

GLASS CONTAINERS AND GLASS TABLEWARES FROM THE MARKET STREET CHINATOWN

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MSCAP Technical Report 14

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PREFACE

Contributed by Barbara L. Voss

“Glass Containers and Glass Tablewares from the Market Street Chinatown” is a technical report representing two years of focused research by Stanford Archaeology Center postdoctoral fellow Dr. Kimberley G. Connor (September 2023 – August 2025). Dr. Connor completed this research with assistance from undergraduate researchers Alana Okonkwo, Alyssa Fong, and Karen Rojas. The work was conducted at the Historical Archaeology Lab at the Stanford Archaeology Center under my guidance as Principal Investigator of the Market Street Chinatown Archaeology Project (MSCAP). Throughout this work, Dr. Connor met frequently with members and staff from MSCAP partners Chinese Historical and Cultural Project (CHCP) and History San José (HSJ). Their perspectives and knowledge greatly shaped the direction and outcome of this research.

Dr. Connor’s research study is the first to systematically inventory, analyze, and interpret an entire material class of human-made artifacts in the Market Street Chinatown collection. The need for such a study was first identified in 2012, during the 10th anniversary meeting of the Market Street Chinatown Archaeology Project. During the remainder of the 2010s, much of our research focused on animal bones and plant remains. Artifact-based research continued to be quite limited in scope, focusing only on small groups of highly diagnostic material or conducting proof-of-concept studies.

Dr. Connor selected the glass containers and glass tablewares for the focus of her research because of her longstanding interest and expertise in food studies. While the animal bones and plant remains studied previously provide insight into specific ingredients used by residents of the Market Street Chinatown, the glass containers themselves represent commercial products, mostly foods, drinks, and medicines. Glass tablewares indicate how those products were prepared and consumed. Together, these contribute to a more well-rounded understanding of the meals that Chinatown residents consumed, the beverages they drank, and the medicines they used to maintain their health.

During the second half of the nineteenth century, the technology used to manufacture glass containers was changing rapidly. Additionally, custom molding was becoming more affordable, and companies packaging their products in glass increasingly ordered containers with embossed (raised) lettering and graphics unique to their product. For these reasons, glass containers from this period are highly diagnostic not only to place and time of manufacture, but also often to the specific company or even product.

These factors enabled Dr. Connor to use glass containers to reconstruct how Market Street Chinatown residents were engaged with local, regional, national, and international commerce. Dr. Connor's research also reveals new information about the Market Street Chinatown collection itself. For example, Dr. Connor's analysis indicates that there are a small number of archaeological features represented in the collection that clearly post-date the Market Street Chinatown. This opens up an entirely new avenue of inquiry about the occupants and uses of Block 1 after the catastrophic 1887 fire that destroyed the Market Street Chinatown. Overall, however, Dr. Connor's research confirms that the vast majority of materials in the collection are associated with the Market Street Chinatown era.

As part of this project, Dr. Connor also undertook substantial independent research into the history of glass production and particularly the products sold in glass containers during this time. Appendix D will be of particular interest to local historians and those interested in the history of food and medicine, as it presents original assessments of the formation and operation of 26 companies whose products are represented by the glass container artifacts in the Market Street Chinatown collection.

Significant in their own right, the findings of this research study will gain additional importance when brought into dialogue with the results of other artifact studies, particularly those of ceramic and metal containers and tablewares. Studies of these additional material types are already underway and will be reported in future MSCAP Technical Reports.

ACKNOWLEDGEMENTS

Analysis of glass containers and glass tablewares from the Market Street Chinatown collection was conducted as part of the Market Street Chinatown Archaeology Project, a community-based research and education collaboration between Stanford University, Chinese Historical and Cultural Project, and History San José.

The postdoctoral fellowship during which this research was undertaken was made possible by a gift from Mrs. Min Kwan Kwaan and the Stanford Archaeology Center. Additional research funding was provided by the Stanford Archaeology Center, the Freeman-Spogli Institute China Fund, the UPS Endowment Fund, and a Faculty Research Fellow stipend from the Clayman Institute for Gender Research.

The sheer amount of glass cataloged and analyzed as part of this project was only possible thanks to the tireless work of undergraduate research assistants Alana Okonkwo and Alyssa Fong. I also want to thank Karen Rojas for her assistance with photography and rehousing; Matt Previto and Benjamin Trujillo Perez for their help with moving boxes; Claudia Engel for her work on the database and digital assets, and Katie Johnson-Noggle for graphics and photo editing.

TABLE OF CONTENTS

PREFACE	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	vi
1.0 INTRODUCTION	1
1.1 Market Street Chinatown: History and Archaeology	1
1.2 Glass Containers and Glass Tablewares in the Market Street Chinatown Collection	4
1.3 Organization of Report	7
2.0 METHODS	8
2.1 Historical Research	9
2.2 Artifact Cataloging, Analysis, and Curation	14
2.3 Feature Analysis	21
3.0 ARS PROJECT 85-31: RESULTS	25
3.1 Form and Function	25
3.2 Manufacturers	34
3.3 Products	35
3.4 Discussion of Results, By Feature	39
4.0 ARS PROJECT 86-36: RESULTS	83
4.1 Form and Function	83
4.2 Manufacturers	91
4.3 Products	92
4.4 Discussion of Results, By Feature	96
5.0 ARS PROJECT 88-91 RESULTS	129
5.1 Form and Function	129
5.2 Products	133
5.3 Discussion of Results	134
6.0 DISCUSSION AND CONCLUSIONS	138
6.1 Traditional Chinese Medicine Vials	138
6.2 Types of Alcohol	145
6.3 Non-alcoholic Beverages	147
6.4 Food Products	149

6.5 Chronology	150
6.6 Conclusions.....	151
7.0 REFERENCES.....	154
APPENDICES	165
Appendix A - Glass Cataloging and Analysis Appendix	165
Appendix B – Glass Analysis Form	193
Appendix C - Minimum Number of Vessels	195
Appendix D – Research on Products in Glass Containers	220

1.0 INTRODUCTION

This technical report documents more than two years of research on glass containers and glass tablewares in the Market Street Chinatown archaeological collection. Glass containers and tablewares are an important addition to the existing scholarship on the Market Street Chinatown for two reasons. First, glass containers from the late nineteenth century are highly temporally diagnostic. This site has multiple phases but many of the features were not excavated stratigraphically. Dates associated with vessel manufacture and/or with the products inside containers can be used to identify strata associated with different phases of occupation. Second, many of these glass containers held identifiable products which provide insight into forms of culinary, medicinal, and domestic consumption which complement the information on diet, healthcare, and daily life gleaned from other material classes. In particular, the containers reveal a community which made extensive use of mass-produced products including condiments, beverages, and patent medicines from local and international markets.

1.1 Market Street Chinatown: History and Archaeology

The Market Street Chinatown (1866–1887) was located on the western two-thirds of a city block in downtown San Jose, California. According to community historian and Market Street Chinatown descendant Connie Young Yu, the Market Street Chinatown housed more than 1,000 men, women, and children, with its businesses, temples, and theaters serving as a regional center for an additional 2,000 Chinese diaspora residents living in surrounding communities (Yu 2012, 29). In May 1887, during the height of San Jose's anti-Chinese movement, the Market Street Chinatown was destroyed by an arson fire. Prohibited from rebuilding in San Jose's downtown, the residents and businesses of the Market Street Chinatown relocated to two sites, Woolen Mills and Heinlerville, both located away from the city center (Laffey 1993; Laffey 1994; Yu 2012).

A century later, the site of the Market Street Chinatown was chosen for urban redevelopment, including the construction of the Fairmont Hotel and the Silicon Valley Financial Center. During 1985-1988, the City of San José Redevelopment Agency contracted Archaeological Resource Service (ARS) to monitor construction activities and

conduct excavations at the site. During construction, archaeologists identified and hastily excavated 63 features, mostly pits filled with domestic refuse. This research was conducted in three phases. ARS Project 85-31, in the southern half of the construction area, involved excavation of 37 archaeological features (Figure 1). ARS Project 86-36, in the northern half of the construction area, included excavation of 21 archaeological features, with an additional four features designated during laboratory research. ARS Project 88-91 consisted of a single feature excavated approximately 10 meters from the front steps of the present-day San Jose Art Museum (Kane 2011, 9-14). In addition to the excavation of archaeological features, ARS collected unprovenienced surface objects during construction monitoring. These objects were designated as Feature 0 for each project.

When archaeological features were identified, ARS archaeologists excavated the deposit. Sometimes this included stratigraphic excavation, but in other cases the entire feature was removed – both artifacts and the soil matrix – to be screened and sorted elsewhere. This means that many artifacts can only be identified to a feature level. Many features had already been impacted by construction activity at the time of identification, so for some features, only partial recovery was possible. Following excavation, artifacts were wet screened, sorted, inventoried, and labelled for curation.

During the 1990s, the collection was stored in a municipal warehouse by the Redevelopment Agency of the City of San Jose. During this time, additional inventory work was completed by Archaeological Resource Management (Roop et al. 1998; Roop and Flynn 1993; Basin Research Associates, Inc. (1993a, 1993b). This work helped to organize the collection, gather documentation from disparate sources, and document the significance of the collection. This was supplemented by historian Glory Ann Laffey's report "Lot Histories for the Block 1 Chinatown San Jose, California," which placed the archaeological findings in conversation with evidence for the historical use of buildings within the Chinatown (1994).

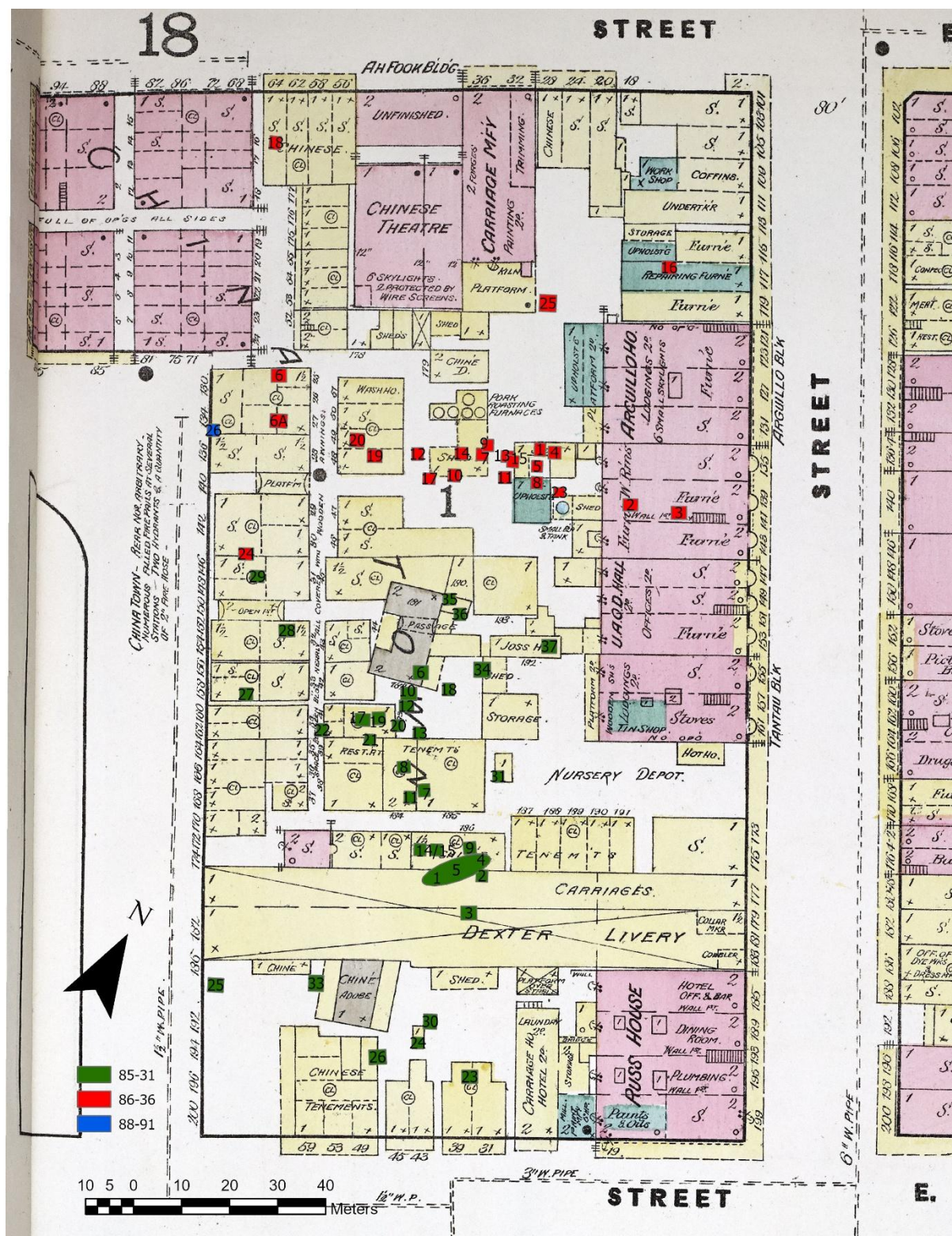


Figure 1: Map of the location of archaeological features recovered by ARS from 1985 to 1988 overlaid on the 1884 Sanborn fire insurance map for the site (Laffey 1994, fig. 5; Sanborn Map, 1884 1884).

Since 2002, the Market Street Chinatown Archaeology Project (MSACP) has been caring for and studying the archaeological assemblage associated with the Market Street Chinatown in San Jose, California. MSACP is a community-based participatory research partnership between Stanford University, History San José (HSJ), and Chinese Historical and Cultural Project (CHCP) (Voss 2012; Voss et al. 2013). The primary goal of MSCAP is to catalog and analyze the collection so the artifacts can once again be used for research and educational programs.

In the first ten years (2002-2012), MSCAP research on the collection was conducted primarily as part of student projects, both through course assignments and research theses. These studies demonstrated the research potential of the collection but were inherently limited in scope by the constraints of the academic calendar. In 2012, as part of a meeting celebrating the ten-year anniversary of MSCAP, the three project partners decided to shift towards systematically analyzing the collection by material type. Since then, the majority of the faunal and the botanical specimens have been analyzed, and the results have been published in a series of technical reports (Kennedy 2016; Popper 2016; Yost 2016). Ceramic artifacts have been cataloged and analyzed, with publication of results currently pending. The analysis of glass containers and glass tablewares reported here contributes to this effort.

1.2 Glass Containers and Glass Tablewares in the Market Street Chinatown Collection

Prior to the research reported here, the glass artifacts in the Market Street Chinatown collection had not been systematically cataloged or analyzed. During the late 1980s, ARS conducted analysis of some glass artifacts from ARS Project 88-91, using a form to record diagnostic attributes (Gosser 1988). Since the start of MSACP in 2002, student research assistants on the Market Street Chinatown Archaeology Project have rehoused, cataloged, and analyzed selected aspects of the glass assemblage. Due to the time constraints of the academic schedule, these prior studies were inherently limited in scope, providing detailed information about selected artifacts. Some examples include Stephanie Cruz' (2007) report on hair tonic bottles, Lynsie Ishimaru's (2003) and Pearle

Lun's (2015) studies of medicine bottles, Liz Clevenger's (2004) analysis of glass from Feature 85-31/20, and Alana Okonkwo's (2024) paper on three bottles from Feature 85-31/35. In addition, Dr. Ray von Wandruszka and his students from the University of Idaho conducted residue analysis on fifteen glass bottles from MSCAP and identified a range of contents including cosmetics, vegetable oil, calamine lotion, and ground mineral "stone drugs" used in Traditional Chinese Medicine (TCM) (von Wandruszka et al. 2014; Voss et al. 2015). Based on the preliminary findings of these studies, comprehensive analysis of the glass assemblage was identified as a major priority for research on the Market Street Chinatown collection.

When I was awarded a postdoctoral fellowship to conduct research on the Market Street Chinatown collection, I sought a research project that would allow me to continue my research on the archaeology of food. Glass containers and glass tablewares are particularly relevant to food studies, as together they document procurement of prepared or processed ingredients and foods, and also the consumption of food.

Initially, the postdoctoral fellowship was scheduled for one year (September 2023 – August 2024). My research during that year focused on glass containers and glass tablewares from ARS Project 85-31. After additional funding was secured for the second year (September 2024 – August 2025), I expanded the scope of the research to include the glass containers and glass tablewares from ARS Projects 86-36 and 88-91. An additional focused period of research was added in February 2026 to incorporate recently discovered glass containers that had been identified in the collection. Since the focus of this research study is consumable products, other glass artifacts—notably window glass, lamp glass, and personal glass items such as buttons, gaming pieces, and ornaments – were excluded from the research study.

In total, the glass studied for this report consists of 14,662 specimens (178,947.2 g) representing a minimum of 835 vessels. Glass tablewares and glass containers were recovered from 54 features. As shown in Figure 2, the amount of glass containers and glass tablewares in each feature varied considerably.

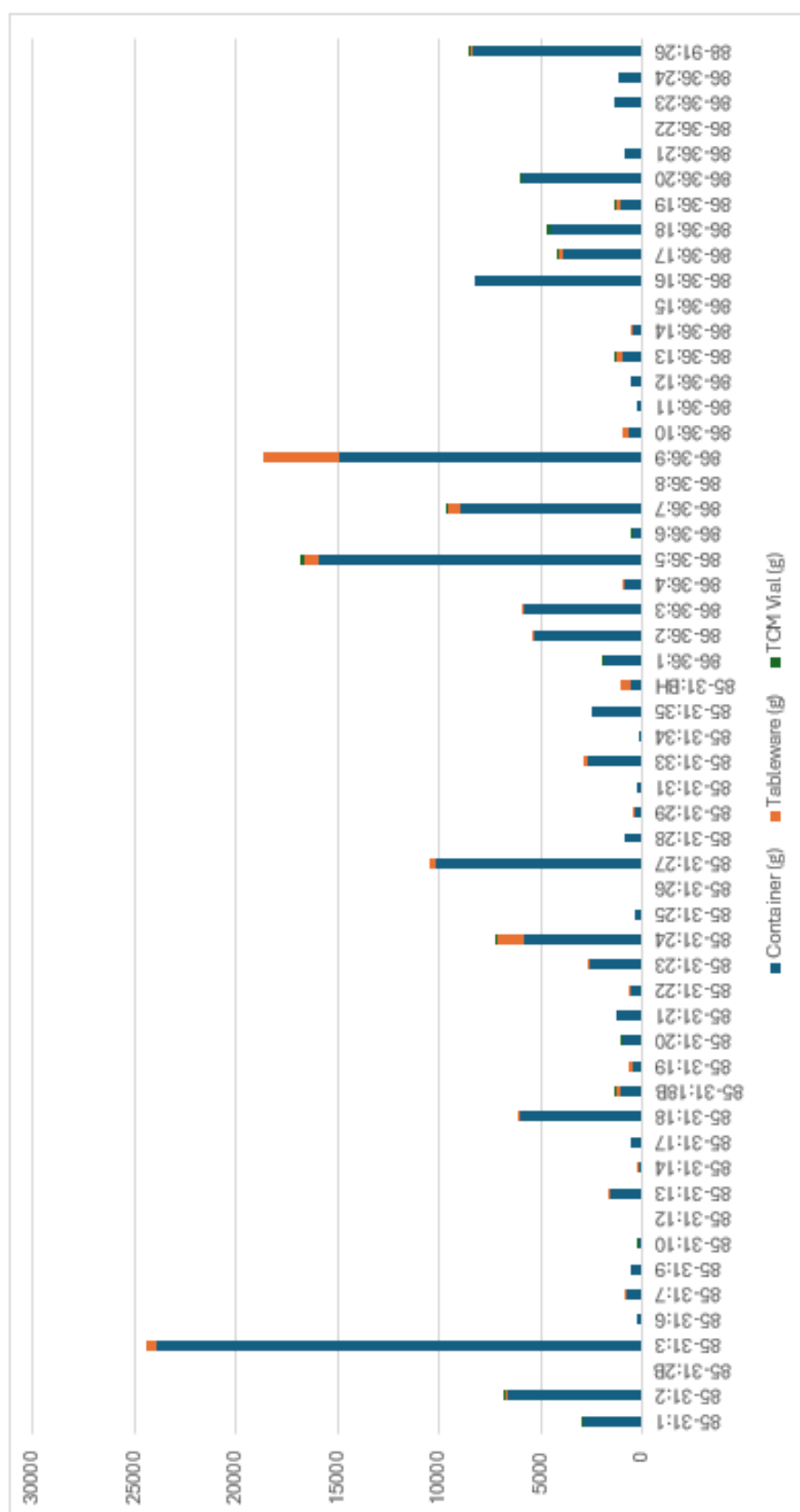


Figure 2: Distribution of glass containers, tablewares, and Traditional Chinese Medicine vials by weight in features across the site.

1.3 Organization of Report

Following this introduction (Section 1.0), this report begins with an overview of the methods used in this research study (Section 2.0). Then, Sections 3.0, 4.0, and 5.0 present the results of the analysis of glass containers and glass tableware for ARS Project 85-31, ARS Project 86-36, and ARS Project 88-91, respectively. Each of these sections begins with an overview of the research findings and then provides a detailed description of the analysis results for each feature. For each feature, I first provide a brief physical description of the archaeological feature and how it was excavated. Then, I describe the glass containers and glass tablewares recovered from that feature, including, where relevant, an assessment of how the glass analysis results inform broader interpretations of that feature. The main body of the report concludes with Section 6.0, which presents several key interpreted themes that emerged from this research study.

This report also contains four appendices. Appendix A presents the procedures used in cataloging and analyzing glass containers and glass tablewares during this research study. This appendix may also be useful as a glossary for technical terms related to glass analysis. Appendix B is the analysis form developed to systematically record diagnostic attributes of glass specimens. Appendix C presents three tables, one each for ARS Project 85-31, ARS Project 86-36, and ARS Project 88-91, listing the minimum number of glass containers and glass tableware vessels identified for each feature. Appendix D presents historical research on selected product companies represented in the Market Street Chinatown glass assemblage. This research was undertaken to refine the date ranges of certain commodities. Additionally, the content of this appendix may be of interest to local historians and to those interested in the history of products used by residents in the Market Street Chinatown.

