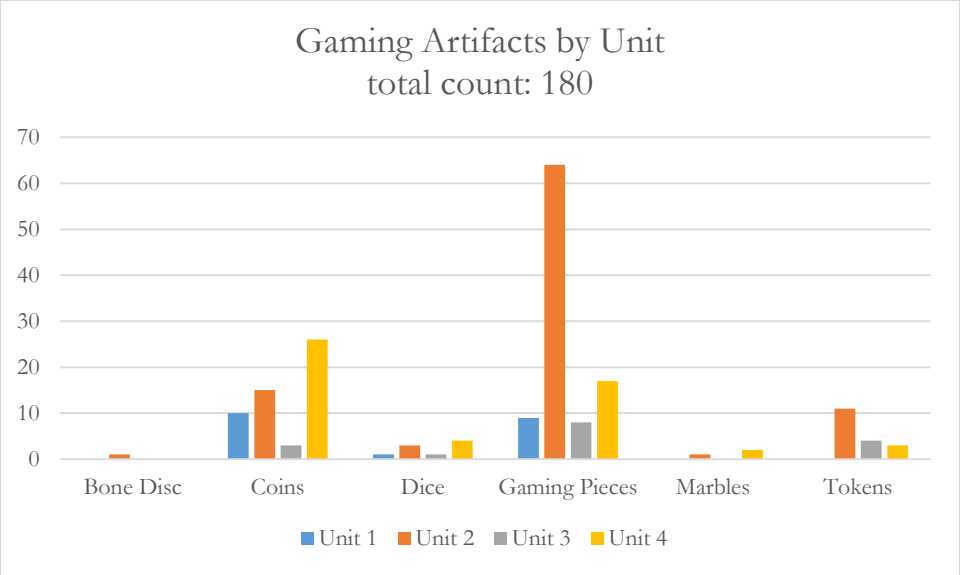


Figure 30. Gaming artifacts within the Chinese Quarter Site by unit and artifact type. The numbers in the chart reflect minimum number of individual items, not total artifact count.

Figure 31. A sample of the gambling artifacts recovered from the Jacksonville Chinese Quarter Site. From top left: stack of eight fused quarters (*specimen 2013.09-1936*), and assorted green, black, and white glass gaming pieces. From bottom left: bone disc (*specimen 2013.09-1630*), cut brass gaming markers, bone dice, and Asian coins.

Traditional games that were brought to the United States included *Fán T'án* (a counting game), *Pák Kòp Piú* (predecessor to the American Keno lottery), *Weiqi (*non-gambling Chinese Chess, also known as *Go*), and *Pai Gow* (dominoes). While many of the games were casual social interactions done in the evenings, the 1870 Census lists seven Chinese men as professional gamblers,

indicating that it could be a profitable endeavor, and that there were established venues for the activity at the height of the neighborhood occupation. The large volume of glass gaming pieces suggests that *Fán T'án* and *Weiqi* were preferred games, and unlike some of the other gambling activities, such as *Pák Kòp Piú,* these games had relatively little to no financial risk. The game *Weiqi,* or *Go*, "is much more a game of strategy than chance, more akin to chess than poker. Gambling may have taken place over the game of *Weiqi,* but it appears generally to have been considered an intellectual diversion, instead of a wagering opportunity" (Costello et al. 2008:146). The glass gaming pieces are sometimes referred to as *zhu* or *go* pieces due to their association with specific games. However, early illustrations, as well as the ethnographic descriptions made by Stewart Cullin, indicate that the game of *Fán T'án* was a popular pastime for overseas Chinese individuals. *Fán T'án,* which roughly translates to 'repeatedly spreading out,' could be played on any surface that would allow enough room for the game. Culin (1891) describes the game as "usually played upon a mat-covered table, with a quantity of Chinese coins or other small objects which are covered with a cup. The players guess what remainder will be left when the pile is divided by four, and bet upon the result." The majority of the gaming descriptions provided by Culin are set within formal, or improvised, gambling parlors. However, the variety of contexts within the rural Chinese communities indicates that gaming activities were occurring within non-traditional contexts such as commercial laundries and domestic spaces (Ruiz and O'Grady 2008; Schablitsky and Ruiz 2009; Maddoux 2015). Culin (1891) acknowledged that Chinese in America were putting their own spin on *Fán T'án,* including the substitution of buttons or improvised tapering rods. Buttons were widely available and inexpensive (particularly in a laundry context) and could be a complimentary size and shape to other gaming pieces. Archaeological evidence (including the current excavation) has also highlighted the use of brass sheet metal from the opium cans being repurposed for gaming markers or tokens.

In addition to the gaming pieces outlined in this section, other artifacts would have been dedicated to, or casually associated with, gaming activities. These include a bowl or cup (such as the Winter Green cup seen in Figure 19), a tapering rod (which could have been bone, wood, bamboo, or metal), the stack of American quarters which would have represented the cash bet (also seen in Figure 19), and the above-mentioned buttons. Although the button assemblage will be discussed with the Personal Artifact category below, a total of 72 Prosser porcelain buttons and button fragments commonly associated with gaming were recovered from the site. Of these, 62% were recovered from Unit 2 and Unit 4, which contained the highest number of gaming related artifacts.

The dice assemblage recovered from the Jacksonville Chinese Quarter Site includes nine bone dice, all consistent with Chinese manufacture. The dice are manufactured in the same configuration as the EuroAmerican dice, with the 1-6, 2-5, and 3-4 number arrangement. Unlike EuroAmerican dice, the one and the four are painted red and "the one is always much larger and more deeply incised than the other spots, possibly to compensate for its opposition to the six" (Culin 1889:5). The dice were found in two sizes, and could have been used to play one or more of the following games: *sz' 'ng luk* or *sing luk* (translated as 'four, five, six'), *Kon mín yéung* (translated as 'pursuing sheep'), *Chák t'in kau* (translated as 'thawing heaven nine'), *Pát chá* (translated as 'handful of eight'), and *Chong ün ch'au.* Descriptions of these games and rules for playing can be found in Culin (1889).

Other artifact categories of note within the Activities group include the **Tools** and the small, but interesting, assemblage assigned to the **Printing** and **Writing** functional categories. A total of 95 artifacts were assigned to the **Tools** category. This number is somewhat inflated, due to 31

etched bone scale rod fragments, which likely only reflect one or two individual items. The scale rods were part of the distinctive Chinese style gold scales, the remainder of which would have consisted of a wooden fiddle-shaped case, a set of weights, and a small dish (Figure 32). While it is possible that other portions of the scale set have survived in the collection, they are less diagnostic and have not been identified as such. Other items include several fragments of a large cut stone grinding wheel with a square central hole (Figure 33). This artifact is made out of an immature sandstone material and would likely have been too soft to be ideal for fine grinding of foods and of too low quality as a sharpening stone (Jad D'Allura 2016, personal communication). However, it appears to be consistent with either of those uses in size and shape (Figure 34). Starch analysis done by Jaime Dexter Kennedy (see Appendix A) resulted in the identification of a single starch grain—likely rice. This lone grain could be the result of heat exposure destroying starch grains once present on the artifact, or could instead reflect that grinding of foodstuffs was not the tool's primary function. The stone measures roughly 10 inches across and has a ground face and rim surface. Heat exposure caused the stone to spall in several places. The grinding wheel was recovered from the kitchen area portion of the house.

Figure 32. The image on the left shows a sample of the etched bone scale rod fragments recovered from the Chinese Quarter Site (*specimens 2013.09-2292, 2013.09-1676, 2013.09-1942).* The image on the right shows an intact gold scale from the collections at the Southern Oregon Historical Society with the same distinctive etchings on the bone scale rod.

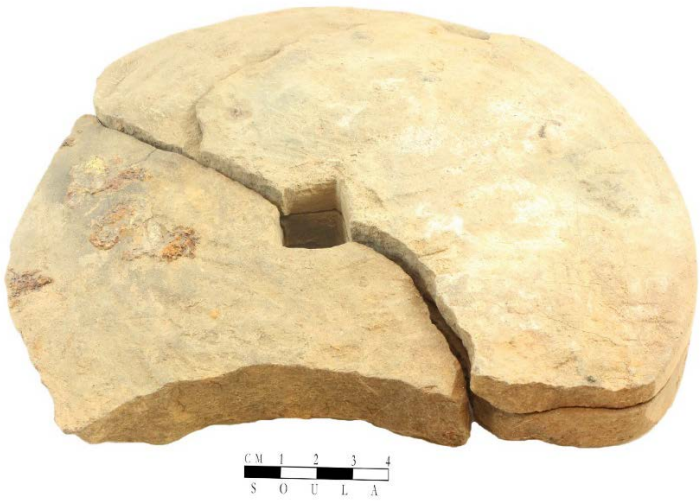


Figure 33. Fragments of the sandstone grinding wheel (*specimens 2013.09-849* and *2013.09-0945*).

Figure 34. The image on the left shows an early stone tool grinding and sharpening wheel, a variety of which can be found through a quick google search. The image on the right shows a modern version of a traditional Chinese rice grinder. These can vary slightly, but the top grinding wheel tends to be smaller in diameter and thicker than the artifact recovered from the Chinese Quarter site (photo credit: Ryan Kennedy). While this version uses the horizontal grinding surface, other examples can be found using the edge, with the wheel being used in a similar fashion to an arrastra mill.

The remaining artifacts identified as **Tools** include a 6-inch carpenter's plane blade, a small crowbar, two drill bits, a flat file, 11 triangle files, a pair of forceps, two pairs of scissors, three knives, four locks, three of which are the distinctive Chinese triangle locks, and a spade (Figure 35 and Figure 36). While the assemblage is consistent with tools common in household use, there are some interesting components. The number of triangle files seems high, and were recovered from

across the units within the burned house deposits. The triangle files range in size and could reflect a mixed tool set or a specific activity conducted within the house.

Archaeological investigations in Montana's German Gulch recovered a similar assemblage of triangle files, and this, paired with the high number of opium related paraphernalia, was interpreted as representing opium pipe mending activities at the site (Fredlund et al. 1991; Merritt 2010; Norman 2012). It is possible that these files, paired with the forceps, screen fragments, cut brass, and other tools, were used for opium pipe mending purposes on a personal, or potentially, commercial scale.

Figure 35. A sample of tools recovered from the Chinese Quarter site. From left: assorted triangle files, a flat file (*specimen 2013.09-0227*), and a spade (*Specimen 2013.09-2187*).

Figure 36. The image on the left shows a sample of the knives recovered from the site. From left: a short knife blade (after electrolysis) (*specimen 2013.09-1384*), an inlaid bone knife handle (*specimen 2013.09-3511*), a folding pocket knife (*specimen 2013.09-*4096), and knife blade (*specimen 2013.09-0459*). The images on the right show the two brass Chinese locks recovered from the site (*specimens 2013.09-4470* and *2013.09-3386*).

While other items seem pretty self-explanatory, such as the pocket knives, the carpenter's plane, crow bar, and drill bits could suggest that a member of the household was handy and engaged in construction activities to some degree. The Chinese triangle locks are worth noting as they are often found in Chinese assemblages in the West and could be associated with the need to protect important items in small trunks or cabinets. ODOT employee Michael Wei Wang also described these locks as being worn around the neck as a good luck charm for young Chinese boys (personal communication). Several examples of this use can be found through a basic internet search, but most often with decorative locks created for this specific purpose.

A total of 39 artifacts were attributed to the **Printing** and **Writing** categories. These include five pieces of moveable type, four small scraps of paper, a bowl with seal paste residue, part of a brush, ink stone fragments, an aqua glass umbrella ink bottle, and slate and graphite pencil fragments. In addition to the moveable type recovered from the excavations described within this report, type pieces have been recovered in the two earlier excavations at the site. The 2004 excavations on the south side of California Street recovered two specimens of moveable type, the letter "O" and a second one that was not identified (Schablitsky and Ruiz 2009:78). Two additional type pieces were recovered in the 2007 testing conducted just north of the current project area, one of which was recognized as the letter "N" (Ruiz and O'Grady 2008:30).

Our excavations recovered a 12-point capital inline "O," a 16-point lower case bold or medium Roman italic "t," a lower case "a," a large "3," and a 24-point thin spacer with the Chicago Type Foundry mark visible on the side, which dates it to between 1855-1892 (Figure 37). It is unclear how the type found its way to the Chinese Quarter Site. There were no known newspaper offices or printing presses in the vicinity of the site, which suggests the type could reflect disposal or secondary use. The metal in type was often melted down into bullets or for other uses according to historian and retired professional typesetter, Ben Truwe (personal communication).

Figure 37. Moveable type found at the Chinese Quarter site. From left: small font "a" (*specimen 2013.09-4907*), "t" (*specimen 2013.09-3617*), "O" (*Specimen 2013.09-1598*), spacer (*spacer 2013.09-1450*), and "3" (*specimen 2013.09-3304*).

Seven slate pencil fragments were found in the assemblage, reflecting a minimum of 5 individual items. Of these, two were marked with the "A.W. Faber" maker's mark and one of the specimens showed evidence of re-sharpening (Figure 38). Pencils manufactured under the Faber name date as far back as the eighteenth century. The A.W. Faber moniker refers to Anton Wilhelm Faber, who ran the company in the late eighteenth-early nineteenth centuries (Faber-Castell 2016). The pencils began to be manufactured in the United States during the Civil War and the company continues to be a leader in quality pencil manufacturing. An aqua glass base of an umbrella style ink bottle was found, along with several artifacts consistent with calligraphy, including what appears to be the bristle fragments from a calligraphy brush, part of an ink stone, and several fragments of a small blue on white 'water bottle' or 'brush washer.'

Figure 38. The above images show a sample of the artifacts recovered from the Chinese Quarter Site attributed to the **Writing** Activity group. The image on the left shows a partial ink stone (*specimen 2013.09*-1939) and the slate pencils recovered, from left: a complete slate pencil, embossed A.W. Faber (*specimen 2013.09-0382*), slate pencil fragment with etching (*specimen 2013.09-1382*), A.W. Faber slate pencil tip, re-sharpened (*specimen 2013.09-0821*), and slate pencil tip with etched lines (*specimen 2013.09-3215*).

Fragments of a Bamboo rice bowl were recovered with intact residue from homemade seal paste. Chemical analysis done by the University of Idaho indicated that the pinkish orange paste was comprised of mercury and organic compounds similar to the traditional *yinni,* also known as "the paste of eight treasures" due to the inclusion of cinnabar, pearl, musk, coral, ruby, moxa, castor oil, and a red pigment (Appendix D). In addition, the bowl appears to have been modified into a shallow dish comparable to the traditional seal oil containers still in use today, and similar to a flat stamp pad.

Figure 39. The above image shows the modified base of a Bamboo patterned rice bowl that contained the residue of seal or stamp paste (*specimen 2013.09-3072*).

The remainder of the Activities assemblage consisted of four fragments of redware drainpipe assigned to the **Agricultural** group and a small group of **Firearms** related artifacts. The **Firearms** category included ten pieces of ammunition that were recovered from within the burned Chinese Dwelling context. These included six cartridges (ranging from .22 caliber to .32 caliber), two small musket balls, and two lead shot. Finally, six artifacts were associated with **Transportation**, including three horseshoe nails and three horseshoes.

Artifacts Assigned to the Domestic Category

A total of 2,707 artifacts were assigned to the Domestic category, the majority of which were attributed to **Food Preparation and Consumption** activities. Roughly 1,000 fragments of tableware were recovered, of which 66% represented imported Asian tablewares (by count). These imported tablewares largely reflect the four most common decorative styles found on Chinese migrant sites: Double Happiness, Bamboo, Winter Green, and Four Seasons Flowers (Figure 40). These tablewares are porcelain and porcelaneous stonewares known as *min yao* (folk ware) in China (Choy 2014:2). Double Happiness and Bamboo rice bowls were cheaper than other decorative wares and commonly found in Chinese migrant mining and railroad sites across the West. Double Happiness is a swirl pattern featuring the Double Happiness character. Over time, the character "stylistically devolved due to expedience in production" and as a result, the pattern varies (Choy 2014:3). Double Happiness is most commonly found on sites occupied prior to 1870 and was replaced by the Bamboo pattern (Sando and Felton 1993:160). Bamboo bowls, sometimes called 'dragonfly and three circles' or 'Swatow Ware,' have a distinctive "blue-grey background color with dominant motif composed of a field of bamboo, with blossoms and a rock alongside the bamboo" (Choy 2014:2). Both the Double Happiness and Bamboo ceramics were manufactured in the eastern region of Guangdong (Choy 2014:4). The popular Bamboo and Double Happiness bowls were not imported after the turn of the twentieth century, but Winter Green and Four Seasons Flower patterns, along with others, were imported up until World War II trade disruptions in the Pacific (Choy 2014:2).

Winter Green (also called Celadon) and Four Season Flowers patterns were a more expensive tableware option in the nineteenth century. Unlike the Double Happiness and Bamboo patterns, these tablewares came in a variety of forms, including bowls, small dishes, spoons, and cups (Choy 2014:8). While Winter Green ceramics are commonly referred to as Celadon, the term is inaccurate as it references a specific pottery type "produced in Lung Chuan County in Chekiange Province during the Sung Dynasty (960-1280 A.D)" (Choy 2014:16). The dishes that found their way to the Chinese settlements in the American West were largely manufactured in Jingdezhen and were known as Winter Green (Choy 2014:6). The Four Seasons Flowers pattern, also manufactured in Jingdezhen (also called Four Flowers or Four Seasons), is decorated with hand painted flowers meant to symbolize the seasons. These include the plum flower for winter, which represents courage and hope, the lotus for summer, representing spiritual purity, the peony for spring, a symbol for riches, honor, and good fortune, and the chrysanthemum for autumn, standing for longevity and friendship. Many bowls also had peaches in the center, which are a symbol of long life and immortality.

Figure 40. A sample of the Serving and Tablewares recovered from the Chinese Quarter Site. From top left: Undecorated porcelain tea pot (*specimen 2013.09-4563*), Four Seasons Flowers bowl (*specimen 2013.09-0578*), and Bamboo bowl (*specimen 2013.09-2816*). Front row, from left: Winter Green tea cup (*specimen 2013.09-2140*), Four Seasons Flowers dish (*specimen 2013.09-1616*), Winter Green dish (*specimen 2013.09-0576*), Four Seasons Flowers spoons (*specimens 2013.09-0579* and *2013.09-0635*).

A total of 673 fragments of Chinese porcelain tableware were recovered from the Chinese Quarter Site. While some fragments were too small to identify to vessel form, or in some cases, pattern, the majority could be loosely grouped into meaningful categories. More than 100 fragments of Bamboo bowls were recovered, representing a minimum of 10 individual vessels. One of these bowls had been repurposed to mix seal or stamp paste (discussed above). The bowl appears to have been modified for this use, suggesting that the Bamboo pattern was also considered to be of lower value (or the dish itself might have been chipped or cracked), as it was repurposed and taken out of the tableware assemblage. Over 50 fragments of Double Happiness rice bowls were recovered, representing a minimum of six individual bowls. The Double Happiness bowls appeared to be more heat affected than the other ceramic styles, and it is unclear whether this was due to placement, age, or vessel quality.

More than 200 fragments of Winter Green porcelain were recovered, representing a minimum of four alcohol cups, three tea cups, and two spoons. In general, the Winter Green sherds were much smaller in size than the other ceramic types, perhaps due to the more delicate nature of vessels they represented. None of the fragments were able to be specifically identified as bowl fragments. Roughly 150 fragments of Four Seasons Flowers porcelain were recovered from the Chinese Quarter Site, representing a minimum of one small sauce dish, two alcohol cups, two rice bowls, one large bowl, and three spoons.

In general, while the Winter Green porcelain was the most numerous by sherd count, it is within the same range as the other patterns by vessel count. Similarly, while the Double Happiness pattern had the smallest artifact count, the majority of the sherds were larger. In short, the tableware assemblage seemed fairly evenly distributed across the pattern types (Figure 41). If this assemblage reflects the table setting (or a portion of) from one household, 17 rice bowls is a relatively large number for daily use. This could reflect the presence of multiple occupants (or a family) within the house, or it could potentially indicate some of these items were for sale and not for personal use. While the tableware might have come from the shelving along the northern sides of the units, it was distributed roughly evenly from across the units, with a slightly higher count from Unit 2. Four Seasons Flowers pattern reflected a slightly more diverse set of tableware forms, but there is not enough of a difference to be statistically meaningful.

Other Chinese ceramics included several fragments of unidentified blue on white pattern fragments (in general too small to identify to vessel shape or pattern), and five fragments of the Sweet Pea motif commonly found on tea pots and liquor warmers. A fragment of a robust blue on white bowl with an unglazed interior was also found and looks consistent with a mortar for grinding spices and medicines. In addition to the imported Chinese porcelain tableware, two fragments of the distal end of a bone chopstick were also recovered. Unlike the scale rod fragments, which are similar but slightly smaller in diameter, the chopstick fragments are tapered (not perfectly round) and have a blunt, flat end (Figure 42).

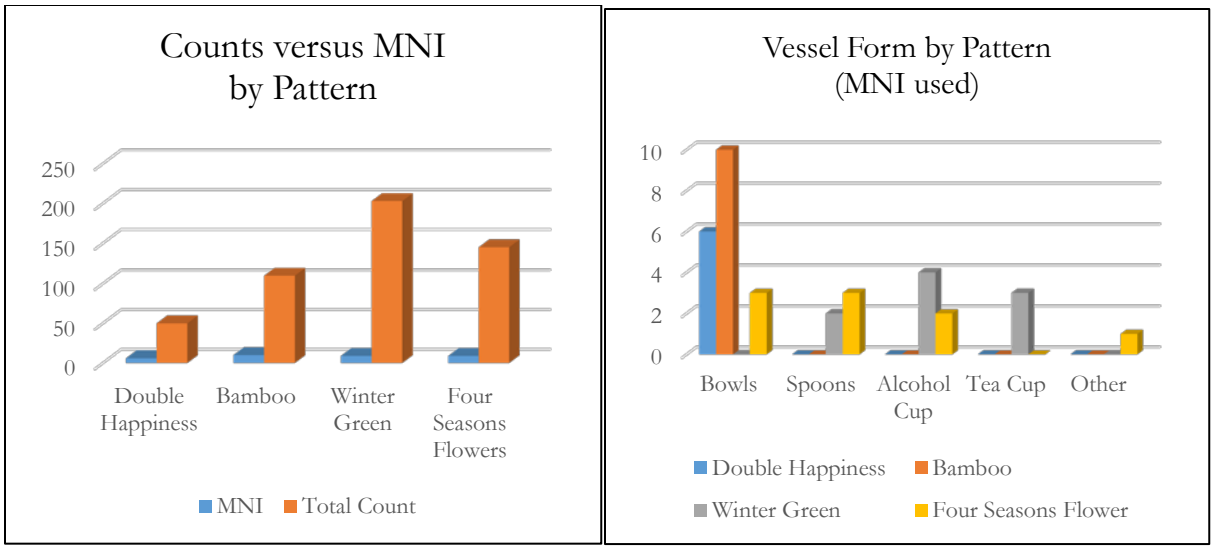


Figure 41. The charts above provide artifact counts by pattern and the diversity of vessel form with each of the four most common Chinese import wares. The chart on the left shows the artifact counts versus the minimum number of artifacts reflected within those counts. As such, it suggests that while certain patterns had higher counts (by number), they each were fairly equal in terms of actual vessel count. The chart on the right shows the vessel form with each pattern. Double Happiness and Bamboo patterns were only used for bowls, nonetheless, the Four Seasons Flowers pattern had the largest diversity of vessel forms represented in the assemblage.

Other items in the **Food Preparation and Consumption** group include EuroAmerican pressed glass, white improved earthenware, and porcelain tablewares. A variety of drinking vessels were recovered (in addition to the Chinese porcelain tea and alcohol cups described above), including a minimum of four pressed glass goblets. Two fragments of a decorative green glass goblet were found in Unit 2 just at the transition to the burned house feature. While other pressed glass items were found below, it is possible that this green glass vessel reflects the later historic-era fill capping the house deposit. Five amethyst glass goblet fragments were recovered, three of which are embossed with a "Happy New Year" motif. This vessel could have been repurposed for use in the Chinese New Year festivities, which were widely celebrated in Jacksonville. An additional three fragments of colorless pressed glass goblet were recovered, likely representing a single vessel.

Four fragments of a colorless glass shot glass were found in the top layers of Unit 2 and Unit 3 and therefore potentially from the mixed historic fill layers capping the house feature. A fragment of colorless glass stemware was recovered, as well as six fragments of tumbler glass, representing a minimum of three individual vessels. One of the tumblers had a horseshoe embossed on the base. A total of 26 cup fragments were recovered, representing a minimum of three white improved earthenware cups and three porcelain tea cups.

In addition to the Chinese porcelain dishes described above, several other ceramic tableware vessels were recovered. Fragments of a large yellowware bowl (n=6) were found, but the bulk of the EuroAmerican tableware consisted of undecorated white improved earthenwares (WIE). There were small fragments from a variety of popular mid-late nineteenth century decorative styles, including mulberry transferprint (1814-1867), blue transferprint, flow blue, unscalloped edgeware (1840s-1860s), banded slipwares, blue sprigged sheetware (1826-1842), and gilded wares (Samford and Miller 2015). Although the above artifacts reflect a variety of popular tableware patterns, they are all represented by just a few small sherds.

Two WIE gothic paneled saucers with maker's marks were recovered, manufactured by Thomas Furnival and Sons between 1876-1890 (Gibson 2011:79). Several fragments of a scalloped WIE bowl manufactured by Charles Meakin between 1876-1882 were also recovered (Kowalsky and Kowalsky 1999:277). Two fragments of a WIE plate manufactured by Turner, Goddard & Co were also found and date to between 1867-1874 (Kowalsky and Kowalsky 1999:355). A plate with a portion of a Royal Arms mark and registry stamp was also recovered, dating to between 1868-1883 (Kowalsky and Kowalsky 1999).

A total of 37 artifacts were designated as flatware, including the five porcelain spoons and two chopstick fragments described above. The remaining items include a metal spoon, a three-pronged metal fork, and eight butter knives, representing three knives with inlaid wooden handles and two knives with bone handles (Figure 42).

Figure 42. Two fragments of a bone chopstick (*specimens 2013.09-5297* and *2013.09*-5298), and a selection of the butter knives recovered from the Chinese Quarter Site. From left: a butter knife missing the wood or bone handle covering (*specimen 2013.09-3279*), a butter knife with the wooden inlay for the handle (*specimen 2013.09-3389*), and bone handled butter knife with a missing tip (*specimen 2013.09-3865*).

Ten artifacts were assigned to the **Kitchen** functional category, representing a ferrous cleaver, a wok, and four ferrous metal cooking pots (Figure 43). The wok is believed to have been found *in situ* on an unmortared brick hearth ring in the cooking area of the house (Figure 44). A total of 49 artifacts were placed within the **Serving** category and include 34 fragments of a hand painted polychrome earthenware pitcher largely recovered from layers above the house deposit and believed to be associated with the historic fill capping the feature. Likewise, five fragments of a circa 1930 Hazel Atlas Strawberry Jam Jar lid were also recovered from shallow depths above the house feature. Other items associated with serving include the fragments of the sweet pea alcohol warmer or tea pot described above and an undecorated porcelain teapot and lid. Three colorless pressed glass fragments of a covered dish believed to be part of a footed compote set were recovered and decorated with the pattern called "Viking," "Bearded Head," or "Old Man of the Mountain," manufactured by Hobbs, Brockunier and Co. circa 1876 (EAPG 2015). Nine other colorless pressed glass dish fragments were recovered, representing a minimum of two additional serving dishes and/or lids.

Figure 43. Iron cleaver blade and tang before and after conservation (*specimen 2013.09-0990*).

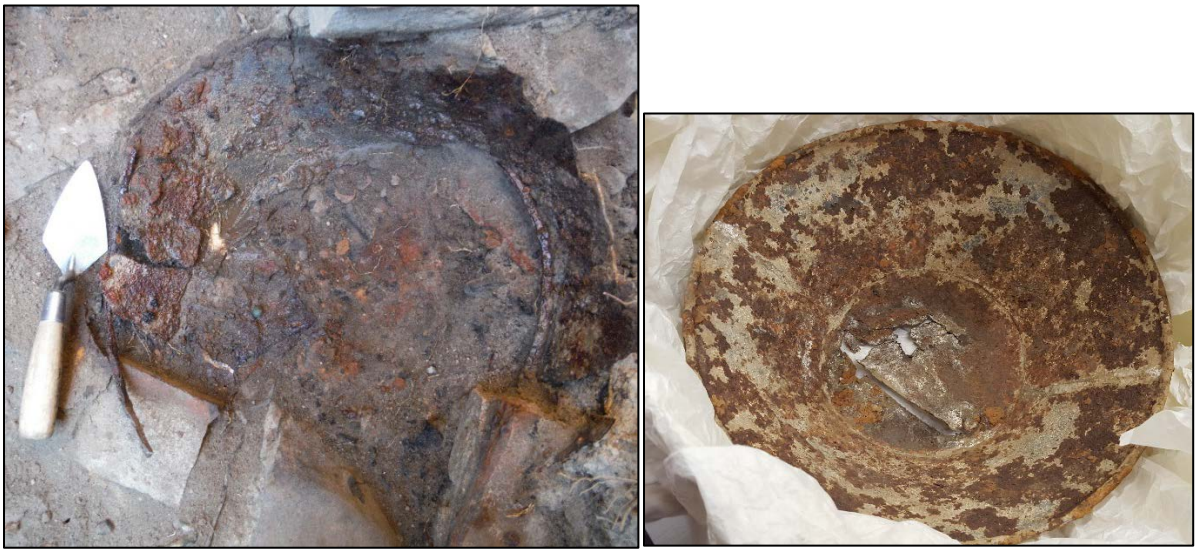


Figure 44. Fragments of an iron wok were found at the bottom of Unit 1, resting on a ring of brick and stones (left). This artifact reflects a vessel that was similar in size and shape to the ferrous wok currently housed in the SOHS collections (on right).

While the majority of the **Food Preparation and Consumption** artifacts are self-explanatory within a household context, there is nonetheless room for interpretation within the assemblage. For example, common dishwares, such as the Four Seasons Flowers bowls and the Viking pressed glass covered serving dish could have been used to serve food, or it could have been repurposed for use as a bulb planter as seen in a nineteenth century Britt photograph of Jacksonville resident Toy Kee (Figure 45). According to Roberta S. Greenwood (1996:122), "It was traditional to plant narcissus bulbs … if they flowered before the Chinese New Year, it was an omen that the family would prosper in the coming year." The popular Narcissus flower (*Narcissus tazetta* subspecies *chinensis*) was reportedly referred to as *seui sin faa* (water immortal flowers), and shipped to Oregon in bulb form where it could be easily rooted in a shallow dish with small pebbles and water.

Figure 45. Peter Britt photograph of a Jacksonville resident and laundry owner, Toy Kee, with incense stick, water pipe, and planted narcissus bulbs. The bulb cluster on the pedestal is in a pressed glass footed compote, similar to the one found at the Chinese Quarter Site. The middle bulb on the lower table is planted in a large Four Seasons Flowers bowl, and there is also a covered Four Seasons Flowers rice bowl on the bannister in the background. Photograph courtesy of the Southern Oregon Historical Society.

A total of 1,699 fragments of Chinese stoneware were recovered. Of this, nearly 1,500 fragments were identified as related to **Food Storage.** Chinese brown-glazed stoneware (often shortened to CBGS) is commonly found across Chinese migrant diaspora sites in the West and reflects the importation of preserved foods and oils from China. The assemblage contains a variety of shapes, sizes, and styles, and includes dozens of unglazed stoneware lids (Figure 46). In addition, several spouted jars were found, two with a white 'plug' still intact in the spout end. Analysis from the University of Idaho indicated that this plug was calcite, a mineral form of calcium carbonate, likely the remnant of a non-toxic paste made from slaked lime (Appendix D). This plug has been interpreted as the seal used during transportation and suggests that at least two jars in the assemblage remained unopened at the time of the fire. Several of the unglazed stoneware vessel lids were also recovered, further suggesting the CBGS containers were in use, and potentially sealed.

Figure 46. A selection of the Chinese brown-glazed stoneware (CBGS) from the collection. From top left: Spouted jar with intact spout plug (*specimen 2013.09-0522*), wide mouth shouldered jar (*specimen 2013.09-0885*), and assorted fragments.

The majority of the CBGS sherds reflect fairly non-diagnostic body fragments, however, several vessel shapes were able to be recognized through distinctive attributes such as rims, spouts, or bases. A rough minimum number of individual items was made using these diagnostic attributes (bases and finishes), and the higher number was used to calculate MNI.

A minimum of eleven spouted jars were recovered from the Chinese Quarter Site, representing six complete specimens and roughly four fragmented jars. Spouted jars, often referred to as soy pots, contained a number of liquid products, including soy sauce and vegetable oils. These jars could be easily reused to house liquid products, and some suggest they were also repurposed as tea pots. Other vessels able to be identified within the collection include a straight sided barrel jar and lid, a large globular jar, and a shallow dish or 'cooking pan' (which could have been used as a lid) (Lister and Lister 1989:45). A conservative minimum of eight other utilitarian vessels, including globular and shouldered jar styles and over a dozen unglazed lids, were recovered. Four fragments of the unglazed stoneware lids (representing a minimum of two individual items) were blackened and could have been used as oil lamps. While CBGS vessels were undoubtedly reused for a variety of purposes, their original contents ranged from dried foods such as rice, salted fish and vegetables, to pickled vegetables, soy bean curd, seaweed, ginger, and preserved eggs. While no specific contents have been attributed to a single vessel, they presumably contained some of the botanical and faunal remains that are discussed below.

The Jacksonville Chinese Quarter Site's **Clothing Maintenance** category was comprised of 8 very small chunks of laundry bluing. Bluing was commonly used in laundries as a clothing

whitener. As previously discussed, the Chinese Dwelling was adjacent to a laundry operated by Lim Wang. It is unclear if these two buildings had any further association or connection.

A total of 82 artifacts were attributed to the **Food** category. The assemblage consists of food containers such as an aqua glass cathedral bottle (n=8), a minimum of four glass condiment bottles (n=16), a horizontally ribbed, aqua glass peppersauce bottle (n=10), an aqua glass Lea and Perrins bottle (n=3) dating to between 1880-1900, and a minimum of five aqua glass soda bottles (n=39), four of which are Hutchison style soda bottles popular between 1880s-1910 (Lindsay 2015). In addition to the glass bottles, a *very* conservative estimate of four meat cans were recovered. This count was made only from the cans that were basically intact, but the large assemblage of non-diagnostic sheet metal and indefinite use container fragments recovered likely represent a variety of ferrous metal containers for tea, meat, and other canned foods. The variety of food containers on the shelf at the time of the fire indicate that the occupants enjoyed flavorful food and were integrating mass-produced Western style sauces and condiments into their daily cuisine.

A total of 104 artifacts were assigned to the **Heating and Lighting** category, including light bulb fragments from upper levels (not associated with the house feature), a piece of coal, and several lamp parts. Five fragments of unglazed stoneware were charred and perhaps consistent with Chinese oil lamps, and 73 fragments of colorless chimney glass (representing a minimum of four individual items) were recovered, in beaded or scalloped rim styles. Other lamp parts, including wick burners and keys, were also recovered (Figure 47). A total of 37 artifacts were assigned to the **Furnishings** category. These included a 4-inch picture frame, clock parts, mirror glass, a redware flower pot saucer, and furniture hardware.

Figure 47. A sample of the **Heating and Lighting** and **Furnishing** artifacts recovered from the Chinese Quarter Site. From left: a colorless glass lamp chimney with a scalloped rim (*specimen 2013.09-0708*), lamp burner and wick turner (*specimen 2013.09-3858*), and 4-inch picture frame (*specimen 2013.09-0507*).

Artifacts Attributed to the Personal Category

A total of 2,559 artifacts were attributed to the Personal artifact category. Of these, the majority (65%) belonged to the **Social Drugs** category, which included material culture associated with tobacco, opium, and alcohol. The total of 1,674 artifacts reflecting **Social Drugs** included 746 artifacts belonging to the Alcohol group. The majority of these artifacts (n=517) reflect a minimum of 36 individual alcohol containers. The bulk of the container glass (n=421) in this category represents a minimum of 23 bottles consistent with common alcohol bottle morphology. The remainder of the bottles could be assigned to a specific type of content or vessel, including a fragment of an amber beer bottle, fragments of two dark olive stout bottles, and 83 fragments of olive bottle glass representing a minimum of four individual bottles. Four fragments of bitters bottles (including three fragments of an aqua bottle and one amber glass bottle) were recovered. Two additional fragments of an olive glass case bottle were recovered, which could have contained either bitters or case gin. Three alcohol flasks were collected reflecting two fragments of an amber glass flask, with a key mold base that dates to between the 1870s-1880s, and a colorless glass Picnic/ Jo Jo style flask, popular between the 1870s-1890s (Lindsay 2015). An aqua glass Carl Conrad and Company lager bottle was also found, which had a maker's mark dating to between 1876 and 1882 (Toulouse 1971:117).

In addition to the glass assemblage, 230 fragments of Chinese brown-glazed stoneware alcohol jars were also recovered, representing a minimum of 11 individual bottles. These distinctive containers have a rounded body, narrow neck, and outwardly flared lip, and were used to import distilled spirits such as *ng ka py* and *mei kuei lu* (Choy 2014:16). The contents of these bottles could be used as medicinal wine or for recreational enjoyment.

A total of 15 artifacts recovered were related to tobacco paraphernalia. This included six ball clay pipe fragments reflecting a minimum of three individual pipes, six metal water pipe fragments, two amber resin pipe mouth pieces, and a brass pipe bowl with fragments of a red linen gasket, or "gee rag." Linen rags were commonly used to create a tight fit between the pipe parts (Wegars 2001:69).

A total of 252 opium pipe bowl fragments were recovered, including 40 grayware fragments, and 211 redware fragments. These bowls reflect a variety of common shapes and some have characters stamped into them. Additional research on these artifacts is needed before an accurate minimum number of individual items can be determined. Five copper-alloy pipe bowl fittings, two pipe saddles, and screen that was used to patch the pipe bowls, were also recovered. Small cut brass triangles were also found in the assemblage, which, along with the screen and triangle files mentioned earlier, could indicate that pipe mending activities were occurring within the house.

More than 600 opium can fragments were recovered, representing a minimum of twenty individual cans. A portion of the head stamps were analyzed, the majority of which were the popular Fook Lung and Lai Yuen stamps (Figure 48). Several of the fragments had portions of the printed paper or painted labels, and targeted analysis of this suite of artifacts could yield additional information. Several opium can fragments were sent to the University of Idaho for analysis, one of which contained bone dust, not opium (Appendix D). Ground bone is known to be a traditional Chinese medicine suggesting the can was either repurposed to house the bone, or that perhaps these distinctive containers held a greater variety of contents than previously understood. If the can was

reused, that could suggest that the occupant of the house might have been manufacturing traditional medicines. The mortar described above could also indicate home medicine production.

Figure 48. A selection of the opium cans with the stamps recovered from the assemblage. From left: a Fook Lung head stamp (*specimen 2013.09-0378*) and three Lai Yuen head stamps (*specimens 2013.09-0378, 2013.09-3281,* and *2013.09-1560*).

A total of 129 items in were assigned to the **Grooming and Health** functional category, which includes items associated with Medicine and Toiletry. This category was dominated by artifacts associated with home health care and included 57 fragments of glass medicine bottles. This assemblage contained a minimum of 16 aqua glass Chinese medicine bottles, three fragments of a homeopathic bottle, a Chinese brown-glazed stoneware potentially used as an apothecary jar (Figure 51), and 15 EuroAmerican style medicine bottles containing a variety of prescription and patent medicines (Figure 49). The small Chinese bottles are commonly misidentified as "opium bottles" but instead contained single dose or pelletized Chinese medicines. A handful of the bottles recovered from the site had the contents intact and were subsequently analyzed by the University of Idaho chemistry department. Two bottles contained cinnabar, called *zhu sha*, an ore of mercury, and one bottle contained activated carbon (Appendix D).

More than 40 fragments of EuroAmerican style glass medicine bottles were recovered, representing a minimum of 15 individual bottles. This included an oval based aqua glass bottle with a patent/ extract finish which contained a residue identified through University of Idaho chemical analysis as calamine lotion (Appendix D). Other patent medicines included a bottle of Perry Davis Vegetable Pain Killer, St. Jacobs Oel, Gargling Oil, and a cobalt glass Bromoseltzer bottle that came from the upper levels and is not associated with the Chinese dwelling.

Figure 49. A sample of the aqua glass medicine vials recovered from the Chinese Quarter Site. From top left: *Specimen 2013.09-3293, 2013.09-3027, 2013.09-2694,* and *2013.09-1948.* Middle row, from left: *specimens 2013.09-1487, 2013.09-0767, 2013.09-0541,* and *2013.09-1443.* Bottom row, from left: *specimen 2013.09-0540, 2013.09-3214, 2013.09-3071,* and *2013.09-1047.*

A total of 64 artifacts were associated with Toiletry activities and included items associated with personal hygiene and grooming. The remains of at least two hair combs (n=11) were recovered, as evidenced by nine resin comb teeth, a fragment of a curved celluloid comb, and a blue plastic comb tooth from an upper level and not believed to be associated with the Chinese Dwelling. Two Chinese style razors were also recovered. These distinctive tools consisted of a short, wedge shaped iron blade that would have had a bamboo folding handle. These razors were important for use in the maintenance of the traditional queue hairstyle. A barber was listed in the 1870 Jacksonville Census, however, by the late 1880s there was likely no formal establishment in the neighborhood, leaving residents to help each other or to shave in the privacy of their own homes.

Figure 50. Historical postcard of Chinese barber and customer, found for sale on eBay.

A small assemblage of 13 bone toothbrush fragments was recovered from the site, representing a minimum of five individual items (Figure 51). Several of these were typical of Chinese manufacture with three distinctive concentric circles carved into the handle and painted red and four to five bristle rows (Greenwood 1996:115). Similar brushes have been found in many Chinatown assemblages, including the San Jose Market Street Chinatown, which contained brushes with traces of red paint and described as the "Chinese three circle design" (Douglas 2007:6). The toothbrush originated in China in the late fifteenth century and "featured tufts of boar bristles glued into holes that had been drilled along a piece of bone" (Douglas 2007:4). Toothbrush manufacturers around the world continued to use Chinese boar bristles until World War II trade disruptions led to the use of synthetic bristles. A European made toothbrush was also recovered in the assemblage, identifiable by the three bristle rows and a shape consistent with the preferred Western style. Some of the brush fragments had shorter and rounder ends, suggesting the brushes could have been used for other grooming activities. ODOT employee Michael Wei Wong described using brushes like these for clothing maintenance and the cleaning of cotton fabric shoes (personal communication). Interestingly, all but one of the toothbrushes was recovered from a relatively discreet area in Unit 4, in and around the dense artifact deposits that is believed to reflect a collapsed shelf. Even the outlier (from Unit 3) came from within the same general area and could have been thrown a little further in the fire event.

Other items associated with personal grooming include a total of 29 WIE ewer fragments, representing a minimum of two individual items. The accompanying basins were not identified but could be represented within the more robust ceramics assigned to the Indefinite Use category.

Seven chamber pot fragments (representing a minimum of two vessels) were also collected. There is no indication of where a privy would have been in association with the small dwelling, and it is likely that the residents shared the use of one on the block with their neighbors.

Figure 51. A sample of the grooming items found at the Chinese Quarter Site. From left: bone toothbrush, European manufacture (*specimen 2013.09-4291*), a short bone brush (*specimen 2013.09-3385*), fragments of a Chinese made toothbrush (*specimens 2013.09-4126* and *2013.09-0791*), and a razor blade (*specimen 2013.09-0991*). On right: Chinese brown-glazed apothecary jar (*specimen 2013.09-4293*).

A diverse assemblage of 41 decorative jewelry items and coin purses were assigned to the Personal **Accoutrement** category. Of these, nine coin purse fragments, representing a minimum of five purses, were recovered (Figure 52). Some of these purses could have held coins or the gaming pieces and buttons that were in the vicinity. One purse had fragments of fine cotton cloth still attached. The cloth was black, but it was unclear whether that was the original color or if it had been darkened by soot or age. Other items in this group included a fabric applique flower, a decorative buckle, several fine chains, a brooch, watch fob, carved bone flower, and several beads (Figure 53).

Figure 52. A sample of the coin purse fragments recovered from the site (*specimen 2013.09-1613, 2013.09-2945,* and *2013.09-3461*), the one on the bottom right has attached woven fabric (*specimen 2013.09-3280*).

Figure 53. A sample of the decorative and personal items recovered from the site. From left: an abalone brooch (*specimen 2013.09-*2795), a carved flower (*specimen 2013.09-*3289), bone bead (*specimen 2013.09-4660*), carved metal flower (*specimen 2013.09-4469*), and three Chinese ball buttons (*specimen 2013.09-2937*, *2013.09-2877,* and *2013.09-3050*).

A total of 68 artifacts were attributed to the **Toys** category, representing a minimum of 18 individual items. This included a metal whistle, three marbles (mentioned earlier), a toy clock face with the hands at 9:23, two ferrous metal cap guns, doll fragments, and portions of a child's tea set (Figure 54). The cap guns underwent metal conservation, which revealed diagnostic embossing. One gun was a single shot derringer cap gun manufactured by J. & E. Stevens, embossed with the word "Daisy" (with the image of the flower), and the patent date of April 22, 1873 (Logan and Best

1990:42). The other gun was also a Derringer cap gun manufactured circa 1880 and embossed with "UNXLD," which was short hand for "unexcelled," a popular firework brand (Logan and Best 1990:160). These toys were popular with young boys in the late nineteenth century. However, if there were no children in the household, it is possible that these cap guns could have been repurposed for use as noise makers during festivals or other times. The porcelain tea set assemblage included a plate, three saucers, two tea cups, and a tea pot lid. Dolls present at the site included several fragments of a hollow plaster molded doll and what appear to be animals. German bisque porcelain doll fragments were also recovered, representing a minimum of two dolls.

A total of 281 artifacts were assigned to the **Clothing** category, the majority of which were buttons and other fasteners. A small collection of snaps, rivets, buckles, strap adjusters, suspender clips, and safety pins were found, in addition to 255 buttons. As mentioned above, some of the button assemblage might have been repurposed for use as gaming markers. This has been documented with Prosser porcelain buttons on other archaeological sites. Small scraps of fabric were recovered from the assemblage, in some cases attached to buttons. This suggests that at least part of the assemblage reflects actual clothing that did not survive the fire, or the subsequent years in the soil. Some of the buttons could have also been stored in bulk, in a button jar, for example.

Five black glass buttons were found, one large loop shank button with a woven pattern on the face, three other small loop shank buttons, and one sew through style (Figure 55). Seven bone button fragments were found, representing one stud and five four-hole sew through styles. A total of 46 copper-alloy button fragments were recovered, representing 14 ball buttons popular in Chinese clothing, a loop shank button with a flower design, and a minimum of 28 other buttons in a variety of sew through and loop shank styles. Nearly 60 ferrous metal buttons were recovered in a variety of sew through, post, and loop shank styles. Over 40 sew through shell buttons were found, representing an assortment of sizes and decorative styles (Figure 56). Nearly 70 Prosser porcelain buttons were recovered, reflecting a range of sizes, styles, and decorative types. However, despite the variety of buttons represented, the bulk of the assemblage (86%) consisted of plain, white sew through buttons of various sizes. An additional six white opaque glass buttons were recovered in stud and loop shank styles.

A total of 359 artifacts were attributed to the **Footwear** category. However, this number is artificially inflated due to the high volume of boot nails and eyelets that can be found on a single shoe. Eight shoe sole and heel fragments were identified, further suggesting that the shoe fragment count reflects just a few individual shoes.

Figure 54. A sample of the artifacts recovered from the site associated to the **Toys** category. From top left: whistle (*specimen 2013.09-4335*), cap guns (*specimens 2013.09-4287* and *2013.09-4759*), and clock face (*specimen 2013.09-1710*). Items from a porcelain tea set plate, saucer, and cups (*specimens 2013.09-4602, 2013.09-2143, 2013.09-4764,* and *2013.09-4622*), and the doll parts: a molded plaster hand and boot (*specimen 2013.09-1849* and *2013.09-0558*), and miscellaneous porcelain doll parts including a breast plate (*specimen 2013.09-0618*), right arm (*specimen 2013.09*-3839), a porcelain leg (*specimen 2013.09-5210*), and a black painted hand (*specimen 2013.09-2995*).

Figure 55. A sample of the buttons recovered from the site. From left: large black loop shank button with woven pattern (*specimen 2013.09-2643*), four-hole sew through button (*2013.09-4336*), sew through bone buttons (*specimens 2013.09-4879* and *2013.09-4779*), and assorted metal buttons (*specimens 2013.09-4063, 2013.09-4241, 2013.09-4781, 2013.09-2667,* and *2013.09-4801*).

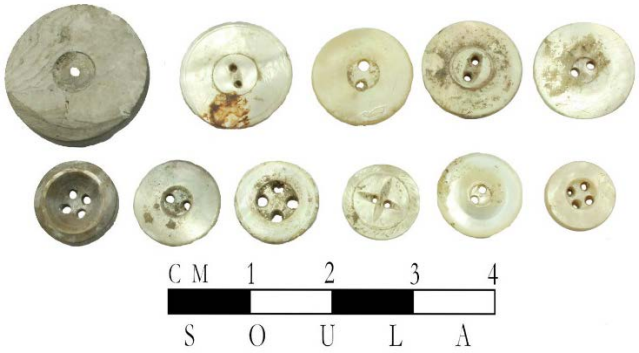


Figure 56. A sample of the sew through shell buttons recovered from the site (*specimens 2013.09-4302, 2013.09-2942, 2013.09-2747, 2013.09-2803, 2013.09-3199, 2013.09-3403, 2013.09-4304, 2013.09-4240, 2013.09-3300, 2013.09-3470,* and *2013.09-3405*).

Artifacts Attributed to the Structural Category

A total of 9,950 artifacts were assigned to the Structural functional category, 7,775 of which are believed to be associated with the intact portion of the Chinese Dwelling feature. By count, 90% of the artifacts within the Structural category belonged to the **Hardware** group. As noted before, this figure is slightly misleading, as the **Materials** would represent a far higher percentage by volume, but the **Hardware** is inflated by count due to the enumeration of each nail, screw, and so forth. The **Hardware** category is dominated by machine cut nails, which represent 84% of the assemblage below level 7 (the average level where the feature was encountered). Over 5,800 cut nails and fragments were identified, more than 2,000 of which were identified to size. Of these, 47% were under 2 inches in length, 41% were between 2 to 3 inches, and the remaining 11% were 3 inches or greater. A similar trend was observed with the 350 wire nails recovered from within the house feature deposit, 50% of which were less than 2 inches in length and could potentially represent crate or container nails. Wire nails could also reflect later additions or repairs to the structure. In addition to the nails found in the assemblage, other fasteners included screws (n=33), brad nails (n=63), and a small number of miscellaneous tacks, bolts, staples, and washers.

The remaining items within the **Hardware** category represent door hardware, including more than 50 porcelain door knob fragments. One door knob fragment was a Bennington pressed porcelain style, the remainder of the fragments were white pressed porcelain. The majority of the door knobs were highly fragmented, presumably due to the heat exposure from the fire event. However, the more than 50 pieces clearly reflect multiple door knobs, which could suggest the pieces reflect intentional breakage and reuse. Or, the smaller fragments could have been from smaller knobs used in cabinet hardware. Other door parts include handles, a lock plate, rim locks, dead bolt, and hinges (Figure 57). The hardware was largely found in the vicinity of the doorway between Unit 1 and Unit 2 and suggests that security was on the mind of the residents, and the small building was able to be locked up tight. Two mortise keys were found, which could have been used in association with the door rim lock. Other **Hardware** items could be related to furniture within the home, including hinges, brackets, and latches.

Figure 57. A sample of the miscellaneous hardware recovered from the Chinese Quarter site. From top: a rim lock (*specimen 2013.09-5240*), a fragment of porcelain doorknob, two brass mortise keys (*specimen 2013.09-0261* and *2013.09-1857*), and padlock (*specimen 2013.09-0544*).

Due to the highly fragmented nature of the artifacts within the **Materials** category, often only a representative sample is collected. As such, the category can be difficult to quantify by count, but rather indicates the presence of diagnostic material types which can be used to infer the type of structure present within the project area, and the means of its construction. A total of 914 items were assigned to the **Materials** category, including brick, mortar, plaster, wood, and pane glass. In addition to the material from the burned house deposit, modern structural materials including composite roofing, cement rubble, linoleum, and asphalt was recovered from the upper fill levels. Other artifacts recovered from the upper layers included a pressed porcelain skirted insulator and wrapped wire associated with electric utilities.

Prehistoric Artifacts

A total of 13 prehistoric artifacts were recovered during the Chinese Quarter Site data recovery excavations. This included 9 chert flakes, two obsidian flakes, a fragment of a chert projectile point, and a portion of an obsidian biface. These artifacts reflect the well-known, but poorly defined, prehistoric presence in Jacksonville. While several flakes have been recovered from within the historic-era levels along Main Street, the only intact prehistoric deposits have been found within the Britt Gardens Site (35JA789). The prehistoric artifacts all came from within an historic-era occupation layer and do not reflect an intact archaeological deposit.

Discussion of the Jacksonville Chinese Quarter Findings

The Archaeology of the Chinese Dwelling

General Site Structure Information

While there have been previous excavations at the site, a variety of factors have made systematic testing across the Chinese Quarter problematic. As a result, the site has been tested in pockets, which has made characterization of resources difficult. This excavation was designed to focus in on one area and try to provide detailed information about the nature of the resource in the specific project APE, and hopefully clarify some basic questions about the site's general location, function, and period of use.

The excavation was able to confirm that the ashy feature observed during SOULA testing was associated with the small building marked as a "Chinese Shanty" on the Sanborn Maps, described herein as the Chinese Dwelling. Furthermore, features observed within the excavation indicate that the units were placed on the northern side of the building where the building juts out. As such, this would suggest that the ashy deposits excavated by Schablitsky and Ruiz (2009) were not within the same building. These deposits were likely from the same fire, and possibly represent the burned remains of the adjacent building believed to be the Wash House occupied by Lim Wang at the time of the fire.

This project incorporated fire science into the investigation with great success. The ability to interpret fire behavior through its impact on material culture and site taphonomy allowed for key observations to be made about the site structure, composition, and significance. As fire behaves in a predictable way, its impact on the material culture within the Chinese Dwelling was recognized, and the feature was determined to represent an *in situ* feature created when the building burned on September 11, 1888. In addition to the deposit reflecting the intact remains of a burned dwelling, the density of the assemblage, paired with the presence of abundant food remains, suggests that the house was occupied at the time of the fire.

Aside from the shape of its footprint, little is known about the exact form of the Chinese Dwelling, or the date of its construction. The building is present on maps prior to the Sanborns from the 1880s, but likely was constructed much earlier. Much of the town was formally platted in the 1860s, and the fact that the building does not comply with the property lines or tax lots suggests that it, along with many other structures in the area, were constructed during the initial occupation of the block in the 1850s.

Photographs taken of the backside of the Chinese Quarter from the Britt hill in the mid-late 1850s provide information about the construction techniques employed in some of the neighborhood's early buildings (see Figure 2 and Figure 3 above). Short sections of roughhewn siding and roof shingles were used, potentially from portable mills present around town during the first few years after the gold rush. These boards were fastened onto posts spaced roughly four feet apart and were presumably driven directly into the ground. This type of cladding would allow for a variety of fasteners to be employed and could be consistent with the distribution of the small to medium sized nails recovered in the assemblage. The construction elements visible in early photographs are roughly consistent with contemporary descriptions of an early Jacksonville building on Main Street:

> It was built of shakes, the studding, plates and rafters were improvised out of fir poles; there were no sills to the house, the posts or studding were stuck in the ground, window openings were covered with canvas, doors were made out of fir poles covered with shakes. It is safe to say that not a sawed stick of timber was if any description was used in the building (Klippel 1901: Chapter IV).

If the Chinese Dwelling began like the one described above, archaeological evidence presented suggests it was improved somewhat over time.

A sample of the *in situ* structural wood recovered from the excavation was analyzed by Jaime Dexter Kennedy of the University of Oregon (Figure 58; Appendix A). Kennedy identified the wood and structural beams as Douglas fir, and the milled floor boards as pine. This indicates that building was constructed out of locally available materials. The kitchen area had smooth stone flooring, and the presence of brick, mortar, plaster, and pane glass suggests that these materials were employed in parts of the building, but it is unclear to what extent. Aside from the dry stacked bricks found in association with the wok, larger brick fragments were mostly recovered from the shallow excavation layers and likely represent post fire fill activities. Brick rubble has been uncovered across the larger project area (see Rose and Johnson 2015, 2012) and likely originates from the Main Street Warehouse building that was to the immediate east of the Chinese Dwelling, or the former brick extension on the Brunner Building still standing on the corner of Main and Oregon streets. No evidence for a brick foundation or chimney was found within the excavations, nor is one visible in the photographs or maps of the building (which does not mean the building did not have one).

Other clues to the building's construction include the nearly two dozen fragments of mud dauber wasp nests that were recovered from the burned building deposit. Most of these were collected from deep in the site and are associated with the wooden flooring. This suggests that the floor boards were not placed directly on the ground surface, but on a sill plate, which allowed for a small gap between the ground surface and the flooring for the wasps to inhabit. The house clearly settled during the fire event, and there was little to no material found between the intact floor boards and the uniform clay subsoil beneath, suggesting that the space was minimal. Some of the nests could have also been in the exterior eaves of the building, however, due to the depth and association with the flooring, it appears most were from under the structure. While the wooden floor could have allowed for the building to adapt to the natural slope in the area, the fact that the kitchen flooring was stone suggest that at least parts of the house were placed directly on, or dug into, the ground. The presence of earthen bisque along the east wall of the excavation could suggest the latter. The floorboards were oriented at different angles across the feature (Figure 18), perhaps suggesting that the building was extended or added on to over time, or that the residents remodeled and improved the building. While many of the early structures would have had earthen floors to begin with, there was little to no cultural material recovered from the soils beneath the floorboards. If the house was occupied before the wood flooring was laid, you would expect to find cultural soils and not the sterile subsoil that was encountered a few centimeters beneath the floor board horizon.

Figure 58. Plan view photograph of the intact floorboards visible in the bottom of Unit 3 at 150 cm below datum.

The Jacksonville Chinese Quarter Faunal and Botanical Assemblages in Context

In addition to the robust artifact assemblage presented above, over 50 pounds of faunal and botanical material was collected. Selected botanical material was analyzed by Jaime Dexter Kennedy of the University of Oregon (Appendix A) and Virginia Popper of the University of Massachusetts, Boston (Appendix B). Faunal analysis was conducted at the Southern Oregon University Laboratory of Anthropology under the direction of Katie Johnson (Appendix C). The botanical and faunal findings will be discussed generally along with the artifact assemblage below, and the full reports will be presented in the appendices.

As described in the pages above, the excavations within the burned feature shed light on the choices, opportunities, and household possessions of those living within the Chinese Dwelling when it burned in 1888. The investigation not only revealed artifacts associated with food preparation and consumption, but also uncovered features suggesting how the household functioned.

Archaeological deposits uncovered in the Unit 1 "kitchen" area indicated that foods were being cooked using traditional Chinese methods: in a wok, over a small fire. Wok ovens have been found in several other Chinese migrant archaeological sites, and range from informal stacked rock ovens in remote areas where mining or railroad construction camps were located (see Furnis and Maniery 2015; Pierson 2008; Syda 1990) to mortared brick wok stoves in more permanent dwellings (Costello 2004). Other kitchen artifacts included iron pots for boiling water, a long-handled pan, a flat bladed metal spoon or spatula, and a cleaver for preparing the meat and vegetables. The bulk of

the tableware assemblage, which included imported rice bowls, small sauce dishes, Chinese spoons, a bone chopstick, teapots, and cups, is complimented by a sturdy yellowware mixing bowl, white improved earthenware plates and saucers, and a variety of metal spoons, forks, and knives. This blend of imported, traditional (Chinese), Western, and locally available materials is seen in the faunal and botanical assemblage as well. Reinforcing the established fact that although there was some continuity of foodways within Chinese kitchens on the American frontier—with vessels forms and ingredients familiar to residents of Guangdong *or* Jacksonville—that is not to say the same dishes made it to the table, or were experienced in the same way.

The faunal and botanical assemblages reflect a house with a well-stocked larder of a variety of imported and locally available foods. With dozens of CBGS jars, metal cans, and storage vessels that contained peanuts, Chinese olives (which could have been dried, pickled, sugared, or in tea), litchi fruit, rice, Szechuan peppercorns, as well as liquids, such as soy sauce or vegetable oils. Other recovered fruits, vegetables, and grains could have been acquired either from local Rogue Valley farms or from markets in the Willamette Valley or California. These included chili peppers, watermelon, melon seeds, peaches, plums, berries, elderberries, wheat, and grapes (Appendix B).

The faunal assemblage similarly presents a wide variety of protein sources, including the pork and chicken traditionally associated with the Chinese diet, along with local domesticated animals including goat, sheep, and cow. A variety of seafood was also found within the household, coming from both regional and foreign markets, including cuttlefish, abalone, pile perch, and a variety of other fish species.

The sheer volume of recovered faunal remains (again, over 50 lbs.), paired with the material culture related to food storage, suggests that the Chinese Dwelling contained a large amount of preserved food. Home preservation, such as salting, curing, and drying was widely practiced in the nineteenth century across cultural traditions. It was important, particularly in rural communities, to preserve the harvest in order to prepare for the leaner times. Preservation was also a necessity for foods needing to travel a long distance. Imported fish and vegetables would have been dried, pickled, or salted. Modern Chinese markets still carry a wide variety of preserved meat, fish, and produce, which can offer a glimpse into what we may be seeing in the archaeological assemblage.

In addition to the importation of foods from larger or distant markets, the historical record indicates that the Chinese residents of southern Oregon were instrumental in spurring a local swine industry. In addition to pork available at the neighboring Orth butcher shop, several accounts mention Chinese residents purchasing live hogs in bulk in preparation for the New Year's celebration, or funerals, or to feed work crews in the mines (Colvig 1963; Beeson 1851-1893).

The assemblage also contained a large amount of eggshell. This material was prolific enough that it was able to be recovered directly from the screens and was also abundant in the bulk samples. While the eggshell has not been identified to species, duck or chicken eggs were clearly plentiful in the household and could have been preserved to make them shelf stable. Preserved eggs, such as tea eggs or century eggs, remain a popular food item in southern Chinese cuisine. Several gastroliths were also recovered at the site (most came from Unit 4). The gastrolith assemblage reflects stones, porcelain, and glass fragments that had been worn smooth while in a chicken's gizzard. The faunal assemblage reflects a heavy use of poultry within the household. When the abundance is paired with the presence of eggshell, gastroliths, and distinctive faunal markers, it suggests that chickens were being raised and butchered on site.

While Western diets separate food and medicine, cuisine in southern China is seen as playing a fundamental role in one's internal balance. Maintaining balance is considered a key element to good health, and food is therefore considered a form of medicine that can aid in the prevention and treatment of an illness. As a result, consumer choices may have been informed by more than personal food preferences and availability, but might also be a more holistic reflection of health and wellbeing on the American frontier.

Whereas merchants and peddlers may have been importing food into the neighborhood, other residents were importing food traditions. The Census records indicate that many of Jacksonville's non-mining Chinese population were employed as cooks in nearby hotels and private homes. This facilitated exposure to EuroAmerican foods and recipes, and presumably led to recipes being exchanged between the populations, as has been noted by Fong (2013). Western style sauces (i.e. peppersauce, Lea and Perrins Worcestershire sauce) and pickle bottles indicate that the residents were supplementing imported spices and foods, such as the Szechuan peppercorns and other herbs recovered from the site, with commercially available American condiments.

Daily Life in Jacksonville

In general, the assemblage from the Jacksonville Chinese Quarter Site (35JA737) provides a window into the life of Chinese residents in Jacksonville during the height of the Exclusion Era. Shrinking economic opportunity, paired with an increasingly hostile political climate, motivated many of the Chinese migrants living in Jacksonville during the 1870s to move on in the decade that followed. At the time of the fire, the community was smaller, but the contents of the burned Chinese Dwelling highlight that a comfortable life was achieved by some who remained. The house was well equipped with a variety of nourishing and flavorful foods. There was a fully stocked cabinet of dishes, and the variety of clothing fasteners could indicate that the resident/ residents were well dressed. Artifacts indicate a variety of recreational activities, indicating that the residents spent free time gaming, drinking, and smoking in the comfort of their home. Other artifacts speak to household skills, trade, and activities used to support and maintain the household. At least one resident was literate, and women and children may have been present.