2.0 METHODS

My primary goal in this glass analysis was to better understand the lives of the inhabitants of the Market Street Chinatown. Glass containers, in particular, are an invaluable source of information about the products that people obtained by purchase or trade. The mid and late 1800s were a particularly important transitional period where revolutions in manufacturing and shipping were making mass-produced foods, medicines, and beverages widely available to customers for the first time. Simultaneously, the years when the Market Street Chinatown was occupied (1860s to 1887) were a period during which California was transitioning from a resource-extraction economy (mining, logging, etc.) to an agricultural and manufacturing economy. Thus, alongside regional and global trade in packaged foods, local canning and bottling industries were developing (see Appendix D for examples).

As demonstrated by this study, Market Street Chinatown residents sourced food, drink, medicine, and household products from producers throughout the world. At this time, manufacturers in China primarily used ceramic vessels to package and ship their products, while producers in Europe and the United States used glass, metal, and ceramic containers. Similarly, most tableware vessels produced in China were ceramic, while tableware vessels produced in Europe and the United States were manufactured from both ceramic and glass. Thus, analysis of the glass container and glass tableware assemblage particularly generates new information about how Market Street Chinatown residents were engaging with products made locally as well as products shipped from throughout the United States and China. The methods developed for this study were designed to generate fine-grained evidence that would allow reconstruction of Market Street Chinatown residents' market engagement, product consumption, and food and medical practices.

The methods used are described in the following order: historical research, artifact cataloging, artifact analysis, assemblage analysis, photo documentation, and rehousing for curation.

2.1 Historical Research

Beyond the glass analysis, over the two years I also conducted some historical research to support the interpretation of the glass. This took two main forms: 1) research into the businesses and individuals located on Block 1 with a view to linking the contents of particular features to specific buildings, and 2) research into the products in glass containers for which there was evidence in the Market Street Chinatown assemblage. The results of the former are included here, while the results of the latter can be found in Appendix D.

I examined digitized census records for San Jose from 1870 and 1880 through Ancestry.com, city directories from 1870 and 1887 via the San Jose Public Library, the Wells Fargo Directory of Chinese Business Houses from 1878 and 1882, as well as archival records held by History San José. This initial re-assessment of the historical resources available suggests that there is scope for a larger historical project which integrates newly available sources with geo-spatial or deep mapping techniques.

The one map of the layout of buildings within the Market Street Chinatown is the 1884 Sanborn Fire Insurance Map. In Figure 3, I have digitized the buildings shown in the Sanborn map and overlaid that with information about the inhabitants and uses of the buildings drawn from the map itself and the 1887 San Jose city directory. The 1887 directory has a distinct lack of Chinese businesses listed, in contrast to the 1870 directory which listed Chinese businesses throughout the city, although notably not on the western half of Block 1 where the Chinatown was located. This may be related to the fire in 1870 which saw the Chinatown move temporarily to Vine Street nearby.

For the purposes of this report, it was interesting to see that one of the businesses on First Street advertised the sale of crockery and glassware (*1887 San Jose City Directory* 1887, 649). Henry French ran a grocery store out of 135 South First Street which offered a variety of food and household products, but he may also have been the closest source of glassware. History San José holds extensive records associated with this business and closer examination of the ledgers may reveal more information about the types of glassware that French sold.

[illegible]

10 | Page

While the directories do not provide many of the names of the Chinese inhabitants of the Market Street Chinatown, more information is available from the lease books and tax assessment rolls. Historian Bonnie Montgomery transcribed the leases pertaining to Block 1 from the County of Santa Clara Archives for use in MSCAP research. The approximate location of the leases has been mapped on top of the Sanborn Fire Insurance Map in Figure 4. These locations are based on the descriptions given in the lease books and on maps showing the land parcels and their owners (e.g., Figure 5 and Figure 6). Newspaper accounts and tax assessment rolls can then be cross-referenced with the names of the lessors and the landowners to identify specific locations within the Chinatown.

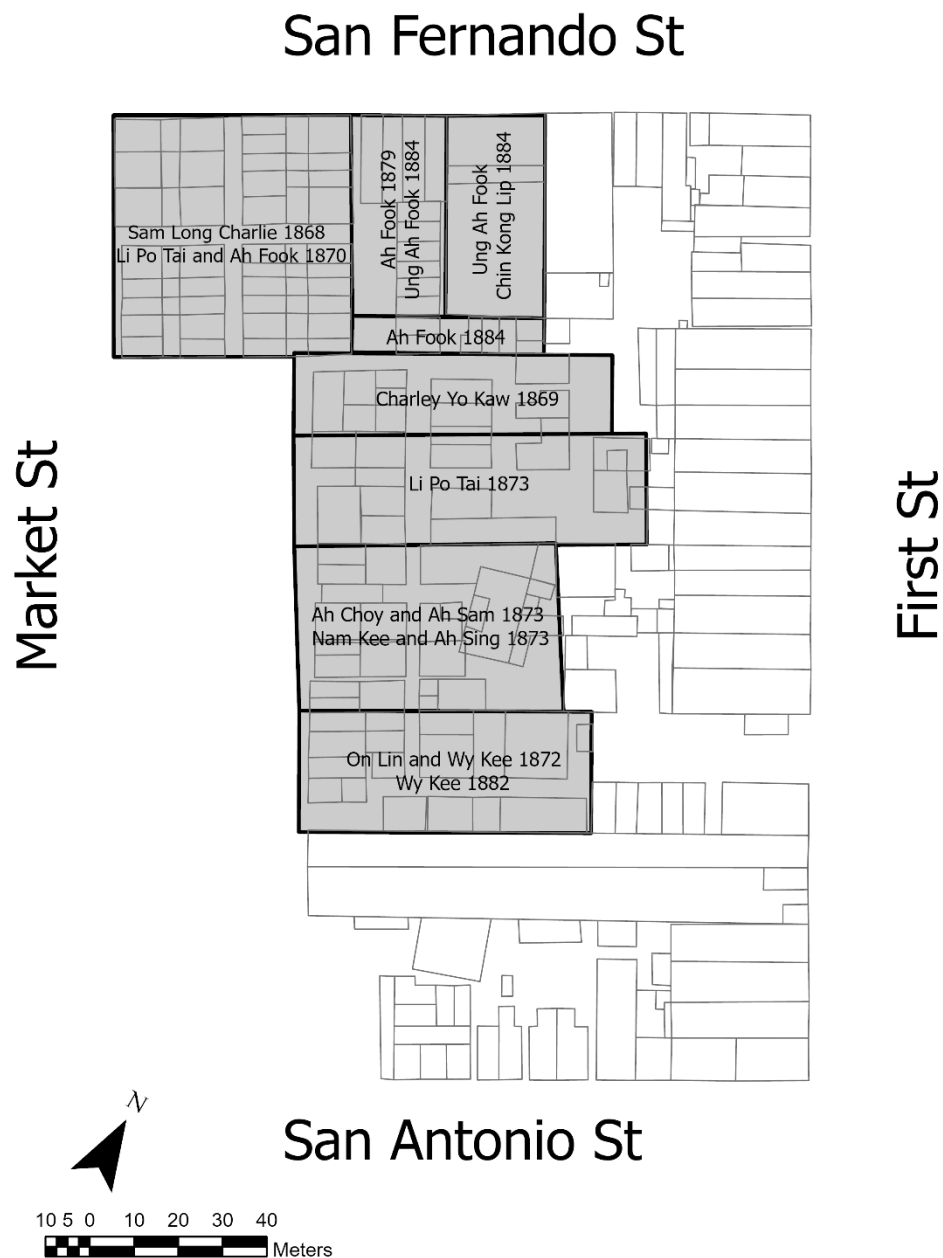


Figure 4: Estimated extent of leases held by Chinese Americans on Block 1, according to transcriptions of the Lease Books held by the County of Santa Clara Archives by Bonnie Montgomery (Sanborn Map, 1884 1884).

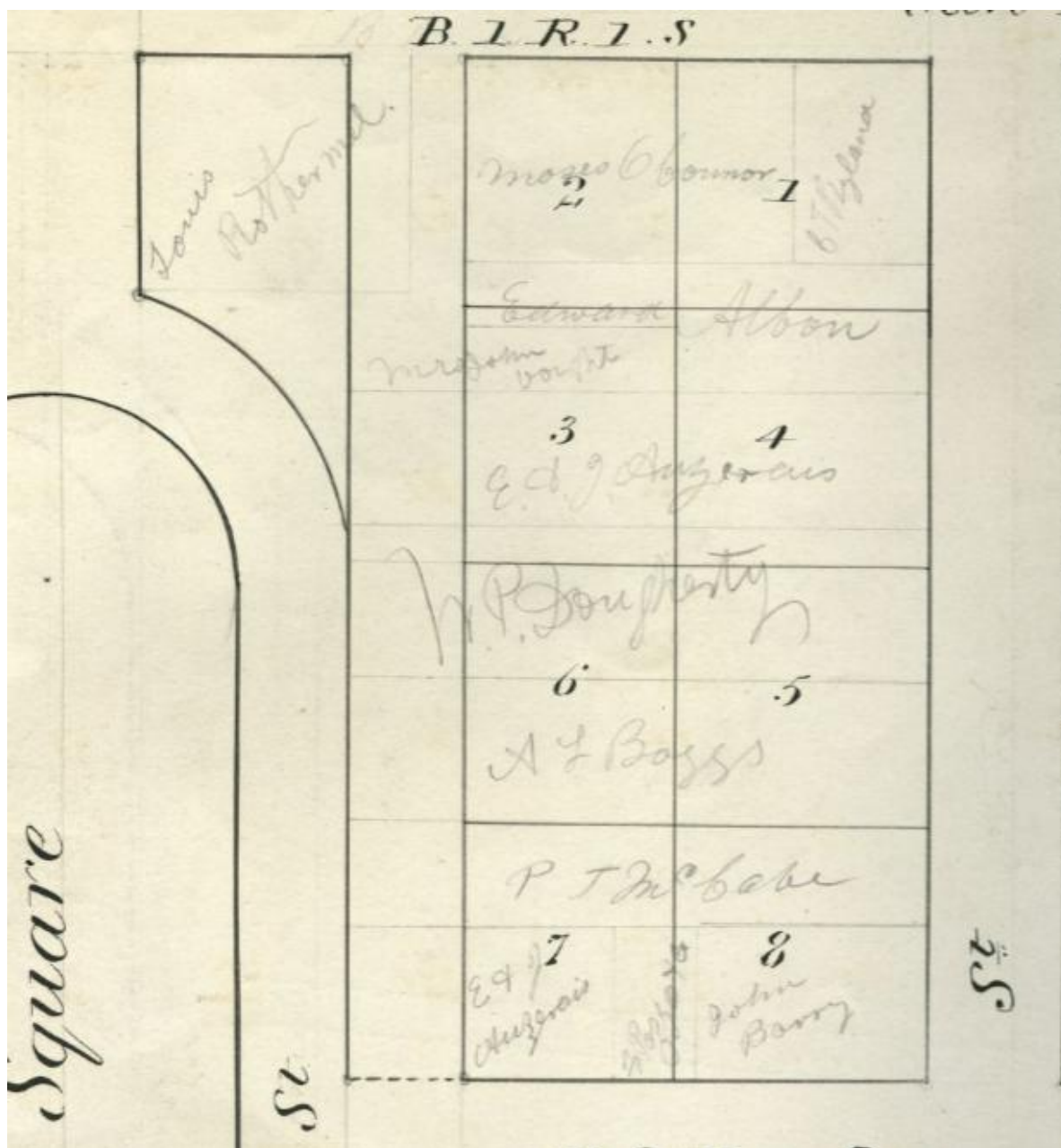


Figure 5: Detail from the 1871 City of San Jose Block Book, showing the land ownership on Block 1 in 1871. Compiled by H.H. Stevenson for the Santa Clara County Assessor's Office. Image in the public domain, courtesy of San Jose Public Library.

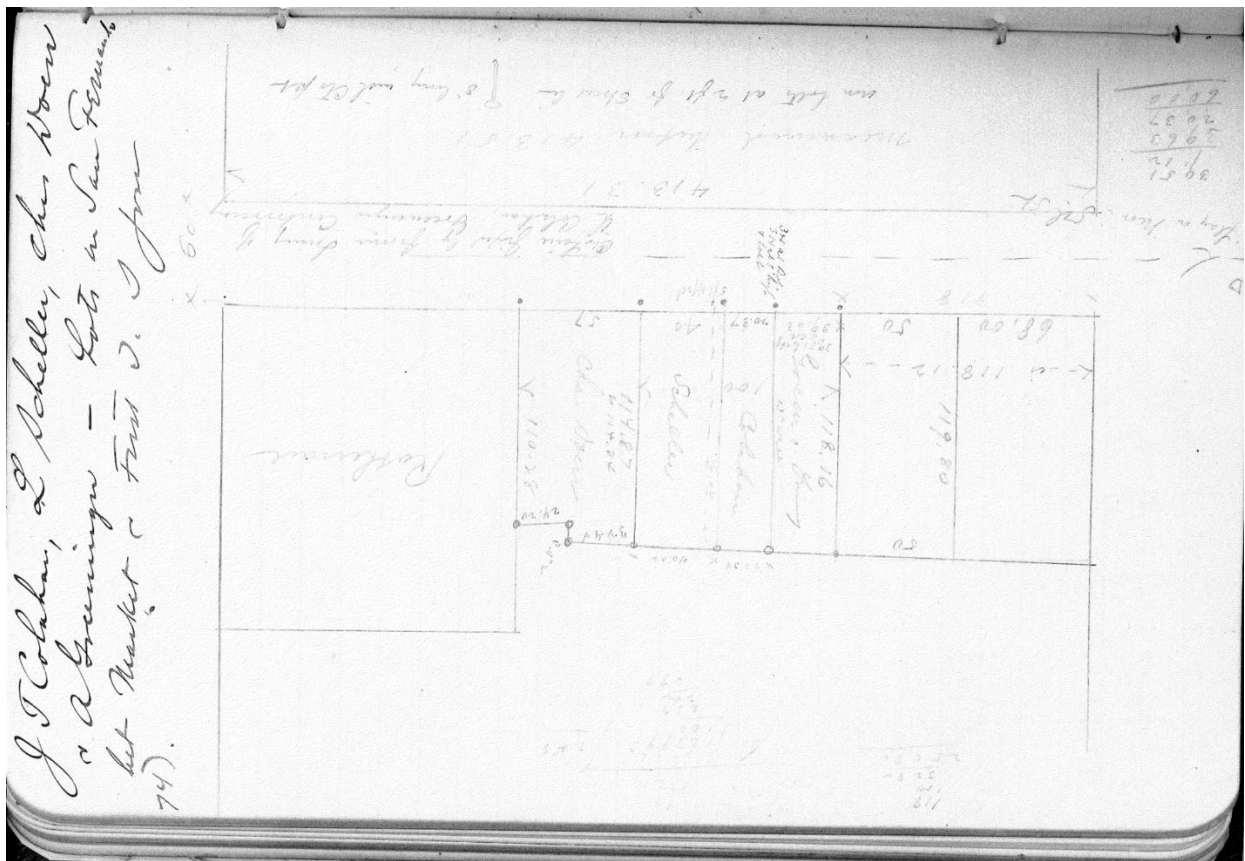


Figure 6: Surveyor's sketch showing land ownership along San Fernando St on Block 1. Santa Clara County Surveyor's Field Books, A.T. Hermann, Book 22, 1887, pg. 74.

2.2 Artifact Cataloging, Analysis, and Curation

2.2.1 General considerations

At the start of this research study, the existing state of the glass containers and glass tablewares was assessed. Most of the glass artifacts from ARS Project 85-31, and some of those from ARS Project 86-36 and ARS Project 88-91, had been cataloged by student research assistants. However, differences in the approaches used by individual catalogers, as well as improvements in cataloging procedures over time, meant that there was little standardization among existing catalog records. In order to ensure consistent values across catalog database fields, I decided to re-catalog all glass container and glass tableware specimens, standardizing terminology and measurements across the entire assemblage.

MSCAP uses a Microsoft Access catalog database to collect and organize information about all artifacts in the Market Street Chinatown collection. This catalog database was used for the archaeological study of the Woolen Mills Chinatown in San Jose (Past Forward Inc. 2002) and was adopted by MSCAP specifically to facilitate comparison between the Market Street and Woolen Mills Chinatowns. Later iterations of this database were developed as the Sonoma Historic Artifact Research Database (SHARD) (Anthropological Studies Center, Sonoma State University, n.d.) and used for cataloging artifacts from the Heinlenville Chinatown in San Jose (Anthropological Studies Center 2009). SHARD is now widely used for historical archaeology research projects throughout California.

In the MSCAP catalog database, an individual artifact or a group of artifacts that share similar attributes are assigned a unique catalog number. For each catalog number, the cataloger records:

- The location where the artifact was found (typically the ARS feature number, as well as any stratigraphic information recorded by ARS archaeologists).
- The material the artifacts are made of.
- The condition and completeness of the artifacts.
- The count (whole items and fragments) and weight of the artifacts.
- If known, the dates of manufacture and the place of origin of the artifacts; and
- A description of the artifact using a series of nested functional categories.

The functional categories used to describe artifacts in the Market Street Chinatown collection posed specific challenges for standardization of glass container analysis. The use of functional categories for cataloging historic artifacts originates in research by Stanley South (1977), who proposed that comparing the functions of artifacts across different archaeological sites could reveal demographic information as well as contribute to generalizable knowledge about the relationship between human activity

and material objects. However, assigning a given artifact to a specific “function” typically requires that the analyst make certain assumptions, and this is particularly problematic for glass artifacts. For example, is a bottle of tonic water a food (beverage) or therapeutic (medicinal)? The situation becomes even more complex when bottle re-use is considered: the bottle originally containing tonic water might be later used as a container for other substances, thus changing its function.

For the sake of continuity and comparison with other sites, very few changes have been made to the existing catalog system for this research project. In order to ensure consistency in functional analysis, I developed a new appendix to the MSCAP Lab Handbook (Appendix A of this report), and a new analysis form for recording additional attributes and observations about glass containers and glass tablewares (Appendix B). In addition to standardizing functional attribution, these updates also standardized the naming for colors and decoration of glass.

The functional analysis used in the Market Street Chinatown is nested, involving increasingly specific nomenclature (group, category, type, and description). For example, catalog number 85-31/24-35 is functionally cataloged as *Personal/Alcohol Container/Container/Absinthe Bottle*.

For this research study, functional groups have followed the general guidelines used for MSCAP cataloging:

- Containers that clearly contained alcohol = Personal
- Containers that clearly contained food = Domestic
- Containers that clearly held medicine or toiletries = Personal
- All other containers = Indefinite

In order to minimize over-classification, functional groups have been interpreted narrowly. For example, a fragment of an olive-colored glass bottle might commonly be used for wine or beer. But since this type of bottle was also used for other products and

was commonly reused after its initial contents were consumed, for this research study, olive-colored bottle glass is only categorized as “Personal” if there is a product label (embossment) or other attributes that clearly indicates the bottle originally held an alcohol-based product. This means that olive-colored bottle glass specimens lacking a product label have been cataloged in the “Indefinite” functional group.

Similarly, when cataloging and analyzing paneled, colorless glass bottles with prescription or patent finishes, I only described these as medicine bottles if they had an embossment indicating that they originally contained a medicinal product. This is a more conservative approach taken than often used in historic glass analysis, but it is important to avoid misidentification, as bottles often used for medicines were also used for other products.

Following these decisions, the conservative identification approach taken here should be kept in mind when comparing the results of the Market Street Chinatown glass container analysis to those from other historic archaeology projects.

2.2.2 Cataloging

For each box in the Market Street Chinatown collection containing glass artifacts, the glass analysis team (myself and the two student research assistants, Alana Okonkwo and Alyssa Fong) inspected each artifact, setting aside any non-glass artifacts as well as any glass artifacts that are not containers or tablewares. This assessment was based on color and/or form. Glass artifacts from unprovenanced features (85-31/0 and 86-36/0) were largely excluded from the study at this time, although a few that needed rehousing were cataloged and properly bagged. These removed artifacts were all re-boxed for later study and are not discussed in this report.

(It should be noted that four glass bottles from the Market Street Chinatown collection are on display at the Chinese American Historical Museum in San Jose. Catalog records were produced for each of those four objects, but they were not fully analyzed as direct examination was not possible.)

For all artifacts representing glass containers and glass tablewares, we made a list of all catalog numbers and then printed existing catalog forms from the catalog database. Occasionally an artifact was found without a catalog number or contextual information, or two clearly different items were found with the same catalog number. With reference to the original hand-written catalog generated during the 1985-1988 ARS excavations, we attempted to disambiguate partial or duplicate artifact numbers. When the issue could not be conclusively resolved, new catalog numbers were generated to ensure accurate tracking and identification of all specimens. These circumstances are clearly documented in the catalog database.

Once catalog number issues were resolved, each catalog record was carefully reviewed and then corrected and/or completed following the procedures outlined in Appendix A of this report. Specifically, the specimens were counted and weighed, and diagnostic features updated and recorded including color, form, body shape, elements present, size, manufacturing technique, features present, marks, decoration, evidence of heat modification, and conservation assessment. Following the conservative approach outlined in Section 2.2.1, artifact function was assessed and whenever possible, the date and location of production and the brand and/or maker was recorded. For specimens with diagnostic attributes, we made some preliminary photographs. Most specimens with legible embossments were hand-illustrated.

At this stage, some artifacts were selected for further analysis (see Section 2.1.3). Once cataloging (and, if relevant, analysis) was complete, the specimens were rehoused by catalog number in 4mm thick polyethylene self-closing bags. In addition to writing the catalog number on the bag's outer surface with a permanent marker, a bag tag printed on archival-quality paper was included in each bag to safeguard later identification.

2.2.3 Analysis

In the process of cataloging, glass artifacts with diagnostic features were selected for further analysis using the form reproduced in Appendix B. This form allowed the glass analysis team to record greater detail about selected specimens than afforded through the catalog process alone.