Mystery remains about who might have occupied the house at the time of the fire. Extensive research was done on the property records, but the early date of the block created a confusing matrix of ownership. The building was likely owned by Joseph Solomon at the time of the fire, but his tenant is not mentioned in the subsequent newspaper accounts of the conflagration. The hunt for the residents of the Chinese Dwelling will continue, but there are some clues as to who might have lived there. As the fire occurred in a time when the demographics were rapidly changing within the community, and in between census records, it is difficult to get a snapshot of the community in 1888. Despite a lack of documentation, the house might have been occupied by a small family. This could be supported by the feminine clothing fasteners, toys, and again, the diversity of food and tablewares.

The assemblage could also reflect a store or informal commercial business. It is possible that a peddler named Chow was the occupant, and this could support many aspects of the material culture assemblage, including artifacts associated with writing, women and children's goods, and bulk items that might have been for sale. In addition to the small crowbar that may have been used

to open shipping crates, fragments of rice straw were found that could have been used as packing material.

The desire for traditional Chinese goods in the American West was strong enough to create a lucrative market in even the most remote of areas where Chinese were present. This was clearly documented in LaLande's 1981 work in the nearby Applegate Valley. LaLande (1981) transcribed entries from the Kubli Store, a small outpost surrounded by mines, which contained itemized purchases made by Chinese miners between the years of 1866-1868. In just two short years, Kubli purchased $4,270 worth of goods from Tung Chong and Company in San Francisco to sell to local miners (LaLande 1981). Kubli moved to Jacksonville in the 1870s, and opened a hardware store in town. It is unclear whether or not he continued to sell Chinese goods, but other merchants certainly did. The Karewski Store—located in the Brunner Building virtually next door to the Chinese Dwelling—recorded Chinese goods in the ledger books from the 1870s including China rice and China nut oil (SOHS 1877). Solomon's Store, located on the northeastern corner of the same block, also sold goods to its Chinese neighbors. Solomon's ledgers do not itemize purchases, but contain several accounts that indicate he also allowed Chinese customers to purchase items on credit. Joseph Solomon was not only a merchant, but a landlord and the likely owner of the Chinese Dwelling at the time of the fire.

In addition to the white store owners listed above, records indicate that Chinese merchants and peddlers were also present in small numbers. However, while commercial businesses must have been present, they are not listed on any historical maps (aside from laundries). This could be due to the fact that local laws required such prohibitive fees for Chinese merchants that it was not worth the cost. Laundries were geared toward white customers, and therefore needed to be visible within the larger community. The fact that there were multiple peddler's licenses issued in the 1880s suggest that there might have been economic advantages to this business strategy, as it may have allowed for the distribution of imported commercial goods on a local level without the need for a brick and mortar store front and associated merchant taxes. The casual nature of the peddler title may have allowed for flexibility, suggests mobility, and perhaps provided opportunities for an underground economy within the Chinese community. During the 1880s the City records list Ah Chow as obtaining a peddler's license. A document archived at the Southern Oregon Historical Society (which is the only known Chinese made document from the Jacksonville Chinese Quarter) was written by Chow to a store in San Francisco. Preliminary translations of the document describe Chow ordering oils, rice and fruit wines, and seeds, along with bamboo mats, dishes, and teas. This inventory is consistent with many of the items found within the assemblage. Once fully transcribed, this document will provide some very helpful information when compared with the detailed records from the Kubli Store. As the Kubli records reflect consumer choices by miners in the 1860s, the Chow document reflects (presumably) choices made by residents of the Chinese Quarter in 1881.

One other potential conclusion could be that the diversity of material culture and activities represented in the collection arise from the abundance of hand-me-downs as residents left the neighborhood to seek a better life elsewhere. In the early years, the Jacksonville Chinese Quarter was a critical support system for the larger population of Chinese miners working in the area. In addition to celebrations, funerals, holidays, and social interaction, the neighborhood was the supply hub for needed goods and services. As the community shrank, many of the professional services once available in the neighborhood would have had to be conducted in-house, or perhaps still commercially, but on an informal scale. By the late 1880s there were no longer barbers, doctors, or pipe menders, and the diversity of items within the artifact assemblage could reflect residents

needing to become increasingly self-sufficient in maintaining traditional Chinese practices no longer locally available. Two Chinese razors were recovered, suggesting that the maintenance of the traditional queue hairstyle might have been occurring within the household on an informal or personal scale. Similarly, while most households would contain medicinal remedies to some extent, the Chinese Dwelling not only contained stone drugs, calamine lotion, homeopathic vials, and Western patent medicines, but there is also evidence that medicinal remedies were prepared in-house. Excavations recovered a fragment of a ceramic mortar, a repurposed opium can containing bone dust, and many of the local plant remains identified could have been intrusive, but are also medicinal plant species native to the area. A suite of items, namely a dozen triangle files, metal screens, and patches, are consistent with opium pipe mending and could also reflect activities associated with household maintenance or commercial services.

Other items found in the assemblage speak to the transnational identities of the residents in Jacksonville's Chinese Quarter. Photographs suggest that pressed glass footed compotes, such as the one recovered from the assemblage used as bulb planters (along with Chinese import wares) rather than serving dishes. Similarly, a glass goblet embossed "Happy New Year!" could have been repurposed from its intended use celebrating the event marked by the Gregorian calendar to the Chinese lunar New Year which was widely celebrated in the community.

Summary and Conclusions

The City of Jacksonville, in cooperation with ODOT, hired SOULA in preparation for streetscape improvements to the high traffic areas connecting the historic downtown shopping area with the Britt Gardens and Festival Amphitheater. Significant archaeological finds made during Phase II testing led to data recovery mitigation excavations in the Chinese Quarter Site (35JA737) prior to project construction. Phase III data recovery was conducted under Oregon Archaeological Permit no. 1802. All artifacts collected from the Jacksonville Chinese Quarter Site are being curated at SOULA under curation number 2013.09. All other findings associated with the Jacksonville First and Main Streets Sidewalk Project were described in a separate report (Rose and Johnson 2015).

Fieldwork was conducted in October of 2013. The data recovery plan was designed to excavate a 2 m by 2 m unit in order to characterize the deposit that had been observed by Ruiz and O'Grady (2008) and in the current project's Phase II testing (Rose and Johnson 2012). Data recovery excavation was used to mitigate the adverse impact to the significant deposits within the Chinese Quarter Site by recovering a sample representing slightly greater than 5% of the anticipated disturbance volume. While features such as landscaping and utilities precluded the excavation of a traditional square 2 m by 2 m unit, four contiguous 1 m by 1 m units were excavated, and still provided the 'wide exposure' view that allowed for feature recognition and characterization of the dense material deposits within the project APE. This yielded in the recovery of more than 26,000 artifacts, as well as a robust faunal and botanical assemblage.

The excavations revealed an intact portion of a building which burned in the catastrophic fire of September 11, 1888. In addition to the large artifact assemblage, archaeological features indicated spatial layout and activity areas within the building's footprint. Fire science aided in the interpretation of site taphonomy, and further suggested furniture placement within the household.

In conclusion, the archaeological investigations into the Chinese Dwelling clearly reflect the material culture of a *home*. This home had photographs on the shelf, food on the table, medicine in the cupboard, and games to pass the time. This home also had room for the creature comforts offered by the traditions of a distant land. The residents were able to fully express their transnational identity by negotiating a home life created from the best of both worlds: where soy sauce or Worcestershire sauce could be used to spice a meal cooked in a wok over an open flame. Where whiskey or wine could have been sipped from a Winter Green cup or a pressed glass goblet. Despite the obstacles, prejudice, and discrimination the residents might have faced in the streets of Jacksonville or beyond, within this building they were like many of their neighbors from around the world, and creating their own unique life to the best of their ability and opportunity on the Western frontier.

Works Cited

Akin, Marjorie, James C. Bard, and Gary J. Weisz
2015 Asian Coins Recovered from Chinese Railroad Labor Camps: Evidence of Cultural Practices and Transnational Exchange. In *Historical Archaeology,* 49(1):110-121.

Akin, Marjorie
1992 The Noncurrency Functions of Chinese *Wen* in America. *Historical Archaeology,* Vol 26(2):58-65.

1996 Asian Coins: *Dong, Wen,* and *Mon.* In *Down by the Station: Los Angeles Chinatown, 1880-1933,* Roberta S. Greenwood, editor. Pp98-104. University of California, Institute of Archaeology, Los Angeles.

Applebaker, Lewis
2008 Oral History Interview, Part I. On file at the Southern Oregon Historical Society Research Library, Medford, OR.

Applen, J.A.
2015 Archaeological Investigation of the Old Jackson County Courthouse, 206 North Fifth Street, Jacksonville, Jackson County, OR [Archaeological Permit No. 2035, SHPO Case No. 14-2074]. Research report on file at the State Historic Preservation Office, Salem, OR.

Atwood, Kay
1976 *Minorities of Early Jackson County, Oregon.* Gandee Printing Center, Medford, OR.

Beeson, Welborn
1851-1893 Welborn Beeson Diaries. Welborn Beeson Papers, SCA Manuscript Ax 799, University of Oregon Special Collections, Eugene.

Briggs, Andrew
2002 Morphogenetic Analysis of Main Street, Jacksonville, Oregon. Unpublished Master's Thesis submitted to Portland State University, Portland, OR.

Bronson, Ben and Chuimei Ho
2015 *Coming Home in Gold Brocade: Chinese in Early Northwest America.* Chinese in Northwest America Research Committee, Seattle, WA.

Brott, Clark W.
1982 *Moon Lee One: Life in Old Chinatown, Weaverville, California.* Great Basin Foundation, Redding, CA.

Buckley Ebrey, Patricia
1996 *The Cambridge Illustrated History of China.* Cambridge University Press, Cambridge.

Cafe, Tony
2007 Physical Constants for Investigators. *T.C. Forensic, Forensic and Scientific Services*, Online resource: http://www.tcforensic.com.au/docs/article10.html#1.2 Accessed [2/10/2015].

Cafe, Tony and Wal Stern
2004 Is it an Accidental Fire or Arson? *T.C. Forensic, Forensic and Scientific Services*. Online resource: http://www.tcforensic.com.au/docs/article3.html Accessed [2/10/2015].

Camp, Stacy Lynn
2004 An Examination of Gaming Pieces in the Market Street Chinatown Archaeological Assemblage. Unpublished Student Paper, Stanford, Palo Alto, CA. Electronic Document: https://marketstreet.stanford.edu/2004/03/student-research-projects-2003-2004/ Accessed [1/14/2015].

Chang, Beverly
2004 Gambling and Gaming Pieces in the Market Street Chinatown Community. Unpublished Student Paper, Stanford, Palo Alto, CA. Electronic Document: https://marketstreet.stanford.edu/2004/03/student-research-projects-2003-2004/ Accessed [1/10/15].

Choy, Philip P.
2014 Interpreting 'Overseas Chinese' Ceramics found in Historical Archaeology Sites: Manufacture, Marks, Classification, and Social Use. *SHA Research Resource.* Electronic document: http://sha.org/resources/chinese-ceramics/ Accessed [8/13/2015].

Colvig, Pinto
1963 Letter to Donald Lyngae. Copy stored in the Chinese Quarter vertical file at Southern Oregon Historical Society, Medford.

Connolly, Thomas
1991 The Standley Site (35DO182): Investigation into the Prehistory of Camas Valley, Southwest Oregon. University of Oregon Anthropological Papers No. 43, Department of Anthropology and Oregon State Museum of Anthropology, University of Oregon, Eugene.

Connolly, Thomas, Jane E. Benjamin, Brian L. O'Neill, and Dennis L. Jenkins
1994 Archaeological Investigations at Two Sites on the Upper Rogue River (35JA189 and 35JA190), Southwest Oregon. University of Oregon Anthropological Papers No. 48, Department of Anthropology and Oregon State Museum of Anthropology, University of Oregon, Eugene.

Costello, Julia G.
2004 The Chinese in Gum San ("Golden Mountain"). *SAA Archaeological Record*, 4(5):14-17.

Costello, Julia G., Kevin Hallaran, Keith Warren, and Margie Akin
2008 The Luck of Third Street: Archaeology of Chinatown, San Bernardino, California. In *Historical Archaeology,* 42(3): 135-151.

Culin, Stewart
1889 Chinese Games with Dice. *Elliott Avedon Virtual Museum of Games.* Electronic document: *http://www.gamesmuseum.uwaterloo.ca/Archives/Culin/Dice1889/index.html* Accessed [1/14/15].

1891 The Gambling Games of the Chinese in America. *Elliott Avedon Virtual Museum of Games.* Electronic document: http://www.gamesmuseum.uwaterloo.ca/ Archives/Culin/ Gambling1891/index.html Accessed [1/14/16].

Daniels, Roger
1988 *Asian America: Chinese and Japanese in the United States since 1850.* University of Washington Press, Seattle.

Davies, D.G., Editor
1961 *Peter Skene Ogden's Snake Country Journal: 1826-1827.* Hudson's Bay Company Record Society, London.

Douglas, Bear
2007 Race, Class and Teeth: Dental Hygiene in the Market Street Chinatown. Unpublished Student Paper, Electronic Document: https://marketstreet.stanford.edu/2007/04/student-research-projects-2006-2007/ Accessed [1/14/2016].

Douthit, Nathan
2002 *Uncertain Encounters: Indians and Whites at Peace and War in Southern Oregon 1820s-1860s.* Oregon State University Press, Corvallis.

Drucker, Philip
1937 The Tolowa and Their Southwest Oregon Kin. University of California Publications in *American Archaeology and Ethnology,* 36:221-300.

Early American Pattern Glass
2015 Pattern Glass School, in *Pattern Glass.com: Your Source for Early American Pattern Glass 1850-1910.* Online resource: http://patternglass.com/eapgHome.htm Accessed [3/12/2015].

Faber-Castell
2016 The Company History. Online resource: http://www.fabercastell.com/company/history Accessed [5/10/2016].

Farnham, Wallace D.
1955 Religion as an Influence in Life and Thought: Jackson County, Oregon, 1860-1890. An unpublished thesis, University of Oregon, Eugene.

Fong, Kelly Nicole
2013 Excavating Chinese America in the Delta: Race and the Historical Archaeology of the Isleton Chinese American Community. Unpublished dissertation, University of California, Los Angeles.

Force, Harry David
1973 Oral History Interview, ed. Kay Atwood. Tape 15, on file at Southern Oregon Historical Society, Medford.

The Forensic Library
2015 Fire Investigation. *The Forensics Library.* Online resource: http://aboutforensics.co.uk/fire-investigation/ Accessed [5/9/2015].

Fredlund, Lynn, Dale Delco, Gene Munson, and Jean Hourston-Wrght
1991 Archeological Investigations in the German Gulch Historic District (24SB212), a Chinese and European American Placer Mining Area in Southwestern Montana, Volume 1 and 2. Prepared for Beal Mountain Mining, a Subsidiary of Pegasus Gold Corporation, by GCM Services, Butte, MT.

Friedman, Ralph
1970 Jacksonville: Voice of the Past. *A Touch of Oregon,* Portland, OR.

Furnis, Lynn and Mary Maniery
2015 An Archaeological Strategy for Chinese Workers; Camps in the West: Method and Case Study. *Historical Archaeology*, 49(1):71-84.

Gibson, Erica
2011 *Ceramics Maker's Marks.* Guides to Historical Artifacts, Left Coast Press, Walnut Creek, CA.

Goebel, Ted
1995 Bear Creek Archaeology: Archaeological Excavations at Fort Lane, Hanley Farm, Beekman House, Jacksonville Courthouse, and Cove Creek Rock Shelter. Unpublished report, Department of Sociology/Anthropology Southern Oregon State College, Ashland.

Gonzalles-Tennant, Edward
2011 Creating a Diasporic Archaeology of Chinese Migration: Tentative Steps across Four Continents. *International Journal of Historical Archaeology,* 15(3):509-532.

Gray, Dennis J.
1987 The Takelma and Their Athapaskan Neighbors: A New Ethnographic Synthesis for the Upper Rogue River Area of Southwestern Oregon. University of Oregon Anthropological Papers No. 37. Department of Anthropology, University of Oregon, Eugene.

2000 Preliminary Investigations at the North Bank Site, 35DO61, Douglas County, Oregon, 1997-1998. Cascade Research, Ashland, OR.

Greenwood, Roberta S.
1996. *Down by the Station: Los Angeles Chinatown 1880-1933*. Monumenta Archaeologica 18, Institute of Archaeology, University of California, Los Angeles.

Haines, Frances
1967 *Jacksonville: Biography of a Gold Camp*. Gandee Printing, Medford, OR.

Hannon, Nan
1990 Hand to Mouth: Plant Food Resources and Prehistoric People in Southwest Oregon's Bear Creek Valley. Unpublished M.S. Papers, Southern Oregon State College, Ashland.

Hartman, Wesley
1973 Oral History Interview with Wesley Hartman. Tape 243, on file at the Southern Oregon Historical Society, Medford.

Hutchings, James Mason
1855 James Mason Hutchings papers, Library of Congress MMC-1892. Online resource: http://id.mind.net/~truwe/tina/hutchings.html Accessed [4/10/2015].

Jacksonville City Treasurer
Nd Jacksonville City Treasurer Ledger, manuscript on file at Old City Hall, Jacksonville, OR.

Johnson, Katie
2012 Oregon Street Monitoring, Jackson County, Oregon. Unpublished SOULA Report No. 12.05, Southern Oregon University, Ashland.

Jolly, Elyse
2012 Chinese Gaming in the Nineteenth-Century American West: An Ethnic and Cultural Reassessment. Unpublished Master's Thesis submitted to the University of Nevada, Reno. Electronic document: http://search.proquest.com/docview/1022629314 Accessed [1/10/16].

Kingsbury, Lawrence A.
1995 Chinese Wen- Antique Coin Identification. Unpublished report for the Payette National Forest, Idaho U.S. Department of Agriculture Intermountain Region, McCall.

Klippel, Henry
1901 Reminiscence of Early Days. *Medford Inquirer,* 9 February, 1901.

Kowalsky, Arnold A., and Dorothy W. Kowalsky
1999 *Encyclopedia of Marks on American, English and European Earthenware, Ironstone, and Stoneware*. Schiffer Publishing Ltd., Atglen, PA.

Kramer, George
1993 Historic and Cultural Resource Inventory: A Historic Context Statement for the City of Jacksonville, Oregon. Electronic document: http://scholarsbank.uoregon.edu Accessed [3/10/2010].

1999 Mining in Southwestern Oregon: A Historic Context Statement. Heritage Research Associates Report Number 234, Eugene, OR.

Lacy, Ruby and Lida Childers, ed.
1989 *Oregon Sentinel: Various 1856-1873.* Self-published, Ashland, OR.

LaLande, Jeffrey M.
1981 Sojourners in the Oregon Siskiyous: Adaptation and Acculturation of the Chinese Miners in the Applegate Valley, Ca. 1855-1900. An unpublished thesis, Oregon State University, Corvallis.

1987 *First Over the Siskiyous: Peter Skene Ogden's 1826-1827 Journey through the Oregon-California Borderlands*. Oregon Historical Society Press, Portland.

2014 Determination-of-Eligibility Report and Preliminary Finding-of-Effect Statement for the Jacksonville Dam Breaching and Channel-Reconstruction project. Unpublished report, on file at the Oregon State Historic Preservation Office, Salem.

Lindsey, Bill
2015 Historic Glass Bottle Identification and Information Website. Online resource: http://www.sha.org/bottle/index.htm Accessed [2/9/2015].

Linn, Fletcher
n.d. Memories. Typescript at the Southern Oregon Historical Society, Medford.

Lister, Forence D. and Robert H. Lister
1989 *The Chinese of Early Tucson: Historic Archaeology from the Tucson Urban Renewal Project.* University of Arizona Press, Tucson.

Logan, Samuel H. and Charles W. Best
1990 *Cast Iron Toy Guns and Capshooters.* The Printer, Davis, CA.

Maddoux, Maryanne
2015 A Game of Silent Irreverence: Passive Resistance in The Dalles, Oregon. Unpublished Master's Thesis, Oregon State University, Corvallis.

McIntyre, Russell and Melba McIntyre
2008 Oral History Interview. On file at the Southern Oregon Historical Society, Medford.

Medford BLM
2000 Cascade Siskiyou Ecological Emphasis Area. Draft Management Plan/Environment Impact Statement. Medford District, Bureau of Land Management. Medford, OR.

Merritt, Christopher William
2010 "The Coming Man from Canton:" Chinese Experience in Montana (1862-1943). Unpublished PhD dissertation, University of Montana, Missoula.

Norman, William Travis
2012 Tradewinds and Traditions: Exploring the Archaeology of German Gulch. Unpublished Master's Thesis, University of Montana, Missoula.

NRCS
2014 Natural Resources Conservation Service National Cooperative Soil Survey. United States Department of Agriculture. Electronic Document: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx Accessed [1/17/2011].

O'Hara, Edwin V.
1925 *Catholic History of Oregon.* Catholic Book Company, Portland, OR.

O'Neill, Brian
1989 Cultural Resource Inventory of Segments 1 and 4 of PP&L's Proposed 500 KV Eugene – Medford Transmission Line; Lane, Douglas, and Jackson Counties, Oregon. Oregon State Museum of Anthropology Report No. 89-8, University of Oregon, Eugene.

Orr, Elizabeth L., William N. Orr, and Ewart M. Baldwin
1992 *Geology of Oregon*, 4th ed. Kendal and Hunt Publishing Company, Dubuque, IA.

Pettigrew, Richard and Clayton G. Lebow
1987 Data Recovery at Sites 35JA27, 35JA59, and 35JA100, Elk Creek Lake Project Jackson County, Oregon: Report by INFOTEC Research Inc., for the U.S. Army Corps of Engineers, Portland, OR.

Pierson, Heidi Karin
2008 The Historical Archaeology of Ethnicity at two Mining Sites in West Redding, California. Unpublished Master's Thesis, California State University, Chico.

Praetzellis, Mary and Adrian Praetzellis
1997 Historical Archaeology of an Overseas Chinese Community in Sacramento, CA. Unpublished report, Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Rose, Chelsea E.
2014 Results of the Inadvertent Discovery of Human Remains at the Britt Gardens Site 35JA789 during the Britt Festival Renovation Project, Jacksonville, Oregon. Unpublished SOULA letter report, on file at the Oregon State Historic Preservation Office, Salem.

2013 Lonely Men and Loose Ladies: Rethinking the Demographics of a Multi-Ethnic Mining Camp, Kanaka Flat, Oregon. In *Historical Archaeology,* 47(3):23-35.

2009 A Sound of Revelry by Night: Archaeology, History, and the Myth of The Mining Camp. Unpublished Master's Thesis, Sonoma State University, Rohnert Park, CA.

Rose, Chelsea and Katie Johnson
2015 59 Bottles of Booze in the Road: First and Main Streets Sidewalk Project Monitoring and Inadvertent Discoveries, Jacksonville, Jacksonville, Oregon. Unpublished SOULA research report 14.05, on file at the Southern Oregon University, Ashland.

2014 Results of the Monitoring and Phase II Testing of the Inadvertent Discovery for the Avista Utilities Gas Line Relocation Project, Jacksonville, OR. Unpublished SOULA report 2013.15, Southern Oregon University, Ashland.

2012 'The Off-spring of the Mines:' Phase I and II Testing for the First and Mains Streets Sidewalk Project, Jacksonville, Oregon. Unpublished SOULA report 2011.13, Southern Oregon University, Ashland.

2010 'Horse and Buggy Days': Archaeological Investigations Along C Street, Jacksonville, Oregon. Unpublished research report No. 10.04, Southern Oregon University, Ashland.

Rose, Chelsea, Katie Johnson, and Mark Tveskov
2011 'On and Onwards': A Comprehensive Study for the Applegate Trail, The Southern Route to Oregon. I-5 Jumpoff Joe to Glendale Paving & Climbing Lanes Project [ODOT Key No. 16763]. SOULA Research Report 2010-12. Southern Oregon University, Ashland.

Ruiz, Christopher and Patrick O'Grady
2008 Jacksonville Site A: Archaeological Test Excavations at the Main Street Warehouse and Chinese Quarter (35JA737). Unpublished report, University of Oregon Museum of Natural and Cultural History, Eugene.

Rumley, Anna
1977 Oral History Interview. Ed Marshall Lango. Tape 85, on file at Southern Oregon Historical Society, Medford.

Samford, Patricia
2012 [2002] Marbles. *Diagnostic Artifacts in Maryland.* Online resource: http://www.jefpat.org/diagnostic/SmallFinds/Marbles/index-marbles.html Accessed [1/14/2015].

Samford, Patricia and George Miller
2015 [2002] Post-Colonial Ceramics. *Diagnostic Artifacts in Maryland.* Online resource: http://www.jefpat.org/diagnostic/Post-Colonial%20Ceramics/index-PostColonialCeramics.htm Accessed [1/26/2016].

Sando, Ruth Ann and David L. Felton.
1993 Inventory Records of Ceramics and Opium from a 19th Century Chinese Store in California, 151-176. In Priscilla Wegars' *Hidden Heritage: Historical Archaeology of the Overseas Chinese.* Baywood Publishing Company, Inc, New York, NY.

Sapir, Edward
1907a Notes on the Takelma Indians of Southwest Oregon. *American Anthropologist* 9(2):251-275.

1907b Religious Ideas of the Takelma Indians of Southwest Oregon. *Journal of American Folk-Lore* 20(76):33-49.

Schablitsky, Julie and Christopher Ruiz
2009 Archaeological Monitoring and Investigations Along Oregon State Highway 238, Jacksonville, Oregon. Unpublished report, University of Oregon Museum of Natural and Cultural History, Eugene.

Schoonmaker, Peter K., Bettina VonHagen, and Edward C. Wolf, editors
1997 *The Rain Forests of Home: Profiles of a North American Bioregion*. Island Press, Washington, D.C..

Schwartz, E.A.
1997 *The Rogue River Indian Wars and Its Aftermath, 1850-1980*. University of Oklahoma Press, Norman.

Smith, J.C., N.J. Page, M.G. Johnson, B.C. Morning, and F. Gray
1982 Preliminary Geologic Map of the Medford 10x20 Quadrangle, Oregon and California. U.S. Geological Survey Open File Report 82-955.

Southern Oregon Historical Society (SOHS)
1877 Gustav Karewski's receipts and correspondence pertaining to general merchandising business, Jacksonville, Oregon, ca. 1870-1877. MS 522, on file at the Southern Oregon Historical Society Research Library, Medford, OR.

Toulouse, Julian Harrison
1971 *Bottle Makers and their Marks*. The Blackburn Press, Caldwell, NJ.

Tveskov, Mark A.
2000 The Coos and Coquille: A Northwest Coast Historical Anthropology. Unpublished Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene.

2004 Household, Landscape, and Persistent Places: The Pacific Coast Athapaskans. In *Ancient and Historic Lifeways in North America's Rocky Mountain: Proceedings of the 2003 Rocky Mountain Anthropology Conference*, Estes Park, Colorado, pp. 65-80. Edited by Robert H. Brundswig and William B. Butler. Department of Anthropology, University of Northern Colorado, Greely.

2007 Social Identity and Cultural Change on the Southern Northwest Coast. *American Anthropologist,* 109(3):431-441.

Tveskov, Mark A., Cohen, Amie
2007 Ni-Les'Tun Archaeology: The Bussmann, Blue Barn, and Old Town Bandon Sites. SOULA Research Report 2007-1, Southern Oregon University, Ashland.

2006 The Archaeology of the Western Cascades of Southwest Oregon. SOULA Research Report, Southern Oregon University, Ashland.

Tveskov, Mark A., Kelly Derr, Nicole Norris, and Richard Silva
2001 Archaeological Investigations of the Siskiyou Trail. SOULA Research Report 2001-1. Southern Oregon University Laboratory of Anthropology. Prepared for the U.S. Department of Interior, Bureau of Land Management, Medford, OR.

Tveskov, Mark A., Nicole Norris, and Amy Sobiech
2002 The Windom Site: A Persistent Place in the Western Cascades of Southwest Oregon. SOULA Research Report 2002-1, Southern Oregon University, Ashland.

Walling, A.G.
1884 *History of Southern Oregon: Comprising Jackson, Josephine, Douglas, Curry and Coos Counties.* A.G. Walling, Portland, OR.

Webber, Bert and Margie Webber
1994 *Jacksonville, Oregon: Antique Town in a Modern Age.* Webb Research Group, Jacksonville, OR.

Wegars, Priscilla.
2001 Uncovering a Chinese Legacy: Historical Archaeology at Centerville, Idaho, Once the "Handsomest Town in the Basin." Idaho Cultural Resources Series, No. 5. Bureau of Land Management, Boise, ID.

Wells, Harry
1881 *History of Siskiyou County, California.* Oakland, CA.

Winthrop, Katherine
1993 Prehistoric Settlement Patterns in Southwest Oregon. Unpublished Ph.D. University of Oregon, Eugene.

Appendix A:

Charcoal Identification and Starch Residue Analysis at Site 35JA737, the Jacksonville Chinese Quarter

By Jaime L. Kennedy

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by Jaime L. Kennedy

Introduction

Analysis of botanical remains at site 35JA737, an early Chinese settlement in Jackson County, Oregon, was completed to learn more about the day-to-day life of Chinese immigrants in the American West. In 1888, fire destroyed the home of a Chinese immigrant living in the Jacksonville Chinese Quarter; charcoal fragments recovered from the house were identified to provide information about the plant taxa used in the construction of structural features and interior furnishings of that home. Additionally, various surfaces of a wheel-shaped, immature sandstone artifact found inside the house were sampled for plant residues to aid in the interpretation of the artifact's function. The residue samples were analyzed to isolate and identify any starch grains embedded in the worn surfaces to determine how the artifact was used historically. Starch analysis is a valuable tool for examining food processing and diet in the archaeological record. The starch granules adhering to food processing tools often represent plant foods that are not easily identifiable through macrobotanical analysis because starchy food fragments rarely survive in the archaeological record (Sandweiss 2007:3021). Also, when starchy plants are present in carbonized form, the cell tissues become amorphous preventing accurate taxonomic identification with standard binocular stereo microscopy (Torrence 2006a:29-30). Microscopic starch analysis permits the identification of plant remains that would otherwise be rendered invisible using traditional paleoethnobotanical methods. Because information about plant usage by historically underrepresented groups is typically absent from the historic record, wood charcoal and starch analyses at site 35JA737 can provide crucial information regarding the cultural customs of the late 19th century Chinese immigrants in Oregon.

Methods

Charcoal Identification

Charcoal specimens were weighed and identified. The tangential, transverse, and radial sections of each piece of wood were examined with the help of a 70x binocular microscope outfitted with a fluorescent light ring. Wood identification manuals (Friedman 1978; Hoadley 1990; Sharp 1990) and a modern charcoal collection were consulted to make identifications to the most specific taxonomic level possible.

Starch Residue Processing and Identification

Basic procedures for starch analysis have been adopted from methods outlined by Li Liu at Stanford University (Liu et al. 2012). Starch remains are extracted from grinding stone artifacts and

subjected to heavy liquid flotation to separate the granules from other organic materials adhering to the grinding stone use surface(s). The steps for starch extraction and identification conducted in this research are outlined below.

1. The grinding wheel artifact was lightly rinsed with distilled water to remove modern contaminants and adhering soil matrix.

2. A sterile sonication toothbrush was used to clean the identified use wear surfaces individually (see Piperno et al. 2009). Double-distilled water was added to e artifact surface to aid in the extraction of organic material embedded in the use wear surface. All liquid generated from the wash was collected in a sterile, pre-labeled plastic bag.

3. The sample was then transferred to a clean 15 mL tube in batches and spun at 1500 rpms for 5 minutes in a centrifuge. Once the starch and other organic materials settled, the supernatant was poured off, leaving an intact pellet at the bottom of the tube. This step was repeated until the entire sample was transferred into the 15 mL tube.

4. The starches were separated from the distilled water using a heavy liquid flotation procedure. The specific gravity of distilled water was adjusted to a density of 1.8 with the addition of a prescribed amount of dry sodium polytungstate (SPT) powder. Five mL of the heavy liquid was then added to each sample in the 15 mL tubes, mixed with the aid of a vortex mixer, and centrifuged at 1000 rpms for 15 minutes. Starches have a specific gravity of 1.5 or less (Torrence 2006b); therefore, the starches float to the top of the denser heavy liquid. After centrifuging, the starches were transferred to a new, clean 15 mL tube using a pipette to collect the upper 2-3 mL of the sample.

5. The new tube was then filled with distilled water and spun at 1500 rpm for 5 minutes and the water containing the SPT was tipped out of the tube. This process was repeated a minimum of four times to ensure that all of the heavy liquid was removed from the sample.

6. A small volume of the sample was pipetted onto a microscope slide and dried in a muffle furnace. Once dry, a 50% glycerol solution was added to the sample and it was covered with a sterile microscope slide.

7. The slides were scanned using a Nikon AZ 100 transmitted light microscope fitted with an 8x zoom lens and 5x objective lens with the aid of an internal polarizing lens. Starches are birefringent, a property that causes the grains to appear bright white against a black background. The polarizing lens accentuates the birefringence and permits the identification of starches. Once the starches were located on the slide, they were also viewed and photographed in a bright field view and in a differential inference contrast (DIC) view. The DIC view resolves fine structural detail on the starch grain surface allowing the analyst to identify features diagnostic to taxonomic classifications.

8. Identification of starches was conducted with reference to a modern regional starch reference collection compiled by the author and Gyoung-Ah Lee at the University of Oregon Archaeobotanical Laboratory. The modern reference collection consists of starches extracted from ground seeds/tubers in economically important and starch-rich plants relevant to the research area.

Results and Discussion

Site 35JA737 consists of a series of Chinese-inhabited row houses in Jacksonville, Oregon, dating to the 19th century. The Jacksonville Chinese Quarter was located in the city's original commercial center. Jacksonville is surrounded by flood plains and terraces of the Middle Rogue River. The site of downtown Jacksonville is an urban environment, and local flora is dominated by domestic landscaped trees and shrubs. Previous archaeological wood analysis at site 35JA737 documented the presence of Douglas fir (*Pseudotsuga menziesii*), spruce (*Picea*), pine (*Pinus*), big leaf maple (*Acer macrophyllum*), box elder (*Acer negundo*), birch (*Betula*), Western hazelnut (*Corylus cornuta*), oak (*Quercus*), serviceberry (*Amelanchier*), and Oregon ash (*Fraxinus latifolia*) in cultural deposits at the site (Dexter 2009).

Wood Charcoal Samples

Ten samples were examined to determine taxonomic identifications for charcoal representing features in the house. Samples were collected from furniture, floorboards, and beams, among other structural elements (Table 1). Two of the samples (13.09-0597 and 13.09-0884) were not included in this analysis because they do not represent botanical remains. Sample 13.09-0884 was tentatively identified as a rib bone belonging to a small mammal (Molly Casperson, personal communication, November 2, 2015). The remaining samples represent four taxanomic types, including Douglas fir (*Pseudotsuga menziesii*), pine (*Pinus* sp.), western redcedar (*Thuja plicata*), and a member of the white oak group (*Quercus-Leucobalanus*). The white oak group includes oak species such as Oregon white oak (*Q. garryana*), white oak (*Q. alba*), and English oak (*Q. robur*) among others. When viewed under magnification, white oaks are distinguished from other types of oak by their relatively longer rays visible in the tangential section of the wood and occlusions (called tyloses) in the pores of the heartwood along the transverse plane (Hoadley 1990). The white oak wood dowel was the only taxonomic type identified to a hardwood genus. The remaining specimens represent softwood conifers. Based on the analysis, it appears that pine and Douglas fir (both member of Pinaceae, the pine family) were primarily used in the construction of the house, while household furniture (e.g., the 13.09-0293 dowel sample) was crafted from durable hardwoods like white oak.

Table 1. Index of charred macrofloral remains identified from site 35JA737.

Sample No.	Context	Depth	Description	Identification
13.09-0293	TU 1, Level 9	90-100 cmbd	3/8" wooden dowel	white oak
13.09-0597	TU 1, Level 11	110-120 cmbd	furniture?	n/a
13.09-0629	TU 1, Level 12	120-130 cmbd	surface clean-up	western redcedar
13.09-0884	TU 1, Level 14	140-150 cmbd	pedestal under wash basin	cf. faunal rib bone
13.09-2139	TU 1, Level 13	130-140 cmbd	wood sample	Douglas fir
13.09-2188	TU 1, Level 14	140-150 cmbd	milled wood sample	Douglas fir
13.09-2191	TU 2, Level 14	140-150 cmbd	floor board sample	pine
13.09-2222	TU 2, Level 14	140-150 cmbd	surface clean-up	Douglas fir
13.09-2277	TU 2, Level 14	140-150 cmbd	sample of wood	pine
13.09-2288	TU 1, -	-	beam feature on top of barrel jar	Douglas fir

Starch Analysis

A small grinding wheel fragment (9.85 in x 5.3 in), composed of immature bedrock, was recovered from a shelf within the house. Grain-processing and tool-sharpening have both been suggested as plausible uses for the artifact. Residue analysis of the artifact's surfaces was performed to ascertain whether it was used in rice processing. The wheel is broken into two fragments, which likely occurred during the 1888 house fire. Five residue samples were extracted from unique locations on the tool (Figure 1). Charring was visible in two locations on surface 1A and also near the bottom edge of surface 1B, reaffirming the grinding wheel was exposed to heat. Care was taken to avoid sampling these locations. Under certain conditions, heat can damage starches, so no samples were collected at locations with evidence of fire exposure.

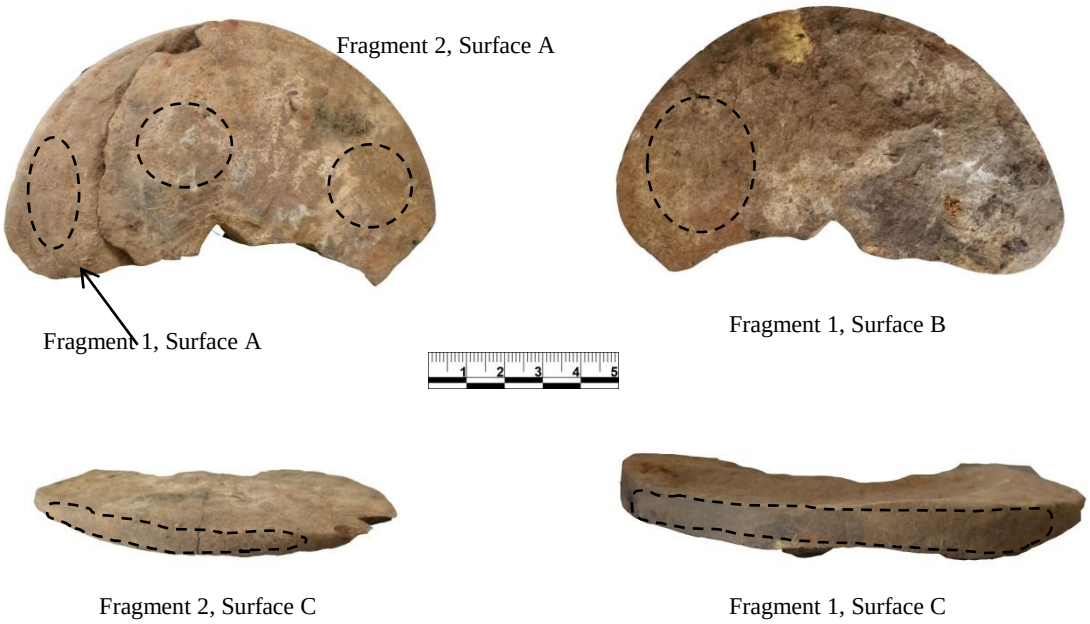

Figure 1. Jacksonville grinding wheel surfaces analyzed for starch residues (sampled locations outlined).

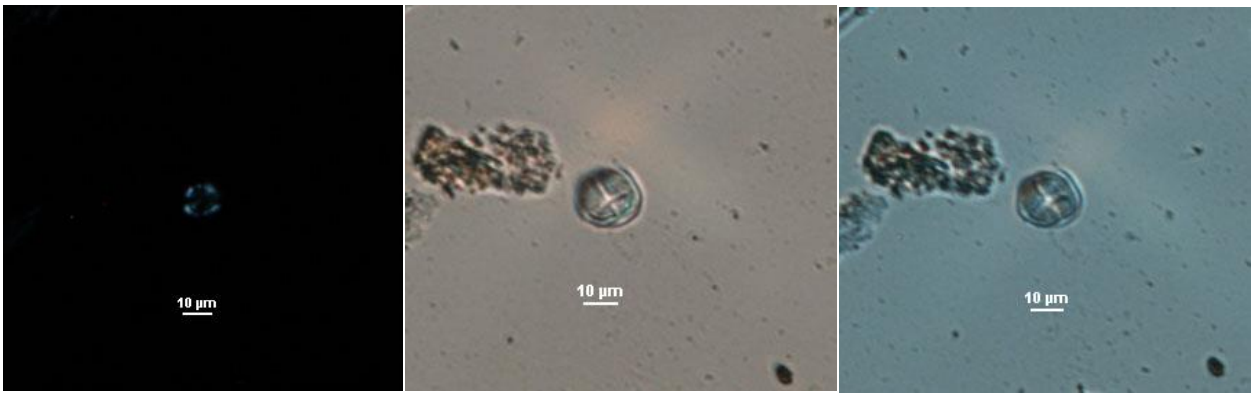

Figure 2. Starch grain observed on Fragment 1, Surface A: Polarized view (left), bright field view (center), differential inference contrast (DIC) view (right).

Only one, single starch grain was recovered from an analyzed surface. This starch was noted on Surface A of Fragment 1 (Figure 2). The unique morphology of starch grain characteristics (including size, shape, hila position, lamellae, dimples, cracks, and fissures) allows researchers to determine the plant family, genus, or species of plant that produced them (Piperno et al. 2004; Torrence 2006b). Although food preparation techniques, like grinding, soaking, parching, baking, boiling, and fermenting can alter the appearance of starches, typically the diagnostic features remain intact (Henry et al. 2009). Based on comparisons with the author's reference collection and published starch images (Becks and Bestel 2013; Henry et al. 2009), the Jacksonville starch was identified as a member of the grass family (Poaceae; Figure 3). The centric position of hila in starches is a diagnostic trait of grasses (Liu et al. 2012; Torrence 2006b). Lamellae (the visible growth rings) are pronounced in the DIC view, the extinction cross has relatively straight arms and is shaped as a "+," and the grain measured approximately 10 µm. The size of the Jacksonville Chinese Quarter starch suggests it is representative of a domestic grass, and the most likely identification is rice (*Oryza sativa*). Although this particular grain is less angular than most rice starches, its shape falls within the normal range of rice starch grains, especially if the rice was boiled (Figure 4).

Figure 3. Example of modern rice starches.

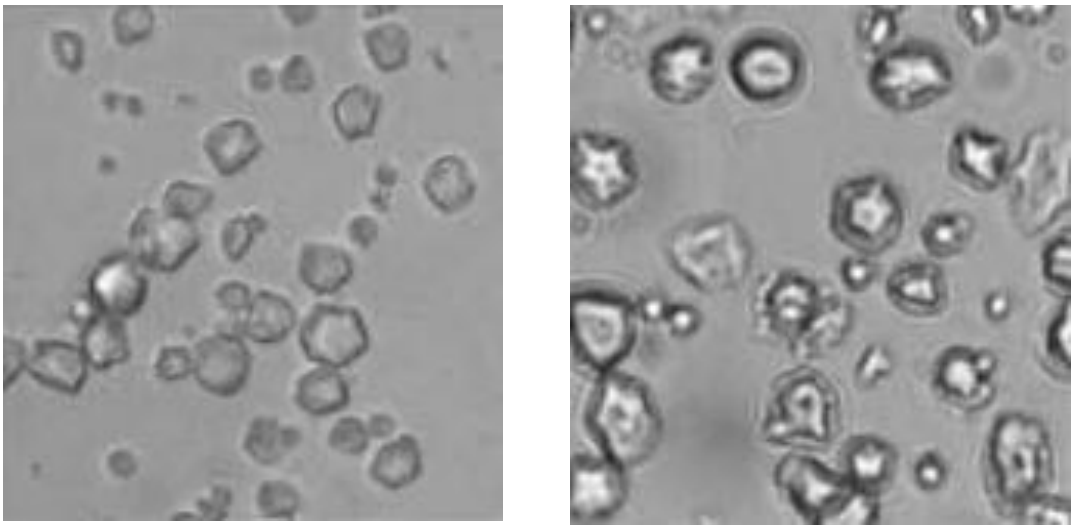

Figure 4. Uncooked rice starch (left) and rice starches after 5 minutes of boiling (right). Each image measures 50 µm (Figure 2 in Henry et al. 2009).

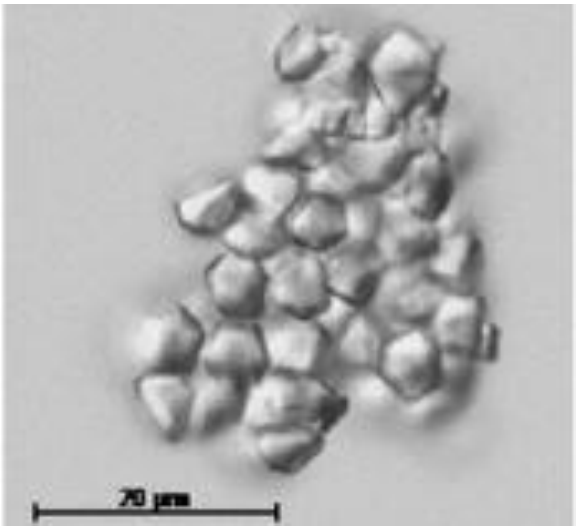

Figure 5. Rice starch residues recovered from a bowl found at the Market Street Chinatown site in California (Figure 4d in Becks and Bestel 2013).

The presence of a probable rice starch grain does not necessarily suggest the artifact was used in habitual rice processing. Commonly, the starch residues of processed rice tend to "clump" together, resulting in conglomerations of multiple starch grains. Cooked rice starches with obvious compound grains were identified on bowls recovered at the Market Street Chinatown site in San Jose, California (Figure 5). If the Jacksonville grinding wheel was regularly used for grinding rice, we would expect to find several starches, including compound grains, on use wear surfaces. The absence of compound grains in the current analysis suggests the rice starch on the grinding wheel may not be related to the function of the artifact. Additionally, because the artifact is made of immature sandstone, which is soft and gritty, any foods processed with the artifact would also contain grit inclusions, potentially rendering the ground meal inedible (personal communication, Chelsea Rose, January 14, 2016). It is likely that the lone starch grain retrieved from the artifact surface reflects contamination from rice stored and/or processed near the artifact rather than indicating the grinding wheel was used in rice processing. However, starches are sensitive to heat and typically gelatinize beyond recognition when exposed to temperatures greater than 50 degrees Celsius (Ratnayke and Jackson 2008). It is possible that the artifact in question was heated above this threshold during the fire, resulting in the destruction of the majority of starch granules.

Conclusions

Identifications of burned wood elements at site 35JA737 reveal the use of Douglas fir and pine in the structural elements of the house that burned in the Jacksonville Chinese Quarter. A small dowel fragment, identified as a member of the white oak group, was likely used in furniture construction. Additionally, a single fragment of western redcedar was noted on the floor of the house. Microfossil analysis of a sandstone grinding wheel recovered in the house showed evidence of a grass family member in the form of a single starch grain (cautiously identified as rice). Typically, artifacts used to process plant foods will exhibit higher instances of starches on use surfaces. The single recovered starch probably represents airborne contamination generated by rice stored and/or processed nearby; although it is possible that exposure to high temperatures during the house fire may have destroyed any other starches adhering to the artifact. Because the artifact was fashioned out of sandstone, it seems unlikely that it was used to grind food or to sharpen tools. This artifact is the first of its kind found in an American Chinese settlement and its purpose/use is still uncertain.

References

Becks, Fanya S. and Sheahan Bestel
2013 Rice in rice bowls: Starch and residues on Market Street Chinatown artifacts. Paper presented at the annual meeting of the Society for California Archaeology, Berkeley, California, March 7-10, 2013.

Dexter, Jaime
2009 Macrobotanical Analysis. Appendix B in Archaeological Monitoring and Investigations Along Oregon State Highway 238 Jacksonville, Oregon, by Julia M. Schablitsky and Chris Ruiz. University of Oregon Museum of Natural and Cultural History and State Museum of Anthropology. OSMA Report 2009-061. Ms. on file with the State Historic Preservation Office, Salem.

Friedman, Janet
1978 *Wood Identification by Microscopic Examination: A Guide for the Archaeologist on the Northwest Coast of North America*. British Columbia Provincial Museum, Heritage Record No. 5, Victoria, British Columbia.

Henry, Amanda G., Holly F. Hudson, and Dolores R. Piperno
2009 Changes in starch grain morphologies from cooking *Journal of Archaeological Science* 36(3): 915-922.

Hoadley, R. Bruce
1990 *Identifying Wood: Accurate Results with Simple Tools*. Tauton Press, Newtown, CT.

Liu, Li, Sheahan Bestel, Jinming Shi, Yanhua Song, and Xingcan Chen
2012 Paleolithic human exploitation of plant foods during the last glacial maximum in North China. *Proceedings of the National Academy of Sciences* 110(14): 5380-5385.

Piperno, Dolores R., Anthony J. Ranere, Irene Holst, Jose Iriarte, and Ruth Dickau
2009 Starch Grain and Phytolith Evidence for Early Ninth Millennium B.P. Maize from the Central Balsas River Valley, Mexico. *Proceedings of the National Academy of Sciences* 106: 5019-5024.

Piperno, Dolores R., Ehud Weiss, Irene Holst, and Dani Nadel
2004 Processing of Wild Cereal Grains in the Upper Paleolithic Revealed by Starch Grain Analysis. *Nature* 430: 670-673.

Ratnayake, W.S. and D.S. Jackson
2008 Starch gelatinization. Chapter 5 in *Advances in Food and Nutrition Research* 55: 221-268.

Sandweiss, Daniel H.
2007 Small is big: the microfossil perspective on human-plant interaction. *Proceedings of the National Academy of Sciences* 104(9): 3021-3022.

Sharp, John B
1990 Wood Identification: A manual for the Non-Professional. University of Tennessee Agricultural Extension Service, Publication No. 1389, Knoxville, Tennessee.

Torrence, Robin
2006a Starch and archaeology. Chapter 1 in *Ancient Starch Research* (Eds. Robin Torrence and Huw Barton). Left Coast Press: Berkeley, CA.

Torrence, Robin
2006b Description, classification, and identification. Chapter 7 in *Ancient Starch Research* (Eds. Robin Torrence and Huw Barton). Left Coast Press: Berkeley, CA Torrence, Robin

Appendix B:

The Analysis of Botanical and Flotation Samples from the Jacksonville Chinese Quarter Site 35JA737, Oregon

By Virginia Popper

The Analysis of Botanical and Flotation Samples from The Jacksonville Chinese Quarter Site 35JA737, Oregon

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Introduction

At 3am Tuesday, September 11, 1888 a house in the Jacksonville Chinese Quarter perhaps belonging to a peddler and his family burned down (C. Rose, personal communication). This report discusses the plant remains recovered during the recent excavation of that house. While the Jacksonville Chinese Quarter (Site 35JA737) was started in the mid-1850s, this house may date to the 1860s (C. Rose, personal communication). The house was located next to a laundry. The house was excavated by The Southern Oregon University Laboratory of Anthropology (SOULA), in collaboration with the Oregon Department of Transportation (ODOT) and the City of Jacksonville. Units 2, 3, and 4 were placed inside the house, and reached wood plank flooring at about 140-150 cmbd. Unit 1 differs from the others with flagstone flooring and evidence of an exterior wall. It may have been a covered activity area and perhaps an attached outdoor kitchen (C. Rose, personal communication). Eight soil samples and eighteen bags of botanical specimens from the house were sent to the University of Massachusetts, Boston for archaeobotanical analysis (Tables 1 and 2).

The Jacksonville Chinese Quarter was on the western edge of town, roughly in an area defined by California Street, First Street, Pine Street, and Oregon Street. An 1883 lithograph of the city suggests that this area contained a mix of buildings, trees, and open areas (http://hdl.loc.gov/loc.gmd/g4294j.pm007170). Daisy Creek runs nearby to the south of the city and Jackson Creek to the west, so the area is rich in riparian resources. Jacksonville sits in the Rogue River Valley, an area that would have provided land for ranching and agriculture with easy access to woodland resources in the surrounding mountains.

Methods

The soil samples were processed in a Flote-Tech flotation machine at the University of Massachusetts, Boston. Samples were measured and then poured into the Flote-Tech machine where the low-density botanical remains (light fraction) were collected in chiffon netting (0.02 mm openings). The heavy fraction, material remaining in the insert screen (1 mm openings), was collected, dried, and examined for plant material. All botanical material that did not float was removed from the heavy fraction and added to the light fraction before further processing.

The light fraction was sifted through a series of nested sieves (2.00, 1.00, and 0.50 mm), yielding four size fractions in preparation for sorting. The light fraction is divided because it is easier to sort material of similar size, given the shallow depth of field of the incident light binocular microscope (10-40x), and it allows one to selectively remove distinct materials from each fraction. In this analysis, wood, charcoal, amorphous material, bark, stems, and unknown plant parts were removed only from the >2.00 mm fraction. Whole seeds and fruits were collected from all fractions as were all seed fragments larger than 0.50 mm fraction. The smaller fractions of a couple of samples contained so many fragments of rice spikelets that only a portion from the 1.00

to 0.50 mm fraction was recorded. In these cases, the number of rice calluses provides a more accurate indication of the minimum number of rice spikelets. The <0.50 mm fraction was scanned for seeds, but none were present.

One sample (Unit 4 Level 9) contained too many small remains to sort in a timely manner. My sampling strategy aimed to get a representative picture of the remains and to target rare items. Consequently, the smaller fractions were split using a riffle box, with the final subsample size (based on sample weight) determined by the density of remains and the variety of recovered types. Only 25% of the 0.5-2.0 mm fraction was sorted. The unsorted portion (75%) was scanned for types not yet recovered in the subsample.

The plant remains were identified using comparative plant and seed collections at the University of Massachusetts Boston, floras, and seed identification manuals (Cappers et al. 2009; Hickman 1993; Martin and Barkley 1961; Hu 2005). Wood and charcoal were not identified. Most of the seeds and fruits were counted, but nutshell, cereal grainss, corms, *Prunus* seeds, and some other plant parts were weighed because variations in fragmentation can make weight a more representative measure of abundance. Seeds were recorded as carbonized (C) even if they were only partially carbonized in order to indicate exposure to fire. When only one fragment of a seed or fruit type was recovered, it was considered a whole if more than half of the seed was present. If there were multiple fragments of a type that clearly came from different seeds, the minimum number of seeds was noted in the raw data table in parentheses.

Results

The analysis of the 8 flotation samples, totaling 6.9 liters of soil, and the botanical specimens recovered over 45 of botanical remains (seeds, fruits, and other plant parts). These include a variety of cultivated, non-domesticated, native and introduced plants. Non-domesticate is a useful term to use for wild plants that could have been exploited as potherbs and medicines. Table 3 lists the scientific and common names (in English and Chinese if available) of the identified taxa. Most Chinese names are standard Mandarin transliterations (pinyin without diacritical marks) from Hu (2005) or the Flora of China (2008); not all variations of the Chinese names are listed in the table.

The results of the analysis are presented in Tables 2 and 4-7. Table 2 presents the raw data from the botanical specimens. Table 4 presents the plant material absolute counts and weights (grams) for the analyzed flotation samples. For the Unit 4 Level 9 sample, where the smaller screen fractions were subsampled, the data are separated by subsample size. Table 4 presents whole and fragments of a taxon separately. Numbers in parentheses indicate a minimum number of whole specimens based on the appearance of the fragments. Both tables record the presence of bark, charcoal, and wood, and Table 2 records bone and other non-floral remains to assist with future cataloging of the specimens. However, further analysis of those categories of remains are not included in this report.

The organization of the types in Tables 4-7 follows the classification of Chinese foodstuff. The traditional southern Chinese food classification system distinguishes the staple grain dishes (*fan*) from the flavorful side dishes of vegetables, meats, and seasonings that accompany them (*tsai*). These are more than functional categories. Chinese foodways prescribe a balance between *fan* and *tsai* foods to maintain balance in the body and good health (Chang 1977; Simoon 1991). Eating must also balance foods with *yin* and *yang* qualities, and as part of this, foods categorized as "hot" or "cold" (Chang 1977:10; Anderson and Anderson 1977:367). Anderson and Anderson (1977; see also Anderson 1988) present a more detailed classification of Chinese foodstuffs that combines functional and taxonomic categories. This is the basis for organizing these report tables. The first category of plants is the *fan* staple grains. The second category includes both the vegetables or *tsai*, and the fruits and nuts (*kuo*) (Anderson and Anderson 1977:332). Because of the importance of maintaining bodily balance for good health, most of these foodstuffs have medicinal properties. Finally, plants and plant parts that do not clearly fit into one of the above categories are grouped as "other." This does not preclude the possibility the item was deposited in the site as the result of utilitarian, food, or medicinal use. More specific information on these types follows.

For all the report tables, remains were uncarbonized unless noted as carbonized (C). And except for the Unknown Types, remains were whole (or considered whole) unless followed by the designation "frag." Any uncertain identification is indicated "cf" (compares favorably).

Table 5 estimates the total whole counts of the remains in each of the flotation samples. First the count of a taxon from the sorted Unit 4 Level 9 25% subsample was multiplied up to 100% and added to the fully sampled count. The remains noted during scanning the remaining 75% portion were counted as representative of the whole sample and added to the estimated total count. These estimated counts could inflate the actual number of remains. Second, fragments from all samples were converted into whole counts using formulas specific to each taxon and added to the whole examples if present. The *Citrullus lanatus* and Cucurbitaceae fragments were small and two fragments were counted as one whole seed. Three Poaceae fragments were counted a one whole seed. Single fragments were counted as a whole seed. Unidentified and unknown plant part fragments are not converted to wholes since it is possible that the items come from different taxa.

Table 6 calculates density values (counts/liter or grams/liter) of the plant remains based on the estimated whole counts. Because the soil sample volumes differed, density permits comparisons among samples and with the flotation samples from other sites. Most of the soil samples are smaller than one liter, so the densities will be higher than the absolute counts and may inflate the value of rare items.

Table 7 calculates the relative proportions of each type and plant category as well as summary statistics: the percentage of the remains that are carbonized and number of identifiable seed, fruit, and tuber types. (If more than one part of a taxon was recovered, they were counted as one. I did not include plant parts and unidentifiable seeds unless

they were defined as a type.) Relative proportions give some indication of the concentration of different taxa and food categories. Caution is necessary when interpreting this table. One cannot determine the precise importance of various foods in the diet from these figures, because fruits contain different numbers of seeds. For example, grapes have only one to four seeds per fruit, while blackberries may contain 30 or more seeds. And the nutritional value of a single large fruit, such as a peach, would be equivalent to many smaller grapes or berries. In addition, when comparing the relative proportions among samples, it is important to remember that in richer samples with more taxa, the proportion of any individual taxon will be lower even if the amount is comparable to that of another sample.

Descriptions of Taxa, Unknowns, and Plant Parts

This section describes the taxa recovered from the Jacksonville Chinese Quarter excavations. When appropriate it discusses the origin of the taxon, its uses, history of cultivation in Oregon and/or China, and the likely source of the plant. It summarizes the charred/uncharred status and location. The discussion draws on a number of references including Anderson (1988), Hu (2005), and Simoons (1991) for the history and uses of plants in China. Medicinal uses of plants also came from Beth Howlett (personal communication 2014), Li et al. (1973), Lim (2012), and Lu (1994). Oregon Flora Project (2015) was the primary source for the distribution of individual taxa in Oregon, and the Flora of China (2008) and Hu (2005) provided this information for plants growing in China.

Arachis hypogaea cf. Peanut

Peanut, a native plant of South America, is not a commercial crop in Oregon, but is in California. It was introduced to China by Portuguese traders in the 16th century and by the end of the 19th century was extensively cultivated there. The Chinese boil or roast and eat the seeds as a snack or add it to other dishes. According to Simoons (1991:282) roasted peanuts are highly regarded by the Chinese. Lim (2012:535) records that the seeds, oil, and whole plant are used in traditional Chinese medicine. The nuts have a neutral energy in the Chinese diet. These flotation samples contained three very small fragments of what could be peanut shells from Units 1, 3, and 4. Peanuts were a familiar food to the Chinese immigrants and were readily available in California, so these probably were ordered from San Francisco or some other supplier of foods.

Arctostaphylos sp. Manzanita

Manzanita is a very common native chaparral and woodland plant of Oregon and a few species grow near Jacksonville. While native groups ate manzanita berries and smoked the dried leaves mixed with tobacco (Coville 1897; Strike 1994), the presence in this analysis of only one carbonized seed from Unit 3 suggests it reflects the local vegetation.

Asteraceae Sunflower family

One carbonized Astereaceae seed was found in Unit 4. It resembles *Madia* sp. (tarweed), which was eaten by native groups in the area (Coville 1897:106). A large variety of species from this genus and family grow in the Jacksonville area.

Avena sp. cf. Wild oat

Three carbonized grass seeds that resemble wild oats were recovered from Unit 4. Two species *Avena fatua* and *Avena barbata* grow in Oregon and both are introduced types. They are common weeds in grasslands, fields, gardens and disturbed sites (DiTomaso et al. 2013).

Berberis sp. cf. Oregon grape

Two uncharred fruits that probably are Oregon grape were recovered from Unit 3. A few species of *Berberis* (sometimes classified as *Mahonia*) are native to Oregon and *Mahonia aquifolium* is native to the riparian woodland of the Rogue Basin (Water Resource Department 2004). Coville (1897:96) mentions that the berries of *Berberis repens* were not eaten by the Klamaths, but other groups ate the berries and used the berries and roots for medicinal remedies (Moerman 2003). Hu (2005:394-395) records that *Berberis heteropoda* (Central Asian Barberry), which is native to central Asia, is used as a medicinal in China. The dried fruits are boiled and mixed with sugar to treat high blood pressure.

Boraginaceae cf. Borage family

One uncarbonized seed from Unit 3 resembles this family. A large number of Boraginaceae plants are native to Oregon.

Brassicaceae Mustard family

Many types of wild mustards grow in the Jacksonville area. These herbs are common weeds and some are introduced plants. A charred possible Brassicaceae seed was recovered from Unit 3.

Canarium cf. *album* Chinese olive

Canarium album is a native plant of China, which is widely grown in southern China. Its fruit is eaten raw, dried, pickled, or preserved in sugar, and is used for tea. Canarium kernels, which taste like almonds, are also esteemed in southern Chinese cuisine. Traditional Chinese Medicine uses *Canarium* fruits and seeds for a variety of ailments. Charred *Canarium* seeds and fragments were identified from QTU 15, Unit 1 and Unit 2, while one uncharred seed came from Unit 3. Blasdale (1899:43) mentions finding green and salted and dried *Canarium* for sale in the Chinese section of San

Francisco and preserved Chinese olives are common in American Chinese stores today. These seeds probably come from imported fruits.

Capsicum sp. Chili pepper

Chili pepper is native to Mexico or South America, depending on the species, but was cultivated in California beginning in the Spanish-colonial Period. Chili peppers also were introduced early to China, brought by Portuguese traders in the 16th century. Today *C. annuum* is widely cultivated and used fresh or dried as a flavoring in Chinese cuisine, although Cantonese cooking typically uses less chili than Szechuanese. Traditional Chinese medicine uses chili peppers to induce sweating. Carbonized and uncarbonized *Capsicum* seeds were found in the Unit 1 flotation sample. These probably were grown locally or purchased from California.

Chenopodium sp. Goosefoot

Uncarbonized goosefoot occurred in Units 1 and 4. Goosefoots are widespread, growing in open disturbed places, agricultural fields, and wet marshy lands. The Klamath Indians ate the seeds (Coville 1897) and Native California groups ate the greens and seeds (Strike 1994). Several species of *Chenopodium* grow in China and a few are used as food (young leaves cooked as greens and seeds).

Citrullus lanatus Watermelon

Watermelon cultivation in California dates back to the Spanish-colonial period and they can be grown in the warmer parts of Oregon (Allen 1998). Watermelons, which are native to Africa, also have a long history of use in China where they are valued as a fresh summer fruit and for their roasted and sometimes spiced seeds. Some varieties have been bred to produce little flesh and many seeds. In addition, the fruit and seed have medicinal properties and cold energy. Three carbonized watermelon seed fragments were recovered from Unit 2 and one possible seed fragment from Unit 1. Blasdale (1899:48) noted that in the Chinese section of San Francisco, watermelon seeds were frequently eaten. The watermelon seeds in the samples could come from eating fresh watermelon as well as snacking on imported seeds.