The nomenclature used in the glass analysis process is broadly based on Jones and Sullivan (1989) and also draws on other works including Boow (1991), Jones (2000), and the Digital Archaeological Archive of Comparative Slavery Cataloging Manuals (Galle et al. 2003). In describing bottle finishes, the glass analysis form departs from Jones and Sullivan (1989), using instead the names for finishes from the Society for Historical Archaeology Historic Glass Bottle Identification Website (Lindsey 2024c).

The analysis process includes assessment of vessel form, including body shape and finish type (pontil treatment was not systematically recorded although it was occasionally noted in the Remarks section); the elements of the original vessel that are represented by the archaeological specimens, the manufacturing techniques used to produce the specimen, dimensions (base and finish diameter and complete vessel height), and any marks or attributes that indicate the maker of the container and the producer of the container's contents.

Since the procedure used to catalog glass containers is intentionally conservative to prevent misattribution (see Section 2.1.2) the glass analysis form also includes a field, "Bottle Style," that allows the analyst to make an informed assessment of the likely contents of a container based on holistic interpretation of container form, color, marks, etc. For example, fragments of an olive-colored or black-colored glass bottle with a circular cross-section can be indicated on the analysis form as likely alcohol bottles. This enables a more nuanced assessment of bottle function than afforded by the cataloging process alone.

2.2.4 Missing Specimens

Following cataloging and analysis of artifacts, I used the catalog database to generate a list of glass artifacts identified as containers, tableware, or indefinite function that had not been located and re-cataloged. Feature 85-31/0 and Feature 86-36/0 were excluded from this process as these artifacts lack provenience and are not considered to be part of the research collection.

For ARS Project 85-31, this project identified approximately 140 items that had not been cataloged or analyzed as part of the current research study. By conducting a systematic visual inspection of all remaining temporary storage boxes and searching the storage cabinet shelving units in the Historical Archaeology Lab, I located most of these missing items. I then cross-referenced the remaining artifacts with the original ARS catalog to ensure they had been cataloged correctly and checked the catalog form “remarks” field for information about whether these objects had been renumbered at some point in their previous handling. However, artifacts represented by about 20 catalog records from ARS Project 85-31 were not found for this analysis.

Since most of the glass containers and glass tablewares from ARS Project 86-36 and ARS Project 88-91 had not been cataloged prior to this study, it was not possible to systematically assess whether any glass containers and glass tablewares had been omitted during the 2023-2025 cataloging and analysis process. However, the inspection process described above was effective in locating previously overlooked objects.

The problem of missing specimens has arisen during systematic cataloging and analysis of other material categories and appears to be a result of gaps in the chain of custody and inventory control during the fourteen years between the original 1985-1988 excavations and the loan of the collection to Stanford University in 2002. Documenting these missing specimens is an important contribution to the systematic, material-by-material approach currently being used to study the Market Street Chinatown collection.

2.2.5 Photo documentation

Following the cataloging and analysis process, the glass analysis team selected 488 catalog records for formal photo documentation. These photographs will facilitate future analysis, publication, and collections management.

Items were selected for photography based on researcher judgement in an attempt to capture both the most commonly found vessel colors, forms, manufacturing, and decorative techniques, as well as the more unusual embossments and features.

Photographs were taken with a Nikon D5000 in a NEF format. Each photograph contains a scale and printed label showing the catalog number of the artifacts. These images were then renamed using the following format: GL-artifact tracking number-image number. For example, GL-86360100001-001 would be the first image taken of the artifacts cataloged as 86-36/1-1.

The renamed images were uploaded to the desktop computer in the Historical Archaeology Lab at Stanford University for long-term storage.

2.2.6 Final Curation Boxes

The final stage of the process was organizing the artifacts in their final curation boxes. Artifacts were curated in three broad categories: Tablewares, Traditional Chinese Medicine (TCM) Vials, and Containers. Using the Access catalog database, for each category I generated a list of artifacts by ARS project number. Within each category and ARS project number, the artifacts were sorted by feature and then by catalog number and placed in that order in permanent curation boxes. In the MSCAP catalog database, the “Stanford Box” field was updated to show the permanent box number. Finally, a list of the items in each box was generated, printed, and placed in the appropriate curation box.

2.3 Feature Analysis

Once cataloging, analysis, and curation was complete, the resulting data was then ready for analysis by archaeological feature.

2.3.1 Quality Assurance and Quality Control

“Data cleaning” (quality assurance and quality control) is an essential step in preparing a database for comparative and integrative analyses. I reviewed the MSCAP catalog database to correct missing and erroneous data. Using filters, I completed blank fields, fixed spelling errors (e.g., Featre 5), and standardized duplicates (e.g., Feature 14-15/Features 14-15). For the glass containers and tablewares specifically, this included reviewing and standardizing:

- The use of ink bottle vs. inkwell
- The categorization of Florida water as perfume
- The use of color categories for solarized glass

I then exported the relevant data from the MSCAP catalog database into Microsoft Excel, using PowerQuery to merge the catalog and analysis tables. I then imported this merged spreadsheet into OpenRefine for more data cleaning, before re-exporting it into Excel for analysis.

2.3.2 Minimum Number of Vessels

Minimum Number of Vessels (MNV) is a secondary measurement that is widely used in archaeology to standardize quantities of fragmented and incomplete artifacts. In brief, MNV refers to the minimum number of vessels that must have been present originally to generate the observed archaeological specimens. For example, if there are five fragments of glass – two bottle bases and three body fragments, all of the same color – there must have originally been at least two complete bottles in order to generate the five fragments. MNV is thus a highly conservative method of quantification. It guards against over-counting caused by fragmentation but may under-count specimens with few diagnostic features.

For this research study, MNV was calculated by feature following a procedure similar to the qualitative analysis outlined for historic ceramics by Voss and Allen (2010). For each feature, recorded glass fragments were sorted into mutually exclusive categories by color, form, size, type of finish, and decoration to produce a conservative estimate of the minimum number of each type of vessel represented in that feature. The presence of a single fragment of olive bottle glass, for example, produces an MNV of one, as would 70 body sherds of olive bottle glass. However, two partial olive bottle finishes, one mineral and one champagne, would produce an MNV of two because it is not possible that they came from the same bottle.

Appendix C provides a complete list of all glass container and glass tableware MNVs identified for the Market Street Chinatown collection. The list is organized into three tables, one for each ARS Project (85-31, 86-36, and 88-91).

2.3.3 Cross-mends Across Features

Some glass sherds from different features cross-mend with each other and thus were originally part of the same bottle. This raises questions about site formation processes, excavation procedures, and post-excavation laboratory processes for the Market Street Chinatown collection.

When glass sherds cross-mended across feature, the MNV count was attributed to the first feature in numerical order. The glass sherds that cross-mended across features are:

- 86-36/5-873 and 86-36/17-128 – aqua body fragments ammonia bottle from San Francisco Gaslight Co. with embossment describing process for dilution. Attributed to Feature 86-36/5.
- 86-36/2-44 and 86-36/5-94 – aqua fragments of vertically ribbed salt jar with embossment for J.H. Brough & Co., Liverpool. Attributed to Feature 86-36/2.

There are several possible explanations for how this could occur:

- Pieces of a broken bottle were collected and disposed of separately, thus ending up in different trash pits or other deposits.
- The bulldozing that occurred after the 1887 fire may have displaced artifacts from their original location and redeposited them in other locations.
- Construction activity during 1985-1988 similarly may have displaced artifacts, moving them from one feature location to another.
- During rapid excavation of features, ARS archaeologists may have mislabeled artifacts or misplaced buckets of deposits.

- In the ARS lab after excavation, artifacts may have been mis-sorted or misplaced and hence mislabeled.

Because the number of cross-mends among glass artifacts are few, it appears that whatever process might have caused this was unusual and did not compromise the integrity of the Market Street Chinatown collection as a whole. However, if cross-mends are found to also occur in other material categories such as ceramics or metal, it would be instructive to reassess this topic in future interpretations of the site. It would be particularly instructive to assess the locations and proximity of the features that yielded cross-mended artifacts, as that might provide clues to the processes involved.

3.0 ARS PROJECT 85-31: RESULTS

For ARS Project 85-31, there are 897 catalog numbers for glass containers and glass tablewares. These represent 6,354 specimens, together weighing 78.5 kg. These artifacts represent a minimum of 360 original vessels (Appendix C). After cataloging, 706 specimens were selected for analysis (Section 2.2.3 and Appendices A and B).

An additional 45 artefact numbers (11 whole vessels and 55 fragments, 6,747.5 g) were cataloged from Feature 85-31/0, which consists of unprovenienced surface finds collected by ARS archaeologists while observing construction activity. Because of lack of context, glass containers and glass tablewares from Feature 85-31/0 are excluded from the following analyses except for lists of manufactures and products.

3.1 Form and Function

3.1.1 Glass Containers

ARS Project 85-31 contained a range of glass and tableware forms. This subsection presents aggregate data for categorization of glass specimens from ARS Project 85-31 using functional classifications from catalog records and bottle style from analysis forms (See Section 2.0 for methods description).

Table 1: ARS Project 85-31: Glass specimens by function (Group, Category, and Description), as measured by count, weight, and MNV.

Functional Group	Functional Category	Functional Description	Count	Weight (g)	MNV
Activities					
	<i>Writing</i>		12	406.7	8
		Inkwell	12	406.7	8
Domestic				6448.9	
	<i>Drinking Vessel</i>		65	2714.9	22
		Drinking glass	17	227.2	4
		Tumbler	48	2487.7	18
	<i>Food Container</i>		64	2674	14
		Bottle	3	16.2	1
		Condiment bottle	5	204.7	3
		Pickle/chutney bottle	47	422.1	2

	Soda-water bottle	6	1741.2	6
	Spice bottle	3	289.8	2
<i>Food Storage</i>		1	8.5	1
	Canning jar	1	8.5	1
<i>Tableware</i>		28	636.6	12
	Egg cup	3	51.7	2
	Flatware	3	37.2	1
	Hollowware	7	194.4	
	Indefinite	6	64.5	2
	Salt	1	82.5	1
	Saucer	1	20	1
	Stemware	7	186.3	5
<i>Misc. Closures</i>		2	43.1	1
	Lid	1	40.6	1
	Stopper	1	2.5	
<i>Misc. Containers</i>		11	228.9	2
	Glue Bottle	2	156.6	1
	Sewing machine oil bottle	9	72.3	1
<i>Indefinite</i>		12	142.9	
	Hollowware	1	54	
	Indefinite	11	88.9	
Personal			5747.3	
<i>Alcohol Container</i>		179	2123.3	5
	Absinthe bottle	21	747	1
	Alcoholic beverage bottle	146	1048	2
	Flask	12	328.3	2
<i>Clothing</i>		1	178.1	1
	Shoe-polish bottle	1	178.1	1
<i>Grooming</i>		8	1008.3	7
	Hair-tonic bottle	4	336.7	3
	Perfume bottle	4	671.6	4
<i>Health</i>		103	2485.2	29
	Bitters bottle	16	317.4	2
	Jar	6	49.9	1
	Medicine bottle	44	1232.8	11
	Sarsaparilla bottle	5	121.3	1
	Schnapps bottle	17	615	3
	Vial	15	148.8	11
Indefinite				
<i>Misc. Closures</i>		3	41.9	1
	Stopper	3	41.9	1
<i>Misc. Containers</i>		3106	62783.5	239
	Bottle	2786	60109.1	226
	Bottle/jar	44	589	5

	Chemical bottle	19	347.9	1
	Container	254	494.8	5
	Demijohn	1	1210	1
	Hollowware	2	32.7	1
<i>Indefinite</i>		2759	3002.5	18
	Bottle	17	99.4	
	Bottle/jar	5	23.3	
	Hollowware	2	13.7	3
	Indefinite	2735	2866.1	15
Totals		6354	78478.4	360

Table 2: ARS Project 85-31 bottle style by count, weight, and MNV.

Bottle Style	Count	Weight (g)	MNV
Alcohol bottle	1,681	50,211.4	132
Canning jar	1	8.5	1
Case gin bottle	171	1,634.5	4
Chemical bottle	19	347.9	1
Pickle/chutney bottle	51	531.1	2
Glue/mucilage bottle	2	156.6	1
Ink bottle/inkwell	12	406.7	8
Medicine bottle	109	2,438.9	19
Soda/mineral water bottle	9	1,797.2	5
Condiment bottle	12	443.2	4
Perfume bottle	4	671.6	4
Pomade jar	6	49.9	1
Sewing Machine Oil Bottle	9	72.3	
Shoe polish	1	178.1	1
Spice bottle	3	289.8	2
TCM vial	13	114.3	10
Indefinite	4,251	19,410.4	166
Total	6,354	78478.4	360

These results reveal that, taken as a whole, most identifiable glass containers in ARS Project 85-31 are likely to have contained alcohol. These include olive-colored wine bottles and beer bottles as well as including spirits bottles and whiskey flasks. Bottles likely to have contained alcohol represent 38% of the assemblage by MNV and 66% of the assemblage by weight. This proportion of alcohol bottles is broadly similar to that

found at other nineteenth-century sites. At the Wong Ho Leun site in California, for example, 42% of identifiable bottles were categorized as beer/ale, wine/champagne, or miscellaneous alcoholic (Blandford 1987, 192) while the percentage (52.7%) was even higher at Lovelock, Nevada (Blandford 1987, 208). At the Hoff Store site, a San Francisco retail warehouse destroyed in 1851, 45.9% of the assemblage was attributed to alcohol bottles, while the privy from the Mexican American Diaz household in Monterey had 38% alcohol bottles (Felton and Schulz 1983). Differences in the percentages are at least partly caused by differences in recovery, analysis, and quantification methods. Alcoholic beverages are supplemented by medicine bottles (including bitters, medicinal gin and hair tonic, non-alcoholic beverages, such as soda and mineral waters, food products (pickle/chutney, oil/vinegar, canning jars, and spice bottles), household products (chemical bottles, glue/mucilage, ink, shoe polish, and sewing machine oil bottles) and grooming products (perfume and pomade).

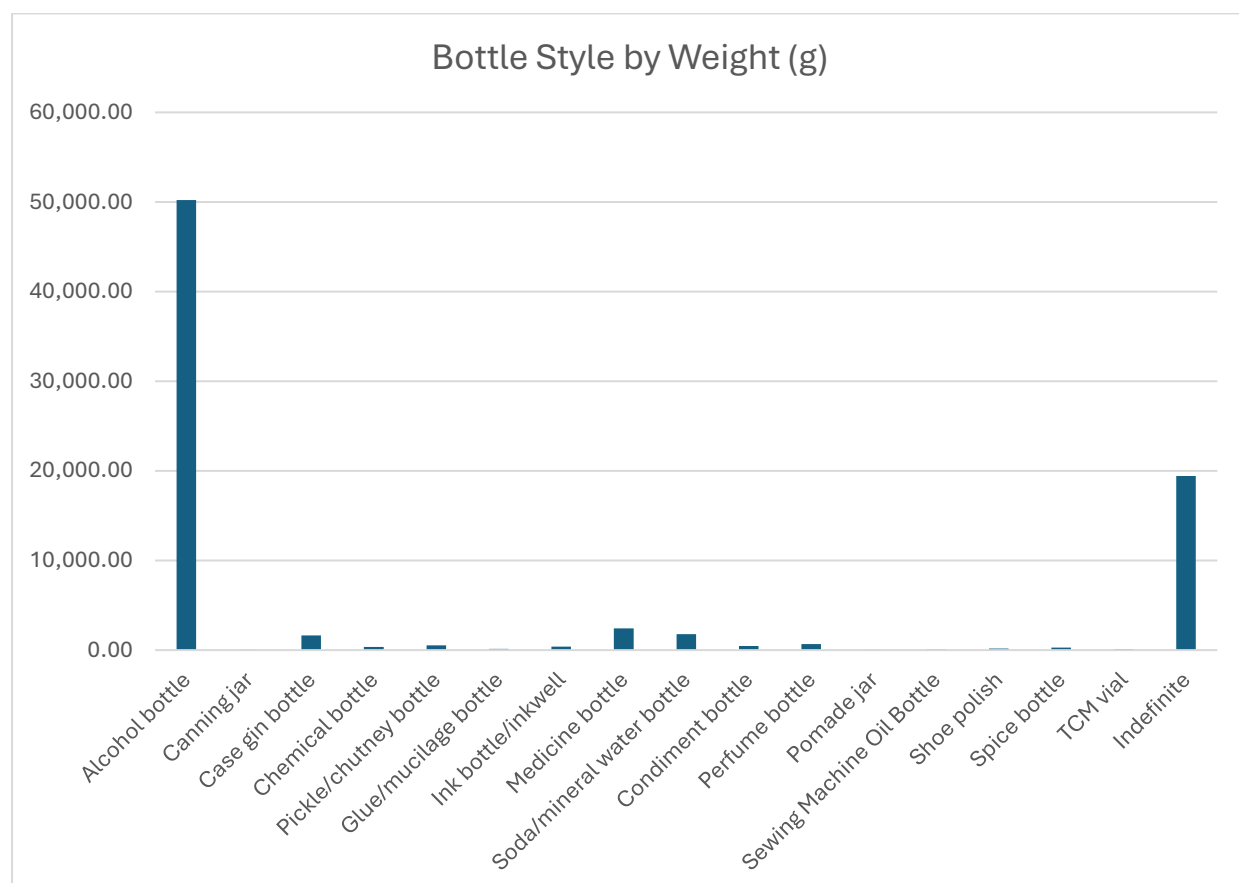


Figure 7: ARS Project 85-31 bottle style by weight in grams.

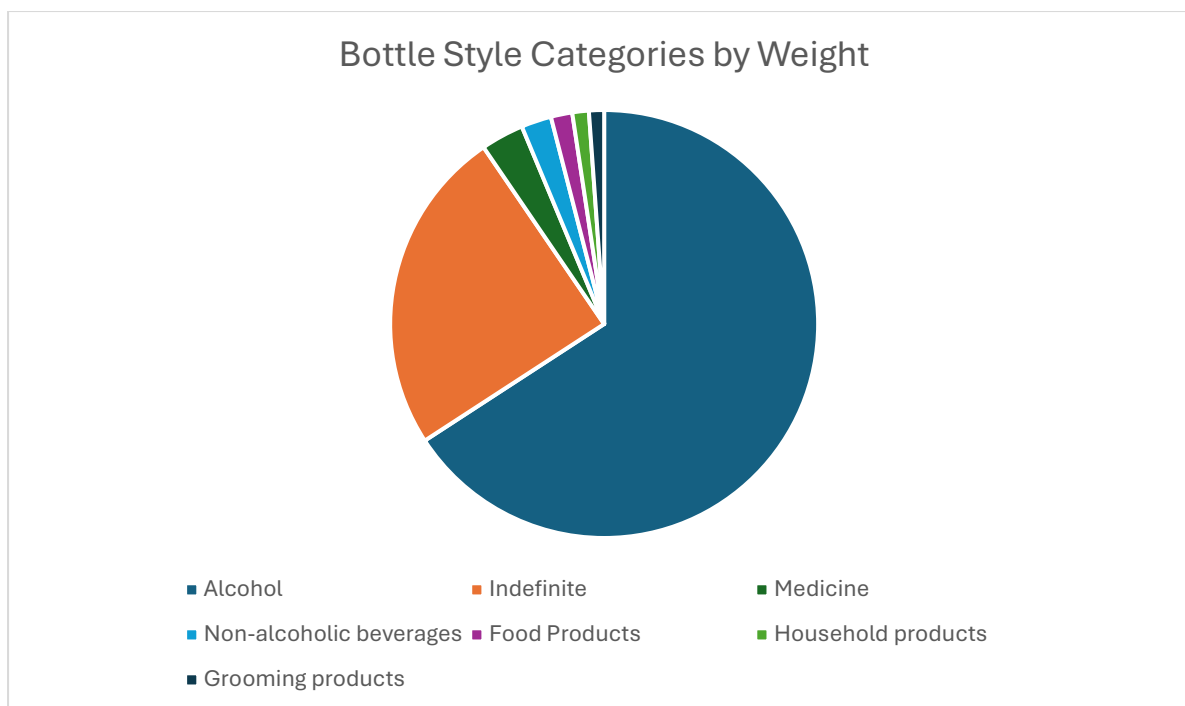


Figure 8: ARS Project 85-31 bottle style categories by weight.

3.1.2 Tablewares

The glass tablewares are primarily represented by tumblers (MNV = 18) in a variety of press-molded forms: plain (MNV = 3), ribbed (MNV = 2), fluted (MNV = 1), and paneled (MNV = 13) (Table 3). These are typical of the tumblers produced from the 1830s onwards and ubiquitous on archaeological sites (Jones 2000, 225). The tumblers are supplemented by at least four stemmed drinking glasses.

Table 3: ARS Project 85-31 tablewares by count, weight, and MNV.

	Count	Weight	MNV
<i>Drinking Vessel</i>	65	2714.9	22
Drinking glass	17	227.2	4
Tumbler	48	2487.7	18
<i>Tableware</i>	28	636.6	12
Egg Cup	3	51.7	2
Flatware	3	37.2	1
Hollowware	7	194.4	
Indefinite	6	64.5	2
Salt	1	82.5	1
Saucer	1	20	1
Stemware	7	186.3	5
Total	93	3351.5	34

Both the tumblers and the drinking glasses are marked by a variety of forms and decorative styles: there is no evidence of sets of matching drinking vessels. The tumblers show ribbing and panels of different heights and widths, different cross-sections, and varying degrees of flatness or concavity among paneling (Figure 9). The drinking glasses have different stems (one paneled, one plain roughed stem, one true baluster stem, one with a ball knop) and body treatments (two paneled, one honeycomb, one probably plain) (Figure 10). Honeycomb is a simple geometric pattern of facets designed to look like cut glass which was first produced in the 1840s to 1860s but continued in use for many decades (Gronniger 2016, 88–89). The same pattern continues in the unidentified stemware, which may have been from drinking glasses or other stemmed vessels with a variety of different stems and knops.