Claytonia sp. Springbeauty

Several species of *Claytonia* grown in the Jacksonville area including *Claytonia perfoliata* ssp. *perfoliata* (miner's lettuce). Miner's lettuce is a common annual herb that grows in a variety of habitats including agricultural fields and disturbed sites in urban areas. Native California groups ate the leaves raw or cooked and its common name refers to its consumption by miners during the Gold Rush. It is a good source of vitamin C and was presumably used to avoid scurvy (USDA Forest Service 2014). One uncharred seed fragment and on charred seed were recovered from Unit 4. These seeds probably came from weeds growing in the vicinity, although the plant may have been collected as pot greens.

Convululaceae cf. Morning glory family

One seed from Unit 4 resembles those from the Convulvulaceae. There are many native and introduced species from this family that grow in Oregon.

Corylus sp.

The Klamath Indians ate the native hazelnuts (*Corylus cornuta* ssp. *californica*), which grow in the Cascade mountains (Coville 1897:94). But the hazelnut nutshell fragments from Units 1, 3 and 4 and QTU 15 may be the cultivated variety (*Corylus avellana*). Cultivated hazelnuts were first planted in Oregon in 1858 and now Oregon is a major producer of hazelnuts (Oregon State University 2013). Western hazelnut (*Corylus cornuta*) charcoal was identified from the site (Dexter 2009).

Cucurbitaceae Squash/gourd family

Two uncharred seed fragments from Unit 1 could be from watermelon or some other squash or pumpkin. Cucurbitaceae seeds are an extremely popular snack food in China, coming from a variety of squashes as well as watermelons and melons. Robert Spier (1958:80) examined invoices of Chinese imports during the early 1850s, housed at the U. S. Custom House at San Francisco. Melon seeds were among the less common items mentioned (Spier 1958:80). Salted melon seeds were still being imported to San Fransisco in 1873 (Coe 2009:119).

Cyperaceae Sedge family

A possible carbonized Cyperaceae seed was recovered from Unit 3. This identification to family encompasses a very large variety of plants, but many grow in wet open locations. It is likely that these represent the weedy vegetation growing around Jacksonville.

Eleocharis dulcis cf. Water chestnut

It is possible that one large burnt corm fragment from Unit 1 is a water chestnut. The size and some of the outer morphology are similar, but the interior does not match that of modern fresh water chestnuts that I carbonized. Water chestnuts grow in shallow water in warm climates, so it could not have been grown in Jacksonville. Exported water chestnuts are generally boiled and peeled, and this specimen retains its peel. But water chestnuts are dried in China to process for their starch, so this may be a dried corm. This specimen requires further investigation to provide a secure identification. Water chestnuts are a common crop in southern China where they are cultivated in fish ponds. The corms are most often eaten boiled, but they also serve as medicine for a variety of ailments (Lu 1994:437-438).

Erodium sp. Filaree

The filaree that grow in Oregon are introduced species that thrive in grasslands, dry open areas, or disturbed sites. A charred filaree seed and a fruit fragment were identified from Unit 4. These represent the local weedy vegetation.

Fabaceae Legume family

A flotation sample from Unit 3 contained two types of wild Fabaceae that could not be identified more specifically given the large variety of species that grow in Oregon. A variety of Fabaceae plants thrive on disturbed soils, so this evidence reflects the local weedy vegetation.

Galium/Plantago cf. Bedstraw/plantain

One carbonized seed from Unit 4 has an indentation similar to bedstraw and plantain. Both of these taxa grow in Oregon. Plantains tend to be weedy plants.

Hordeum sp. Wild barley

A. carbonized wild barley seeds was recovered from Unit 4. A number of native and introduced *Hordeum* species grow in Oregon, some of which can be found in disturbed soils along streambanks and roads. So this seed most likely represents the weedy flora of the region.

Litchi chinensis Litchi

Units 1 and 3 and QU 15 contained litchi seeds. Litchi is a native of China, and has a long history of cultivation there. The sweet aril that encloses the seed may be eaten fresh, dried, pickled, or preserved and the fruits may be dried or canned. While the Chinese often eat litchis for dessert, they also cook them in sweet-and-sour and other dishes. Chinese traditional medicine uses litchi fruit, seed, and other plant parts for remedies and they have warm energy in the Chinese diet. Blasdale (1899:42) recorded that dried litchis and litchis preserved in sugar were available in the Chinese section of San Francisco. So the litchi seeds in these samples certainly come from the dried fruits recorded as imported from China starting in the mid-19th century (Spier 1958:80).

Malva sp. Mallow

The mallow species that grow in Oregon are all introduced. In California they are common weeds in disturbed locations, such as houselots, along roadways, and in fallow gardens. One uncarbonized mallow seed was found in Unit 3.

Medicago sp. Burclover

Medicago growing in Oregon are wild and often-weedy species, all of which are introduced and some of which also grow in China. These weeds are abundant in disturbed and agricultural soils. Unit 3 contained a carbonized seed that may be burclover. It seems likely that it came from local weeds.

Monocotyledon

The Unit 4 Level 9 flotation sample contained many very small burnt monocotyledon stem fragments. These probably come from a grass.

Oryza sativa Rice

Rice is the staple grain of southern China, so much so that the word for cooked rice and food (*fan*) are the same. For southern Chinese, food eaten without rice is considered a snack and not a meal. Simoons (1991:64) notes "in rural South China and adult male consumed 470 or 485 pounds of rice a year" and that much of the agricultural land was devoted to rice cultivation. The most common preparation of rice in southern China is boiled, but rice flour may be made into noodles and cakes, and rice is fermented to make vinegar. Rice has a neutral energy in the Chinese diet and can be cooked to cure a number of ailments. Rice florets (hulls made up of the lemma, palea, and callus) and straw served a variety of purposes including fuel, and packing material. Rice florets do not ignite or burn easily, and while they produce good heat, they also leave a large proportion of ash (International Rice Research Institute 2015).

This study recovered no rice grains, but charred and uncharred floret parts (the lemma and palea - the hulls or structures surrounding the grain – and the callus – a hard projection at the base of the floret) were found in Units 1, 3 and 4. Sometimes the callus had florets attached. Most of the rice imported to the United States was hulled, so these chaff remains most likely are not related to rice grains.

Perilla sp. cf. Beefsteak plant

Some carbonized seeds from Units 3 and 4 resemble *Perilla* sp. *Perilla* does not grow in Oregon. In China wild *Perilla acuta* shoots serve as a seasoning for meat or fish dishes and the leaves are steeped for tea (Hu 2005:651). *Perilla maxima* is cultivated to extract oil from its seeds and all parts of the plant have medicinal properties (Hu 2005:652).

Poaceae Grass family

Numerous grasses grow in Oregon, and they probably were common weeds in Jacksonville and in the fields and pastures of the Rogue River Valley. Many grass seeds

are morphologically similar, so they are difficult to identify more specifically. Carbonized grass seeds and other spikelet parts were clustered in Units 3 and 4.

Polygonum sp. Knotweed

Knotweed is a common wild and weedy plant in Oregon and the Klamath Indians ate knotweed seeds (Coville 1897:95). Both native and introduced species grow in the Jacksonville area. In China many parts of knotweed plants are used medicinally and some knotweeds are steeped to prepare *liangsha* ((“cooling tea”), an herbal drink prepared in the summer to promote good health. Unit 4 contained uncarbonized knotweed seeds. These seeds probably reflect the local weedy flora.

Portulaca oleracea Purslane

Portulaca oleracea is the only species of purslane that grows in Oregon. This is a common introduced weed, which grows in disturbed habitats. A few species of purslane grow in China and some have medicinal uses. *Portulaca oleracea*, a weedy plant in fields, is used medicinally, but also is collected as a green vegetable. The young shoots and leaves are eaten fresh or cooked. Blasdale (1899:48) reported finding purslane on vegetable stands in the Chinese section of San Francisco, although not in large quantities. One charred *Portulaca* seed was found in Unit 3.

Prunus persica Peach

Peaches are native to northern China and were domesticated fairly early. In the north, they are eaten fresh or cooked as soup or dessert. They are less common in the south, generally eaten dried or pickled as a snack. Peaches are symbols of long life and fertility and bring luck, abundance, and protection (Anderson 1988:135). Peaches have warm energy in the Chinese diet and both the flesh and dried seed kernels are used in traditional Chinese medicine. Peach trees were grown at the California missions in the late 18th century, but beginning in the 1850s improved varieties were brought from the East for planting (Jacobson 1984) and it seems that peaches were grown in the Rogue River Valley by the 1880s (Rogue Valley Orchard History 2015**).** These samples contained carbonized peach pits from Units 1, 2, and 3. These could be local fresh peaches since they were readily available, however they could be imported fresh peaches from California or dried or pickled varieties from China.

Prunus sp. Plum

Two carbonized *Prunus* pit fragments in the Unit 2 and QTU 15 samples are probably from plums. Otherncharred fragments recovered from QTU 15 do not have diagnostic features to distinguish plum, apricot, or cherry. Several different *Prunus* species are called plums. A few types are cultivated in China. Plums have a neutral energy in the Chinese diet and both the fruits and the seed kernels serve as herbal remedies. Plums have been grown in California since Spanish-colonial times, but in the 1850s improved stock was imported to plant in California ((Jacobson 1984:90; Vallejo

1890). The two main types grown in California are *P. domestica* and *P. salicina*; prunes come from a variety of *P. domestica*. An article in the *Medford Monitor-Miner,* October 13, 1898, listed prunes as one of the major fruit crops of the Rogue River Valley, so the seeds in these samples may have come from local farms (Rogue Valley Orchard History 2015).

Rubus sp. Blackberry/raspberry

Many wild species of *Rubus* grow in China. The fruits are generally eaten fresh, but may be cooked or made into wine. Raspberries have a warm energy in the Chinese diet. Traditional Chinese medicine uses the dried fruits, seeds, and leaves to cure a variety of ailments and the Chinese raspberry fruit was found among medicines used by Ing Hay, a Chinese doctor who began practicing in eastern Oregon in the 1880s. Wild varieties of *Rubus* commonly grow in Oregon. Unit 1 contained a large number of uncarbonized *Rubus* seeds.

Rumex sp. Dock

A number of *Rumex* species grow in China. The Chinese eat the young leaves of sorrel (*R. acetosa*) and use the fruits and leaves for medicinal purposes. Oregon also has a variety of *Rumex* species, some native and some introduced that grow in disturbed or moist habitats. At least two species of *Rumex* were recovered from the house, charred seeds from Units 3 and 4 and uncharred seeds from Unit 4. While these seeds probably came from weedy plants growing in the area, they may have been encouraged or protected to provide this potherb and medicine.

Sambucus sp. Elderberry

Four species of *Sambucus* grow in China but the ones Hu (2005) records as eaten come from Taiwan (fruit) and Inner Mongolia (leaves). Elderberry leaves, stems, and roots are used in traditional Chinese medicine. Three native species grow in Oregon. Sambucus generally prefers streambanks and moist places. Uncharred *Sambucus* seeds were found in Unit 3. Their presence may indicate traditional uses as medicine or their uses as food and beverage ingredients.

Triticum durum/aestivum Wheat

Durum and bread wheat were domesticated in Western Asia and bread wheat was introduced to China by 2500 BC (Flad et al. 2010). It soon became one of the major staples in northern China. Today bread wheat is grown primarily in north, central and western China, and durum wheat is not common. Wheat, ground into flour and then cooked as dumplings or noodles (rarely bread), is consumed throughout China, but is more important in the North. Wheat has cooling energy in the Chinese diet and has some medicinal uses. To make a balm for burns, wheat grains are fried until they are charred, and then ground and mixed with oil (Lu 1994:488). Wheat was brought to California by the Spanish colonists. It is difficult to distinguish between durum and

bread wheat from the grains alone (Hillman et al. 1996). Today wheat is a major crop in Oregon. A carbonized wheat grain was recovered from Unit 3.

Thuja sp. cf.

Two unburnt immature seeds from Unit 4 could be *Thuja*. Western Redcedar (*Thuja plicata*) charcoal was identified from the site and reflects wood collection in the riparian habitat of the Rogue River valley (Dexter 2009).

Vitis vinifera Grape

Vitis vinifera was introduced to China in the 2nd century, but because alcoholic beverages in China were made from rice and other grains, grapes were not widely cultivated through the 19th century. Now European grapes are eaten fresh or dried and are made into wine. They have a neutral energy in the Chinese diet. In addition, the roots, leaves, and fruits are used medicinally. A couple of wild grape species with edible fruits grow in southern China. Grapes were brought to California by the Spanish colonists. Chan (1986:230) describes that by the 1880s grapes were an important crop for the Chinese farmers of Santa Clara County. Grapes were also grown in Jacksonville according to the *Oregonian,* Portland, December 3, 1887 (Rogue Valley Orchard History 2015). One immature charred seed was found in Unit 2.

Zanthoxylum sp. Szechuan pepper

One uncharrad *Zanthoxylum* seed was found in Unit 1. In China wild and cultivated species of *Zanthoxylum* provide fruits used as a spice and as medicine to cure a variety of ailments. Fagara has been used in China since at least the Han dynasty (206B.C.- A.D. 220). For seasoning food, most often the husks (pericarps) are added whole or toasted and ground in to a powder and then mixed with other spices. The seeds and husks are sold together in Chinese grocery stores and Eugene Anderson (personal communication 2014) confirms that both the seeds and the husks may be used. There is no record of *Zanthoxylum* growing in California in the 19th century, so it is unlikely that it was growing in Oregon at that time; these seeds probably were imported.

Unknown types and plant parts

Unknown Type A is a large obovate seed with a smooth shiny exterior and a spongy interior. It was found carbonized in QTU15 and Units 1 and 2. Unknown Type B is a corm that comes in a range of sizes. All examples were carbonized and in some the central medulla was missing, suggesting we are recovering these geophytes at different stages of growth. They came from QTU15 and Units 1 and 2. Unknown Type C is a small tuber that resembles those in the Cyperaceae. However without a better understanding of the local geophytes we cannot rule out other taxa. The specimens were recovered carbonized from Unit 4. Unknown Type E seeds are relatively large and irregularly shaped. The seedcoat is eroded and they were found in the Unit 1 flotation sample with other small fruit seeds, suggesting that they were from an edible fruit and passed through the digestive system. Unknown Type F is a small smooth seed that was

found in Units 3 and 4. Other plant parts that could not be identified to taxon included small buds, a possible root fragment, unknown fruits (including pointed bases and stems), leaves, tiny monocotyledon stem fragments, and unknown structures that could be thick seedcoats, nutshell, or thin fruit skins. Most units contained charred and uncharred unidentifiable seed fragments, unknown plant parts, wood, charcoal, and possible bark. Botanical material that lacked any diagnostic characteristics and could not be positively identified to a known taxa was placed in the Amorphous category. Amorphous material typically possesses minimal vessel structure and lacks a distinctive shape. Most of the Amorphous material was grainy and could be bark. Another type of amorphous material was exploded and often vitrified; this did not look like it was of organic origin.

Discussion

The plant remains from the Jacksonville Chinese Quarter show that the inhabitants of the house ate a range of foods, some probably grown locally, but others imported from California and China. Peaches, plums, hazelnuts, wheat, grapes and berries would have grown in the area. Peanut and some of the other foods may have come from California. And litchi, Chinese olive, Szechuan pepper and perhaps some other plants were purchased from merchants who imported Chinese products. The peddler and his family most likely ate a variety of other plant foods that did not preserve in the house. From our understanding of Chinese foodways we would expect that rice was an important staple grain. Kennedy (2016) analyzed the starch from a grinding wheel fragment and identified one grain that is a domesticated grass, probably rice. The absence of rice in the macrobotanical assemblage could reflect that this relatively expensive food, which was imported from China, was carefully stored and cooked to avoid any waste. In addition, fresh vegetables such as cabbages, mustard greens, radishes, and sweet potatoes are common ingredients of Chinese cuisine that leave no dense remains, so we would not expect to find them in the archaeobotanical assemblage.

Documentary evidence provides evidence of other Chinese foods that were imported to the area. Records from the Kubli Store located near Jacksonville show the purchases made by Chinese miners from 1866 through 1868 (LaLande 1981). While this predates the final occupation of the house under study, it is contemporaneous with the early Chinese occupation of Jacksonville and suggests preferred Chinese products that may have been imported on an ongoing basis to the area. Common plant food purchases included ginger and other spices, sesame seeds, black beans, melon seeds, tea, and dried vegetables such as mushrooms and cabbages (LaLande 1981:236-237). Rice was a minor purchase compared to wheat flour and noodles, probably reflecting the high price of imported rice (LaLande 1981:238). The peddler and his family may have had greater access to fresh fruits and vegetables than the miners, but probably relied on imports for foods that could not be grown in the area.

The Southern Oregon Historical Society has a document that appears to be a store inventory or order form dating to 1881 from a peddler who may be the Jacksonville house resident (C. Rose, personal communication). The list includes cooking oils, seeds,

tea, and wine. Comfort tea, used to aid digestion, is another item. The importance of plants in traditional Chinese medicine points out that while some of the recovered archaeological plants may have been used in medicinal preparations, one would expect that the peddler and his family used other medicinal plants that did not preserve. Many medicinal plants were prepared by boiling into teas, a process that would hasten the decay of all but the densest plant parts.

Site 35JA737 contains an array of plant remains used as foods and types that could be used for medicine, fuel and other utilitarian items. But the samples also have a number of wild and non-domesticated plants. Looking at the assemblage as a whole shows that the plant remains are not uniform across the site (Table 7); the types and quantities of plant remains vary by depth and location, attesting to a range of activities at the site.

QTU 15, Unit 1 and Unit 2 contain somewhat similar plants, with the largest concentration of remains in Unit 1. The middle levels of the units (40-70 cmbd or cmbs) seem to be where most of the burnt corms (Type B) and Type A seeds came from. This suggests that the corms in the Unit wall clean up sample may also have come from these levels, but that is uncertain. Because we cannot identify the corms, we cannot tell if they are the remains of stored foods or the bases of ornamental plants. The Chinese ate a variety of geophytes as did the native populations of the area.

The lower levels of these units, starting around 90 cmbd have a mix of large seeds (peach, plum, Chinese olive, litchi, watermelon) and hazelnuts typical of kitchen waste and small seeds (chili pepper, blackberry/raspberry, Szechuan pepper) more typical of privy deposits. The eroded appearance of the Type E seeds and the Szechuan pepper seeds support the suggestion that at least some of these seeds had passed through the digestive system. Unit 1 also contained the highest density of charcoal, although most of the seeds were not burnt, and the largest percentage of vegetable and fruit remains. These indicate that Unit 1 was an area where kitchen waste was deposited and supports the other evidence (flagstones, hearth, and wok) that this was a location of cooking.

While the botanical remains pulled from Unit 2 are similar to Unit 1, the flotation samples from Unit 2 are different with little charcoal, few types of seeds, and all remains carbonized. If this area burned more intensely than other parts of the house (C. Rose, personal communication) most plant remains present may have been burnt to ash.

The Unit 4 Level 9 flotation sample contents contrast significantly with those from Units 1 and 2. The density of remains was extremely high, with most of these rice chaff and wild or non-domesticated plants. In addition, most of the remains were carbonized. Rice chaff may be the remains of packing material when the peddler received his goods or took them out to sell. The large array of wild plants suggests that those remains came from grasslands (the Poaceae/grass stems, seeds, and spikelets, and filaree seeds) and more moist habitats (knotweed and dock). It is possible that they came from a packrat nest in the roof (C. Rose, personal communication) or from fodder

collected for domestic animals. Given the dense urban environment of the Chinese Quarter, it seems unlikely that these seeds came from vegetation growing around the house that burned and fell or blew into the house during the fire. Few plants were preserved in the other samples from Unit 4.

Unit 3 Level 11 contains a similar but reduced array of plants to Unit 4 Level 9. If Unit 3 Quad B abuts Unit 4 Quad A, this indicates that the samples come from the same deposit. However, Unit 3 contains more food plants than Unit 4, with most of these pulled from the excavation as botanical specimens.

The botanical specimens and flotation samples from Site 35JA737 reflect the importance of plants for nutrition, utilitarian items, and cultural traditions in the Jacksonville Chinese Quarter. The variety of foods show that Chinese cuisine was maintained through a combination of local gardening and orchard crops along with imported items.

References Cited

Allen, Rebecca
1998 Native Americans at Mission Santa Cruz, 1791– 1834: Interpreting the Archaeological Record. Perspectives in California Archaeology 5. Los Angeles: Institute of Archaeology, University of California.

Anderson, E.N.
1988 *The Food of China*. Yale University Press, New Haven.

Anderson, E.N., Jr., and Marja L. Anderson
1977 Modern China:South In *Food in Chinese Culture : Anthropological and Historical Perspectives*, ed. K.C. Chang, pp.317-382. Yale University Press, New Haven.

Blasdale, Walter C.
1899 A description of some Chinese vegetable food materials and their nutritive and economic value, U.S. Department of Agriculture, Office of Experiment stations, Bulletin No.68. Washington, DC: U. S.Government Printing Office. http://www.archive.org/details/descriptionofsom00blas, accessed May 10, 2014.

Bowen, William M.
2002 The Five Eras of Chinese Medicine in California In *The Chinese in America: A History from Gold Mountain to the Millennium*, ed. Susie Lan Cassel, pp. 174-194. AltaMira Press, Walnut Creek.

Calflora: Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals, including the Consortium of California Herbaria.
2014. Berkeley, California: The Calflora Database [a non-profit organization]. Available: http://www.calflora.org/, accessed: Jul 16, 2014.

California Rare Fruit Growers, Inc.
1996 Lychee, http://www.crfg.org/pubs/ff/lychee.html, accessed July 14, 2014.

Cappers, R. T. J., Neef, R., and R.M. Bekker
2009 *Digital Atlas of Economic Plants*. Barkhuis, Eelde, The Netherlands.

Chan, Sucheng
1986 *This Bittersweet Soil: The Chinese in California Agriculture, 1860-1910*. University of California Press, Berkeley.

Chang, Kwang-chih
1977 Introduction In *Food in Chinese Culture : Anthropological and Historical Perspectives*, ed. K.C. Chang, pp.3-21. Yale University Press, New Haven.

Coe , Andrew
Chop Suey: A Cultural History of Chinese Food in the United States, [Oxford University Press:Oxford] 2009

Coville, Frederick V.
1897 *Notes on the plants used by the Klamath Indians of Oregon*. U. S Department of Agriculture Division of Botany Contributions. Vol. V, No.2. Washington : Government Printing Office.

Dexter, Jaime
2009 Macrobotanical Analysis. Appendix B in Archaeological Monitoring and Investigations Along Oregon State Highway 238 Jacksonville, Oregon, by Julia M. Schablitsky and Chris Ruiz. University of Oregon Museum of Natural and Cultural History and State Museum of Anthropology. OSMA Report 2009-061. Ms. on file with the State Historic Preservation Office, Salem.

DiTomaso, J.M., G.B, Kyser et al. 2013
Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California.

Flad, Rowan; Li Shuicheng; Wu Xiaohong; Zhao Zhijun.
2010 Early wheat in China: Results from new studies at Donghuishan in the Hexi Corridor. *The Holocene* 20(6):955-965.

Flora of China
2008 eFloras. Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA., http://www.efloras.org, accessed 2 May 2014.

Hedrick. U.P.
1950 *A history of horticulture in America to 1860*. Oxford University Press, Oxford.

Hickman, J.C., editor
1993 *The Jepson Manual: Higher Plants of California*. University of California Press, Berkeley.

Hillman G.C, Mason S., Moulins D.D., and Nesbitt M.
1996 Identification of archaeological remains of wheat: The 1992 London workshop. *Circaea* 12(2):195–209.

Hsu, Madeline
2000 *Dreaming of Gold, Dreaming of Home: Transnationalism and Migration Between the United States and South China, 1882-1943*. Stanford University Press, Stanford.

Hu, Shiu-ying
2005 *Food Plants of China*. The Chinese University Press, Hong Kong.

International Rice Research Institute
2015 Rice Husk. http://www.knowledgebank.irri.org/step-by-step-production/postharvest/milling/what-is-rice-husk, accessed June 18, 2015.

Jacobson, Yvonne
1984 *Passing Farms, Enduring Values: California's Santa Clara Valley*. William Kaufmann Inc, Los Altos, CA.

Kennedy, Jaime L.
2016 *Charcoal Identification and Starch Residue Analysis at Site 35JA737, the Jacksonville Chinese Quarter*. Macrobotanical Report 16-02. Prepared for Southern Oregon University Laboratory of Anthropology.

LaLande, Jeffrey Max
1981 Sojourners in the Oregon Siskiyous: Adaptation and Acculturation of the Chinese Miners in the Appplegate Valley, Ca. 1855-1900. Maters thesis, Department of Interdisciplinary Studies, Oregon State University, Corvallis.

Li, Shih-Chên, Smith, F. Porter, and G. A.Stuart
1973 *Chinese Medicinal Herbs: A Modern Edition of a Classic Sixteenth-Century Manual*. Dover Publications, Mineloa.

Lim, Tong Kwee
2012 *Edible Medicinal and Non-Medicinal Plants*, Volumes 1-4, Fruits. Springer, Dordrecht.

Lu, Henry C.
1994 Chinese Natural Cures: Traditional Methods for Remedies and Prevention. Black Dog & Leventhal Publishers, New York.

Martin, Alexander C. and William D. Barkley
1961 *Seed Identification Manual*. University of California, Berkeley.

Moerman, Dan
2003 *Native American Ethnobotany* http://herb.umd.umich.edu/ accessed May 26, 2016

Myers, Claudia, ed.
1998 *Specialty and Minor Crops Handbook.* University of California Press, Oakland.

Oregon Flora Project
2015 http://www.oregonflora.org/atlas.php accessed December 28, 2015.

Oregon State University
2013 Growing Hazelnuts in the Pacific Northwest. https://catalog.extension.oregonstate.edu/files/project/pdf/em9072.pdf accessed December 29, 2015.

Rogue Valley Orchard History
2015 http://id.mind.net/~truwe/tina/orchards.html accessed December 29, 2015.

Simoons, Frederick J.
1991 *Food in China: A Cultural and Historical Inquiry*. CRC Press, Boca Raton.

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

Strike, Sandra S.
1994 *Ethnobotany of the California Indians*. Koeltz Scientific Books, Champaign, Illinois.

Vallejo, Guadalupe
1890 Ranch and Mission Days in Alta California, The Century Magazine Vol XLI No2 pp188-189. http://www.sfmuseum.org/hist2/rancho.html, accessed May 14, 2014.

Water Resource Department
2004 *Stream & Wetland Enhancement Guide*. Rogue Valley Council of Governments.

List of tables

Table 1. Soil Samples from The Jacksonville Chinese Quarter Site 35JA737

Unit	Level	Provenience	Vol (l)	EB #[1]
1	Level 11	110-120 cmbd Quad A	0.9	5510
2	Level 8	80-90 cmbd Datum 3	1.0	5511
2	Level 9	90-100 cmbd Datum 4	0.7	5512
3	Level 11	110-120 cmbd Quad B, NE corner	0.7	5513
3	Level 12	120-130 cmbd South ? of unit	0.9	5514
4	Level 9	90-100 cmbd Quad A	0.9	5515
4	Level 13	130-140 cmbd Center of unit	1.0	5516
4	Level 14	140-150 cmbd Datum 3	0.8	5517

[1]The EB number is the laboratory accession number.

Table 2. Botanical Samples from The Jacksonville Chinese Quarter Site 35JA737

Unit	Level	Provenience	Identification	Count	Weight (g)
QTU 15	Level 5	40-50 cmbs	Type B corm C	1	0.137
			Type B corm frag. C	16	0.119
			Unknown seed frag. C	8	0.024
QTU 15	Level 6	50-60 cmbs	Type A C	2	0.030
			Unknown plant part	1	
QTU 15	Level 7	60-70 cmbs	Dicotyledon twig C	2	0.084
			Dicotyledon wood C	1	0.158
			Root	1	0.455
QTU 15	Level 12	110-120 cmbs	*Corylus* sp. nutshell frag. C	6	0.107
QTU 15	Level 13	120-130 cmbs Feature C	*Canarium* cf. *album* C	1	0.591
			Litchi chinensis C	1	0.640
			Prunus (plum) frag. C	1	0.050
			Prunus sp. frag. C	3	0.053
QTU 15	Level 13	120-130 cmbs West 1/2 of unit	*Canarium* cf. *album* C	1	0.530
			Litchi chinensis C	1	0.517
Unit 1	Level 6	60-70 cmbd South side of unit	Type A C	1	0.109
			Type A frag. C	1	0.050
			Type B corm C	3	0.695
Unit 1	Level 10	100-110 cmbd	*Canarium* cf. *album* frag.	1	0.171
			Litchi chinensis	1	0.325
			Type B corm frag. C	1	0.364
			Unknown seed frag. C	1	0.126
			Modern root	2	
			Bone	2	

Unit	Level	Provenience	Identification	Count	Weight (g)
Unit 1	Level 11	110-120 cmbd	*Corylus* sp. nutshell frag. C	1	0.221
Unit 1	Level 15	150-160 cmbd	*Canarium* cf. *album* C	2	0.827
			Prunus persica C	1	3.002
			Prunus persica frag. C	24	1.508
Unit 1		Wall clean-up 30-100 cmbd	*Canarium* cf. *album* frag. C	1	0.047
			cf. *Eleocharis dulcis* frag. C	1	1.976
			Type B corm C	2	0.488
			Type B corm frag. C	34	3.228
			Type B corm large C	1	2.143
			Type B corm large frag. C	5	1.224
Unit 2	Level 4	40-50 cmbd	Type A frag. C	1	0.028
			Type B corm	1	0.224
			Type B corm C	1	0.497
			Type B corm frag. C	2	0.143
			Dirt clump	1	
Unit 2	Level 7	70-80 cmbd Ash Feature	Charcoal		0.523
Unit 2	Level 9	90-100 cmbd	*Prunus persica* C	1	1.772
Unit 2	Level 11	110-120 cmbd	Not plant		
Unit 2	Level 12	120-130 cmbd SE corner of Feature, pedestal removal	Conifer charcoal	1	0.545
Unit 2	Level 14	140-150 cmbd	*Prunus* (plum) C	1	0.364
Unit 2	Level 15	@150 cmbd termination clean-up	*Canarium* cf. *album* frag. C	1	0.281
Unit 3	Level 8	80-90 cmbd	cf. *Berberis* sp. fruit	1	0.051
			cf. *Berberis* sp. fruit frag	1	0.025

Unit	Level	Provenience	Identification	Count	Weight (g)
			Charcoal	11	0.409
			Corylus sp. nutshell frag.	1	0.151
			Corylus sp. nutshell frag. C	6	0.432
			Fruit/corm exploded frag. C	7	0.014
			Amorphous exploded (not plant?)	3	0.048
			Non plant	2	
Unit 3	Level 9	90-100 cmbd	*Prunus persica* C	1	1.583
Unit 3	Level 14	140-150 cmbd under wood	*Canarium* cf. *album*	1	0.738
			Litchi chinensis frag. C	4	0.705
			Prunus persica frag. C	6	0.503

Table 3. Scientific and Common Names of Identified Jacksonville Chinese Quarter Site 35JA737 Botanical Remains.[1]

Scientific Name	English Common Name	Chinese Common Name
Arachis hypogaea	Peanut	Luo hua sheng
Arctostaphylos sp.	Manzanita	
Asteraceae	Sunflower family	
Avena sp. cf	Wild oat	
Berberis sp. cf.	Oregon grape	
Boraginaceae cf.	Borage family	
Brassicaceae	Mustard family	
Canarium cf. *album*	Chinese olive	Gan lan
Capsicum sp.	Chili pepper	
Chenopodium sp.	Goosefoot	Li
Citrullus lanatus	Wheat, rice, or barley	Xi gua
Claytonia sp.	Miner's lettuce	
Convululaceae cf.	Morning glory family	
Corylus sp.	Hazelnut	
Cucurbitaceae	Squash/gourd family	
Cyperaceae	Sedge family	
Eleocharis dulcis cf.	Water chestnut	Bi qi
Erodium sp.	Filaree	
Fabaceae	Legume family	
Galium/Plantago cf.	Bedstraw/plantain	
Hordeum sp.	Wild barley	
Litchi chinensis	Litchi	Li zhi
Malva sp.	Mallow	
Medicago sp. cf.	Burclover/alfalfa	Mu xu/ Zi mu xu
Monocotyledon	Includes grass, lily, and sedge families	
Oryza sativa	Rice	Dao
Perilla sp. cf.	Beefsteak plant	Zi su
Poaceae	Grass family	
Polygonum sp.	Knotweed	
Portulaca sp.	Purslane	Ma chi xian
Prunus persica	Peach	Tao
Prunus sp. (plum)	Plum	Li, Yang li
Rubus sp.	Blackberry, Raspberry	Xuan gou zi
Rumex sp.	Dock	Suan mo
Sambucus sp.	Elderberry	
Triticum durum/aestivum	Wheat	Xiao mai
Thuja sp. cf.	Redcedar	
Vitis vinifera	Grape	Pu tao
Zanthoxylum sp.	Fagara, Szechuan pepper	Hua jiao

[1]cf. is an abbreviation for compares favorably.

Table 4. Plant Material Absolute Counts and Weights (g) for the Flotation Samples from the Jacksonville Chinese Quarter Site 35JA737.[1 2]

Unit	1		2		2		3		3		4				4		4	
Level	11		8		9		11		12		9				13		14	
EB Number	5510		5511		5512		5513		5514		5515				5516		5517	
											100% sort		25% Sort	75% Scan				
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Grain/*fan*																		
Oryza sativa floret frag.	3						4				6		19					
Oryza sativa floret frag. C	1						32				7		54					
Oryza sativa floret callus	3						1						45					
Oryza sativa floret callus C			1				47						107					
Triticum durum/aestivum C							1	0.005										
Vegetable/*ts'ai and* fruit/*kuo*																		
Arachis hypogaea cf. shell frag.	1	0.008																
Arachis hypogaea cf. shell frag. C							1				1	0.003						
Canarium cf. *album* frag.	1																	
Capsicum sp. C	2																	
Capsicum sp. frag. C	1																	
Citrullus lanatus frag. C			2	0.004	1	0.004												
Citrullus lanatus cf. frag. C	1	<0.001																
Corylus sp. frag. C							1	0.005			1	0.01						
Cucurbitaceae seed frag.	2	0.005																
Prunus persica frag. C									1	0.08								
Rubus sp.	49																	
Sambucus sp.							12											
Type E	24																	
Type E frag	6(2)																	
Vitis vinifera C			1															
Zanthoxylum sp.	1																	
Other																		
Arctostaphylos sp. C							1											
Asteraceae C											1							
Avena sp. cf. C											3							

Unit	1		2		2		3		3		4				4		4	
Level	11		8		9		11		12		9				13		14	
EB Number	5510		5511		5512		5513		5514		5515				5516		5517	
											100% sort		25% Sort	75% Scan				
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Boraginaceae cf.							1											
Brassicaceae cf. C							1											
Bud C													1					
Chenopodium sp.	1												2					
Claytonia sp.frag.															1			
Claytonia sp. C													1					
Convululaceae cf. C														1				
Cyperaceae cf. frag. C							1											
Erodium sp. C													1					
Erodium sp. fruit C														1				
Fabaceae							2											
Fruit base frag. C							1				2							
Fruit stem	1																	
Galium/*Plantago* cf. C														1				
Hordeum sp. C													1					
Leaf frag.	1																	
Leaf frag. - dicotyledon							1											
Malva sp.							1											
Medicago sp. cf. C							1											
Monocotyledon stem C													many					
Perilla sp. cf. C							1						6					
Poaceae A C													3					
Poaceae B C													3					
Poaceae large C											12		2					
Poaceae large frag. C							10						8					
Poaceae small C							11						5					
Poaceae spikelet frag.											1							
Poaceae spikelet frag. C							12						7					
Polygonum sp.													5					

Unit	1		2		2		3		3		4				4		4	
Level	11		8		9		11		12		9				13		14	
EB Number	5510		5511		5512		5513		5514		5515				5516		5517	
											100% sort		25% Sort	75% Scan				
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Portulaca sp. C							1											
Root cf. C															1	0.138		
Rumex sp.														2				
Rumex spp. C							2						1					
Ulmus sp. cf. samara											2							
Unidentifiable seed frag.	5						1											
Unidentifiable seed frag. C	3		4		1		16						11				1	
Unidentified seed coat/fruit C	4	0.012	2	0.004							2	0.008						
Unknown plant part											1							
Unknown plant part C											1							
Unknown Type C tuber frag. C											9	0.134						
Unknown Type F							1											
Thuja sp. cf.							1							2				
Amorphous grainy										0.32								
Amorphous grainy C		0.04		0.23		0.03				0.30		3.25				1.36		
Amorphous exploded (not plant?)		0.04		0.06		0.33		1.44		0.06								
Bark cf.		0.01																
Bark cf. C		0.01								0.08								
Charcoal		22.91		2.24		2.04		4.19		5.30		10.09				10.16		1.48
Wood		0.38		0.03		0.04		0.22		0.29		0.65				0.59		0.03

[2] Number in parentheses is minimum number of wholes.

Table 5. Plant Material Estimated Whole Counts and Weights (g) for the Flotation Samples from the Jacksonville Chinese Quarter Site 35JA737.

Unit	1		2		2		3		3		4		4		4	
Level	11		8		9		11		12		9		13		14	
EB Number	5510		5511		5512		5513		5514		5515		5516		5517	
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Grain/*fan*																
Oryza sativa floret	3						4				82					
Oryza sativa floret C	1						32				223					
Oryza sativa floret callus	3						1				180					
Oryza sativa floret callus C			1				47				428					
Triticum durum/aestivum C							1	0.05								
Vegetable/*ts'ai and* fruit/*kuo*																
Arachis hypogaea cf. shell	1															
Arachis hypogaea cf. shell C							1				1					
Canarium cf. *album* frag.	1															
Capsicum sp. C	3															
Citrullus lanatus C			1		1											
Citrullus lanatus cf. C	1															
Corylus sp. C							1				1					
Cucurbitaceae seed	1															
Prunus persica C									1							
Rubus sp.	49															
Sambucus sp.							12									
Type E	26															
Vitis vinifera C			1													
Zanthoxylum sp.	1															
Other																
Arctostaphylos sp. C							1									
Asteraceae C											1					
Avena sp. cf. C											3					
Boraginaceae cf.							1									
Brassicaceae cf. C							1									

Unit	1		2		2		3		3		4		4		4	
Level	11		8		9		11		12		9		13		14	
EB Number	5510		5511		5512		5513		5514		5515		5516		5517	
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Bud C											4					
Chenopodium sp.	1										8					
Claytonia sp.frag.													1			
Claytonia sp. C											4					
Convululaceae cf. C											1					
Cyperaceae cf. C							1									
Erodium sp. C											4					
Erodium sp. fruit C											1					
Fabaceae							2									
Fruit base C							1				2					
Fruit stem	1															
Galium/*Plantago* cf. C											1					
Hordeum sp. C											4					
Leaf frag.	1															
Leaf frag. - dicotyledon							1									
Malva sp.							1									
Medicago sp. cf. C							1									
Monocotyledon stem C											many					
Perilla sp. cf. C							1				24					
Poaceae A C											12					
Poaceae B C											12					
Poaceae large C							4				32					
Poaceae small C							11				20					
Poaceae spikelet frag.											1					
Poaceae spikelet frag. C							12				28					
Polygonum sp.											20					
Portulaca sp. C							1									
Root cf. C													1	0.138		
Rumex sp.											2					

Unit	1		2		2		3		3		4		4		4	
Level	11		8		9		11		12		9		13		14	
EB Number	5510		5511		5512		5513		5514		5515		5516		5517	
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Rumex spp. C							2				4					
Thuja sp. cf.											2					
Unidentifiable seed frag.	5						1									
Unidentifiable seed frag. C	3		4		1		16				44				1	
Unidentified seed coat/fruit C	4	0.012	2	0.004							2	0.008				
Unknown plant part											1					
Unknown plant part C											1					
Unknown Type C tuber frag. C											9	0.134				
Unknown Type F							1									
Unknown Type F C							1				2					
Amorphous grainy										0.32						
Amorphous grainy C		0.04		0.23		0.03				0.30		3.25		1.36		
Amorphous exploded (not plant?)		0.04		0.06		0.33		1.4 4		0.06						
Bark cf.		0.01														
Bark cf. C		0.01								0.08						
Charcoal		22.91		2.24		2.04		4.1 9		5.30		10.09		10.1 6		1.4 8
Wood		0.38		0.03		0.04		0.2 2		0.29		0.65		0.59		0.0 3

Table 6. Plant Material Densities (count/l or g/l) for the Flotation Samples from the Jacksonville Chinese Quarter Site 35JA737.

Unit	1		2		2		3		3		4		4		4	
Level	11		8		9		11		12		9		13		14	
EB Number	5510		5511		5512		5513		5514		5515		5516		5517	
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Grain/*fan*																
Oryza sativa floret	3.3						5.7				91.1					
Oryza sativa floret C	1.1						45.7				247.8					
Oryza sativa floret callus	3.3						1.4				200.0					
Oryza sativa floret callus C			1				67.1				475.6					
Triticum durum/aestivum C							1.4									
Vegetable/*ts'ai and* fruit/*kuo*																
Arachis hypogaea cf. shell	1.1															
Arachis hypogaea cf. shell C							1.4				1.1					
Canarium cf. *album* frag.	1.1															
Capsicum sp. C	3.3															
Citrullus lanatus C			1		1.4											
Citrullus lanatus cf. C	1.1															
Corylus sp. C							1.4				1.1					
Cucurbitaceae seed 1	1.1															
Prunus persica C									0.9							
Rubus sp.	54.4															
Sambucus sp.							17.1									
Type E	28.9															
Vitis vinifera C			1													
Zanthoxylum sp.	1.1															
Other																
Arctostaphylos sp. C							1.4									
Asteraceae C											1.1					
Avena sp. cf. C											3.3					
Boraginaceae cf.							1.4									
Brassicaceae cf. C							1.4									
Bud C											4.4					
Chenopodium sp.	1.1										8.9					

Unit	1		2		2		3		3		4		4		4	
Level	11		8		9		11		12		9		13		14	
EB Number	5510		5511		5512		5513		5514		5515		5516		5517	
Category																
Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Claytonia sp.													1			
Claytonia sp. C											4.4					
Convululaceae cf. C											1.1					
Cyperaceae cf. C							1.4									
Erodium sp. C											4.4					
Erodium sp. fruit C											1.1					
Fabaceae							2.9									
Fruit base C							1.4				2.2					
Fruit stem	1.1															
Galium/*Plantago* cf. C											1.1					
Hordeum sp. C											4.4					
Leaf frag.	1.1															
Leaf frag. - dicotyledon							1.4									
Malva sp.							1.4									
Medicago sp. cf. C							1.4									
Monocotyledon stem C											many					
Perilla sp. cf. C							1.4				26.7					
Poaceae A C											13.3					
Poaceae B C											13.3					
Poaceae large C							5.7				35.6					
Poaceae small C							15.7				22.2					
Poaceae spikelet frag.											1.1					
Poaceae spikelet frag. C							17.1				31.1					
Polygonum sp.											22.2					
Portulaca sp. C							1.4									
Root cf. C													1			
Rumex sp.											2.2					
Rumex spp. C							2.9				4.4					
Thuja sp. cf.											2.2					
Unidentifiable seed frag.	5.6						1.4									
Unidentifiable seed frag. C	3.3		4		1.4		22.9				48.9				0.8	

Unit	1		2		2		3		3		4		4		4	
Level	11		8		9		11		12		9		13		14	
EB Number	5510		5511		5512		5513		5514		5515		5516		5517	
Category Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Unidentified seed coat/fruit C	4.4		2								2.2					
Unknown plant part											1.1					
Unknown plant part C											1.1					
Unknown Type C tuber frag. C											10.0					
Unknown Type F							1.4									
Unknown Type F C							1.4				2.2					
Amorphous grainy									0.350							
Amorphous grainy C		0.049		0.225		0.049			0.331			3.608		1.364		
Amorphous exploded (not plant?)		0.048		0.055		0.477		2.051		0.069						
Bark cf.		0.011														
Bark cf. C		0.016								0.086						
Charcoal		25.456		2.244		2.910		5.989		5.883		11.206		10.162		1.8525
Wood		0.423		0.030		0.050		0.314		0.318		0.726		0.594		0.03375

Table 7. Plant Material Percentages and Summary Measures for the Flotation Samples from the Jacksonville Chinese Quarter Site 35JA737.

Unit	1	2	2	3	3	4	4	4	All Samples
Level	11	8	9	11	12	9	13	14	
EB Number	5510	5511	5512	5513	5514	5515	5516	5517	
Category									
Taxon or plant part	CT	CT	CT	CT	CT	CT	CT	CT	
Grain/*fan*									
***Oryza sativa* chaff**	**7**	**11**		**53**		**78**			**69.3**
***Triticum durum/aestivum* C**				**1**					**0.1**
Vegetable/*ts'ai and* fruit/*kuo*									
Arachis hypogaea cf. shell	1								0.1
Arachis hypogaea cf. shell C				1		0.1			0.2
Canarium cf. *album* frag.	1								0.1
Capsicum sp. C	3								0.2
Citrullus lanatus C		11	50						0.1
Citrullus lanatus cf. C	1								0.1
Corylus sp. C				1		0.1			0.2
Cucurbitaceae seed 1	1								0.1
Prunus persica C					100				0.1
Rubus sp.	47								3.3
Sambucus sp.				8					1.0
Type E	25								1.8
Vitis vinifera C		11							0.1
Zanthoxylum sp.	1								0.1
	79	**22**	**50**	**9**	**100**	**0.2**			**7.2**
Other									
Arctostaphylos sp. C				1					0.1
Asteraceae C						0.1			0.1
Avena sp. cf. C						0.3			0.2
Boraginaceae cf.				1					0.1
Brassicaceae cf. C				1					0.1
Bud C						0.3			0.3
Chenopodium sp.	1					0.7			0.6
Claytonia sp.							50		0.1

Unit	1	2	2	3	3	4	4	4	All Samples
Level	11	8	9	11	12	9	13	14	
EB Number	5510	5511	5512	5513	5514	5515	5516	5517	
Category									
Taxon or plant part	CT	CT	CT	CT	CT	CT	CT	CT	
Claytonia sp. C						0.3			0.3
Convululaceae cf. C						0.1			0.1
Cyperaceae cf. C				1					0.1
Erodium sp. C						0.3			0.3
Erodium sp. fruit C						0.1			0.1
Fabaceae				1					0.2
Fruit base C				1		0.2			0.2
Fruit stem	1								0.1
Galium/*Plantago* cf. C						0.1			0.1
Hordeum sp. C						0.3			0.3
Leaf frag.	1								0.1
Leaf frag. - dicotyledon				1					0.1
Malva sp.				1					0.1
Medicago sp. cf. C				1					0.1
Monocotyledon stem C									
Perilla sp. cf. C				1		2.1			1.7
Poaceae A C						1.0			0.8
Poaceae B C						1.0			0.8
Poaceae large C				3		2.8			2.4
Poaceae small C				7		1.7			2.3
Poaceae spikelet frag.						0.1			0.1
Poaceae spikelet frag. C				8		2.4			2.9
Polygonum sp.						1.7			1.3
Portulaca sp. C				1					0.1
Root cf. C							50		0.1
Rumex sp.						0.2			0.1
Rumex spp. C				1		0.3			0.4
Thuja sp. cf.						0.2			0.1
Unidentifiable seed frag.	5			1					0.4
Unidentifiable seed frag. C	3	44	50	10		3.8		100	4.9

Unit	1		2	2	3	3	4	4	4	All Samples
Level	11		8	9	11	12	9	13	14	
EB Number	5510		5511	5512	5513	5514	5515	5516	5517	
Category										
Taxon or plant part	CT		CT	CT	CT	CT	CT	CT	CT	
Unidentified seed coat/fruit C		4	22				0.2			0.5
Unknown plant part							0.1			0.1
Unknown plant part C							0.1			0.1
Unknown Type C tuber frag. C							0.8			0.6
Unknown Type F					1					0.1
Unknown Type F C					1		0.2			0.2
		14	**67**	**50**	**38**		**21**	**100**	**100**	**23.5**
% carbonized		11	100	100	85	100	75	50	100	71.7
% uncarbonized		89			15		25	50		28.3
Number of identifiable seed, fruit and tuber types		10	2	1	18	1	22	1		41

Appendix C:

Analysis of the Faunal Remains from the Chinese Quarter Site

By Katie Johnson

Analysis of the Faunal Remains from the Chinese Quarter Site

By Katie Johnson

The data recovery excavations conducted by the Southern Oregon University Laboratory of Anthropology (SOULA) at the Chinese Quarter Site of Jacksonville, Oregon resulted in the recovery 17,841 bone specimens weighing a total of 22 kilograms (22,300.1 grams or 49.2 lbs.). The bones were identified at SOULA using the in-house comparative collection, along with a number of reference manuals and online resources (Beisaw 2013; Adams and Crabtree 2012; Smart 2009; Olsen 1990, 1968; Wheeler and Jones 1989; Cannon 1987). Faunal material was recovered from each of the four units excavated during the data recovery project and while the upper portions of the units were found to represent mixed historic and modern fill materials, the sediments excavated below level 7 (70-80 cmbd) were found to be largely intact. As a result of these findings, the faunal materials found within the mixed fill, roughly 7% of the faunal material, was counted, weighed, and identified to the broadest taxonomic group (i.e. fowl, mammal, fish, and reptile). The faunal materials recovered from within the intact sediments was thoroughly examined with all distinctive markings noted, such as if the bone was cut, chopped, or sawn, if it had been heat altered, and what portion of the animal or element the specimen was from. All of these specimens were identified to the lowest taxonomic group possible.

As a result of natural taphonomic processes, coupled with the fire that burned the house to the ground in 1888, many of the bone specimens are highly fragmented and difficult to identify specifically. Additionally, butchered bones are often difficult to distinguish between taxa. Therefore, they have been simply grouped into a size range. The size classification includes a small mammal group (i.e. rodent and rabbit), a medium mammal group (i.e. pig, deer, sheep, goat), and a large mammal group (i.e. cow and elk). The fowl bones were also sorted according to this size classification with chicken and duck representing the general medium classification group and elements larger or smaller classified accordingly.

The Chinese Quarter Site faunal assemblage is very diverse. However, the assemblage is dominated by mammal and fowl specimens (Table 1). A noticeable amount of fish was also identified within the assemblage. By count and weight the fish makes up a relatively small portion of the assemblage, however, the meat weight to bone ratio of fish is generally much higher than mammal and fowl, indicating that the count and weight is a problematic measure of comparison to other meat sources. This is also true when comparing the fowl to mammal specimens. While the larger and denser mammal bones outweigh the delicate bird bone, fowl represent a much larger portion of the household diet when meat weight is considered. The shellfish and reptile bones recovered in the assemblage are also notable, as many of these species were imported to Jacksonville from coastal or foreign markets. Additionally, the assemblage likely only captures a small sample of this category, as many of the dried or preserved foods imported to the site were already shelled or processed leaving little to no archaeological evidence.

Table 1. Basic representation of the faunal assemblage by the broadest taxa.

Taxa	NISP[1]	% NISP[1]	Weight (g)	% Weight
Mammal	8496	47.6%	20215.3	90.7%
Fowl	7348	41.2%	1867.25	8.4%
Fish[2]	1488	8.3%	159.16	0.7%
Shellfish	21	0.1%	6.91	0.0%
Reptile	41	0.2%	30.74	0.1%
Intrusive[3]	27	0.2%	1.23	0.0%
Unidentified	420	2.4%	19.51	0.1%
Total	**17841**	**100%**	**22300.1**	**100%**

[1] NISP = number of individual specimens
[2] Cuttlefish is included in this category
[3] This category includes land snails and insects

Of the faunal remains recovered, only 8% (NISP=1483) had been visibly heat altered or burned. The majority of which came from TU 2 (NISP=639) with 18% of the specimens recovered from this unit having been heat altered. The larger percentage of heat alteration within TU 2 parallels the findings of the larger artifact assemblage, further indicating that TU 2 was exposed to more heat than the surrounding units. The general low density of burned faunal material is further evidence that it was preserved or being stored in containers within the house, and therefore somewhat protected from the heat of the fire.

The faunal assemblage was examined for evidence of processing, including any type of marks resulting from the butchering, consumption, or cooking of the specimen. Butchery marks were observed on 6,494 specimens, roughly 36% of the faunal material recovered. The analysis of these specimens revealed two distinct butchering techniques: chopping and hand sawing of the bones. Chop marks typically leave slightly compressed edges that lack the multiple striations associated with a saw or knife cut and will often display a clean cut at the point of impact and an uneven break on the opposite side (O'Grady 2009). A total of 5,330 (82%) of the bones identified as having evidence of butchering were categorized as chopped. The remaining 1,164 (18%) specimens were categorized as hand sawn. The saw blade leaves multiple striations along the cut surface and often false starts or kerf marks on the exterior surface of the bone (O'Grady 2009). The bones that were sawn appear to have been sawn with a hand saw rather than a machine. Hand sawn marks will typically leave irregularly spaced striations across the surface of the sawn area at various orientations while an electrical machine saw will leave a much more uniform pattern (Beisaw 2013).

Additional surface marks were also noted on a number of the bones and appear to have been a result of further processing which is typically associated with the removal of the meat from the bone, rather than the subdivision of the carcass as seen through chopping and sawing marks (O'Conner2000). It is also interesting to note that between the major taxon, fowl specimens had a much higher percentage of chopped bones while mammal bones were more likely to have been sawn. However, this is most likely the result of butchering techniques between mammal and fowl species, rather than a culinary preference. The majority of the chopped mammal specimens consisted of rib fragments. Of the 982 chopped mammal specimens, 721 (73%) were medium mammal rib fragments that had been chopped into two to three inch lengths. While a number of rib fragments were recovered that had been hand sawn, these fragments are distinct from the chopped ones and occur much less frequently within the assemblage.

In regards to the distribution of the faunal material across the excavation units, we see a spike in the density of specimens recovered within TU 4 (Figure 1). This is consistent with the analysis of non-faunal materials within TU 4, and consistent with the hypothesis that there was a pantry or shelf within the vicinity.

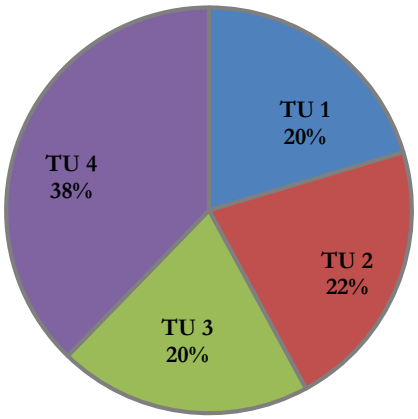

Figure 1. Percentage of faunal material recovered by unit.

Faunal Material Recovered from the Jacksonville Chinese Quarter

Mammal

The mammal bone category makes up the largest portion of the Chinese Quarter Site faunal assemblage by both count and weight, with 8,496 specimens weighing more than 20 kg. While the majority of the specimens identified as mammal were unidentifiable to species and were instead assigned to a size class, a portion of the specimens were positively identified as cattle (*Bos taurus*) , domesticated pig (*Sus scrofa*), black bear (*Urus americanus*), sheep or goat (*Capra/Ovis* sp.), deer (*Odocoileus* sp.), domestic cat (*Felis catus*), and fox (*Vulpus* sp.) (Table 2).

Of the specimens that were identified to species, domestic pig makes up the largest portion with 939 (4,248.4 g) specimens identified. However, it is likely that at least a portion of the specimens categorized as medium mammal are pig elements. Pork is often associated with traditional Chinese cuisine, however, it is also associated with the EuroAmerican diet and was available in local markets. Just over 20% of the specimens identified as pork had evidence of butchering, with a near even split between chopped and hand sawn specimens. While the hand sawn specimens appear to be consistent with EuroAmerican butchery cuts, the chopped specimens may indicate additional processing of the specimens as part of meal preparation. It is worth noting that 45% of the pork assemblage is comprised of cranial fragments, including teeth and mandibles. The assemblage contained a minimum of nine mandibles. Additionally, a minimum of three pig maxilla and atlas vertebrae were present, suggesting that large portions of the head, if not the whole head, were being stored and/or butchered for consumption on site.

All of the pig mandibles were either broken or chopped at or near the ascending ramus, and all but two were additionally fractured laterally at or near the mandibular symphysis of the bone. This is likely related to marrow processing. Meat and bone broths made up a significant portion of the historical and contemporary Chinese diet. According to Henry C. Lu, "the Chinese are very fond of using pork marrow bones to make various kinds of soup, because the marrow is good for facilitating the growth of bones in children" (Lu 2005:360). The most abundant marrow deposits occur within the long bones and mandible of mammals including pigs. Experiments conducted on modern pigs' heads have suggested that the distinct

chopping seen on the mandibles from the Chinese Quarter site are the result of marrow extraction rather than meat recovery (Sunseri 2015a; O'Conner 2000:47). Other Chinese sites have had similar assemblages that suggest marrow extraction (see Pierson 2008).

A total of 18 specimens weighing 1,019.4 grams were positively identified as domesticated cattle. However, it is likely that many of the specimens categorized as large mammal are in fact cattle, given the relative lack of wild game seen in the assemblage. With that said, even with the specimens categorized as large mammal this would still be a relatively small portion of the assemblage when compared to pork and medium sized mammals. The 18 specimens represent the full span of the carcass with elements ranging from the cranium to the lower limbs. All of the specimens identified as cattle have been hand sawn and a single specimen was burned.

The sheep and/or goat category contained 31 specimens (413.3 g). This is a combined category given the similarities between the two species and the difficulties in distinguishing between the species with the small butchered elements that are present. Of the 31 specimens in this category, nine of the specimens were positively identified as goat and one as sheep. Additionally, 12 of the specimens had been hand sawn and two had been chopped. As with the pig and cattle specimens identified within the assemblage, the span of the carcass are represented from the cranium to the feet indicating that all elements of the animal were being utilized at the site.

The black bear specimens recovered from the site all represent lower limb and paw elements and include a minimum of three paws. The specimens do not appear to represent three paws from the same animal, but rather at least three different animals. This number and distinction is based on the presence of 12 terminal phalanx and the observable size difference between many of the specimens. Additionally, a single distal tibia and distal ulna were identified as bear. Both of the specimens had been hand sawn.

A total of 78 specimens within the assemblage were identified as domestic cat. The presence of two atlas and four scapula would indicate that a minimum of two individual cats are represented within the assemblage. These specimens are considered to be a part of the food assemblage due to the presence of distinct chop marks on three of the specimens and cut marks on another. While this may seem unusual for our modern American view of food, cat had been a documented food source in many regions across the world. Fredrick Simoons notes that cat can be found for sale in traditional Chinese markets and has been documented as being used as a regular food source historically, particularly in southern China (1991:316).

A very small number of fox specimens (n=3) were also identified within the assemblage, two of which were chopped indicating that they were processed for food.

A single deer terminal phalanx was also identified within the assemblage. The remaining specimens identified as mammal have not been identified to species, however, the majority of them are categorized as medium mammals and likely represent additional pork, goat, and sheep.

Table 2. Faunal remains identified as mammal from the Chinese Quarter.

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Sawn	% Sawn	NISP Burned	% Burned
***Bos taurus* (Cattle)**								
Cranial fragments	3	16.7%	0	0.0%	0	0.0%	0	0.0%
Scapula	2	11.1%	0	0.0%	2	20.0%	1	100.0%
Humerus	1	5.6%	0	0.0%	1	10.0%	0	0.0%
Radius	4	22.2%	0	0.0%	3	30.0%	0	0.0%
Ulna	3	16.7%	0	0.0%	2	20.0%	0	0.0%
Metapodial	1	5.6%	0	0.0%	0	0.0%	0	0.0%
Femur	2	11.1%	0	0.0%	2	20.0%	0	0.0%
Calcaneus	2	11.1%	0	0.0%	0	0.0%	0	0.0%
Total *Bos taurus*	**18**	**0.2%**	**0**	**0.0%**	**10**	**0.9%**	**1**	**0.1%**
***Sus Scrofa* (Pig)**								
Cranial fragments	318	33.9%	12	11.5%	5	4.9%	7	21.9%
Mandible	111	11.8%	16	15.4%	2	2.0%	0	0.0%
Atlas	3	0.3%	0	0.0%	2	2.0%	0	0.0%
Scapula	1	0.1%	0	0.0%	1	1.0%	0	0.0%
Humerus	5	0.5%	0	0.0%	3	2.9%	0	0.0%
Radius	2	0.2%	1	1.0%	0	0.0%	0	0.0%
Femur	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Calcaneus	1	0.1%	0	0.0%	1	1.0%	0	0.0%
metacarpal/metatarsal	252	26.8%	70	67.3%	61	59.8%	14	43.8%
phalanx	245	26.1%	5		27		11	
Total *Sus scrofa*	**939**	**11.1%**	**104**	**10.6%**	**102**	**9.1%**	**32**	**2.9%**
***Ursus americanus* (Black bear)**								
Tibia	1	1.9%	0	0.0%	1	50.0%	0	0.0%
Ulna	1	1.9%	0	0.0%	1	50.0%	0	0.0%
carpal/tarsal	3	5.8%	0	0.0%	0	0.0%	0	0.0%
metacarpal/metatarsal	7	13.5%	2	28.6%	0	0.0%	0	0.0%
phalanx	38	73.1%	5	71.4%	0	0.0%	3	100.0%
unidentified	2	3.8%	0	0.0%	0	0.0%	0	0.0%
Total *Ursus americanus*	**52**	**0.6%**	**7**	**0.7%**	**2**	**0.2%**	**3**	**0.3%**
***Capra/Ovis sp.* (Sheep or Goat)**								
Cranial fragments	5	16.1%	0	0.0%	1	8.3%	0	0.0%
Mandible	1	3.2%	0	0.0%	1	8.3%	0	0.0%
Scapula	2	6.5%	0	0.0%	1	8.3%	0	0.0%
Humerus	3	9.7%	0	0.0%	2	16.7%	0	0.0%
Radius	3	9.7%	1	50.0%	1	8.3%	0	0.0%
Ulna	1	3.2%	0	0.0%	1	8.3%	0	0.0%
Pelvis	3	9.7%	0	0.0%	3	25.0%	0	0.0%
Femur	3	9.7%	1	50.0%	0	0.0%	0	0.0%
Tibia	1	3.2%	0	0.0%	1	8.3%	0	0.0%
Calcaneus	3	9.7%	0	0.0%	1	8.3%	0	0.0%
carpal/tarsal	3	9.7%	0	0.0%	0	0.0%	0	0.0%
phalanx	3	9.7%	0	0.0%	0	0.0%	1	100.0%
Total *Capra/Ovis sp.*	**31**	**0.4%**	**2**	**0.2%**	**12**	**1.1%**	**1**	**0.1%**

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Sawn	% Sawn	NISP Burned	% Burned
***Odocoileus sp.* (Deer)**								
phalanx	1	100.0%	0	0.0%	0	0.0%	0	0.0%
Total *Odocoileus sp.*	**1**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
***Felis catus* (Domestic cat)**								
Cranial fragments	3	3.8%	0	0.0%	0	0.0%	0	0.0%
Atlas	2	2.6%	1	33.3%	0	0.0%	0	0.0%
Scapula	4	5.1%	1	33.3%	0	0.0%	0	0.0%
Vertebra	25	32.1%	0	0.0%	1	100.0%	0	0.0%
Rib	1	1.3%	0	0.0%	0	0.0%	0	0.0%
Humerus	2	2.6%	0	0.0%	0	0.0%	0	0.0%
Radius	1	1.3%	0	0.0%	0	0.0%	0	0.0%
Ulna	1	1.3%	0	0.0%	0	0.0%	0	0.0%
Pelvis	3	3.8%	0	0.0%	0	0.0%	0	0.0%
Sacrum	1	1.3%	0	0.0%	0	0.0%	0	0.0%
Femur	2	2.6%	0	0.0%	0	0.0%	0	0.0%
Tibia	2	2.6%	1	33.3%	0	0.0%	0	0.0%
Fibula	2	2.6%	0	0.0%	0	0.0%	0	0.0%
Calcaneus	2	2.6%	0	0.0%	0	0.0%	0	0.0%
Astragalus	2	2.6%	0	0.0%	0	0.0%	0	0.0%
carpal/tarsal	1	1.3%	0	0.0%	0	0.0%	0	0.0%
Metacarpal/metatarsal	14	17.9%	0	0.0%	0	0.0%	0	0.0%
Phalanx	10	12.8%	0	0.0%	0	0.0%	0	0.0%
Total *Felis catus*	**78**	**0.9%**	**3**	**0.3%**	**1**	**0.1%**	**0**	**0.0%**
***Vulpus sp.* (Fox)**								
vertebra	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Scapula	1	33.3%	1	50.0%	0	0.0%	0	0.0%
Tibia	1	33.3%	1	50.0%	0	0.0%	0	0.0%
Total *Vulpus sp.*	**3**	**0.0%**	**2**	**0.2%**	**0**	**0.0%**	**0**	**0.0%**
Large Mammal								
Teeth	2	1.1%	0	0.0%	0	0.0%	0	0.0%
Atlas	2	1.1%	0	0.0%	0	0.0%	0	0.0%
Scapula	6	3.2%	0	0.0%	6	4.2%	0	0.0%
Vertebra	27	14.3%	0	0.0%	25	17.5%	0	0.0%
Rib	17	9.0%	0	0.0%	17	11.9%	0	0.0%
Humerus	18	9.5%	0	0.0%	17	11.9%	4	21.1%
Radius	5	2.6%	0	0.0%	2	1.4%	0	0.0%
Pelvis	8	4.2%	0	0.0%	8	5.6%	0	0.0%
Femur	11	5.8%	1	100.0%	8	5.6%	0	0.0%
Tibia	1	0.5%	0	0.0%	1	0.7%	0	0.0%
Metapodial	1	0.5%	0	0.0%	0	0.0%	0	0.0%
carpal/tarsal	7	3.7%	0	0.0%	0	0.0%	1	5.3%
Phalanx	4	2.1%	0	0.0%	0	0.0%	0	0.0%
Diaphysis	40	21.2%	0	0.0%	35	24.5%	11	57.9%
Epiphysis	3	1.6%	0	0.0%	1	0.7%	0	0.0%
Cancellous	4	2.1%	0	0.0%	1	0.7%	1	5.3%
Unidentified	33	17.5%	0	0.0%	22	15.4%	2	10.5%
Total Large Mammal	**189**	**2.2%**	**1**	**0.1%**	**143**	**12.7%**	**19**	**1.7%**