Figure 9: Range of tumbler forms and decoration. A) 85-31/3-144 has ribbing around the base, B) 85-31/3-145 has flat panels most of the height of the body, C) 85-31/24-14 has wider, flatter ribbing with a plain upper body, D) 85-31/24-5 has more concave panels with arches, approximately $\frac{3}{4}$ of the body height, E) 85-31/24-4 has short arched panels on the bottom $\frac{1}{3}$ of the body, F) 85-31/24-13 has fluting most of the height of the body.

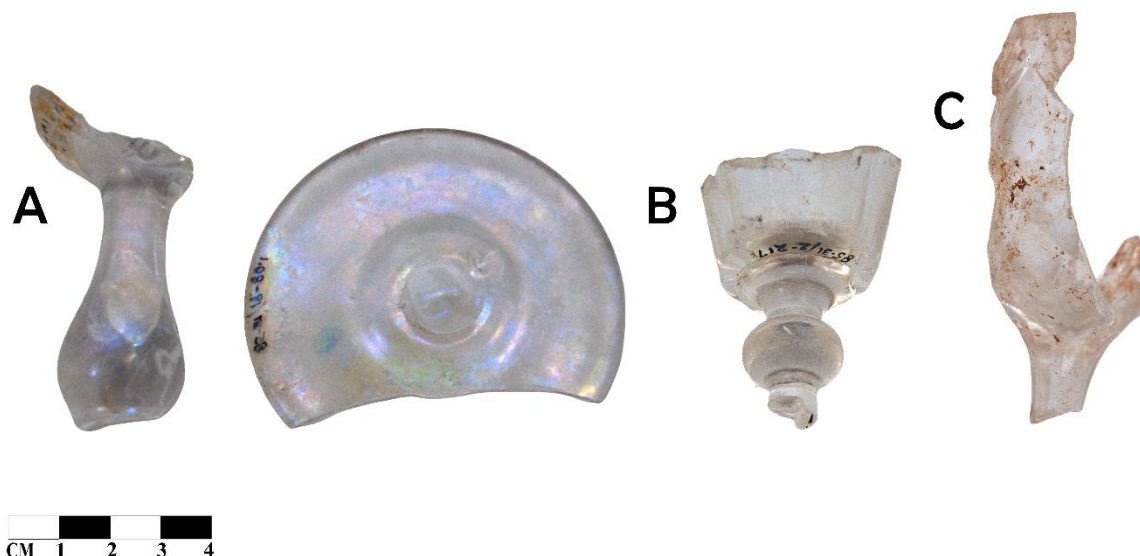


Figure 10: Range of decorative forms among the drinking glasses. A) 85-31/19:56 has a true baluster stem with a probably plain bowl, B) 85-31/2-217 has a paneled bowl and stem with a bowl knob, C) 85-31/18-491 has a paneled stem and honeycomb bowl.

In addition to drinking vessels, there is evidence of other pressed tablewares in patterns with sunbursts, alternating panels and mitres, and circles and petals. Four fragments of opaque white (milk-colored) glass have a basketweave pattern on the exterior and, given the presence of a cup-well on one fragment, are probably from a single saucer. A plain square salt (85-31/14-37) with chamfered corners is similar to the plain square individual salt depicted in Jones (2000, 205) and probably dates to the 1860s or afterwards. The only evidence for matching pieces comes for two pressed egg cups with a pattern of circles (also called thumbprints) and stars (85-31/24-11 and 85-31/24-12) (Figure 11).

Approximately a third of the tablewares, including the egg cups and at least six tumblers, come from Feature 85-31/24. Detailed discussion of this feature and its contents is provided in Section 3.4.

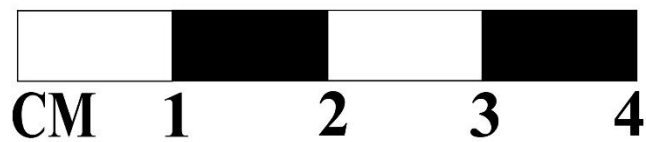


Figure 11: Largest fragment of an eggcup (85-31/24-11) showing the impressed pattern of stars and circles.

3.2 Manufacturers

Ten glass manufacturers can be identified from embossments. This provides important information about production dates and the location of production which are outlined in Table 4.

Table 4: Glass manufacturers and bottlers identified in ARS Project 85-31.

Name	Date From	Date To	Location	Likely Product	Feature
AB&Co	c. 1860	c. 1900	UK?	Beer	27
Adolphus Busch Glass Manufacturing Co.	1905	1917	USA, MO, St Louis or IL, Belleville	Beer	35
American Bottle Co.	1905	1909	USA, IL, Belleville		27
Cooper Silica & Glass Co.	1907	1912	USA, VA, Salem		9
GW&J or W&JG	c. 1880s	c. 1910s	Europe?	Beer	25, 27
Illinois Glass Co	Mid 1870s	c. 1880	USA, IL, Alton	Medicine	7
William McCully	Mid 1870s	1896	USA, PA, Pittsburgh	Medicine	35
San Jose Bottling Co.	1895	1901	USA, CA, San Jose	Beer	35
San Jose Bottling Co, C. Maurer	1900	1905	USA, CA, San Jose	Beer but reused for cooking oil	0
San Jose Soda Works, John Balzhauser	1892	1905	USA, CA, San Jose	Soda water	35
Whitall Tatum Co.	1878	1895	USA, NJ, Millville	Medicine	13
Winslow & Williams	1851	1871	USA, CA, New Almaden or San Jose	Soda water	24

By placing these manufacturing dates in a Gantt chart (Figure 12), it becomes clear that only half of the bottles with identified manufacturers could have been produced and deposited during the occupation of Block 1 by the Market Street Chinatown. The other six manufacturers' marks all relate to production after the fire of 1887. The later material appears to be largely limited to surface levels of the site and to Feature 85-31/35 in particular.

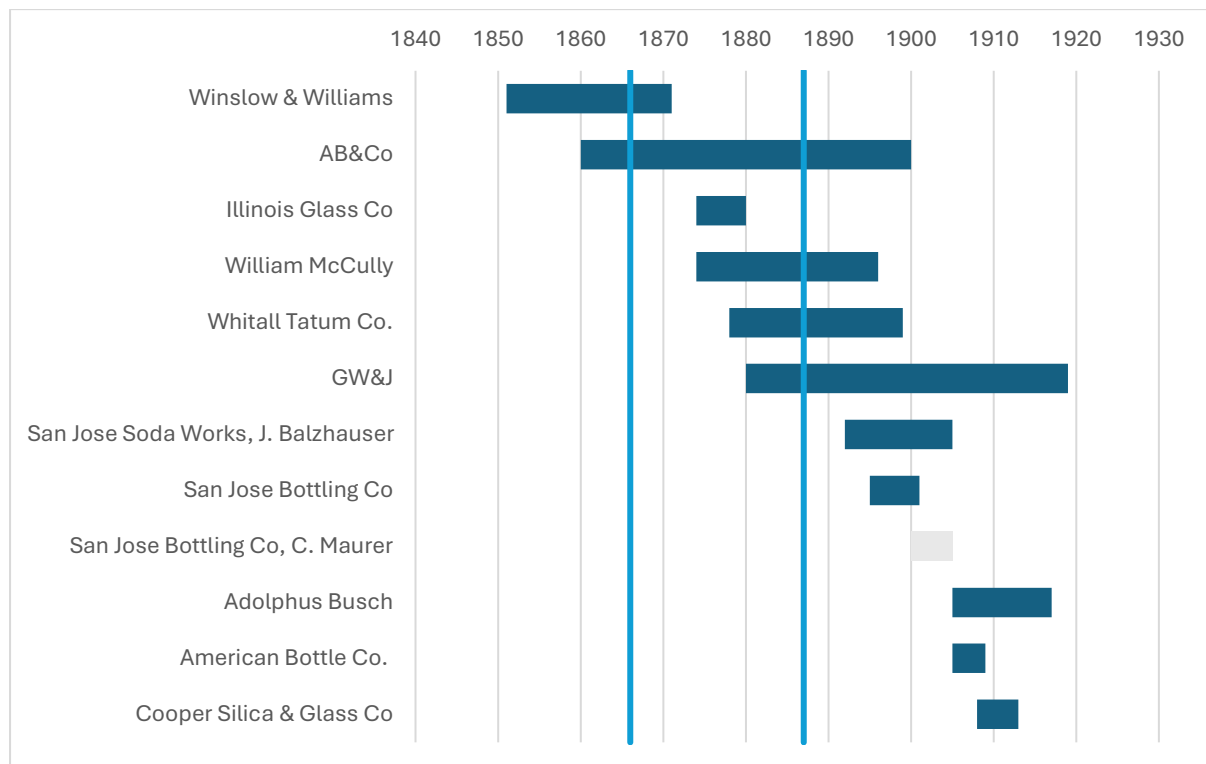


Figure 12: Years of vessel production for manufacturers and bottlers in ARS Project 85-31, with the occupation of the Market Street Chinatown shown in the lighter blue vertical lines and unprovenanced artifacts in the light grey.

3.3 Products

The brand names of contents of glass containers from ARS Project 85-31 were determined through analysis of embossed labels and other diagnostic features (Table 5, Figure 13).

Table 5: Brands of products identified in ARS Project 85-31.

Product	Date From	Date To	Location	Likely Product	Feature
Edouard Pernod	1827	1910	SWITZERLAND, Couvet	Absinthe	24
JW Peters	1833	1860	GERMANY, Hamburg	Alcohol	3
Murray & Lanman	1835	1871	USA, NY, New York	Florida water	24
Frederick Brown	1848	1919	USA, PA, Philadelphia	Jamaica Ginger	0
Udolpho Wolfe	1848	1935	NETHERLANDS, Schiedam	Gin/schnapps	1, 27
Lyon's Kathairon	1851	c. 1922	USA, NY, New York	Hair tonic	0, 21, 24
Meyer & Rottman	1853	1857	USA, NY, New York	Soda water	21
J.W. Hunnewell & Co	1853	1917	USA, MA, Boston	Spice	24
Ernst Eduard Meyer	1853	present	Germany, Stadthagen	Bitters	27
Voldner's Aromatic Schnapps	1856	1864	USA, NY, New York	Schnapps	33
Hall's Sarsaparilla	1858	1909	USA, CA, San Francisco	Sarsaparilla	2
Rosenbaum's Bitters	1858	1870	USA, CA, San Francisco	Bitters	0, 27
Laird, Perfumer	1859	1916	USA, NY, New York	Face tonic	27
Pratt's Abolition Oil	c. 1866	1920s	USA, CA, San Francisco	Medicine	1, 2
Mallinckrodt Chemical Works	1867	c. 1920s	USA, MO, St Louis	Chemicals	35
Joseph S. Pederson	1868	1905	USA, NY, New York	Malt extract	33
Gass & Company	1870	1871	USA, CA, San Francisco	Champagne mead	28
Shiloh's Consumption Cure	c. 1873	c. 1918	USA, NY, Leroy	Medicine	10
Whittemore	1873	1960s	USA, MA, Boston	Shoe polish	35

Warner's Safe Kidney & Liver Cure	1878	1911	USA, NY, Rochester	Medicine	3
Shaw & Callisch Druggists	1878	1884	USA, CA, San Jose	Medicine	13, 18, 18B
Lash's Bitters	1884	1905	USA, Chicago, San Francisco, or New York	Bitters	1
Chesebrough Mfg Co.	c. 1887	c. 1900	USA, NY, or NJ	Vaseline	0
Clorox	1929	1930	USA, CA, Oakland	Clorox	0

By placing these product production dates in a Gantt chart (Figure 13), it becomes clear that nearly all of the products represented were in production and could have been available for purchase during the occupation of Block 1 by the Market Street Chinatown.

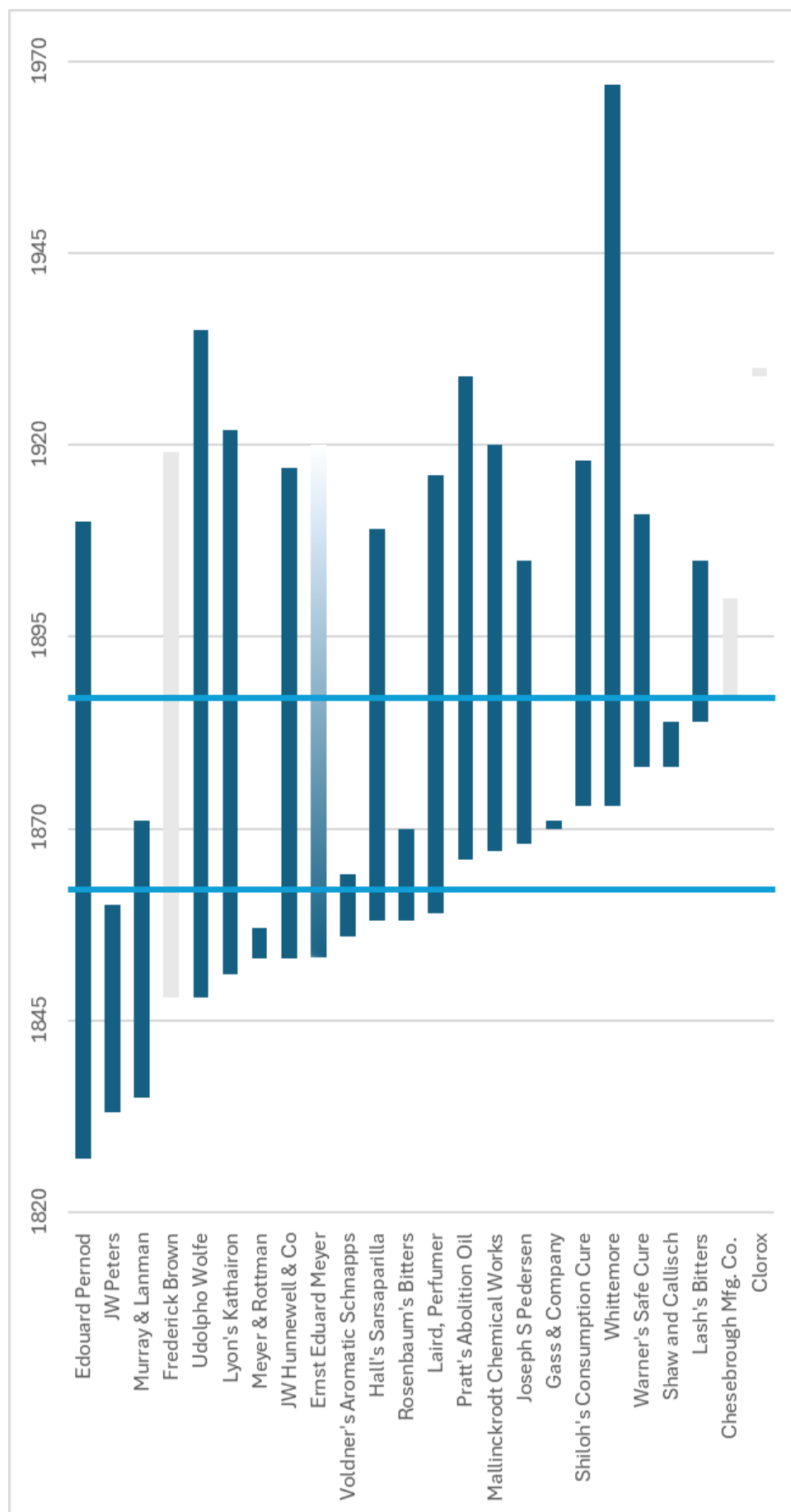


Figure 13: Years of product manufacture for products identified in ARS Project 85-31, with the occupation of the Market Street Chinatown shown in the lighter blue vertical lines and unprovenanced artifacts in the light grey. The gradient shows a level of uncertainty in the dates.

3.4 Discussion of Results, By Feature

Feature 85-31/1

Feature 85-31/1 was described by ARS archaeologists as a trash pit measuring 15 feet across and 6 feet deep. During excavation, stratigraphic layers with different attributes were observed and described, but artifacts were not labeled according to stratigraphic layers or artificial levels (Kane 2011).

Feature 85-31/1 contained 1566 fragments (2,345.3 g) of glass likely to come from containers or tableware, representing a minimum of 14 vessels. The great majority of these fragments were found within two bags of small fragments of mixed, heat-affected glass, most of which were classified as indefinite as to function. Besides these, there is one possible piece of pressed glass tableware, and fragments of food, beverage, and medicine bottles.

Identifiable bottles include parts of two liquid condiment bottles, one in the gothic/cathedral style and one ribbed, as well as a fire-affected Traditional Chinese Medicine vial. Three bottles have identifiable embossing. One is the base and body of a rectangular, aqua, glass medicine bottle with a partial inscription for Pratt's Abolition Oil For Abolishing Pain (Figure 14). A cure-all and pain reliever, Pratt's Abolition Oil was produced in San Francisco by Perry Pratt and Alexander McBoyle & Co from approximately 1866 until at least the end of the nineteenth century. The second is a panel from a bottle of Udolpho Wolfe's Aromatic Schnapps. The last is a fragment of a paneled, amber, glass medicine bottle with a partial inscription for Lash's Kidney and Liver Bitters (Figure 15).

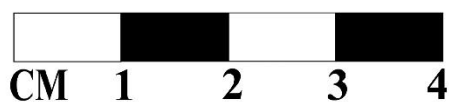


Figure 14: 85-31/1-47 would once have held Pratt's Abolition Oil, a cure-all and pain-reliever.



Figure 15: 85-31/1-59 consists of two mending fragments of a paneled, amber bottle of Lash's Kidney and Liver Bitters which was advertised as 'The Best Cathartic and Blood Purifier'.

Lash's Kidney and Liver Bitters was originally sold as a laxative and blood purifier for treating illnesses of the kidney and liver, but advertisements also promised relief from "Biliousness, Malaria, Dyspepsia, Indigestion, Chills and Fever, Sick Headache, Sour Stomach, Neuralgia, [and] Pain in Back" (M. Torbenson et al. 2000, 59). However, Torbenson et al. (2001; 2003) have shown that, over time, and as regulation of patent medicines increased, the company shifted to advertising the product to men drinking in saloons.

Lash's Bitters was one of several products produced by first T.M. Lash & Co., then Lash's Bitters Company, then Lash's Products Company between 1883 and at least 1935 (Fike 1987, 37; M. Torbenson et al. 2000). Two bottle designs include the embossed lettering "THE BEST CATHARTIC | AND BLOOD PURIFIER," and Fike (1987, 37–38) dates these to between 1884 and 1905. That links this bottle to either the last few years of the Market Street Chinatown, or to post-Chinatown occupation of the site.

Feature 85-31/2

Feature 85-31/2 was described by ARS archaeologists a wood-lined pit that had been largely disturbed by a bulldozer. The dimensions of the pit measured 3m long, 2.7m wide, and 2.5m deep. The upper extent of the feature consisted of the same "demolition layer" as Feature 85-31/1, with some 20th century artifacts present immediately below it. The lower extent of the feature was described as including "a variety of ceramics and glass, as well as bone fragments and wood" (Kane 2011). However, the feature was excavated without regard to stratigraphic layers.

Feature 83-31/2 contained three whole vessels and 955 fragments (6,772.2 g) of glass likely to come from tablewares or containers, representing a minimum of 24 vessels. 772 of those fragments are unidentifiable to function, most (n = 660) from a single bag of heat-affected glass. Most of the others (n = 92) are olive-colored bottle fragments, likely to be from alcohol bottles. A complete example of one of these bottles (85-31/2-92) has a dip-molded body and a champagne finish.

Identifiable forms include an aqua inkwell with molded rings around the neck, an aqua fluted oblong spice bottle, and two complete Traditional Chinese Medicine Vials. There are also two fragments from at least one press-molded paneled tumbler, and at least one stemmed drinking glass with fluting on the bowl. Embossed bottles include one aqua, cup-molded, bottle base (85-31/2-72) is embossed “P.B. 1894”, three fragments of a Pratt’s Abolition Oil bottle marked “ABOL” (see Feature 1 for more information), and the partial front and side panels of an aqua medicine bottle marked “HALL | SARSAPAR[ILLA] || [PROP]RIETOR[S]”.

Hall’s Sarsaparilla was another patent medicine local to San Francisco. It was produced first by R. Hall & Co., and later by J.R. Gates & Co., Shephardson & Gates, and finally the Gates Drug Co. (Fike 1987, 216–17). In 1858 advertisements for Hall’s Sarsaparilla began to appear in California newspapers. They claimed that it was a purer and safer form of sarsaparilla made from a compound syrup of sarsaparilla, yellow dock, and iodide of potash without spirits or mercury (*Hall’s Sarsaparilla Yellow Dock and Iodide Potass* 1858). The product was probably manufactured until the closure of the Gates Drug Co. in 1909 but, like Lash’s Bitters (see above), its use probably shifted over time. Towards the end of the century, Hall’s Sarsaparilla was listed among beverages which were social rather than medicinal in nature (*Humboldt Times* 1897).

Feature 85-31/2B

Feature 85-31/2B is not described in field records or reports by ARS archaeologists. Some records in the ARS artifact catalog attribute several artifacts to Feature 85-31/2B. This group of materials is most likely associated in some way with the artifacts recovered from Feature 85-31/2, described above (Kane 2011).

Feature 85-31/2B contained 26 fragments (64.2 g) of glass likely to come from tablewares or containers, representing at least one vessel. 24 fragments are from a single bag of mixed, fire affected glass. The remaining 2 fragments are from an olive glass bottle.

Feature 85-31/3

Feature 85/31/3 was described by ARS archaeologists as a trash pit that had been significantly disturbed by a bulldozer. The dimensions of the feature were not recorded, and the feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/3 contained two whole vessels and 846 fragments (24,428 g) of glass likely to come from tablewares or containers, representing at least 53 vessels. The great majority of these are unmarked olive or black glass circular bottles which probably held alcohol. There is also one octagonal olive inkwell with a straight finish. The colorless glass includes at least one container and three tumblers, as well as one fragment of solarized-selenium glass, while there is one milk glass vessel with a patent finish. The amber glass is somewhat more diagnostic and includes at least three vessels: a fragmentary ovoid bottle of Warner's Safe Kidney & Liver Cure (Figure 16), and two other finishes.

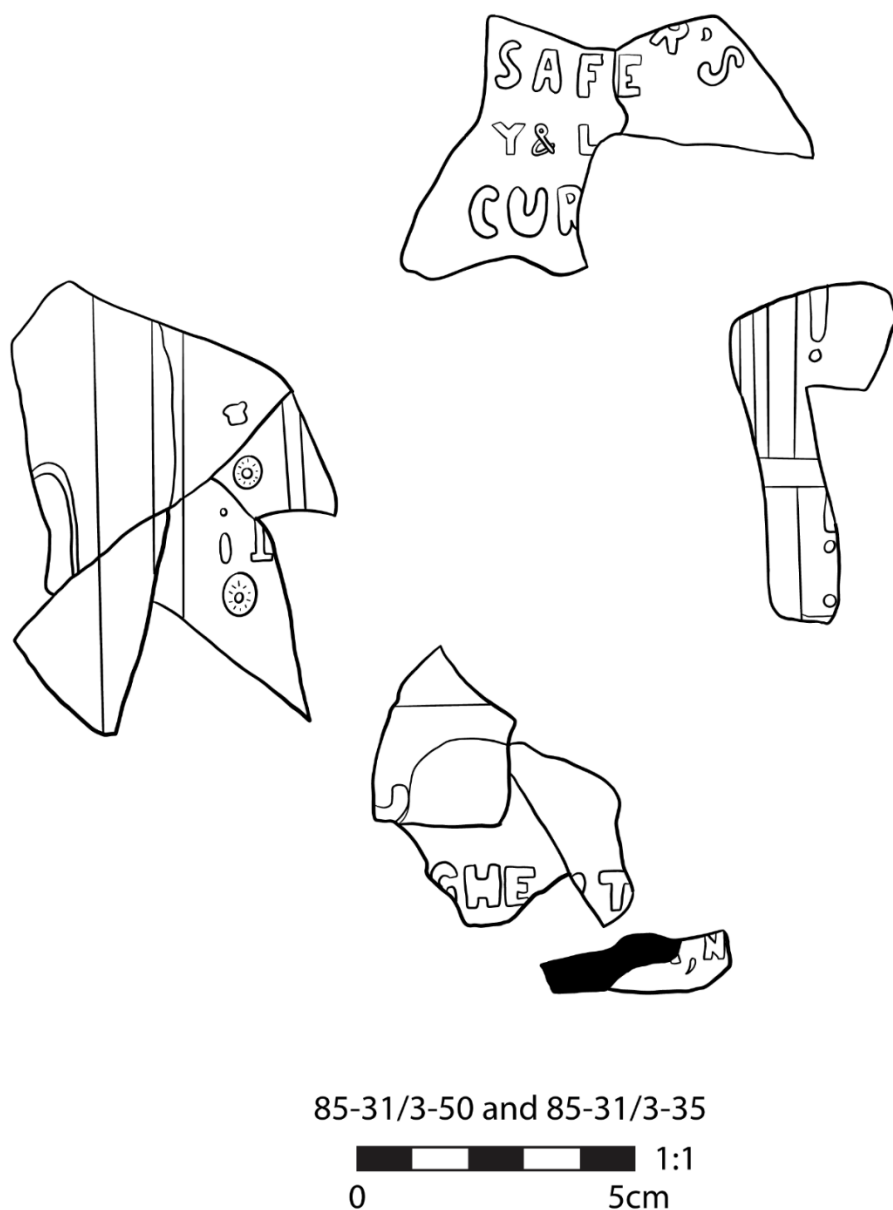


Figure 16: 85-31/3-50 and 85-31/3-35 contain fragments of a Warner's Safe Kidney & Liver Cure bottle, including elements of the safe motif.

There is also an amber base marked "J&W PETERS | HAMBURG" from a circular bottle which probably held brandy, gin, or jenever (Dutch gin) (Figure 17). The Peters distillery in Hamburg, Germany went through a number of name changes, but current sources suggest that bottles marked J&W Peters can be dated to 1833-1860 (Lawrence and Teal 1973, 64; Vermeulen 2003). The same style of bottle was found at the Hoff Store in San

Francisco (McDougall 1990, 60), in Panama (Lawrence and Teal 1973, 64), and probably also at the Mechanics Institute in Auckland (Macready and Goodwyn 1990, 79), while the later JJW Peters was a global phenomenon and bottles are found as far afield as Malta (Palmer 2013), Nigeria (Derefaka and Anozie 2002; see also van den Bersselaar 2007, 72), France (Desfossés 2020), and Canada (Décarie-Audet 1976). As the manufacture of this bottle pre-dates the Market Street Chinatown, it may indicate the presence of pre-1860s deposits in this feature or could indicate re-use of an older bottle.

Figure 17: Bottle base (85-31/3-60) marked J&W Peters, Hamburg.



The aqua vessels include the finish from a groove ring wax seal canning jar, suggesting that either home canning or consumption of home canned food was taking place at the site. Unfortunately, with only a partial finish it is not possible to ascertain an exact date since these jars were in use from the 1820s into the 20th century, but they were most

popular from the 1840s to the 1880s so it is plausible that it relates to the Market Street Chinatown (Lindsey 2024a).

Another interesting vessel is a straight-sided, wide-mouthed jar or bottle marked “STEE... | GLU[E] | SAN F[RANCISCO]” which appears to be a glue bottle from an unknown San Francisco manufacturer (Figure 18). Lindsey suggests that the simple rolled finish is rarely found after the 1870s, placing it well within the time period of the Chinatown (Lindsey 2024b). A by-product of animal processing, glue was a common product which is often invisible archaeologically but speaks to the myriad commercial and household tasks which required adhesives, from shoemaking and bookbinding to quotidian repairs.

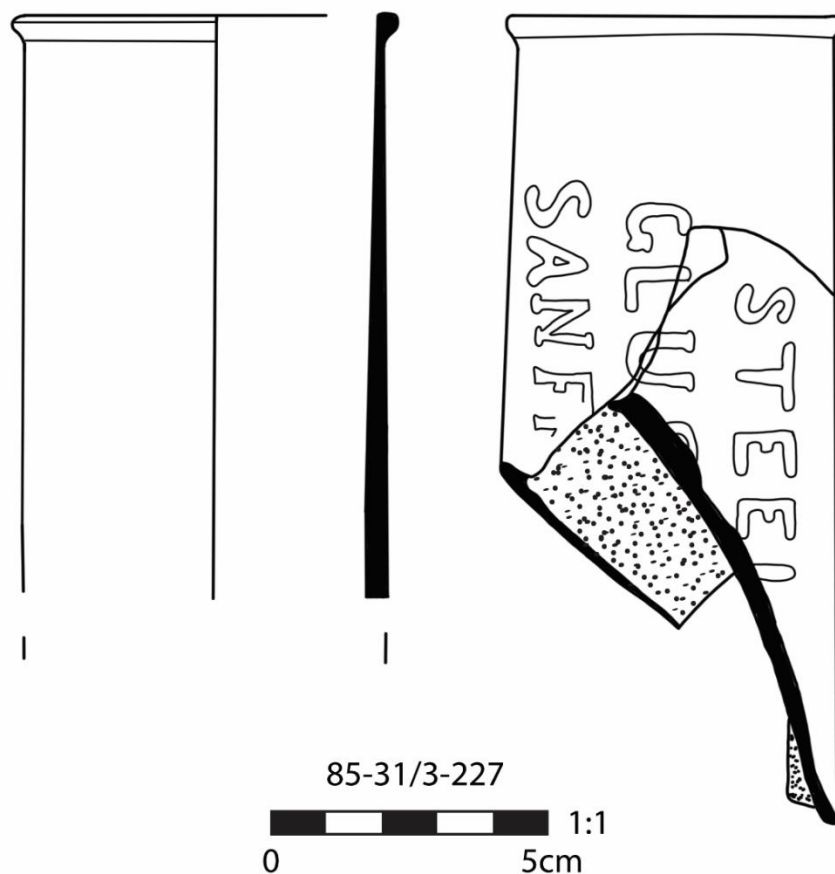


Figure 18: Glue bottle (85-31/3-227) from an unknown San Francisco manufacturer.

From further afield, the base of a square bottle with rounded corners has a British registration diamond. Although largely illegible (“III|...|A(?)|Rd.|...|...”), the presence of the mark suggests the bottle was manufactured in the United Kingdom between 1842 and 1883 when this style of diamond was in use (Godden 1991).

Overall, the size of the assemblage from this feature and the presence of a number of items dateable to the period of the Market Street Chinatown suggests that it has high value for future research.

Feature 85-31/4

Feature 85-31/4 was described by ARS archaeologists as a pit containing large quantities of animal bone and small fragments of glass (Kane 2011). However, no glass container or glass tableware artifacts from Feature 85-31/4 were found in the Market Street Chinatown collection.

Feature 85-31/5

Feature 85-31/5 was reported by ARS archaeologists as having been destroyed by a bulldozer before it could be excavated archaeologically (Kane 2011). No glass container or glass tableware artifacts from Feature 85-31/5 were found in the Market Street Chinatown collection.

Feature 85-31/6

Feature 85-31/6 was described by ARS archaeologists as an unlined shallow trash pit measuring 0.17m diameter and 0.09m depth. Despite its shallow depth, Feature 85-31/6 was excavated carefully, divided first into the north and south halves of the feature and then each side being excavated into three layers (Kane 2011).

Feature 85-31/6 contained 39 fragments (281.9 g) of glass likely to come from tablewares or containers, representing at least three vessels: a small colorless bottle or vial with a prescription finish, a small aqua glass bottle, and an olive bottle likely used for alcohol. One aqua body sherd has shallow angle flake scars on one edge (Figure 19). This is

evidence that the piece of glass was used as a tool for scraping, smoothing, or cutting other materials.

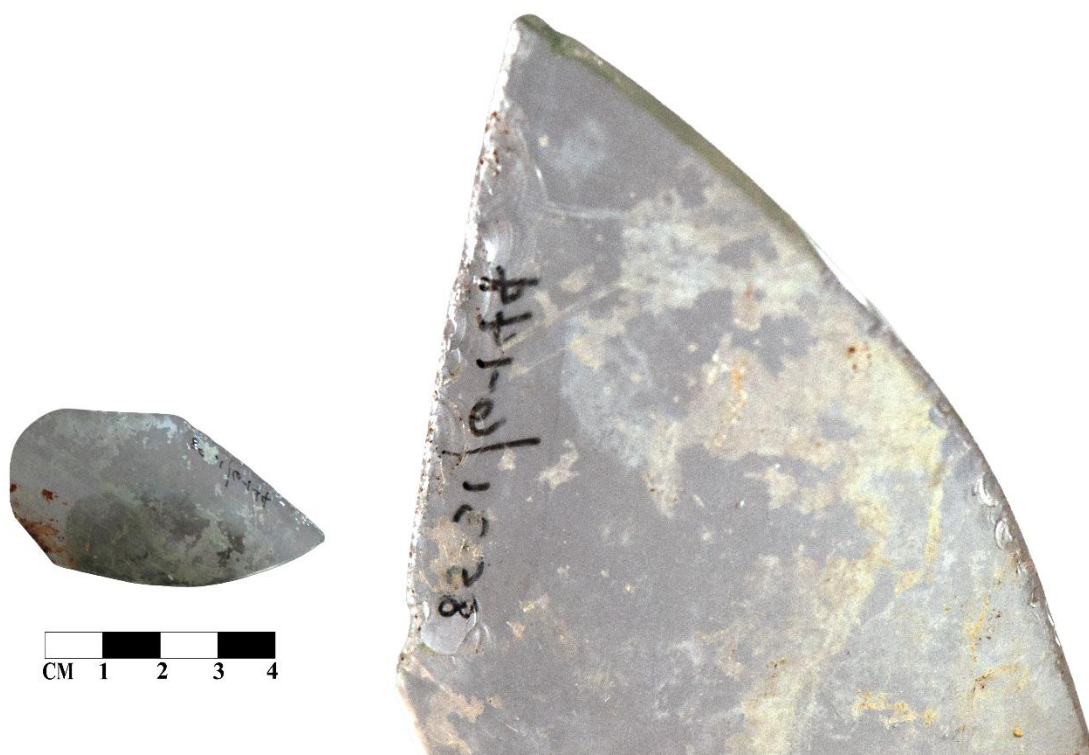


Figure 19: 85-31/6-144 appears to be part of an aqua bottle, likely a soda/mineral water bottle. It has shallow angle flake scars along the edge, suggesting it was used as a tool for scraping, smoothing, or cutting.

Feature 85-31/7

ARS archaeologists described Feature 85-31/7 as an “areal feature,” although precisely what this connotes was not described and the feature dimensions were not recorded. It was excavated in three levels described as “disturbed ramp soils,” “burned soil context,” and “below burn layer.” However, the ARS artifact catalog does not list level association for the majority of artifacts from Feature 85-31/7 (Kane 2011).

Feature 85-31/7 contained 88 fragments (862.9 g) of glass likely to come from tablewares or containers, representing at least nine vessels. Half of the glass fragments from this feature are heat affected. There is evidence of at least three olive circular bottles likely to

have been used for alcohol (one embossed “OB”), two aqua bottles, and a colorless container with a rolled rim. Seven fragments probably come from tablewares, including fragments with a press-molded floral decoration and two flat fragments with a pattern of radiating lines.

Five fragments come from an aqua, rectangular, medicine-style bottle with the base marked “I.C. Co.” This appears to be an engraving error known from Illinois Glass Company bottles made in Alton, Illinois and dating to the mid-1870s to around 1880 (Lockhart et al. 2016, 372).

Feature 85-31/8

Feature 85-31/8 was described by ARS archaeologists as an unlined pit containing animal bones (Kane 2011). No glass container or glass tableware artifacts from Feature 85-31/5 were found in the Market Street Chinatown collection.

Feature 85-31/9

Feature 85-31/9 was described by ARS archaeologists as an unlined pit containing animal bones (Kane 2011). The dimensions of the feature were not recorded, and the feature was not excavated stratigraphically.

Feature 85-31/9 contained 57 fragments (565.8 g) of glass likely to come from tablewares or containers, representing at least five vessels. This includes indefinite fragments of cobalt blue and colorless glass, as well as at least one olive bottle. There are also three fragments of pressed milk glass tableware with a basketweave pattern.



Figure 20: Bottle base marked "...& G. CO" (85-31/9-42).

85-31/9-42 is an embossed base from an aqua bottle or jar marked "[...]& G. CO | 20" (Figure 20). This is consistent with marks made by the Cooper Silica & Glass Company in Salem, Virginia which operated c. 1907-1912 (Lockhart et al. 2014, 734–35). It is unclear whether this fragment was found on the surface of the site or was within the feature. If the latter, it would suggest that the feature was either disturbed or continued to be used after the 1887 fire.

Feature 85-31/10

Feature 85-31/10 was described by ARS archaeologists as a rectangular, unlined trash pit. The dimensions of the feature were not recorded, and the feature was not excavated stratigraphically. ARS archaeologists observed that the feature had been previously disturbed by both historic and recent construction activity, including installation of a stepped foundation from a building that post-dated the Chinatown and had been removed (except for the foundation) at an unknown date. They designated the area outside the foundation Feature 85-31/10, and the area inside the foundation was designated Feature 85-31/12. Thus, it is likely that these two ARS-designated features were originally part of the same archaeological deposit (Kane 2011).

Feature 85-31/10 contained 12 fragments (182.6 g) of glass likely to come from tablewares or containers, representing at least three vessels: one circular olive bottle, one Traditional Chinese Medicine vial, and one rectangular aqua medicine bottle. The aqua medicine bottle is embossed “SHILOH’S | [C]ONSUMPTION | CURE || LEROY, N.Y. || S.C. WELLS” (Figure 21).



Figure 21: Paneled, aqua medicine bottle of Shiloh's Consumption Cure (85-31/10-28).

Shiloh's Consumption Cure was one of the products produced by Schuyler Charles Wells (1840-1897), later S.C. Wells & Co. in Le Roy, New York. Produced from at least 1874, but perhaps as early as 1871, it was advertised as a guaranteed cure for consumption (i.e., tuberculosis), coughs, hoarseness, bronchitis, asthma, whooping

cough, and croup (*Hornellsville Weekly Tribune* 1874). It was sold under that name until at least 1918 (see Appendix).

Feature 85-31/11

Feature 85-31/11 was described by ARS excavators as a shallow unlined pit, filled with animal bone, measuring 1m diameter and 0.05m depth (Kane 2011). No glass container or glass tableware artifacts from Feature 85-31/5 were found in the Market Street Chinatown collection.

Feature 85-31/12

Feature 85-31/12 was described by ARS archaeologists as a rectangular, unlined trash pit. The dimensions of the feature were not recorded, and the feature was not excavated stratigraphically. ARS archaeologists observed that the feature had been previously disturbed by both historic and recent construction activity, including installation of a stepped foundation from a building that post-dated the Chinatown and had been removed (except for the foundation) at an unknown date. They designated the area outside the foundation Feature 85-31/10, and the area inside the foundation was designated Feature 85-31/12. Thus, it is likely that these two ARS-designated features were originally part of the same archaeological deposit (Kane 2011).

Feature 85-31/12 contained 25 fragments (42.4 g) of glass likely to come from tablewares or containers, representing at least five vessels. The glass from this feature consists of small body fragments with few diagnostic features. One piece of aqua glass is embossed “K,” and two fragments of colorless glass have a press-molded diamond pattern.

Feature 85-31/13

Feature 85-31/13 was described by ARS archaeologists as a wood-lined pit measuring 1.22m length, 0.97m width, and 1.17m deep. It was excavated in four layers: Layer 1 – disturbed soft soil with intrusive sand, possibly related to 1981 test excavations in Block 1 by Theoderatus Cultural Research (Johnson 1985); Layer 2 – gray and yellow soils containing animal bone and artifacts; Layer 3 – “clean” sand with few artifacts; and Layer

4 – an organically rich soil containing fish bones (Kane 2011). Although not indicated in the ARS artifact catalog, from this description it seems likely that most glass container and glass tableware artifacts were found in Layer 2.

Feature 85-31/13 contained four whole bottles and 270 fragments (1,623.3 g) of glass likely to come from tablewares or containers, representing at least 11 vessels. Feature 13 has at least three olive and amber bottles likely to have been used for alcohol and a range of bottles used for other products including a mineral water bottle, an oil/vinegar bottle, a vial probably used for medicine, and several other bottles likely to have been used for medicine, toiletries, or household products. Although relatively complete, only one of the vessels can be identified. This is a whole medicine bottle produced by Whitall Tatum & Co. for the San Jose druggists Shaw & Callisch which operated from 1878-1884 (Figure 22).



Figure 22: 83-31/13-2 is a complete druggist's bottle, made by Whitall Tatum & Co. for Shaw & Callisch who operated out of First Street, San Jose.

Feature 85-31/14

Feature 85-31/14 was described by ARS archaeologists as an unlined pit containing a high density of animal bone with no other artifacts. However, the ARS artifact catalog lists considerable glass and ceramic entries for Feature 85-31/14. The feature's dimensions were not recorded, and it was not excavated stratigraphically (Kane 2011).

Feature 85-31/14 contained one whole bottle and 14 fragments (323.4 g) of glass likely to come from tablewares or containers, representing at least six vessels. An olive bottle with a mineral finish is likely to have held alcohol, while an aqua bottle with a blob finish is likely to have held mineral water and another with molded rings is likely to have held a liquid condiment like oil or vinegar. In addition to the food and beverage containers, a complete umbrella ink speaks to writing with dip or fountain pens at the site. The two tableware vessels include a square salt (Figure 23) and a piece of ribbed glass tableware.



Figure 23: Plain, square salt with chamfered corners (85-31/14-37).

Feature 85-31/15

Feature 85-31/15 was described by ARS archaeologists as a small “lensatic” pit containing animal bone. The feature’s dimensions were not recorded, and it was not excavated stratigraphically (Kane 2011). No glass container or glass tableware artifacts from Feature 85-31/15 were found in the Market Street Chinatown collection.

Feature 85-31/16

Feature 85-31/16 was described by ARS archaeologists as a pit containing animal bone. The feature's dimensions were not recorded, and it was not excavated stratigraphically (Kane 2011). No glass container or glass tableware artifacts from Feature 85-31/16 were found in the Market Street Chinatown collection.

Feature 85-31/17

Feature 85-31/17 was described by ARS archaeologists as an unlined pit containing only animal bone. The feature's dimensions were not recorded, and it was not excavated stratigraphically (Kane 2011).

Feature 85-31/17 contained 62 fragments (570.7 g) of glass likely to come from tablewares or containers, representing at least two vessels. The majority of the fragments (n = 60) are from one bag, and most of these are consistent in color and form with a single amber bottle made from a multi-piece mold with a mineral finish. The other vessel is an olive bottle, and both are likely to have contained alcohol.

Feature 85-31/18

Feature 85-31/18 was described by ARS archaeologists as a redwood-lined pit measuring 1.8m long, 1.2m wide, and 0.9m deep. Initially the feature was thought to be two separate deposits, and the second southern area of the feature was designated Feature 85-31/18B. However, ARS archaeologists later concluded that Feature 85-31/18 and Feature 85-31/18B were actually the same deposit. The feature was excavated stratigraphically in three layers: Layer 1 – disturbed soil with asphalt and concrete fragments; Layer 2 – soil containing high concentrations of artifacts, and Layer 3 consisting, like Feature 13, of a compact soil containing fish bones (Kane 2011). It is likely that the glass container and glass tableware artifacts in this feature were recovered from Layer 2.

Feature 85-31/18 contained one whole vessel and 344 fragments (6,131.9 g) of glass likely to come from tablewares or containers, representing at least 24 vessels. Many of

the bottles in this feature are not diagnostic and there are relatively few embossments. The nine olive bottles and at least one of the amber bottles probably held alcohol while the large amber demijohn would have been used to store bulk liquids. Another amber bottle (85-31/18-186), marked "(E or F or 5)(C or G)" has a stippled base, indicating a 20th century date. The only identified embossment is a Philadelphia oval bottle (85-31/18-202 and 85-31/18-651) marked "SHAW & CALLISCH | DRUGGISTS | [392 FIR]ST ST SAN JOSE" from a local pharmacy which operated from 1878-1884 (Figure 24).