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Sawn	% Sawn	NISP Burned	% Burned
Medium Mammal								
Cranial fragments	195	5.5%	0	0.0%	3	0.4%	4	1.2%
Mandible	4	0.1%	0	0.0%	0	0.0%	3	0.9%
Atlas	2	0.1%	0	0.0%	0	0.0%	0	0.0%
axis	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Scapula	110	3.1%	0	0.0%	104	13.7%	0	0.0%
Vertebra	448	12.7%	33	3.9%	191	25.1%	16	4.6%
Rib	836	23.6%	721	84.8%	97	12.8%	67	19.4%
Humerus	41	1.2%	5	0.6%	26	3.4%	3	0.9%
Radius	12	0.3%	3	0.4%	8	1.1%	0	0.0%
Ulna	10	0.3%	3	0.4%	5	0.7%	1	0.3%
Pelvis	49	1.4%	4	0.5%	41	5.4%	2	0.6%
Femur	33	0.9%	3	0.4%	22	2.9%	2	0.6%
Tibia	30	0.8%	7	0.8%	12	1.6%	2	0.6%
Metapodial	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Metacarpal/metatarsal	20	0.6%	8	0.9%	3	0.4%	6	1.7%
carpal/tarsal	68	1.9%	0	0.0%	7	0.9%	7	2.0%
Calcaneus	16	0.5%	1	0.1%	11	1.4%	1	0.3%
Astragalus	21	0.6%	1	0.1%	17	2.2%	2	0.6%
Phalanx	88	2.5%	3	0.4%	12	1.6%	15	4.3%
Diaphysis	278	7.9%	58	6.8%	128	16.8%	37	10.7%
Epiphysis	15	0.4%	0	0.0%	8	1.1%	0	0.0%
Cancellous	24	0.7%	0	0.0%	3	0.4%	9	2.6%
Unidentified	1233	34.9%	0	0.0%	62	8.2%	169	48.8%
Total Medium Mammal	**3535**	**41.6%**	**850**	**86.6%**	**760**	**67.5%**	**346**	**31.9%**
Small Mammal								
Cranial fragments	12	4.6%	0	0.0%	0	0.0%	0	0.0%
Mandible	4	1.5%	0	0.0%	1	1.7%	0	0.0%
Atlas	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Scapula	6	2.3%	0	0.0%	3	5.2%	0	0.0%
Presternum	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Vertebra	104	40.0%	11	84.6%	46	79.3%	1	4.0%
Rib	18	6.9%	1	7.7%	4	6.9%	1	4.0%
Humerus	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Radius	2	0.8%	0	0.0%	0	0.0%	0	0.0%
Ulna	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Pelvis	4	1.5%	0	0.0%	0	0.0%	0	0.0%
Femur	4	1.5%	0	0.0%	0	0.0%	0	0.0%
Fibula	2	0.8%	0	0.0%	0	0.0%	0	0.0%
Metacarpal/metatarsal	8	3.1%	0	0.0%	0	0.0%	0	0.0%
carpal/tarsal	13	5.0%	0	0.0%	0	0.0%	0	0.0%
Astragalus	1	0.4%	0	0.0%	0	0.0%	0	0.0%
Phalanx	3	1.2%	0	0.0%	0	0.0%	1	4.0%
Diaphysis	5	1.9%	1	7.7%	0	0.0%	1	4.0%
Epiphysis	2	0.8%	0	0.0%	0	0.0%	0	0.0%
Unidentified	68	26.2%	0	0.0%	4	6.9%	21	84.0%
Total Small Mammal	**260**	**3.1%**	**13**	**1.3%**	**58**	**5.2%**	**25**	**2.3%**

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Sawn	% Sawn	NISP Burned	% Burned
Unidentified Mammal								
Unidentified	3390	100.0%	0	0.0%	38	100.0%	659	100.0%
Total Medium Mammal	**3390**	**39.9%**	**0**	**0.0%**	**38**	**3.4%**	**659**	**60.7%**
Total Mammal	**8496**		**982**	**11.6%**	**1126**	**13.3%**	**1086**	**12.8%**

Fowl

The fowl specimens represent the second largest portion of the faunal assemblage by count and weight, with a total of 7,348 specimens identified, weighing 1,867.25 grams (Table 3). However, as mentioned previously, when comparing the meat weight to bone ratio, fowl in general has a much higher meat weight which would place the nutritional importance of the fowl in the diets of the inhabitance above the mammal. Of the 7,348 specimens identified as fowl, 58% show clear signs of having been chopped. This is consistent with traditional Chinese preparation methods where the carcass is often chopped into small pieces and stir fried. Additionally, all elements of the carcass are represented from the cranium to the feet, thus indicating whole birds were being obtained and processed at the site. Simoons notes that chicken and duck in particular make up a large portion of the traditional Chinese diet. While chicken is generally eaten fresh, duck is eaten both fresh and preserved (Simoons 1991:300). He also notes the preference of obtaining entire carcasses, as the heads and feet have culinary uses. While chicken and duck are the preferred fowl for everyday use, other species including pigeon, turkey, and goose are also common constituents of the traditional Chinese diet.

Within our assemblage, 22 specimens were positively identified as duck, 54 as chicken, and three as turkey. Another 178 specimens were identified more generally as Gallifromes which includes species of chicken, turkey, and pheasant. Due to the fragmented nature of the specimens further identification is difficult. Likewise, the 3,614 specimens categorized as medium fowl are likely chicken or duck specimens. A large number of these (37%) are chopped diaphysis fragments that lack distinguishing features that would aid in identification. While only a small number of specimens were categorized as large fowl (n=92), small fowl represent a noticeable portion of the assemblage with 746 specimens (10%) present. It is likely that these specimens represent smaller birds such as pigeons which are a common food source along with their eggs.

More than 850 eggshell fragments were recovered from the site. This is just a sample of the shell that was present and recovered from the screens and bulk samples. The eggshell is not identifiable to species, however, chicken, duck, and pigeon eggs were commonly eaten both fresh and preserved. Along with this, a number of the diaphysis fragments (n=39) recovered contained medullary deposits. This is typical of egg laying fowl and indicates that chickens were likely kept on site for egg production. This is further suggested by gastroliths recovered from the site. A total of 10 gastroliths of glass, porcelain, and stone were identified.

Table 3. Faunal remains identified as fowl from the Chinese Quarter.

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Cut	% Cut	NISP Burned	% Burned
***Anas sp.* (Duck)**								
Premaxilla	7	31.8%	0	0.0%	0	0.0%	0	0.0%
Furculum	6	27.3%	3	0.0%	0	0.0%	0	0.0%
Sternum	2	9.1%	0	0.0%	0	0.0%	0	0.0%
Coracoid	3	13.6%	1	0.0%	0	0.0%	0	0.0%
Ulna	1	4.5%	1	0.0%	0	0.0%	0	0.0%
Femur	1	4.5%	0	0.0%	0	0.0%	0	0.0%
Tibiotarsus	1	4.5%	0	0.0%	0	0.0%	0	0.0%
Tarsometatarsus	1	4.5%	1	0.0%	0	0.0%	0	0.0%
Total *Anas sp.*	**22**	**0.3%**	**6**	**0.1%**	**0**	**0.0%**	**0**	**0.0%**
***Gallus gallus* (Chicken)**								
Premaxilla	1	1.9%	0	0.0%	0	0.0%	0	0.0%
Mandible	1	1.9%	0	0.0%	0	0.0%	0	0.0%
Scapula	3	5.6%	3	0.0%	0	0.0%	0	0.0%
Coracoid	1	1.9%	1	0.0%	0	0.0%	0	0.0%
Humerus	10	18.5%	8	0.0%	0	0.0%	0	0.0%
Radius	3	5.6%	3	0.0%	0	0.0%	0	0.0%
Ulna	7	13.0%	7	15.6%	0	0.0%	0	0.0%
Carpometacarpus	5	9.3%	2	4.4%	0	0.0%	0	0.0%
Femur	4	7.4%	4	0.0%	0	0.0%	0	0.0%
Tibiotarsus	10	18.5%	10	0.0%	0	0.0%	0	0.0%
Tarsometatarsus	9	16.7%	7	0.0%	0	0.0%	0	0.0%
Total *Gallus gallus*	**54**	**0.7%**	**45**	**1.0%**	**0**	**0.0%**	**0**	**0.0%**
***Meleagris gallopavo* (Turkey)**								
Sternum	1	33.3%	1	0.0%	0	0.0%	0	0.0%
Carpometacarpus	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Tarsometatarsus	1	33.3%	0	0.0%	0	0.0%	0	0.0%
Total *Meleagris gallopavo*	**3**	**0.0%**	**1**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Galliforme (Chicken, Turkey, Pheasant)								
Cranial fragment	6	3.4%	1	0.8%	0	0.0%	0	0.0%
Premaxilla	6	3.4%	1	0.8%	0	0.0%	0	0.0%
Mandible	12	6.7%	0	0.0%	0	0.0%	0	0.0%
Atlas	1	0.6%	0	0.0%	0	0.0%	0	0.0%
Scapula	7	3.9%	6	4.6%	0	0.0%	0	0.0%
Coracoid	15	8.4%	14	10.7%	0	0.0%	1	16.7%
Sternum	4	2.2%	4	3.1%	0	0.0%	0	0.0%
Furculum	5	2.8%	3	2.3%	0	0.0%	0	0.0%
Humerus	17	9.6%	16	12.2%	0	0.0%	0	0.0%
Radius	2	1.1%	1	0.8%	0	0.0%	0	0.0%
Ulna	19	10.7%	16	12.2%	0	0.0%	1	16.7%
Carpometacarpus	24	13.5%	12	9.2%	0	0.0%	1	16.7%
Pelvis	2	1.1%	2	1.5%	0	0.0%	0	0.0%
Femur	12	6.7%	12	9.2%	0	0.0%	0	0.0%
Tibiotarsus	26	14.6%	26	19.8%	0	0.0%	1	16.7%

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Cut	% Cut	NISP Burned	% Burned
Tarsometatarsus	19	10.7%	17	13.0%	0	0.0%	2	33.3%
Phalanx	1	0.6%	0	0.0%	0	0.0%	0	0.0%
Total Galliforme	**178**	**2.4%**	**131**	**3.0%**	**0**	**0.0%**	**6**	**2.1%**
Large Fowl								
Cranial fragment	2	2.2%	2	3.0%	0	0.0%	0	0.0%
Scapula	2	2.2%	0	0.0%	0	0.0%	0	0.0%
Coracoid	7	7.6%	5	7.5%	0	0.0%	0	0.0%
Sternum	11	12.0%	11	16.4%	0	0.0%	0	0.0%
Rib	1	1.1%	1	1.5%	0	0.0%	0	0.0%
Humerus	7	7.6%	6	9.0%	0	0.0%	0	0.0%
Radius	3	3.3%	2	3.0%	0	0.0%	0	0.0%
Ulna	1	1.1%	1	1.5%	0	0.0%	0	0.0%
Carpometacarpus	6	6.5%	2	3.0%	0	0.0%	0	0.0%
Pelvis	2	2.2%	2	3.0%	0	0.0%	0	0.0%
Femur	3	3.3%	3	4.5%	0	0.0%	0	0.0%
Tibiotarsus	4	4.3%	4	6.0%	0	0.0%	0	0.0%
Fibula	1	1.1%	1	1.5%	0	0.0%	0	0.0%
Tarsometatarsus	3	3.3%	3	4.5%	0	0.0%	0	0.0%
Vertebra	12	13.0%	8	11.9%	0	0.0%	1	50.0%
Phalanx	9	9.8%	2	3.0%	0	0.0%	1	50.0%
Diaphysis	12	13.0%	11	16.4%	0	0.0%	0	0.0%
Unidentified	6	6.5%	3	4.5%	0	0.0%	0	0.0%
Total Large Fowl	**92**	**1.3%**	**67**	**1.6%**	**0**	**0.0%**	**2**	**0.7%**
Medium Fowl								
Cranial fragment	50	1.4%	18	0.6%	0	0.0%	3	1.9%
Premaxilla	3	0.1%	0	0.0%	0	0.0%	0	0.0%
Mandible	7	0.2%	2	0.1%	0	0.0%	0	0.0%
Atlas	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Tracheal ring	5	0.1%	0	0.0%	0	0.0%	0	0.0%
Scapula	45	1.2%	44	1.4%	0	0.0%	0	0.0%
Coracoid	48	1.3%	43	1.4%	0	0.0%	3	1.9%
Sternum	382	10.6%	362	11.7%	0	0.0%	0	0.0%
Rib	290	8.0%	273	8.8%	0	0.0%	0	0.0%
Furculum	8	0.2%	6	0.2%	0	0.0%	0	0.0%
Humerus	51	1.4%	50	1.6%	1	6.7%	3	1.9%
Radius	41	1.1%	33	1.1%	0	0.0%	2	1.3%
Ulna	34	0.9%	30	1.0%	0	0.0%	3	1.9%
Carpometacarpus	22	0.6%	16	0.5%	0	0.0%	2	1.3%
Pelvis	220	6.1%	192	6.2%	14	93.3%	2	1.3%
Femur	48	1.3%	46	1.5%	0	0.0%	6	3.9%
Tibiotarsus	59	1.6%	51	1.7%	0	0.0%	6	3.9%
Fibula	17	0.5%	0	0.0%	0	0.0%	0	0.0%
Tarsometatarsus	51	1.4%	45	1.5%	0	0.0%	4	2.6%
Vertebra	146	4.0%	106	3.4%	0	0.0%	5	3.2%
carpal/tarsal	2	0.1%	0	0.0%	0	0.0%	0	0.0%
Phalanx	212	5.9%	1	0.0%	0	0.0%	17	11.0%
Diaphysis	1349	37.3%	1328	43.0%	0	0.0%	86	55.5%

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Cut	% Cut	NISP Burned	% Burned
Epiphysis	2	0.1%	1	0.0%	0	0.0%	1	0.6%
Unidentified	521	14.4%	441	14.3%	0	0.0%	12	7.7%
Total Medium fowl	**3614**	**49.2%**	**3088**	**71.5%**	**15**	**39.5%**	**155**	**54.8%**
Small fowl								
Cranial fragment	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Mandible	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Atlas	3	0.4%	0	0.0%	0	0.0%	0	0.0%
Scapula	18	2.4%	16	2.9%	0	0.0%	0	0.0%
Coracoid	30	4.0%	25	4.5%	0	0.0%	4	7.5%
Sternum	15	2.0%	14	2.5%	0	0.0%	0	0.0%
Rib	71	9.5%	59	10.7%	0	0.0%	1	1.9%
Furculum	2	0.3%	1	0.2%	0	0.0%	0	0.0%
Humerus	27	3.6%	23	4.2%	1	10.0%	1	1.9%
Radius	50	6.7%	38	6.9%	2	20.0%	2	3.8%
Ulna	13	1.7%	10	1.8%	0	0.0%	0	0.0%
Carpometacarpus	13	1.7%	5	0.9%	0	0.0%	0	0.0%
Pelvis	14	1.9%	12	2.2%	0	0.0%	0	0.0%
Femur	28	3.8%	19	3.5%	0	0.0%	2	3.8%
Tibiotarsus	30	4.0%	28	5.1%	0	0.0%	0	0.0%
Fibula	4	0.5%	0	0.0%	0	0.0%	0	0.0%
Tarsometatarsus	45	6.0%	29	5.3%	3	30.0%	2	3.8%
Vertebra	16	2.1%	9	1.6%	2	20.0%	0	0.0%
Phalanx	55	7.4%	0	0.0%	0	0.0%	4	7.5%
Diaphysis	295	39.5%	262	47.6%	2	20.0%	29	54.7%
Epiphysis	1	0.1%	0	0.0%	0	0.0%	1	1.9%
Unidentified	14	1.9%	0	0.0%	0	0.0%	7	13.2%
Total Small Bird	**746**	**10.2%**	**550**	**12.7%**	**10**	**26.3%**	**53**	**18.7%**
Unidentified Fowl								
Egg shell	850	32.2%	0	0.0%	0	0.0%	1	1.5%
Unidentified	1789	67.8%	429	100.0%	13	100.0%	66	98.5%
Total Unidentified Bird	**2639**	**35.9%**	**429**	**9.9%**	**13**	**34.2%**	**67**	**23.7%**
Total Fowl	**7348**		**4317**	**58.8%**	**38**	**0.5%**	**283**	**3.9%**

Fish

The fish identified at the site is represented by 1,488 specimens weighing 159.2 g. Of these, 338 specimens were identified as cuttlefish (*Sepiida* sp.), seven as salmon/trout (*Samonidae* spp.), 21 as pile perch (*Damalichthys vacca*), and three as spotted scorpionfish (*Scorpeana guttata*) (Table 4). It is important to note that while the cuttlefish is represented by a large number of specimens, the cuttlebone is a very large bone and all of the specimens were relatively small in comparison indicating that they might represent a small number of individual specimens at the site. Additionally, while we have grouped the cuttlefish with the other fish specimens, cuttlefish is in fact not a fish but a cephalopod.

When looking at the vertebra recovered from the site, it is clear that a wide variety of fish were being eaten by the residents. More than a dozen species are represented, including salmon/trout, pile perch, and spotted scorpionfish in addition to the cuttlefish. The salmon/trout were locally available in the rivers and

streams, while the remainder of the identified fish are marine species and would have come from larger national or international markets. Fish were eaten both fresh and preserved through salting and drying, and the presence of non-native species suggests that much of the assemblage would have been preserved to some extent prior to transport.

Table 4. Faunal remains identified as fish from the Chinese Quarter.

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Sawn	% Sawn	NISP Burned	% Burned
***Sepiida sp.* (Cuttlefish)**								
Cuttlebone	338	100.0%	0	0.0%	0	0.0%	3	0.0%
Total *Sepiida sp.*	**338**	**22.7%**	**0**	**0.0%**	**0**	**0.0%**	**3**	**8.3%**
***Salmonidae* (Salmon/Trout)**								
Vertebra	7	100.0%	1	0.0%	0	0.0%	1	0.0%
Total *Salmonidea*	**7**	**0.5%**	**1**	**3.4%**	**0**	**0.0%**	**1**	**2.8%**
***Damalichthys vacca* (Pile perch)**								
Pharyngeal plate	21	100.0%	0	0.0%	0	0.0%	0	0.0%
Total *Damalichthys vacca*	**21**	**1.4%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
***Scorpeana guttata* (Spotted scorpionfish)**								
Preopercle	3	100.0%	0	0.0%	0	0.0%	0	0.0%
Total *Scorpeana guttata*	**3**	**0.2%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Unidentified Fish								
Angular	10	0.9%	0	0.0%	0	0.0%	0	0.0%
Branchial	2	0.2%	0	0.0%	0	0.0%	0	0.0%
Ceratohyal	6	0.5%	1	3.6%	0	0.0%	0	0.0%
Cleithrum	3	0.3%	2	7.1%	0	0.0%	0	0.0%
Dentary	9	0.8%	0	0.0%	0	0.0%	0	0.0%
Epihyal	3	0.3%	0	0.0%	0	0.0%	0	0.0%
Hyoid arch	7	0.6%	0	0.0%	0	0.0%	0	0.0%
Hypomandibular	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Maxilla	4	0.4%	0	0.0%	0	0.0%	0	0.0%
Opercle	5	0.4%	0	0.0%	0	0.0%	0	0.0%
Otolith	2	0.2%	0	0.0%	0	0.0%	0	0.0%
Pharyngeal plate	24	2.1%	0	0.0%	0	0.0%	2	6.3%
Premaxilla	9	0.8%	0	0.0%	0	0.0%	1	3.1%
Preopercle	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Quadrate	3	0.3%	0	0.0%	0	0.0%	0	0.0%
Scapula	8	0.7%	0	0.0%	0	0.0%	0	0.0%
Volmer	1	0.1%	0	0.0%	0	0.0%	0	0.0%
Vertebra	256	22.9%	19	67.9%	0	0.0%	24	75.0%
Rays/spines	123	11.0%	1	3.6%	0	0.0%	3	9.4%
Scales	119	10.6%	0	0.0%	0	0.0%	0	0.0%
Unidentified	523	46.7%	5	17.9%	0	0.0%	2	6.3%
Total Unidentified Fish	**1119**	**75.2%**	**28**	**96.6%**	**0**	**0.0%**	**32**	**88.9%**
Total Fish	**1488**		**29**	**1.9%**	**0**	**0.0%**	**36**	**2.4%**

Other Faunal Materials Identified

The remaining faunal material recovered represents a small yet diverse portion of the assemblage (Table 5). A total of 21 shellfish specimens were identified within the assemblage which included, 10 fragments of abalone shell, six fragments of marine gastropods (various species), and five fragments that were unidentifiable to species. The marine gastropods identified are very small and are believed to have been incorporated in the assemblage due to their presence on the larger abalone shell. The abalone, as with the marine fish would have had to have been imported from a larger market. Abalone meat and other shellfish is often dried and transported without its shell, suggesting that only a sample of the shellfish consumed within the household is visible within the assemblage.

The specimens identified as reptile consist mainly of the shell or carapace of at least two different types of turtle. The other elements identified as reptile may be turtle but have not been positively identified as of yet. According to Simoons, "turtles have been highly regarded sources of food in China since antiquity" (Simoons 1991: 352).

The land snail that was identified within the faunal collection is not considered to be a source of food but rather an intrusive species that was simply collected with the assemblage. The remaining faunal specimens recovered were not identifiable outside of clearly being faunal material. These specimens were very small fragments and many of them were burned further hampering identification.

Table 5. Other faunal material identified in the Chinese Quarter assemblage.

Taxon by element	NISP	% NISP	NISP Chopped	% Chopped	NISP Cut	% Cut	NISP Burned	% Burned
Shellfish								
Haliotis spp. (Abalone)	10	47.6%	0	0.0%	0	0.0%	0	0.0%
Marine gastrapods*	6	28.6%	0	0.0%	0	0.0%	0	0.0%
Unidentifed	5	23.8%	0	0.0%	0	0.0%	0	0.0%
Total Shellfish	**21**	**4.1%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Reptile (likely turtle)								
Carapace	24	58.5%	2	100.0%	0	0.0%	0	0.0%
Femur	4	9.8%	0	0.0%	0	0.0%	0	0.0%
Humerus	1	2.4%	0	0.0%	0	0.0%	0	0.0%
Mandible	1	2.4%	0	0.0%	0	0.0%	0	0.0%
Pevis	1	2.4%	0	0.0%	0	0.0%	0	0.0%
Scapula	1	2.4%	0	0.0%	0	0.0%	0	0.0%
Vertebra	2	4.9%	0	0.0%	0	0.0%	0	0.0%
Unidentified	7	17.1%	0	0.0%	0	0.0%	0	0.0%
Total Reptile	**41**	**8.1%**	**2**	**100.0%**	**0**	**0.0%**	**0**	**0.0%**
Intrusive Land Snail								
Carapace	27	100.0%	0	0.0%	0	0.0%	0	0.0%
Total Land Snail	**27**	**5.3%**	**0**	**0.0%**	**0**	**0.0%**	**0**	**0.0%**
Unidentified Faunal								
Unidentified	420	100.0%	0	0.0%	0	0.0%	38	0.0%
Total Unidentified Faunal	**420**	**82.5%**	**0**	**0.0%**	**0**	**0.0%**	**38**	**100.0%**
Total Other	**509**		**2**	**0.4%**	**0**	**0.0%**	**38**	**7.5%**

*various species

Summary and Discussion

This report is meant to be a basic summary and analysis of the large faunal assemblage recovered from the Jacksonville Chinese Quarter Site. In all, 17,841 bone specimens were recovered weighing 22kg (just under 50 pounds). This included a variety of species from domesticated cow, pig, goat, sheep, chicken, and turkey to marine fish, cuttlefish, abalone, cat, bear, and fox. Due to the scope and scale of the material, outside funding was applied for in order to expand our research from a sample of the material to the entire collection. The above information was funded in part through this additional funding. SOULA received a grant from the Oregon Heritage Commission of the Oregon Parks and Recreation Department in order to conduct in-depth analysis of the entire faunal assemblage. This not only includes the identification of all items if possible, but also aids in the creation of a faunal standards collection specifically tailored to the types of faunal material one might encounter within a Chinese immigrant assemblage.

Our analysis to date indicates that a variety of foods were being prepared and eaten within the Chinese Quarter site. While this assemblage has many similarities to contemporary EuroAmerican households with domesticated pork, cow, sheep, goat, and chicken making up the largest portion of the assemblage, culinary traditions are visible in the preparation techniques. Most notably, chop marks on the mammal ribs and poultry suggest stir frying is a favored cooking method within the household. Other culinary preferences are inferred through the range of fish, shellfish, and turtle specimens being imported to the site.

The above observations compare well with other investigations into Chinese sites across the West (Henry 2012; Voss 2011; Sanchez 2009, Preatzellis and Preatzellis 1982), including previous work in the Jacksonville Chinese Quarter (Shablitsky and Ruiz 2009; Ruiz and O'Grady 2008). However, we would like to continue to push the analysis to allow for a deeper investigation into the personal choices and opportunities of the site's residents. A fine grained analysis of this material can show how Chinese immigrants negotiated issues of discrimination and the adaptation of food practices to the local economic conditions (see Kennedy 2015; Sunsuri 2015b, 2015c). Whereas many previously analyzed Chinese immigrant faunal assemblages represent larger groups of people, this assemblage is unique in that it represents the consumer choices made by an individual household on the early American frontier.

Faunal assemblages are often used to determine the social class or status of a population or individual. However, recent research conducted by Charlotte Sunseri of San Jose State University argues that, at least within the Chinese immigrant population of this period, the faunal material may more closely represent the racialized markets of the period rather than social status, and that in general food has low visibility as a status marker outside of feasting (Sunseri 2015b, 2015c). With anti-Chinese propaganda and legislation in full swing during this time period, it is likely that local markets may have inflated pricing for the Chinese immigrant population or refused to sell to them. This may have led to the much higher use of catalogs to order and import goods to an area. This theory could help to explain why such a large amount of faunal goods were being stored at the site, as they may have been placing bulk orders of preserved goods to supplement what was available to them at the local market. This is not to say that they were not importing goods due to a culinary preference, but it is an interesting element of this time period that may have effected their consumer choices. This hypothesis ties in closely with what Ryan Kennedy of Indiana University refers to as localizations, where a population adapts to the local marked and the availability (or lack of availability) of traditionally prepared foods. And in such, rather than emphasizing the maintenance or loss of traditional foodways, the analysis of the faunal material instead shows how the Chinese immigrants navigated the opportunities and constraints of the local economy, market, and social conditions (Kennedy 2015).

Research into the effect of racialized markets and local availability on consumer choices within the Jacksonville Chinese Quarter are ongoing. We are also working to determine ways of identifying preserved foods versus fresh foods within archaeological collections through potential chemical traces or distinct cuts. This will help us determine how the nearly 50 pounds of faunal material were being stored at the site, and as mentioned, how these issues play into the larger social, economic, and cultural factors of this time period.

Works Cited

Adams, Bradley and Pam Crabtree
2012 *Comparative Osteology: A Laboratory and Field Guide of Common North American Animals*. Elservier Inc., Oxford.

Beisaw, April
2013 *Identifying and Interpreting Animal Bones: A Manual*. Number Eighteen, Texas A&M University Anthropology Series. Texas A&M University Press, College Station.

Cannon, Debbi Yee
1987 *Marine Fish Osteology: A Manual for Archaeologists*. Publication / Dept. of Archaeology, Simon Fraser University, no. 18. Archaeology Press, Simon Fraser University, Burnaby, B.C.

Henry, Caitlin Shea
2012 Ni Chi Le Ma, Have You Eaten Yet? Analysis of Foodways from the market Street Chinatown, San Jose California: Zooarchaeological Analysis of Terrestrial Animal Bones from Feature 86-36/5 in the Market Street Chinatown Archeological Collection. MSCAP Technical Report 2, Historical Archaeology Laboratory, Stanford Archaeology Center, Stanford, CA.

Kennedy, J. Ryan
2015 Zooarchaeology, Localization, and Chinese Railroad Workers in North America. In *Historical Archaeology* 49(1):122-133.

Lu, Henry C.
2005 Chinese Natural Cures, Traditional Method for Remedy and Prevention. Published by Black Dog & Lenethal Publishers, Inc., New York, NY.

O'Conner, Terry
2000 *The archaeology of Animal Bones*. Texas A & M University anthropology series, no. Texas A & M University Press, College Station.

Olsen, Stanley
1990 *Mammal remain s From Archaeological Sites: Part I, Southeastern and Southwestern United States*. Published by the Peabody Museum of Cambridge, Cambridge MA.

1968 *Fish, Amphibians and Reptile Remains from Archaeological Sites. Part I, Southeastern and Southwestern United States*. Papers of the Peabody Museum of Archaeology and Ethnology, Volume 56:2, Cambridge, MA.

Pierson, Heidi Karin
2008 The Historical Archaeology of Ethnicity at two Mining Sites in West Redding, California. Unpublished Master's Thesis, California State University, Chico.

Praetzellis, Mary and Adrian Praetzellis
1982 Archaeological and Historical Studies of the IJ56 Block, Sacramento, California: An Early Chinese Community. Cultural Resources Facility, Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Ruiz, Christopher and Patrick O'Grady
2008 Jacksonville Site A: Archaeological Test Excavations at the Main Street Warehouse and Chinese Quarter (35JA737). Museum of Natural and Cultural History & State Museum of Anthropology, University of Oregon, Eugene.

Sanchez, Rhea
2009 Zooarchaeology and Historical Archaeology of Historic Shasta County Hospital 155-1900: A Case Study. Master's Thesis to the California State University, Chico.

Simoons, Fredrick
1991 *Food in China: A Cultural and Historical Inquiry*. CRC Press, Inc., Boca Raton, FL.

Smart, Tamela
2009 Carpals and Tarsals of Mule Deer, Black Bear, and Human: An Osteology Guide for the Archaeologist. Unpublished Master's Thesis for Western Washington University,

Sunseri, Charlotte K.
2015a Taphonomic and Metric Evidence for Marrow and Grease Production. In *Journal of California and Great Basin Anthropology*, 35(2):275-290.

2015b Alliance Strategies in the Racialized Railroad Economies of the American West. In *Historical Archaeology,* 49(1):85-99.

2015c Food Politics of Alliance in a California Frontier Chinatown. In *International Journal of Historical Archaeology*, 19(2):416-431.

Voss, Barbara
2011 Market Street Chinatown Archaeological Project: 2008-2011 Progress Report. Prepared at the Historical Archaeology Laboratory, Stanford Archaeology Center, Stanford, CA.

Wheeler, Alwyne and Andrew Jones
1989 *Cambridge Manuals in Archaeology, Fishes*. Cambridge University Press, Cambridge, NY.

Appendix D:

Reports of the University of Idaho Chemical Analysis on Artifacts from the Chinese Quarter

The following appendix presents miscellaneous student reports on the chemical analysis done on artifacts recovered from the Jacksonville Chinese Quarter site. All work was done under the direction of Dr. Ray von Wandruszka of the University of Idaho Chemistry Department.