Figure 24: Philadelphia oval medicine bottle marked with the name and address for the local druggist, Shaw & Callisch (85-31/18-202).

Among the aqua bottles, there is part of a gothic/cathedral style condiment bottle, while tablewares are represented by a stemmed drinking glass with molded hexagonal facets, and a pressed milk glass saucer with a basketweave pattern. This feature also has fragments of quite a bright yellow glass container, similar to that found in Feature 18B.

Feature 85-31/18B

Feature 85-31/18B was determined to be the same deposit as Feature 85-31/18, described above. It is unclear from the notes provided by ARS archaeologists whether the dimensions described for Feature 85-31/18 include the deposits excavated as 85-31/18B (Kane 2011).

Feature 85-31/18B contained one whole vessel and 155 fragments (1,262.2 g) of glass likely to come from tablewares or containers, representing at least nine vessels. In addition to further fragments of bright yellow container glass, like Feature 18, this feature also contains a second Philadelphia oval bottle from the San Jose druggists Shaw & Callisch (1878-1884) as well as a Traditional Chinese Medicine vial. Olive and amber circular bottles may have held alcohol, while tablewares are represented by a tumbler and a pressed glass fragment with a sunburst design.

Feature 85-31/19

Feature 85-31/19 was described by ARS archaeologists as an unlined pit containing animal bone. The feature's dimensions were not recorded, and the feature was excavated in two layers, an upper disturbed layer and a lower layer thought to be relatively intact (Kane 2011).

Feature 85-31/19 contained 52 fragments (692.3 g) of glass likely to come from tablewares or containers, representing at least seven vessels. This includes one olive bottle, likely used for alcohol, one green wide-mouthed bottle used for chutney or pickles, two aqua bottles, and a colorless bottle. In addition, there is a stemmed drinking glass with a baluster stem as well as fragments of two press-molded pieces of tableware with sunburst designs.

Feature 85-31/20

Feature 85-31/20 was described by ARS archaeologists as a wood-lined pit measuring 2.6m long, 1.8m wide, and 0.9m deep. It was excavated in two layers, with the upper layer containing high concentrations of artifacts and the lower layer containing a mixture of

sand and clay (Kane 2011). The glass container and glass tableware artifacts from Feature 85-31/20 were most likely recovered from this upper layer.

Feature 85-31/20 contained one whole vessel and 58 fragments (1,007 g) of glass likely to come from tablewares or containers, representing at least 11 vessels. They were three aqua bottles, one colorless bottle, one amber bottle, and two olive bottles, a tumbler, and three Traditional Chinese Medicine vials.

Feature 85-31/21

Feature 85-31/21 was described by ARS archaeologists as a wood-lined pit, the dimensions of which were not recorded. The feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/21 had a small but highly diagnostic collection of glass with five whole vessels (1,256.4 g). One olive bottle with a champagne finish was likely used for alcohol, while a Meyer & Rottman soda/mineral water bottle would have held a carbonated beverage. This New York soda company was only in existence from around 1853-1857 and so the bottle may pre-date the Market Street Chinatown or could represent re-use of an older bottle. A similar bottle has been found in Brooklyn (AKRF 2021, 59), but it appears to be a relatively unusual find in California, especially since the bottle pre-dates the transcontinental railroad. Part of a second Meyer & Rottman bottle was found in Feature 86-36/19 (Figure 25). A colorless vial and a dodecagonal bottle were probably used for medicines, while a rectangular bottle held Lyon's Kathairon, a hair tonic.

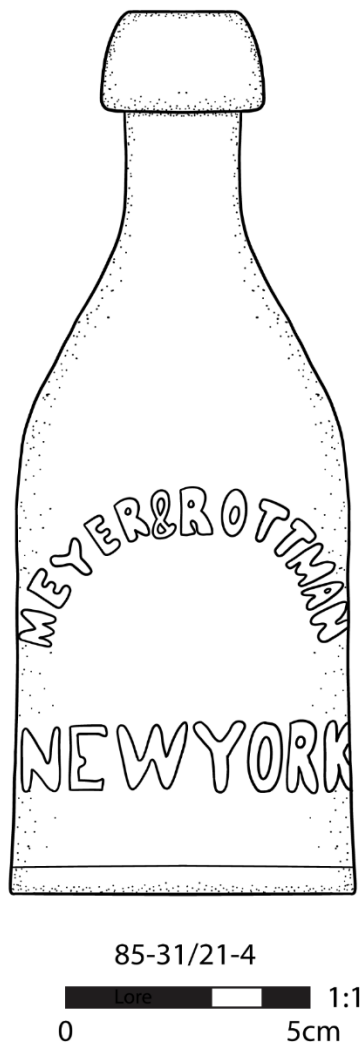


Figure 25: Meyer & Rottman soda/mineral water bottle (85-31/21-4).

The presence of only complete bottles is unusual, as most features contain a mix of whole and broken bottles. It raises the question of whether ARS archaeologists selectively collected complete specimens during excavation.

Feature 85-31/22

Feature 85-31/22 was described by ARS archaeologists as a wood-lined pit. The dimensions of the pit were not recorded, and the pit was not excavated stratigraphically (Kane 2011).

Feature 85-31/22 contained 73 fragments (640.2 g) of glass likely to come from tablewares or containers, representing at least six vessels. There is evidence for at least four bottles, one each in olive, amber, aqua, and colorless glass. A rim fragment from a flat disk of glass in an unusual dark green color may be from a jar liner. There is also a colorless foot from a piece of stemware.

Feature 85-31/23

Feature 85-31/23 was described by ARS archaeologists as an unlined pit that had been disturbed by construction equipment. The pit measured 1.0m long and 0.5m wide; the depth was not recorded. The feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/23 contained 388 fragments (2,583.9 g) of glass likely to come from tablewares or containers, representing at least 13 vessels. This feature has a relatively high proportion of bottles probably associated with alcohol including six amber or olive circular bottles, one of the few case bottles from the site, and a colorless flask. There is also one wide mouth pickle/chutney bottle and several blue and colorless bottles. Tableware is represented by part of a bladed knop from a piece of stemware.

Feature 85-31/24

Feature 85-31/24 was described by ARS archaeologists as a wood-lined pit measuring 1.0m per side and 2.0m deep. It was not excavated stratigraphically (Kane 2011).

Feature 85-31/24 contained one whole bottle and 295 fragments (7,139 g) of glass likely to come from tablewares or containers, representing at least 33 vessels. This feature is notable for two reasons, first for the number of identifiable products, and secondly for the concentration of tablewares.

In terms of food and beverages, Feature 24 had at least 9 amber and olive bottles likely to have held alcohol. Of particular interest is one bottle with a seal embossed “E.D. PERNOD | COUVET” around a cross (Figure 26). A branch of the famous Pernod Fils (now Pernod Ricard) firm, Edouard Pernod produced absinthe in Couvet, Switzerland between about 1827 and 1910 when absinthe was banned in Switzerland. Culturally, absinthe had

widely divergent associations: with medicine because of its herbal content and bitter flavor; with French bohemian culture thanks to its elaborate drinking rituals; and with the hard living of miners on the frontier (Minchinton 2021). In the United States, Edouard Pernod bottles do not seem to be particularly common, but have been found at two sites in Idaho, Marie Henderson’s Brothel (early 20th century) in Sandpoint (Petrich-Guy 2014), and Pon Yam’s store (1873-1904) in Idaho City (Campbell 2023, 68), as well as in California at the Yreka Chinatown (Liu 2006, 103) and Old Sacramento (Schulz et al. 1980, 33–34).



Figure 26: Detail of embossed seal from Pernod absinthe bottle (85-31/24-9).

Alongside an unmarked cathedral oil or vinegar bottle, an aqua, flat octagonal spice bottle embossed “[HUN]NEWELL & CO | BOSTON” came from the firm of grocers J. W. Hunnewell & Co who operated in Boston from c. 1860 into the 1890s. From closer to Market Street came a mineral water bottle embossed “W&W” for Winslow & Williams of New Almaden, California (Figure 27).

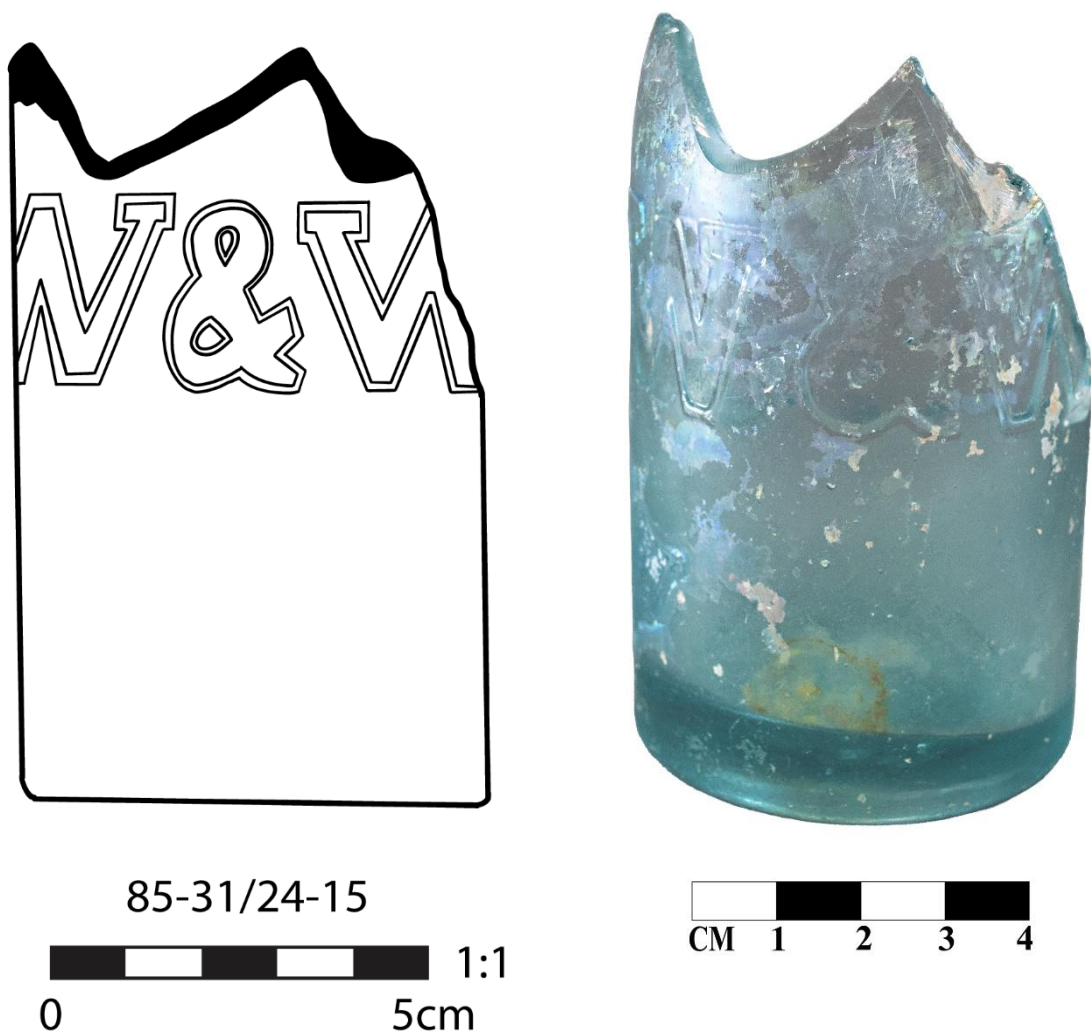


Figure 27: Winslow & Williams soda/mineral water bottle (85-31/24-15).

There is also evidence for a range of medicines and toiletries, including a Traditional Chinese Medicine vial as well as two bottles of Murray & Lanman's Florida Water (Figure 28) and two bottles of Lyon's Kathairon hair tonic. Archaeologist Catherine Sullivan (1994) has well documented the history of Florida Water. Florida water is made from alcohol infused with floral extracts and is similar to a cologne or a toilet water. Used as perfume, room freshener, hair tonic, skin product, and drunk as a medicine, it was commonly found in nineteenth-century American homes. The most famous brand was Murray & Lanman which began production in New York around 1835 and is still sold today (Sullivan 1994). Bottles marked 69 Water St were probably produced until 1871, although

it is possible that the mold continued in use even after the address had changed (Sullivan 1994, 89).

Lyon's Kathairon, meanwhile, was a hair tonic which promised to both beautify and tame the hair, and to treat hair-related maladies such as dandruff and baldness. Like Murray & Lanman's Florida Water, Lyon's Kathairon was extremely popular over many years (1851 until at least 1922) and the bottles are frequently found on archaeological sites.

This feature also has one of the most expansive selections of tablewares at the site. This includes two matching egg cups with a pressed pattern of stars above circles (Figure 11), as well as knops from colorless and yellow glass stemware, and at least six different tumblers.

Taken together, this combination of products suggests several different possibilities. It may be that they are all the result of residential occupation at the site. However, this feature could also be associated with one or more historically known businesses from Lot 7 such as the Washington Inn (1846-1860), a Chinese gambling establishment (1876-1887), or a "fancy goods store" (Laffey 1994, 17; cited in Kane 2011).

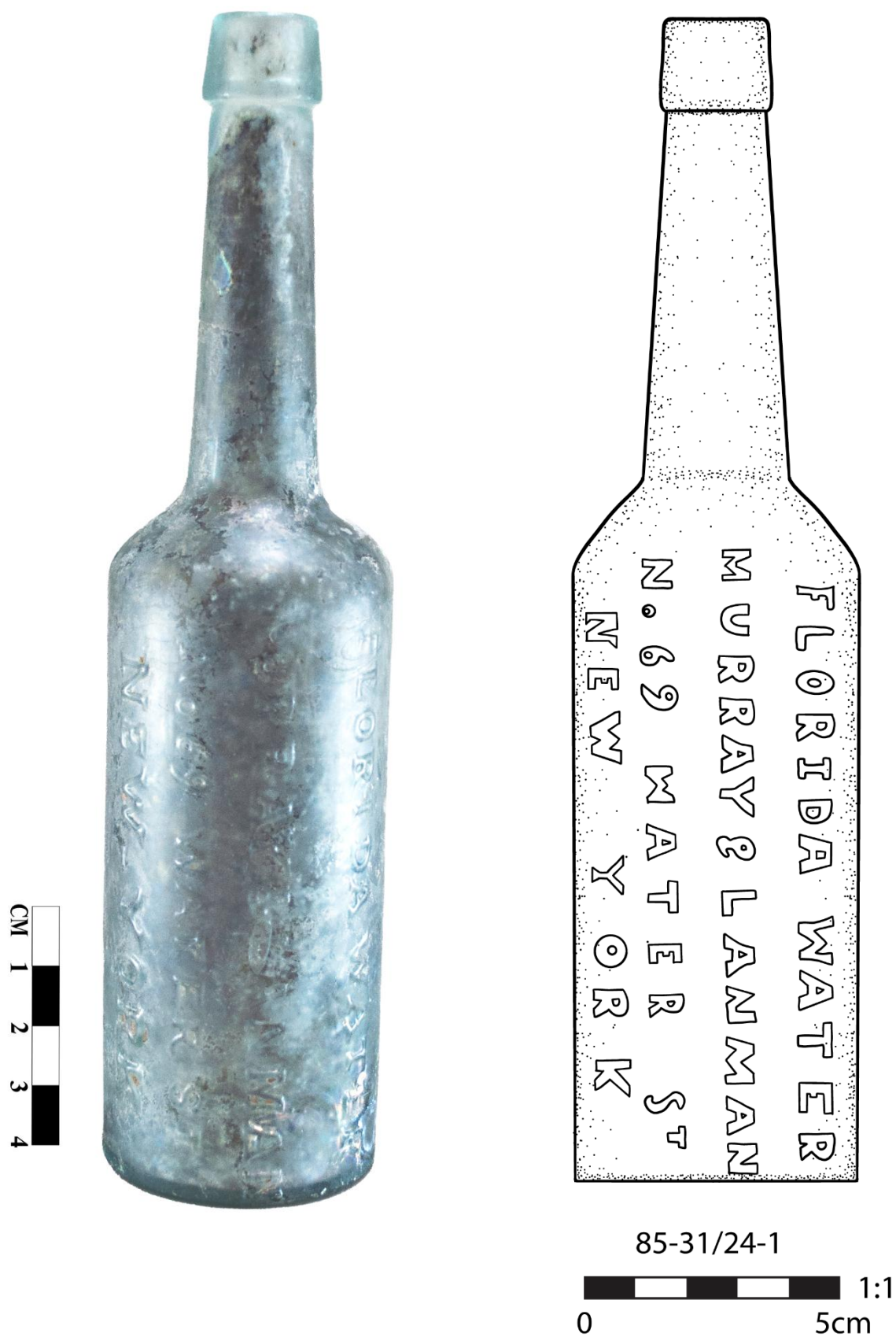


Figure 28: Bottle of Murray & Lanman's Florida Water (85-31/24-1).

Feature 85-31/25

Feature 85-31/25 was described by ARS archaeologists as an unlined pit measuring 0.5m diameter in area; the depth was not recorded. The pit was partially disturbed by construction equipment and about half of the deposit was destroyed. The remainder of the deposit was excavated in four layers: Layer 1 – a mixture of dark and lighter clays; Layer 2 – grey clay; Layer 3 – gleysol, which typically forms under waterlogged conditions; and Layer 4 – tan or brown clay (Kane 2011). It is not clear from available records which layers the glass container and glass tableware artifacts originated in.



Figure 29: GW&J or WJ&G embossment on base (85-31/25-12).

Feature 85-31/25 contained one whole bottle and 24 fragments (424.5 g) of glass likely to come from tablewares or containers, representing at least six vessels. There is at least one amber bottle and two olive bottles, with one of them embossed “GW&J” or “W&JG” (Figure 29). This maker is not known but appears repeatedly in the Market Street

Chinatown collection as well as in other archaeological finds in California and further afield. The best available information currently available suggests that they may be a British maker, active from approximately the 1880s to 1910s (Lockhart et al. 2015, 527, 540). Other than this, there is a fragment of beaded tableware, a colorless glass stopper, and indefinite aqua fragments.

Feature 85-31/26

Feature 85-31/26 was described by ARS archaeologists as a circular brick structure, likely a well or a cistern, with five courses of 13 bricks each still intact as well as a redwood plant floor. The feature measured 1.3m diameter and 0.3m deep, the latter measurement likely referring only to the area with intact courses of brick rather than the entire feature. The feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/26 contained four fragments (15.3 g) of glass likely to come from tablewares or containers, representing at least two vessels: one olive bottle, and one aqua container.

Feature 85-31/27

Feature 85-31/27 was described by ARS archaeologists as a linear feature – a filled in ditch – that extended across the areas of both ARS Project 85-31 and ARS Project 86-36. The portion of the feature excavated in 1986 was designated Feature 86-36/24 (see Kane 2011 for disambiguation between 86-36/24 and 86-36/27). In total, approximately 200 linear feet of the feature were excavated in 1985 and 1986. The width or depth dimensions of the feature were either not recorded or were lost. At the time of excavation, the feature contained fill soils that contained assorted artifacts. The feature was not excavated stratigraphically, nor were the horizontal locations of specific artifacts recorded (Kane 2011).

ARS excavators and Laffey (1994) interpreted Feature 85-31/27 as an *acequia* (water canal or drainage ditch) dating to the Spanish-colonial and Mexican-era Pueblo de San José, although no documentation has been found to support this interpretation. Laffey

(1994) documents that a ditch of this description had been filled in during the late 1880s during the expansion of San Jose’s underground sewer system (Kane 2011).

Feature 85-31/27 contained two whole bottles and 598 fragments (10,470.1 g) of glass likely to come from tablewares or containers, representing at least 46 vessels. The glass containers found in Feature 85-31/27 have manufacturing dates that span the 1850s through the early 20th century. Many of these date ranges overlap with the Market Street Chinatown’s occupation of Block 1. One bottle base represents a container that was produced significantly later: marked “AB | A 11,” this bottle was produced by the American Bottle Company between 1905 and 1909 (Figure 30). Given the way that ARS archaeologists excavated the feature, there is no way to assess whether the presence of this bottle indicates the ditch was still open in the early 20th century, or whether the bottle was intrusive to the deposit.



Figure 30: Embossment on American Bottle Company bottle (85-31/27-116).

There are a large number of olive glass fragments (n = 430) which are likely to come primarily from alcohol bottles. This includes at least 22 circular bottles of the types

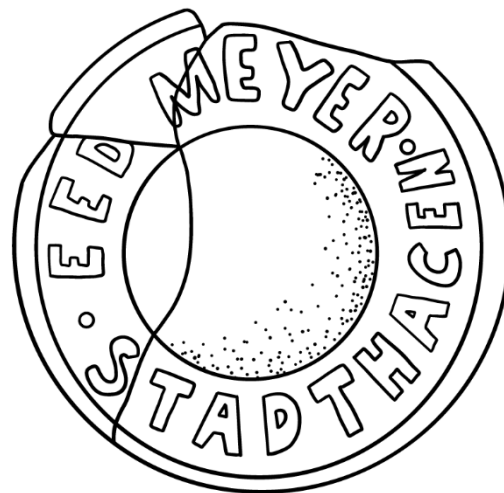
typically used for beer or wine. Embossments on these bottles include “AB&Co” which is believed to be a British maker (Lockhart et al. 2013a, 603–4), “S&Co”, and “...P”. The most common, however, is “GW&J” or “W&JG” which occurs on at least 6 bottles (see Figure 31). It is plausible that these are related to the numerous finishes which are morphologically between a mineral finish and a grooved ring finish.

Other products were based on alcohol but were known for their medicinal products. One olive case bottle has a partial embossment “[SCH]ED[AM]” which has typography consistent with Udolpho Wolfe’s Schiedam Schnapps. An amber case bottle with the embossment “N.B.” would have held Rosenbaum’s Bitters which was made in San Francisco and sold by N.B. Jacobs & Co from 1858 until 1870. There are also multiple mending fragments of a green circular bottle base marked “E ED MEYER | STADTHAGEN” which is likely to come from a bottle of Meyer’s bitters produced by Ernst Eduard Meyer in Stadthagen, Germany (Figure 32). The product is still made today and 1853 is commonly given as the date of first production. Archives for the Meyer family and the firm



Figure 31: GW&J or W&JG base and an example of a possibly related type of finish (85-31/27-85 and 85-31/27-95).

are held by the Niedersächsisches Landesarchiv - Standort Bückeburg (The State Archives of Lower Saxony - Bückeburg Branch) which may be able to shed further light on the dating of this bottle.¹ Archaeologically this appears to be a rare find in North America, and I am not currently aware of any other examples.



85-31/27-89, 85-31/27-304
and 85-31/27-306



Figure 32: Reconstructed base of an Ernst Eduard Meyers bottle (85-31/27-89, 85-31/27-304, and 85-31/27-306).

Numerous small colorless or aqua bottles could have held a variety of products, but the small decagonal and dodecagonal bottles probably held medicine or toiletries, and a rectangular milk glass bottle marked “LAIRD | PERFUMER | [BRO]ADWAY, N.Y.” was for perfume (Figure 33). Meanwhile, three inkwells suggest writing at the site. Tablewares

¹ NLA BU D 42, for a description of the fonts see <https://www.arcinsys.niedersachsen.de/arcinsys/detailAction?detailid=b23804>.

are only minimally represented by the base of a tumbler and base of solarized manganese glass from a piece of hollowware, perhaps a vase.

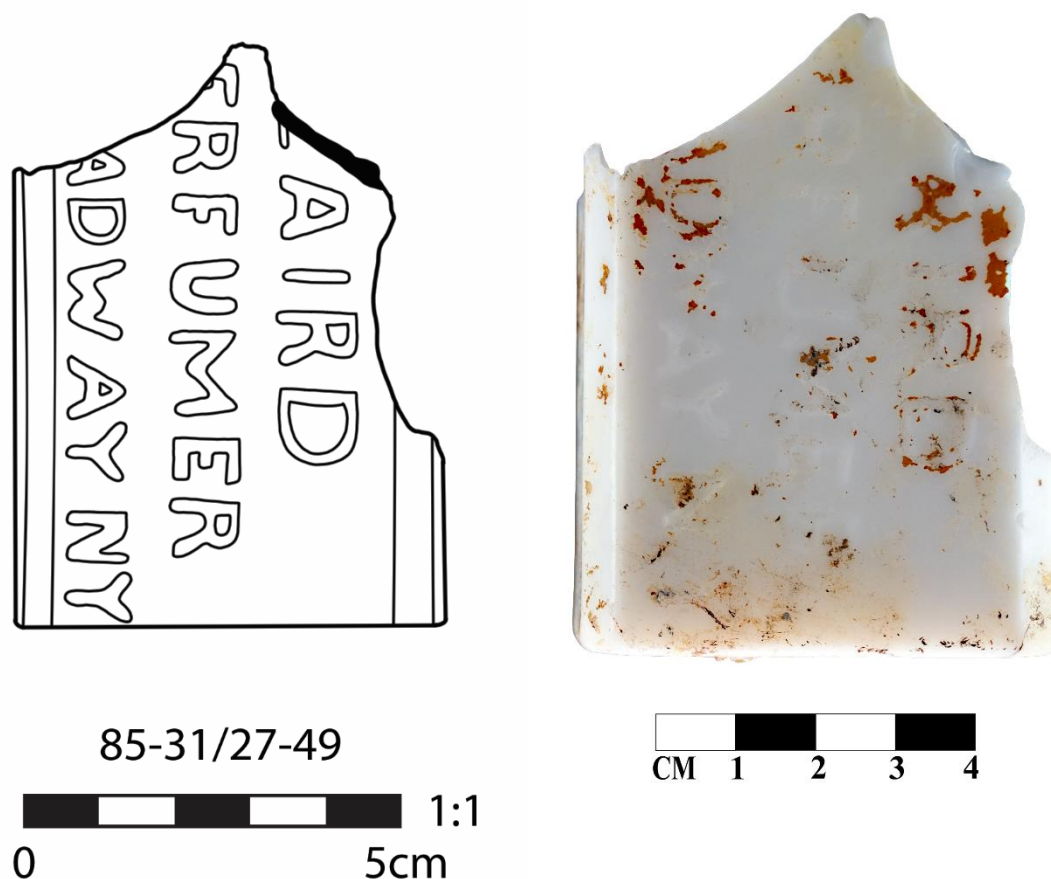


Figure 33: Milk glass bottle from the perfumer Laird, New York (85-31/27-49).

Feature 85-31/28

Feature 85-31/28 was described by ARS archaeologists as an unlined pit; measurements of the pit's dimensions were not taken, and the feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/28 contained two whole bottles and 47 fragments (927.7 g) of glass likely to come from tablewares or containers, representing at least five vessels, two colorless and three aqua. One is a colorless rectangular bottle with decorative molded edges which probably held perfume. There is also a wide-mouthed pickle/chutney bottle

molded in the gothic/cathedral style. Finally, and of particular interest, is an octagonal aqua bottle with a blob finish marked “CHAMPAGNE | MEAD” (Figure 34). Produced by Gass & Company of San Francisco, this bottle dates to between 1870 and 1871.



Figure 34: Paneled champagne mead bottle (85-31/28-31).

Feature 85-31/29

Feature 85-31/29 was described by ARS archaeologists as an unlined pit. Measurements of the pit's dimensions were not taken, and the feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/29 contained 39 fragments (377.2 g) of glass likely to come from tablewares or containers, representing at least seven vessels. There are two olive bottles likely to be for alcohol, a circular colorless tumbler base, and finishes from three aqua bottles (two flat, and one flanged) as well as an indefinite fragment of white milk glass.

Feature 85-31/30

Feature 85-31/30 was described by ARS archaeologists as a circular brick-lined feature with wooden board floor, similar to Feature 85-31/26. The feature measured 1.7m diameter; the depth was not recorded, and the feature was not excavated stratigraphically (Kane 2011). No glass container or glass tableware artifacts from Feature 85-31/16 were found in the Market Street Chinatown collection.

Feature 85-31/31

Feature 85-31/31 was described by ARS archaeologists as a wood-lined pit; the dimensions of the pit were not recorded, and it was not excavated stratigraphically (Kane 2011).

Feature 85-31/31 contained 12 fragments (273.6 g) of glass likely to come from containers, representing at least two vessels, one olive case bottle and one olive circular bottle.

Feature 85-31/32

During the ARS excavations, Feature 85-31/31 was assigned in error to a feature that already had been designed with another number. The feature number was removed from use and no artifacts are associated with it (Kane 2011).

Feature 85-31/33

Feature 85-31/33 was described by ARS archaeologists as a circular brick-lined feature measuring 1.04m x 1.14m in area and 1.06m deep. Similar to Features 85-31/26 and 85-31/30, the edge of the feature was defined by at least 17 courses of brick, each containing 14 to 15 bricks. Feature 85-31/33 was not excavated stratigraphically (Kane 2011).

Feature 85-31/33 contained one whole bottle and 79 fragments (2,939 g) of glass likely to come from tablewares or containers, representing at least ten vessels. The glass in Feature 33 is dominated by bottles and tableware associated with beverages including two circular olive bottles, one amber bottle and an aqua strap-sided flask likely to be associated with alcohol, an aqua mineral water bottle, a fluted drinking glass and a tumbler. The remainder of the vessels are made up of a colorless glass bottle with a straight brandy finish, a case bottle of Voldner's Aromatic Schnapps, and an unusual, teal-colored bottle marked "JSP" for Joseph S. Pederson's Malt Extract (Figure 35).



85-31/33-1

0 5cm 1:1

Figure 35: Johann S. Pedersen bottle (85-31/33-1).

Feature 85-31/34

Feature 85-31/34 was described by ARS archaeologists as an unlined trash pit. The feature's measurements were not recorded, and it was not excavated stratigraphically (Kane 2011).

Feature 85-31/34 contained one whole Euro-American medicine vial and 6 fragments (153.3 g) of heat-affected sherds aqua and colorless glass.

Feature 85-31/35

Feature 85-31/35 was described by ARS archaeologists as a wood-lined pit. The dimensions of the pit were not recorded, and the feature was not excavated stratigraphically (Kane 2011).

Feature 85-31/35 contained two whole bottles and 142 fragments (2,522.9 g) of glass likely to come from tablewares or containers, representing at least 15 vessels. This is a particularly rich feature with a number of identifiable bottles; however, care needs to be taken with interpretation as it appears that large parts of the assemblage post-date the Market Street Chinatown.

Bottles which might be associated with the Market Street Chinatown include a colorless medicine bottle base marked "M^cC" produced by William McCully & Co. in Pittsburgh between approximately the mid-1870s and 1896 (Lockhart et al. 2020, 288–91), and a "WHITTEMORE | BOSTON" shoe polish bottle (1873-c.1960s) (Figure 36). Whittemore Brothers & Co. was a long-lived business producing a variety of polishes and shoe care products into the 1960s. Intriguingly, a 20th century bottle of Whittemore's Shoe Polish was found in the first archaeological excavation of a Chinese Home Village, highlighting the ways migrant connections also created material effects at home (Voss et al. 2018, 420).

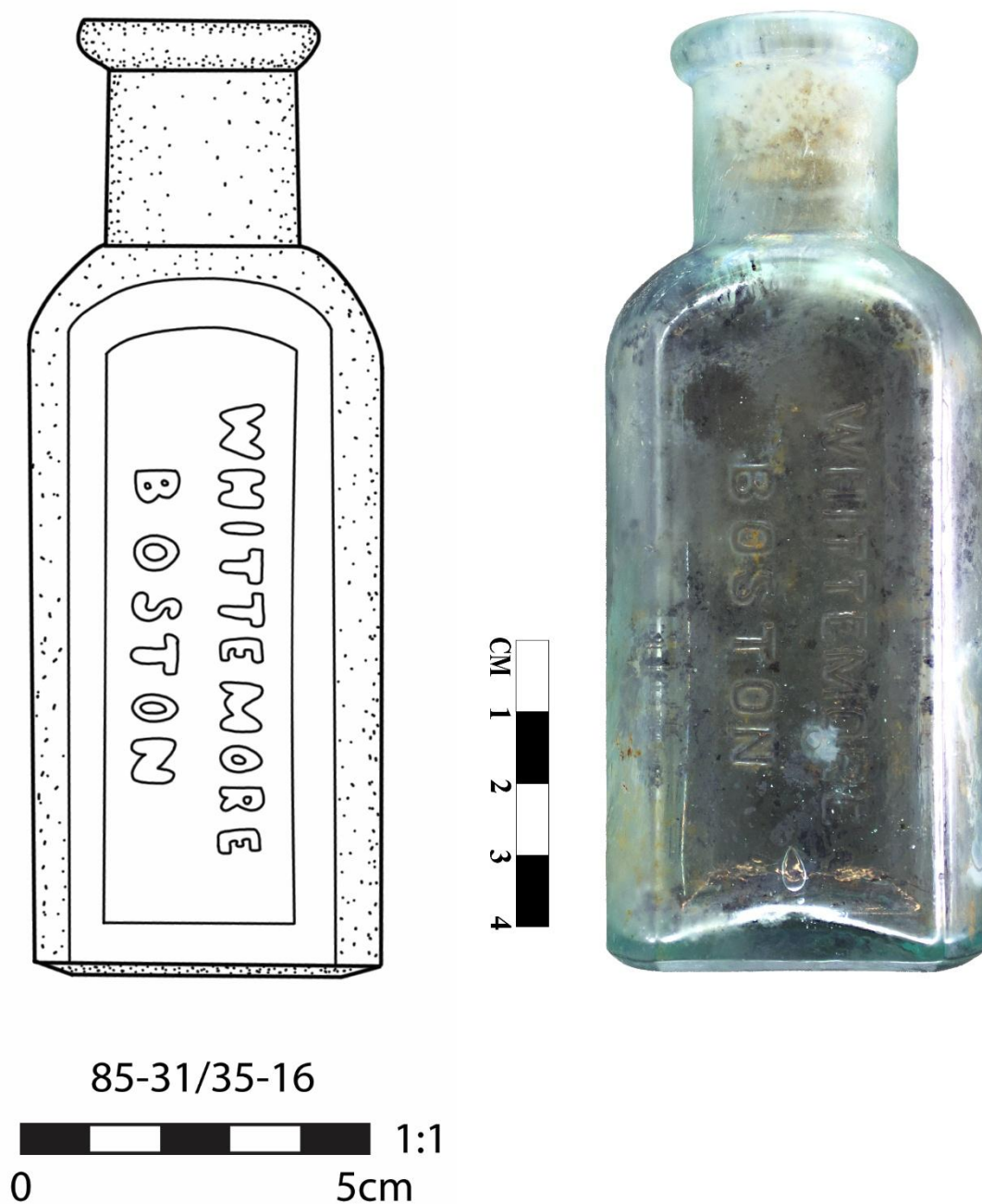


Figure 36: Whittemore shoe polish bottle with black residue on the interior (85-31/35-16).

However, several of the bottles clearly post-date the Market Street Chinatown, suggesting that the pit remained in use after the fire. This includes three fragments with machine-made features which all probably date from the 20th century: a colorless collared ring finish with mold seams (85-31/35-11), a colorless rectangular base with a suction scar (85-31/35-13), and an amber hexagonal bottle with an ejection mark (85-31/35-17).

Other bottles can be dated using their embossments (Figure 37). For example, 10 fragments of the base and body of an amber bottle embossed "[SAN J]OSE BOTTLIN[G CO] | [SAN] JOSE CAL" (85-31/35-22). The San Jose Bottling Company was incorporated in 1895 by a group of former employees of the Fredericksburg Brewing Company who had begun bottling for the brewery several years earlier (*Sacramento Daily Union* 1895). Around 1901, the company was purchased by German immigrant Charles Maurer who had been operating another bottling company in San Jose (Guinn 1904, 802). Around 1905, the company began to be listed as being owned by C. Maurer and Son, and Charles' son Carl Maurer ran the business into at least the 1920s (*San Jose City Directory* 1905, 747). Since bottles produced after Maurer's acquisition of the company carried his name (e.g., 85-31/0-1105), this bottle is likely to have been produced between 1895 and around 1901. Also from the San Jose area was a complete aqua mineral-water bottle with a blob finish marked "SAN JOSE SODA WORKS | JOHN BALZHAUSER | PROP. | SAN JOSE CAL. || J.B.".

Another later bottle (85-31/35-8) is marked "A.B.G.M. Co | H16" for the Adolphus Busch Glass Manufacturing Company which was incorporated in 1892. The aqua bottle, which probably held beer, is consistent with examples made at the company's plants in St Louis, Missouri and Belleville, Illinois until about 1917, although the presence of the mold mark H16 suggests production in St Louis after 1905 (Lockhart et al. 2013a, 204–5).

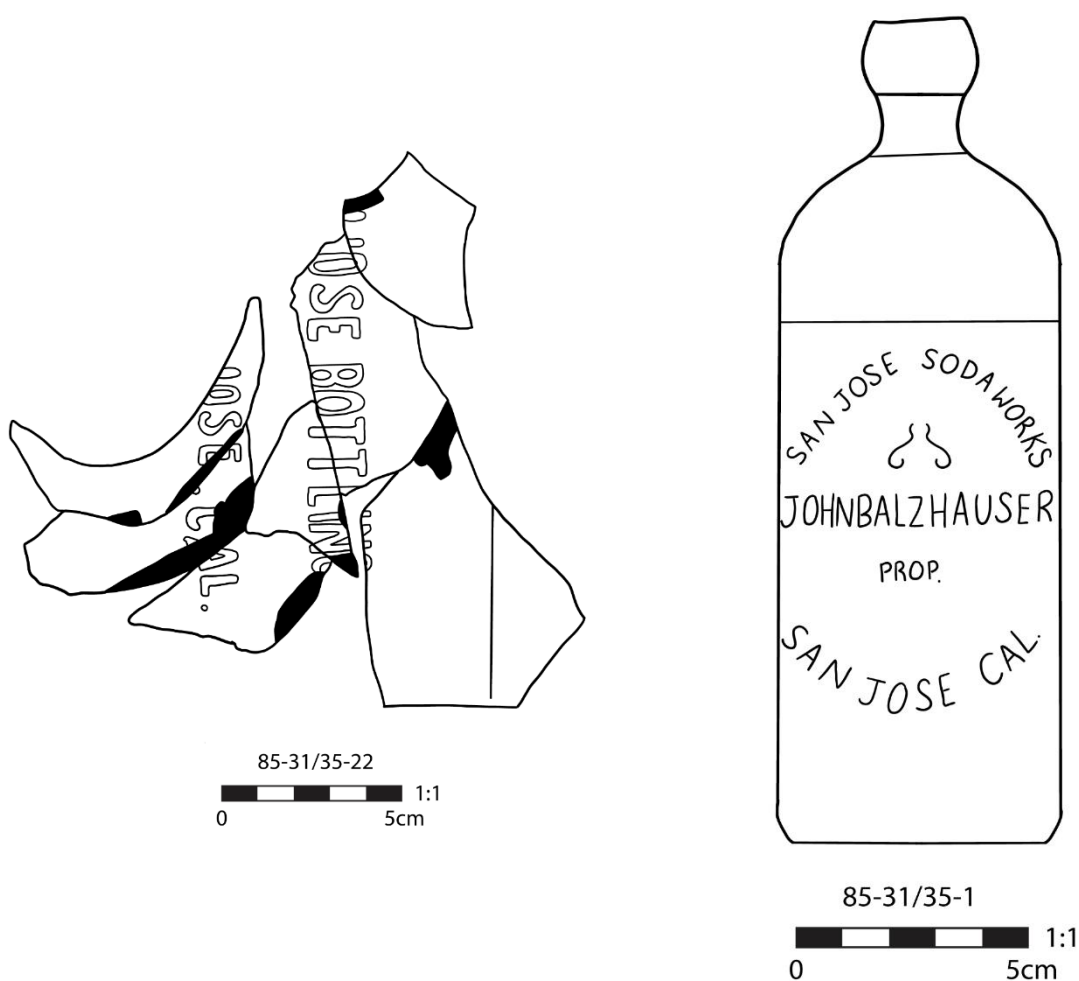


Figure 37: Bottles from San Jose bottlers, the San Jose Bottling Company and San Jose Soda Works (85-31/35-22 and 85-31/35-1).

The base of a circular amber bottle embossed “MCW” was produced for Mallinckrodt Chemical Works in St Louis, MO. Lockhart et al. (2017, 245) attribute a mold-blown amber bottle with “M.C.W.” with a volume measurement to the period c. 1880-1920. The company began as G. Mallinckrodt & Co. in 1867 and only became incorporated as Mallinckrodt Chemical Works in 1882, but the name had clearly been in use earlier, by 1873 at least (*St Louis Globe Democrat* 1873). The date, therefore, could be slightly earlier but based on style is unlikely to be much later than 1920. It probably held a chemical for pharmaceutical or industrial purposes, photographic development, or refrigeration (for more see Okonkwo 2024, 12–14).

Other, unidentified bottles, point to other potentially interesting activities at the site including a bottle of “SPERM | SEWING MACHINE | OIL” (85-31/35-7) (Figure 38), and bottles marked “...AGE || & MIL[K?]” (85-31/35-3) and “...MPERI[A]... | H. ...” (85-31/35-20).

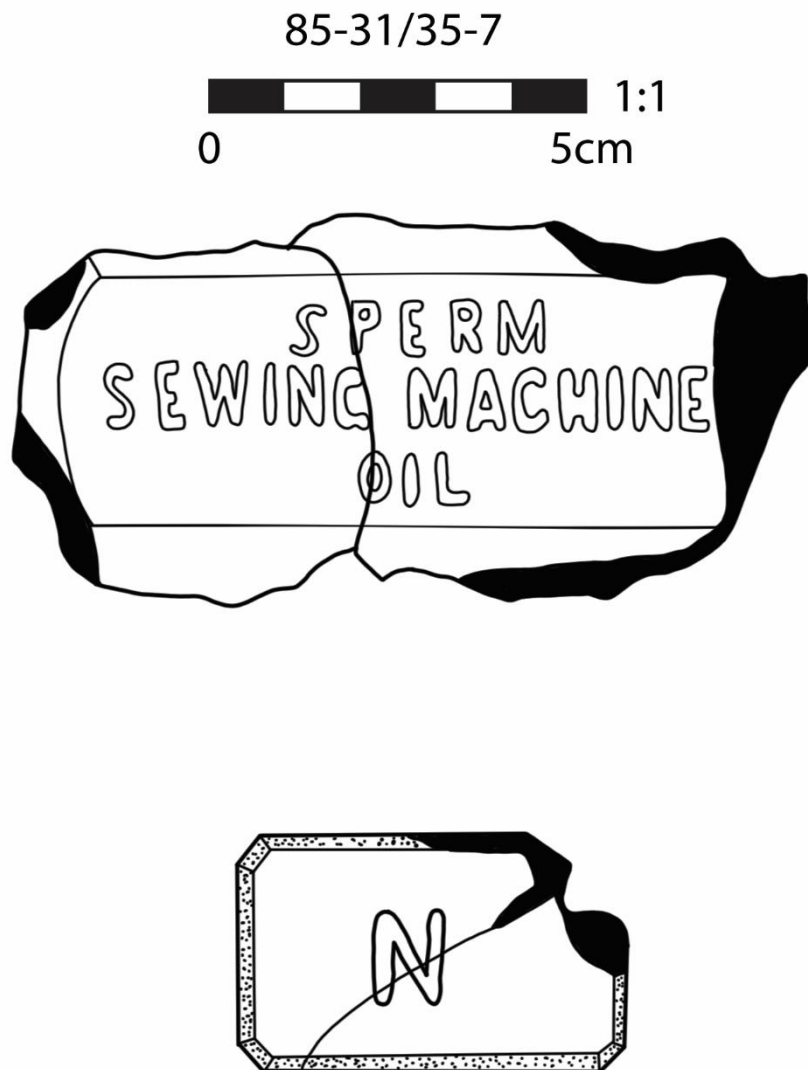


Figure 38: Fragments of a Sperm Sewing Machine Oil bottle (85-31/35-7).