Inquiries regarding the following information can be directed to:

Ray von Wandruszka, Ph.D.
Professor and Chair
Department of Chemistry
University of Idaho
rvw@uidaho.edu
(208) 885-4672

Chinese Stamp Ink

Artifact Unit 1, 1v : 9 (90-100 cmbd) Analyst: Kristine Madsen

Site #35JA737 Main Street Jacksonville, OR

March 26, 2015

Appearance of Artifact

The artifact was a shallow light blue/grey ceramic dish. It was originally probably circular in shape, but now the circumference was irregular, because it was broken along the edges (Fig. 1). It was approximately 2.5 inches in diameter and 1 inch tall. The dish was covered with an orange/red material that adhered loosely to the surface (Fig. 2).

Fig. 1 Ceramic dish: A top view; B side view

Procedure and Results

The red material was lightly scraped off with a wire. It was placed in a muffle furnace for 8 hours at 800^{o} C and was almost completely consumed. Only a minimal layer of residue remained, indicating a trace of an incombustible material. The original substance did not dissolve in water or methanol, but partially dissolved in HCl. This solution was filtered and analyzed by atomic absorption spectrometry (AAS). A large amount of lead (Pb) was found to be present – almost 15%. A spot test for mercury was done, involving adding a drop of a solution of 0.3 mg of dithiozine in 10 mL of chloroform on top of a drop of dissolved sample on a watch glass. This produced a purple color which indicated the presence of Hg.[1] An infrared spectrum was also taken (Fig. 3) and it showed a slight peak at 3400 cm^{-1} indicating the presence of OH. There was also evidence of C=C in the 1400 cm^{-1} region and of C-H at 2900 cm^{-1}. When placed in an open flame the sample burned with an orange flame,

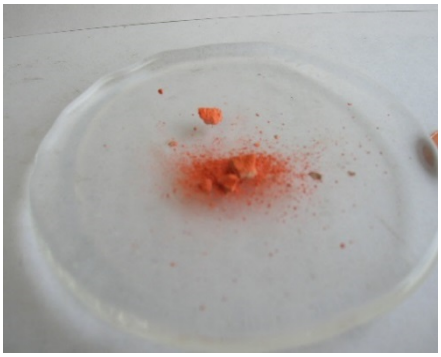

Fig. 2 Red material recovered from ceramic dish

[1] F. Feigl and V. Anger, Spot Tests in Inorganic Analysis, 6th Ed., Elsevier, Amsterdam, 1972, p. 315.

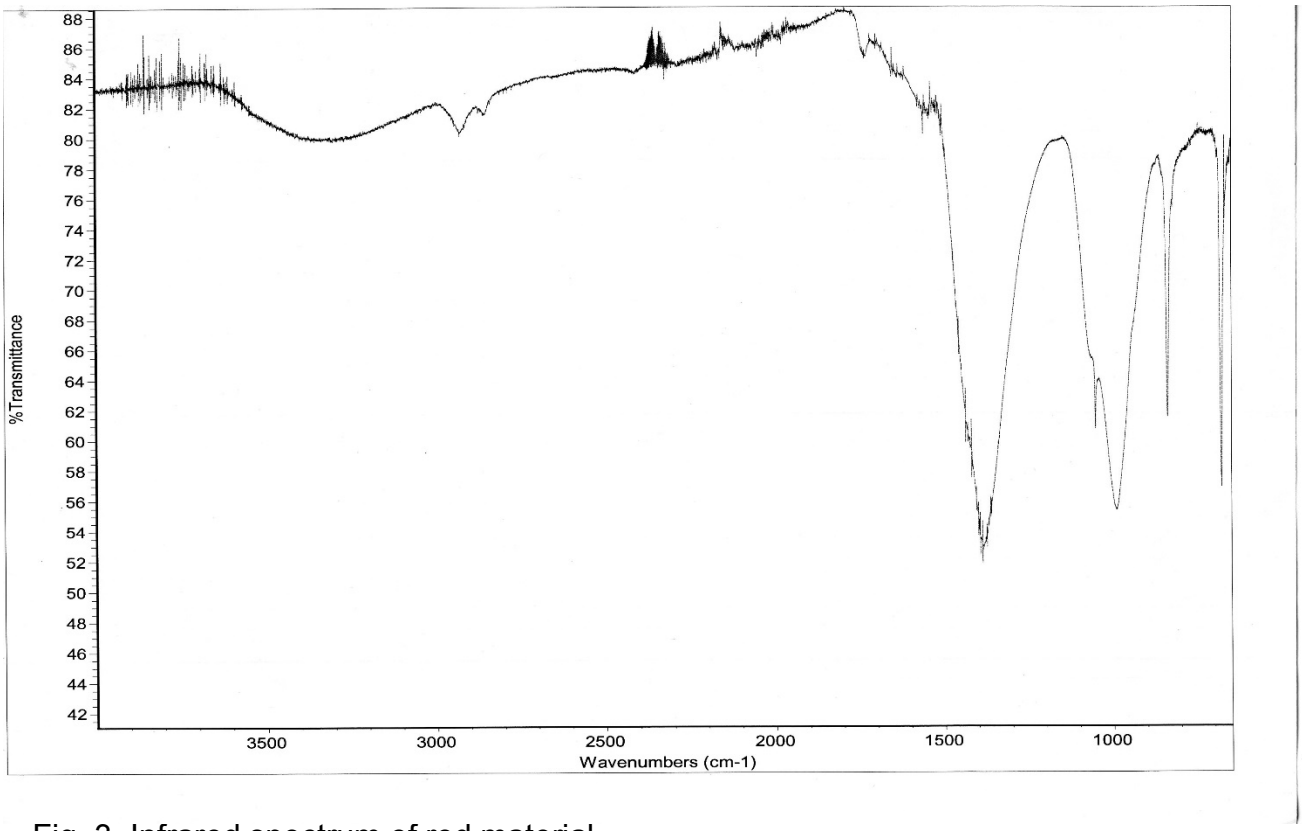

Fig. 3 Infrared spectrum of red material

Discussion and Conclusion

The red material analyzed appeared to contain mercury, lead, and organic substances. Its behavior under high heat, *i.e.* a drastic loss of mass, was consistent with organics and mercury compounds – both tend to "disappear" by either burning or sublimation. This, however, does not tend to happen with lead compounds. The fact that relatively large amounts of Pb were found by AAS, but that very little material remained after exposure to 800^{o} C can be rationalized as follows:

The ceramic surface to which the red material adhered had a loose and crumbly consistency. Mechanical removal of the material inevitably included some of the surface itself, and it did so in an inconsistent way. Some of the red powder came off fairly cleanly, while in other instances visible gains of ceramic material were present. It must be surmised that any of the red material recovered contained at least some fine grains of earthenware and/or glaze. Ceramic glaze, which of course resides on the surface of the artifact, is notorious for containing Pb, especially in older artifacts. Lead glaze was (and still is) widely used because it is smooth, easily colored, and tough.[2] It is very likely that it was used to glaze the present dish, and would therefore account for the presence of Pb in some material recovered from the surface.

[2] http://cchealth.org/lead-poison/pdf/ceramics.pdf

As regards the red substance itself, the manner in which it was spread on a relatively flat dish, its orange-red color, its mercury content, and the presence of (unspecified) organics, strongly suggest that it was red stamp ink (Fig. 4). In addition, although no specific analysis was done on the glaze, the chemical evidence indicates that the ceramic dish had a lead glaze.

Fig. 4 Modern container with stamp ink

Stamp ink has been used to seal documents in China since ancient times.[3] The ink paste used is called yinni (印泥) in Chinese, which means literally "seal clay". It has been referred to as the “the paste of eight treasures”, referring to the ingredients: cinnabar, pearl, musk, coral, ruby, moxa, castor oil and a red pigment. Not all of these were always present, but the material under consideration here undoubtedly contained cinnabar, which is the mineral form of mercuric sulfide (HgS) and is orange-red in color. The organic component found could derive from any or all of: moxa (an *Artemesia argy* extract), castor oil, or organic pigment.

[3] www.arts.cultural-china.com

Chinese Ceramic Spout with Plug

Artifact: 13.09-2726
Location: #135JA737 Jacksonville, OR, Main St. Unit 3, Level 7
Date: June 13, 2016

Analyst: Morgan Spraul

Appearance of Artifact

The artifact (Fig. 1) was a 2" x 2" x 1" ceramic piece comprising an apparent spout and having a dark brown glazed surface on one side. The spout was filled with a white chalk-like substance. The piece was clearly part of a vessel such as the one shown in Fig. 2, which was customarily used to transport soy sauce.

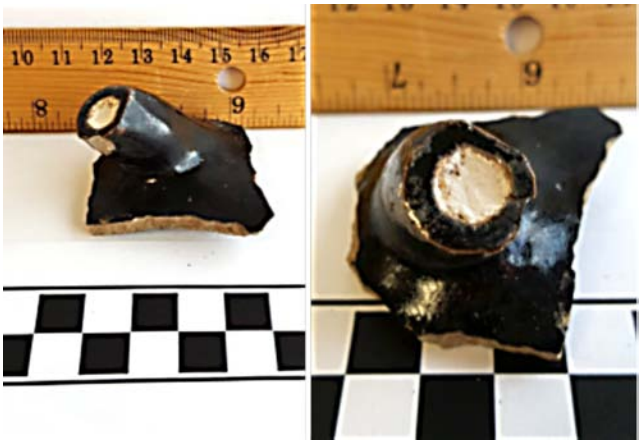

Fig. 1 Two views of ceramic spout and plug

Procedure and Results

The analysis focused on the white material of the plug in the spout. An infrared spectrum was taken (Fig. 3) and compared to that of calcite (Fig. 4), a mineral form of calcium carbonate ($CaCO_3$). the two spectra were found to be virtually identical. Atomic absorption analysis indicated the presence of calcium, but very little magnesium. The complete dissolution of the material in HCl, as well as its IR spectrum, indicated that it contained no silicates.

Fig. 2 Intact vessel with plugged spout (S. Oregon Univ. collection)

Conclusion

It must be concluded that the sealant in the spout was calcite. This is a common non-toxic sealant widely used in construction and art. It is originally applied, not as calcium carbonate, but as calcium hydroxide ($Ca(OH)_2$, a.k.a. slaked lime). Slaked lime, a white powder, is made into *lime putty* (a stiff, thixotropic[1] paste) by adding water. The putty sets when exposed to carbon dioxide in the air. This setting process essentially comes down to the formation of calcite:

$$Ca(OH)_2 + CO_2 \text{ - > } CaCO_3 + H_2O$$

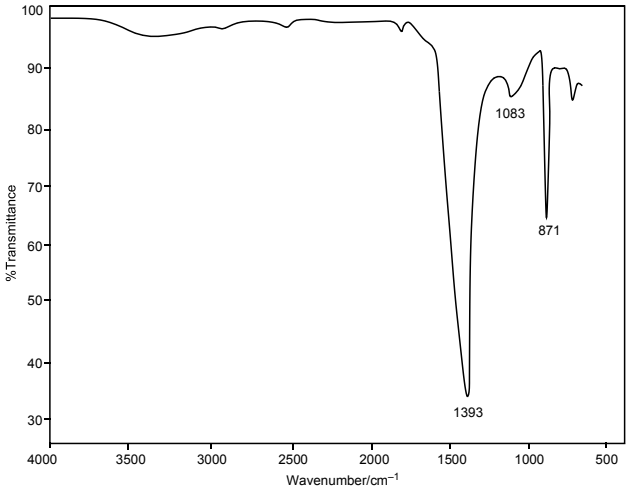

Fig. 3 IR spectrum of unknown plug material

[1] liquefies upon agitation

What probably happened with the present artifact, as well as the one shown in Fig. 2, is that the vessel was used to transport a liquid (possibly soy sauce) from China to the Chinese settlement in Jacksonville, OR. Spillage was prevented during transport by closing the main opening of the jar with a cap or cork, and semi-permanently plugging the spout with lime putty (which hardened by converting to calcite).

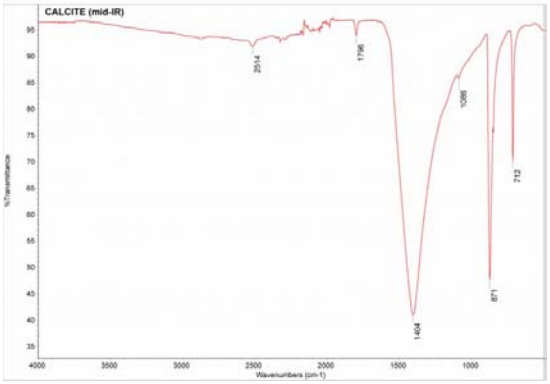

Fig. 4 IR spectrum of calcite from online database (IR database: ATR-FT-IR Database – Institute of Chemistry at University of Tartu, Estonia*: 2016.)*

Analyst: Rachel Anderson

Calamine Lotion

Artifact: 35JA737
Jacksonville, OR, Chinese Quarter
Date: 11-10-2015

Fig, 1 The artifact

Appearance of Artifact

The artifact was a blue-green bottle with a slight patina. The neck was long with a rounded top (Fig. 1). The contents of the bottle consisted of a light brown powder stuck to the sides and bottom of the container (Fig. 2). It also had a significant amount of plant material, seemingly roots (Fig. 3).

Procedures and Results

The material from the bottle was extracted. A total of 0.6755 g of plant material was taken out, 0.0704 g of loose material was shaken from the bottle, and 0.5891 g of material was scraped from the sides. The scraped material was then put through a sifter, and a fine powder was obtained and used for experimental purposes.

Fig. 2 The materials recovered

First, solubility tests were done. The sample was mostly insoluble in water, ethanol, and diluted HCl. It was mostly soluble in concentrated HCl and a HCl/HF solution.

A total of 0.0119 g was taken and put into an 800°C muffle furnace for a total of 8 h. The sample left over weighed 0.00762g, or a net loss of 64%.

IR spectra of both of the original and the heat treated material was taken (Figs. 4, 5). A silicate peak (~1000 cm^{-1}) was observed in both spectra, probably due to the presence of dirt. The original material also showed an OH peak and a carbonate peak (1405 cm^{-1}).

Fig. 3 Plant material

To provide further evidence for the presence of carbonate, a bit of the sample was placed on a watch glass and concentrated HCl was dropped onto it. The sample readily bubbled confirming the presence of carbonate.

To test for the presence of iron, quantitative AA measurements were done on the sample. Standard solutions of 5, 10 and 20 ppm were made. A total of 0.05890 g of the sample was dissolved in HCl. Using the standard solutions, we were able to calculate that the sample contains about 1% iron. (Fig. 6).

The presence of magnesium, calcium, and zinc were suspected, and qualitative AAS confirmed that these elements were indeed in the sample.

The presence of aluminum was investigated *via* the Morin test, which was negative.

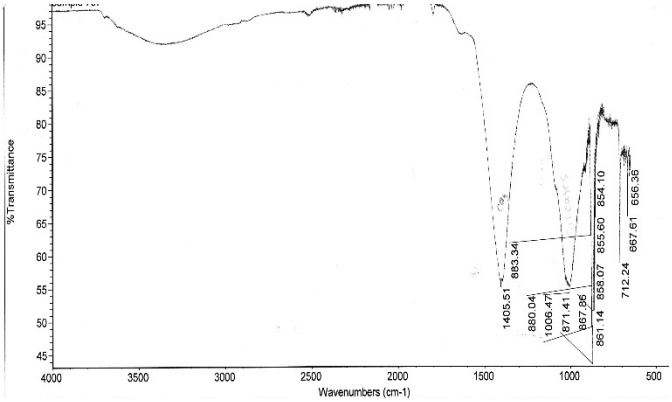

Fig. 4 IR spectrum of original material

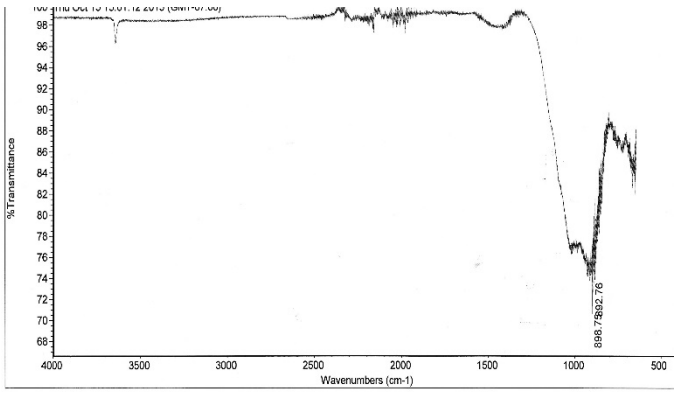

Fig. 5 IR spectrum of heat treated material

Discussion and Conclusion

Based on the shape of the bottle, it appears that it probably contained a liquid – a solution or a free flowing suspension. The composition of the recovered material indicated that it was a mixture of ophicalcite ($CaCO_3$ and $MgCO_3$), $ZnCO_3$, and $FeCO_3$. These materials are typically found in ***calamine lotion***, widely used to treat sunburn and insect bites at the present time. In traditional Chinese medicine “calamina” finds use as a treatment for external and internal bleeding, coagulation stimulation, reduction of blood pressure,[1] and even conjunctivitis.[2] It is mined in Henan Province.

[1] Weidong Yu, Harold D. Foster, Tianyu Zhang. Discovering Chinese Mineral Drugs**.** *J. Orthomolecular Med.,* 10, No. (1995)

[2] Zhen, J, Calamina's Therapeutic Effect on Acute Conjunctivitis, *Guangdong Journal of Traditional Chinese Medicine* (4), 18-19 (1956).

Medicine Vial with Activated Carbon

Artifact 35JA737
Jacksonville, OR, Chinese Quarter
April 2, 2015

Analyst: Kristine Madsen

Appearance of Artifact

The artifact was a typical Chinese single dose medicine vial, approximately 1.5 in high and 0.5 in wide (Fig. 1). Its shape was somewhat distorted, as would happen when the glass was heated above its transition temperature. The material originally in the vial had already been extracted and was contained in aluminum foil. It consisted of small, black, grains (Fig. 2) that were quite friable.

Fig. 1 Medicine vial under investigation

Procedure and Results

The material was placed in a muffle furnace at 800^{o} C for 10 hours and a 90.32% weight loss was observed. The material recovered from the furnace had also completely lost its black color (Fig. 2). When placed in water, the original material did not dissolve, but dispersed to form a colloidal suspension. This suspension was filtered through a 0.2um syringe filter and the resulting clear liquid was tested for Ca and Mg by qualitative atomic absorption spectrometry. Both elements were found to be present. The black material was then ground with a mortar and pestle and placed in water containing methylene blue dye. This treatment caused the blue color to become much lighter, indicating that the black material absorbed the dye.

Fig. 2 Left: original black grains; Right: material out of the muffle furnace

Discussion and Conclusion

The results reported above indicate that the unknown black substance in the medicine vial was activated carbon. This material had been

encountered on previous occasions in this laboratory when artifacts recovered from historical Chinatowns and other locations were analyzed.[1,2,3] Activated carbon was, and continues to be, used as an orally ingested antidote to toxins. It works by having an extremely large surface area per unit weight (in excess of 500 m^2 per gram), giving it an extraordinary adsorptive capacity. Carbon can be activated through impregnation of the original stock (mostly wood) with a salt such as calcium chloride, followed by carbonization. The calcium and magnesium found in the present material probably originated from this process. It is also the likely source of the white material remaining after muffle furnace treatment at 800^o C.

[1] Elizabeth Harman, **Analysis of Glass Bottle from Sandpoint, ID** , site 10BR978, Chinatown Sandpoint, Jan 28, 2014

[2] Alicia Fink, **Activated Carbon,** sample 10CN132 F51.064, Canyon County, ID, Historic Dump, April 1, 2014

[3] Elizabeth Harman, **Compounded Medicine – Black Granular Solid,** Market Street Chinatown, San Jose, sample #85-36/11-2, April 15, 2013

Chinese Stone Drug: Cinnabar

Southern Oregon
Jacksonville, OR, Chinese Quarter
1860-1880

Analyst: Sidney Hunter
November 10, 2014

Appearance of Artifact

This artifact, which was presumably recovered from the Jacksonville, OR, Chinese Quarter Site (35JA737),[1] was a small, rectangular, glass vial with rounded edges (Figs, 1-3). The top part of the vial, where normally a narrow neck would be expected, appeared to have been removed. The edges of the opening were fairly smooth, suggesting that the upper portion had been sawed or scored off, rather than accidentally broken. The material obtained from vial was a red–brown solid.

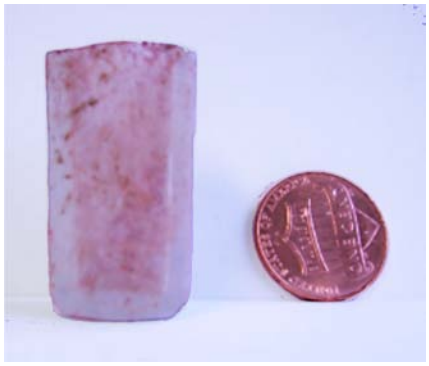

Figure 1: Side view of vial.

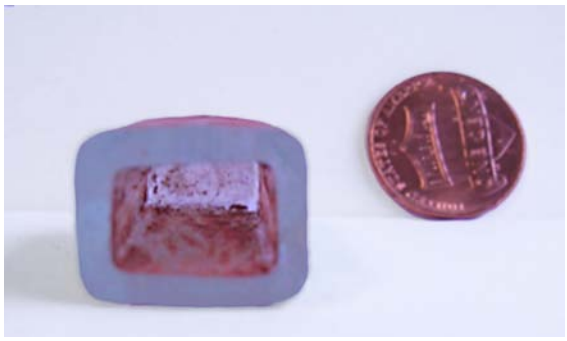

Figure 2: Inside view of vial, showing uneven thickness of sides.

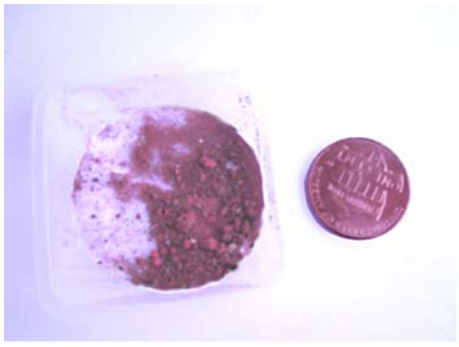

Figure 1: Material recovered from vial.

[1] Rose, C. and K. Johnson, Jacksonville Chinese Quarter Site (35JA737), Data Recovery Plan for the First and Main Street Sidewalk Project, Jacksonville, Oregon [ODOT Key No. 16808]

Procedures and results

A total of 274.5 mg of material was recovered from the vial. A portion was placed in a muffle furnace at 800^{o} C for 8 hours, resulting in an 89.5 % weight loss. The substance was slightly soluble in water and hydrochloric acid and became fully soluble with the addition of hydrofluoric acid (HF). When placed near a flame, at an estimated temperature of 400^{o} C, the material turned black and when the heat was removed, the red-brown color returned to the sample.

Qualitative atomic absorption spectroscopy for iron and gave a slight positive signal. A spot test for mercury salts using diphenylcarbazone[2] was positive.

Discussion and Conclusion

Previous work carried out in this laboratory on similar material, contained in a unmodified single-dose Chinese medicine vial,[3] had shown it to be cinnabar (mercuric sulfide, HgS). Both the visual and chemical signatures of the present material were identical to those encountered in the earlier work.

The high weight loss in the muffle furnace indicated that the material was a mercury compound, having the property of evaporating at high temperatures. The mercury spot test confirmed its presence, and the reversible red-to-black color change at moderately elevated temperatures indicated either HgS or HgO. The solubility behavior left no doubt that it was HgS (cinnabar).

Cinnabar is a common ore of mercury and is established as a traditional Chinese "stone drug"(Zhu Sha, 辰砂).[4] It dissolves only slightly in stomach acid (HCl), providing enough mercury to combat bacterial and fungal infections, but not so much as to acutely harm the patient. It must be realized, however, that repeated ingestion of cinnabar, especially at high doses (as much a 1 gram was used), will lead to mercury poisoning.[5] This was a common health problem in ancient China.[6] The material is still available from purveyors of traditional Chinese medicines.[7]

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[2] Feigl, F. and A. Vinzenz , 1972, *Spot tests in inorganic chemistry, 6th edition*. Elsevier, Amsterdam.

[3] Voss, Barbara L., Ray von Wandruszka, Alicia Fink, Tara Summer, Elizabeth Harman, Anton Shapovalov, Megan S. Kane, Marguerite De Loney, and Nathan Acebo, Stone Drugs and Calamine Lotion: Chemical Analysis of Residue in 19th Century Glass Bottles, Market Street Chinatown, San Jose, California, *California Archaeology*, in press.

[4] Weidong Yu, Harold D. Foster, and Tianyu Zhang, Discovering Chinese Mineral Drugs, *J. Orthomolecular Medicine* Vol. 10, No. 1, 1995.

[5] Liu, Jie, Jing-Zheng Shi, Li-Mei Yu, Robert A. Goyer, and Michael P. Waalkes Mercury in traditional medicines: Is cinnabar toxicologically similar to common mercurials? *Exp Biol Med (Maywood)*, Jul 2008; 233(7): 810–817. doi: 10.3181/0712-MR-336

[6] Wright, David Curtis (2001). *The History of China*. Greenwood Publishing Group. p. 49. ISBN 0-313-30940-X.

[7] see: http://www.acupuncturetoday.com/herbcentral/cinnabar.php

Partial Medicine Vial with Cinnabar – Zhu Sha (辰砂)

Accession #: 13.09-2796
Site #: 35JA737
Jacksonville Chinese Quarter, OR
September 29, 2015 Analyst: Kristine Madsen

Appearance of Artifact

The artifact was the top portion of a typical Chinese single dose medicine vial (Fig. 1). A small quantity of an orange-red powder was recovered from the inside surface of the vial.

Fig. 1 Two views of the partial medicine vial

Procedure and Results

Previous experience with Chinese medicines of similar appearance in this laboratory led to the assumption that the recovered red powder was mercuric sulfide (cinnabar). This hypothesis was tested through a spot test for mercury[1]: the material was dissolved in HCl/HF, and then treated with acetic and oxalic acid. Upon addition of a 0.002% solution of dithizone in chloroform an orange precipitate was formed, confirming the presence of mercury.

Discussion and Conclusion

It was established that the material recovered from the partial medicine vial was cinnabar (HgS), which is a common ore of mercury. Cinnabar is a traditional Chinese medicine[2] (a "stone drug") which is still being used to this day.[3] It is taken internally in doses up to 1 g and its effect are described as "clear away heat and tranquilize the mind". Its low solubility (even in stomach acid) prevents it from being a deadly poison to the patient, while the small quantity that does dissolve may be effective against infections. Mercury poisoning was, however, fairly common in ancient China.[4] Cinnabar can also be applied topically.

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[1] F. Feigl and A. Anger, Spot tests in inorganic chemistry, 6th edition, 1972, Elsevier, Amsterdam, p. 315.

[2] Weidong Yu, Harold D. Foster, and Tianyu Zhang, Discovering Chinese Mineral Drugs, *J. Orthomolecular Medicine* Vol. 10, No. 1, 1995.

[3] Acupuncture Today, http://www.acupuncturetoday.com/herbcentral/cinnabar.php

[4] Zhao HL, Zhu X, Sui Y (2006). "The short-lived Chinese emperors". *J Am Geriatr Soc* 54 (8): 1295–6. doi:10.1111/j.1532-5415.2006.00821.x. PMID 16914004

Opium Tin with 'Dragon's Bone' Medicine

Site no.: 35JA737
Cat. no.:13.09-u4,Lv11,QB
Date: April 14, 2015
Analyst: S. Elizabeth Harman

Physical Description

The artifact was a crushed metal tin, identified as a typical opium container, with a paper label obscured by dirt (Figs. 1, 2). Dirt and small twigs were visible through the main opening at the top. The closure was bent and separated from the main body of the tin. A smaller hole was present on the back side.

Fig. 1 – Artifact as it appeared before cleaning.

Fig. 2 – Label on opium tin (after cleaning)

Fig. 3 – Sample recovered from opium tin

Procedure

Using a dry paintbrush, dirt was removed from the artifact to make the lettering clearer. From the small hole on the back a white-gray powder was extracted. This was interspersed with larger grains of the same color, and still larger pieces of a black solid (Fig. 3).

The analysis focused on the powdered part of the sample. It did not dissolve in water, but settled to the bottom. It dissolved completely in HCl, turning the solution yellow and bubbling. It also bubbled when sulfuric acid was added, but did not dissolve completely. The sample did not dissolve at all in HF.

A molybdenum blue test for phosphorus was performed using stannous chloride as the reducing agent. The sample solution – powdered sample dissolved in HCl and diluted with DI water – turned dark blue first, then faded

to orange. Repeating the test with a diluted sample solution yielded a lasting blue color, indicating the presence of a substantial concentration of phosphorus in the material.

A series of qualitative atomic absorption test showed the presence of sodium, potassium, iron, copper and calcium. Calcium was found to be 27.1 % of the sample by weight. When placed in a muffle furnace for 8 hours at 800 °C the sample lost 58.6 % of its weight.

An infrared spectrum of the sample had peaks at 1390, 1024, 870 and 712 cm^{-1} (Fig. 4).

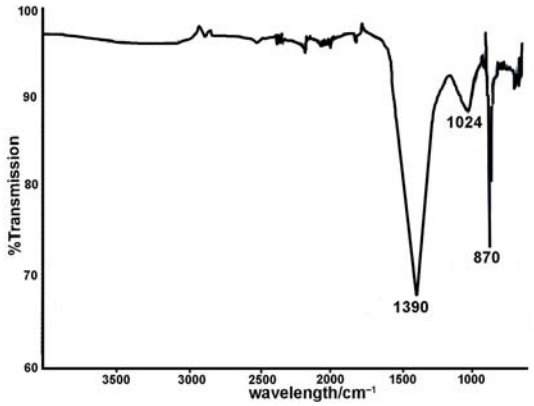

Fig. 4 – IR spectrum of sample.

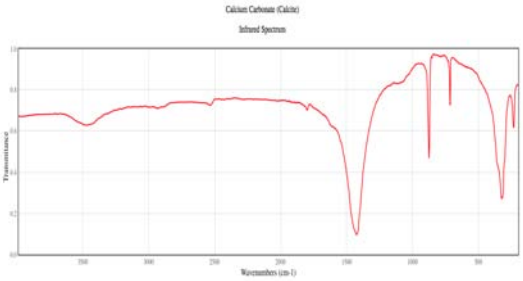

Fig. 5 – IR spectrum of calcium carbonate.

Discussion

On the list of traditional Chinese medicines known as "stone drugs" there are some materials that are not minerals. One of these is what is known as "dragon's bone", or *Os Draconis*.[1] This consists of ground-up fossilized animal bones, and is rich in calcium and phosphorus. Typically ground into powder, dragon's bone was taken orally for a variety of ailments either mixed with water or steeped into a tea.[2] It would have actual health benefits as a mineral supplement.

The IR spectrum of the material (Fig. 4) showed that is was primarily a carbonate, probably calcium carbonate. The spectrum of calcium carbonate (Fig. 5) exhibits the same peaks.

From the weight loss in the muffle furnace, along with its 27.1% Ca content, it can be determined that sample would have initially been 67.8% $CaCO_3$, if all of the calcium were in that form. This is consistent with a fossilized bone. Over time, the smaller mineral components of bone can recrystallize forming aragonite and calcite, the two stable forms of calcium carbonate.[3]

The presence of phosphorus also points to bone. Another main component of dragon's bone samples have been shown to be calcium phosphate.[2] The strong positive reaction of the molybdenum blue test indicated that a substantial portion of the sample was phosphate. This could be in the form of calcium phosphate, or maybe phosphorus pentoxide.

Of course one cannot be certain that the bone meal in the opium tin came indeed from fossilized bone. It is quite possible that it was made from old, sun dried cattle bones. If so, then it is clear that these bones were not calcined (heat treated) before grinding, because of the substantial weight loss observed in the muffle furnace. Parenthetically, this can be ascribed to the loss of CO_2 from carbonate.

Attempts to translate the Chinese characters on the label were not successful. The only character that Chinese speakers were able to decipher was the large one at the top right corner of the label (Fig. 2). It was deemed to mean “prosperity”.

References

1) Weidong Yu et. all, Discovering Chinese Mineral Drugs. *Journal of Orthomolecular Medicine*. 1995, *10* 1.
2) Dragon’s Bones and Teeth. http://www.itmonline.org/arts/dragonbone.htm (Accessed April 18, 2015).
3) Rock Cycle Lab http://www.msnucleus.org/membership/html/k-6/rc/pastlife/5/rcpl5_2a.html (Accessed April 21, 2015).