In summary, many of the bottles in Feature 85-31/35 have date ranges that span the 1870s to the early 20th century. Others were produced after the Market Street Chinatown's occupation of Block 1, dating to the 1890s and early 20th century. Consequently, this feature either contains a mixture of artifacts from the Chinatown and post-Chinatown occupations of the block or may date entirely to the post-Chinatown period. Analysis of other artifact categories, especially ceramics, may be helpful in resolving the chronology of this feature.

Feature 85-31/36

Feature 85-31/36 was described by ARS archaeologists as an unlined pit containing animal bone, measuring 1.0m long and 1.5m wide; the depth was not recorded (Kane 2011).

No glass container or glass tableware artifacts from Feature 85-31/36 were found in the Market Street Chinatown collection.

Feature 85-31/37

Feature 85-31/37 was described by ARS archaeologists as an unlined trash pit; the dimensions of the pit were not recorded, and the feature was not excavated stratigraphically. The feature is described as containing milk bottles and milk bottle fragments below a brick foundation. Despite this description, the ARS artifact catalog does not contain any records of artifacts for Feature 85-31/37 (Kane 2011). During this research study, no glass container or glass tableware artifacts from Feature 85-31/37 were found in the Market Street Chinatown collection.

Feature 85-31/BH

Feature 85-31/BH is the designation used by ARS archaeologists to record artifacts recovered from bore holes, or narrow shafts drilled into the ground during construction activities. Bore holes were numbered but their locations were not precisely recorded (Kane 2011).

Feature 85-31/BH contained 54 fragments of glass (1,057.9 g), representing at least 7 vessels. These were recorded as originating from at least three bore holes at the site. This includes fragments of an aqua bottle, fragments of a blue bottle, three faceted tumblers, and two olive bottles.

4.0 ARS PROJECT 86-36: RESULTS

For ARS Project 86-36, there are 1,016 catalog numbers for glass containers and glass tablewares. These represent 76 whole vessels and 7,380 fragments, together weighing 91.8 kg. These artifacts represent 437 minimum original vessels (Appendix C). After cataloging, 669 specimens were selected for analysis (Section 2.2.3 and Appendices A and B).

An additional 37 catalog numbers (7 whole vessels and 51 fragments, 6,453.4 g) were cataloged from Feature 86-36/0, which consists of unprovenienced surface finds collected by ARS archaeologists while observing construction activity. Because of lack of context, glass containers and glass tablewares from Feature 86-36/0 are excluded from the following analyses, except for lists of manufactures and products.

4.1 Form and Function

4.1.1 Glass Containers

ARS Project 86-36 contained a range of glass and tableware forms (Tables 6 and 7). This subsection presents aggregate data for categorization of glass specimens from ARS Project 85-31 using functional classifications from catalog records and bottle style from analysis forms (See Section 2.0 for methods description).

Table 6: ARS Project 86-36: Glass specimens by function (Group, Category, and Description), as measured by count, weight, and MNV.

Functional Group	Functional Category	Functional Description	Count	Weight (g)	MNV
Activities					
	<i>Writing</i>		4	224	3
		Inkwell	4	224	3
Domestic					
	<i>Cleaning</i>		4	37	1
		Ammonia	4	37	1
	<i>Drinking Vessel</i>		134	5,693.28	39
		Goblet	20	2,333.9	2
		Hollowware	2	4.1	
		Mug	3	67	1
		Packing tumbler	1	175.6	1
		Stemware	10	183.05	3
		Tumbler	98	2929.61	32
	<i>Food Container</i>		153	5,854.85	43
		Bottle	4	204.5	1
		Bottle/jar	1	58.2	
		Extract jar	5	257.6	2
		Milk bottle	1	47.1	1
		Olive bottle	24	1,532.3	8
		Pickle/chutney bottle	28	710.5	4
		Salt jar	4	166.1	1
		Soda/mineral water bottle	73	2,380.85	18
		Spice bottle	10	471	7
		Stopper	1	11.8	
		Worcestershire sauce bottle	2	14.9	1
	<i>Food Storage</i>		31	394.6	2
		Canning jar	31	394.6	2
	<i>Indefinite</i>		2	18.4	
		Indefinite	2	18.4	
	<i>Misc Containers</i>		4	90.2	
		Bottle	1	8.3	
		Bottle/jar	3	81.9	
	<i>Tableware</i>		76	667.28	14
		Bowl	2	28.74	1
		Dish	5	163.57	2
		Dish-footed	1	95.87	1
		Handle	2	27.35	
		Hollowware	6	114.75	
		Indefinite	57	143	7

	Stemware	3	94	3
Personal				
	<i>Alcohol Container</i>	112	6,821.3	15
	Benedictine bottle	1	920	1
	Alcoholic beverage Bottle	9	633.6	3
	Cognac bottle	1	8	
	Flask	43	943.2	5
	Gin/schnapps bottle	57	4,303.4	6
	Wine bottle	1	13.1	
	<i>Grooming</i>	3	81.4	2
	Florida	1	11.3	1
	Perfume bottle	2	70.1	1
	<i>Health</i>	276	3,767.85	82
	Bitters bottle	13	1048.7	2
	Bottle	1	63.2	
	Case gin bottle	115	858.8	5
	Jamaica-ginger bottle	8	53.4	2
	Medicine bottle	58	1,127.45	14
	Sarsaparilla bottle	1	0	1
	Vial	80	616.3	60
	<i>Misc. Containers</i>	44	900.3	
	Bottle	44	900.3	
Indefinite				
	<i>Indefinite</i>	2088	2,784.21	15
	Bottle/jar	1	9	
	Hollowware	17	41.5	
	Indefinite	2070	2736.91	15
	<i>Misc. Closures</i>	8	150.1	
	Stopper	8	150.1	
	<i>Misc. Containers</i>	4518	64,312.46	221
	Battery jar	42	1689	2
	Bottle	4176	59,973.76	209
	Bottle/jar	179	827.3	1
	Container	12	169	
	Demijohn	36	854	2
	Glue bottle	1	97.2	1
	Indefinite	35	295.2	1
	Jar	36	303	4
	Sewing machine oil bottle	1	104	1
Totals		7456	91,786.13	437

Table 7: ARS Project 86-36 bottle style by count, weight, and MNV.

	Count	Weight (g)	MNV
Alcohol bottle	678	35444.6	124
Ammonia bottle	3	25.8	1
Battery jar	42	1689	2
Bitters Bottle	1	37.5	
Canning jar	31	394.6	2
Case gin bottle	118	919.5	5
Extract jar	5	257.6	2
Glue/mucilage bottle	1	97.2	1
Homeopathy vial	3	11.7	3
Ink bottle/inkwell	5	620	4
Medicine bottle	201	2999.75	48
Milk bottle	3	198.3	2
Mineral/soda water bottle	78	2993.95	19
Oil/vinegar bottle	8	170.2	2
Olive bottle	24	1532.3	8
Perfume bottle	4	196.4	2
Pickle/chutney bottle	39	1478.8	4
Salt Jar	4	166.1	1
Sarsaparilla bottle	1	0	1
Sewing Machine Oil Bottle	1	104	1
Snuff bottle	1	2.9	1
Spice bottle	11	494.1	7
TCM vial	62	553.6	38
Indefinite	6132	413898.23	159
Total	7456	91786.13	437

As in ARS Project 85-31, the most frequently identified containers are those likely to have contained alcohol, primarily olive wine bottles and beer bottles, but also including spirits bottles and whisky flasks. They represent 28% of the assemblage by MNV and 39% of the assemblage by weight, which is somewhat lower than the percentages for those from ARS Project 85-31, offset by the higher proportion of indefinite vessels. The alcoholic beverages are supplemented by medicine bottles (including homeopathy vials, bitters, and hair tonic), non-alcoholic beverages, such as soda and mineral waters, food products (pickle/chutney, oil/vinegar, canning jars, olive bottles and spice bottles), household products (chemical bottles, glue/mucilage, ink, and sewing machine oil

bottles) and grooming products (perfume). In ARS Project 86-36, food products make up a slightly higher percentage of the glass than in ARS Project 85-31.

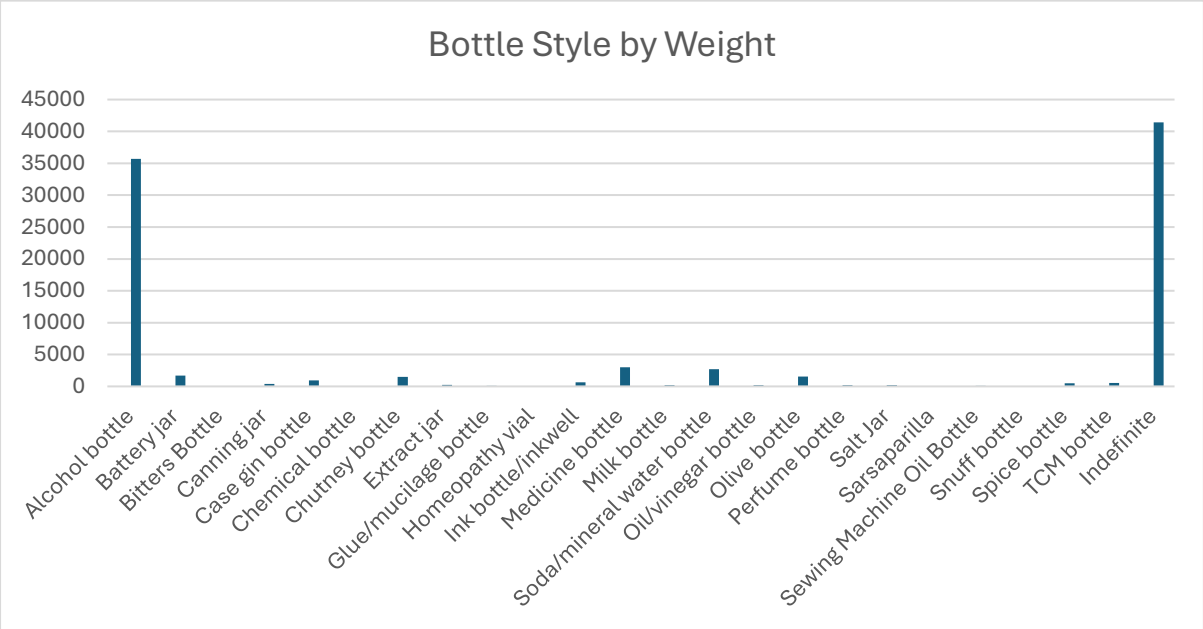


Figure 39: ARS Project 86-36 bottle style by weight in grams.

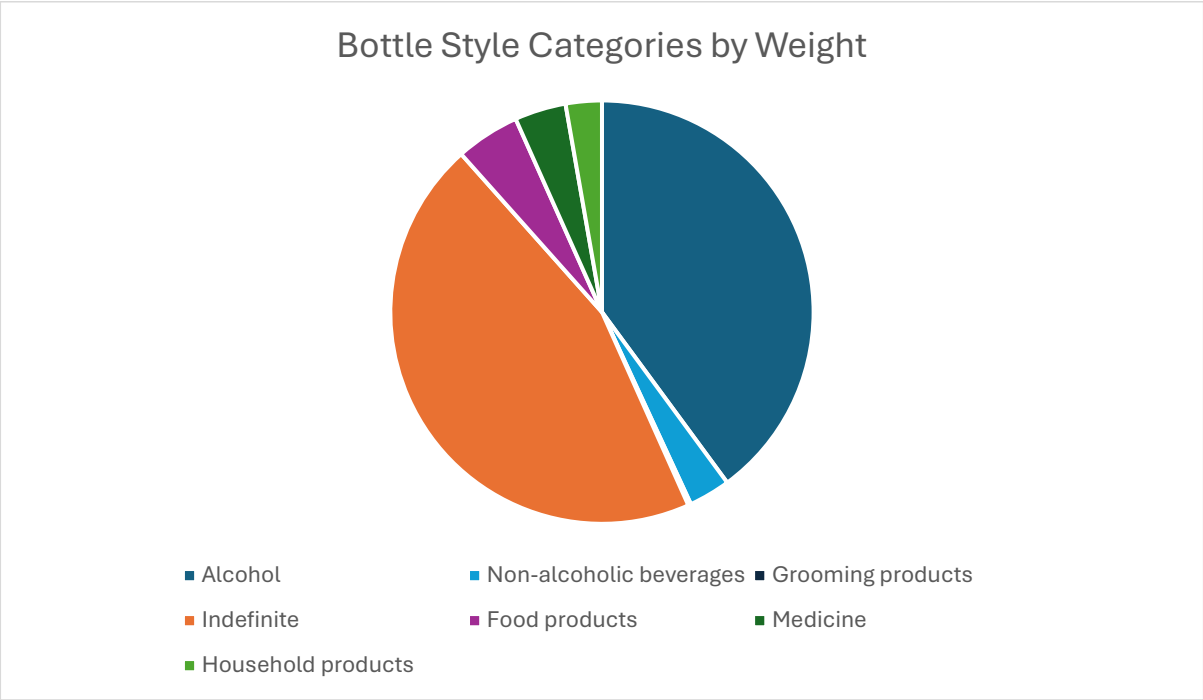


Figure 40: ARS Project 86-36 bottle style categories by weight.

4.1.2 Tablewares

The glass tablewares are primarily represented by tumblers (MNV = 32) in a variety of press-molded and optic-molded forms. These are typical of the tumblers produced from the 1830s onwards and ubiquitous on archaeological sites (Jones 2000, 225). The tumblers are supplemented by at least two stemmed drinking glasses, at least two goblets, and a mug.

Table 8: ARS Project 86-36 tablewares by count, weight, and MNV.

	Count	Weight	MNV
<i>Drinking Vessel</i>	127	5664.68	38
Goblet	20	2333.9	2
Hollowware	2	4.1	
Mug	3	67	1
Packing Tumbler	1	175.62	1
Stemware	10	183.05	2
Tumbler	98	2929.61	32
<i>Tableware</i>	83	695.88	14
Bowl	2	28.74	1
Dish	5	163.57	2
Dish-Footed	1	95.87	1
Handle	2	27.35	
Hollowware	5	106.35	
Indefinite	57	149.7	7
Stemware	3	94	3
Tableware	1	1.7	
Total	210	6360.56	52

As in ARS Project 85-31, there is a wide range of decoration on the different drinking vessels. The tumblers have ribbing, paneling, and fluting of different heights and widths, different cross-sections (Figure 41). One of the goblets has a honeycomb pattern on the body, while the other has finely cut facets on the body which become smaller on the stem. The stemware (Figure 42) includes feet of different diameters, and different decorative treatments on the stem including facets, frosting, and one which has traces of red paint. The bowls are plain, finely ribbed, or molded. One particularly striking pattern has half curved teardrops which join to make hearts on the body of the bowl.

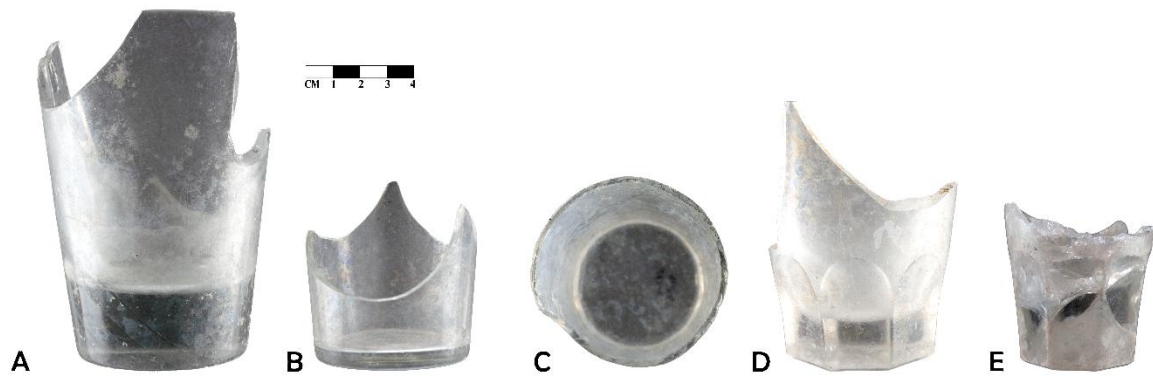


Figure 41: Range of tumbler forms and decoration in ARS Project 86-36. A) 86-36/9-13 is a plain tumbler with a thick base. B) 86-36/9-123 is plain with a thin base. C) 86-36/9-125 is optic molded with light paneling. D) 86-36/13-110 has short arched paneling around the lower body. E) 86-36/14-74 is small, with flatter paneling and no arches.

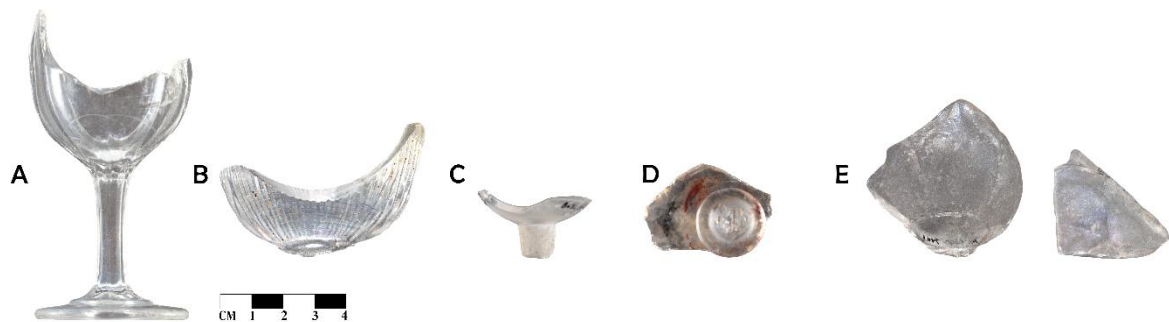


Figure 42: Range of stemware forms and decoration in ARS Project 86-36. A) 86-36/5-885 is an ovoid fluted drinking glass. B) 86-36/7-688 is the finely ribbed bowl of a stemmed vessel. C) 86-36/19-41 has a frosted stem. D) 86-36/20-263 is the foot of a stemmed vessel, with traces of red paint. E) 86-36/5-744 has molded teardrops which form hearts around the bowl of the vessel.

Other tablewares are decorated in a range of styles including square hobnails, horn of plenty, sunbursts and starbursts, molded grapes, and stippled grounds (Figure 43). This range of decoration suggests a diversity of tablewares was used at the sites and does not show any clear indication of the use of matched sets.

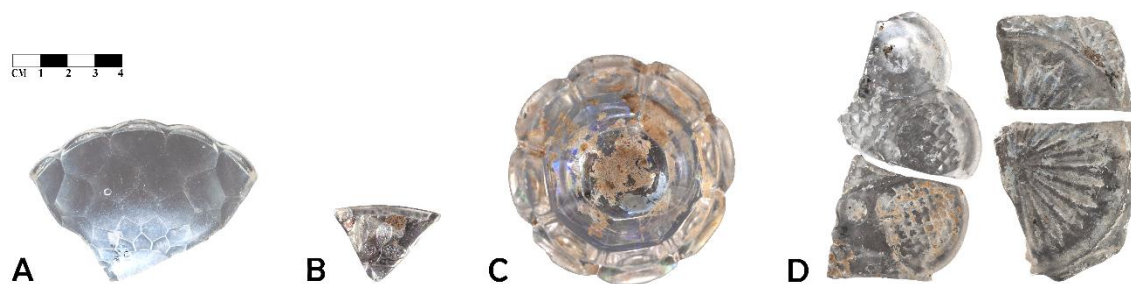


Figure 43: Range of other tableware decorations. A) 86-36/9-171 is a dish with molded honeycomb design. B) 86-36/5-316 is a small fragment of colorless glass rim with a design of three leaves textured with raised circles, with possible grapes below. C) 86-36/13-30 is a complete footed dish with a scalloped rim. D) 86-36/19-44 is a dish in the Horn of Plenty pattern.

4.2 Manufacturers

Eighteen glass manufacturers can be identified from embossments, providing important information about production dates and the location of production (Table 4).

Table 4: Glass manufacturers and bottlers identified in ARS Project 86-36.

Name	Date From	Date To	Location	Likely Product	Feature
AB&Co	c. 1860	c. 1900	UK?	Beer	7
American Bottle Co.	1905	1909	USA, IL, Belleville	Soda	1
Delaval	c. 1902	c. 1927	USA, NY, Poughkeepsie or CA, ON, Peterborough	Milk	23
Dominick O. Cunningham	1880	c. 1914	USA, PA, Pittsburgh	Beer	5
Ellenville Glass Works	c. 1865	At least 1880	USA, NY, Ellenville	Whiskey	24
Empire Bottle & Supply Co.	1901	1914	USA, NY, New York	Milk	23
Empire Works	Soda c. 1861-c.1871 or c. 1880-c. 1882		USA, CA, San Francisco	Soda	21
Reed & Co.	1892	1902	USA, OH, Massillon	Beer	4
Golden West Soda Works	1901	1932?	USA, CA, San Jose	Soda	9
HP			France?	Perfume	18
John Matthews	1864	1908	USA, NY, New York	Soda	5, 17
Kerr Glass Mfg. Co.	1904	c. 1914	USA, OR, Portland	Canning jar	9
Pacific Coast Glass Works	c. 1903	c. 1924	USA, CA, San Francisco	Bitters?	9
Pacific Glass Works	1870	1875	USA, CA, San Francisco	Canning jar	5
San Jose Soda Works, A. J. Henry	1905	1922	USA, CA, San Jose	Soda	9
Whitall Tatum & Co.	1888	1895	USA, NJ, Millville	Medicine	4
Williams Bros.	1871	1909	USA, CA, San Jose	Soda	4
William McCully & Co.	c. 1859	Late 1870s	USA, PA, Pittsburgh	Bitters	5

By placing these manufacturing dates in a Gantt chart (Figure 44), it becomes clear that many of the bottles with identified manufacturers were produced and after the occupation of Block 1 by the Market Street Chinatown. The later material appears to be largely limited to surface levels of the site.

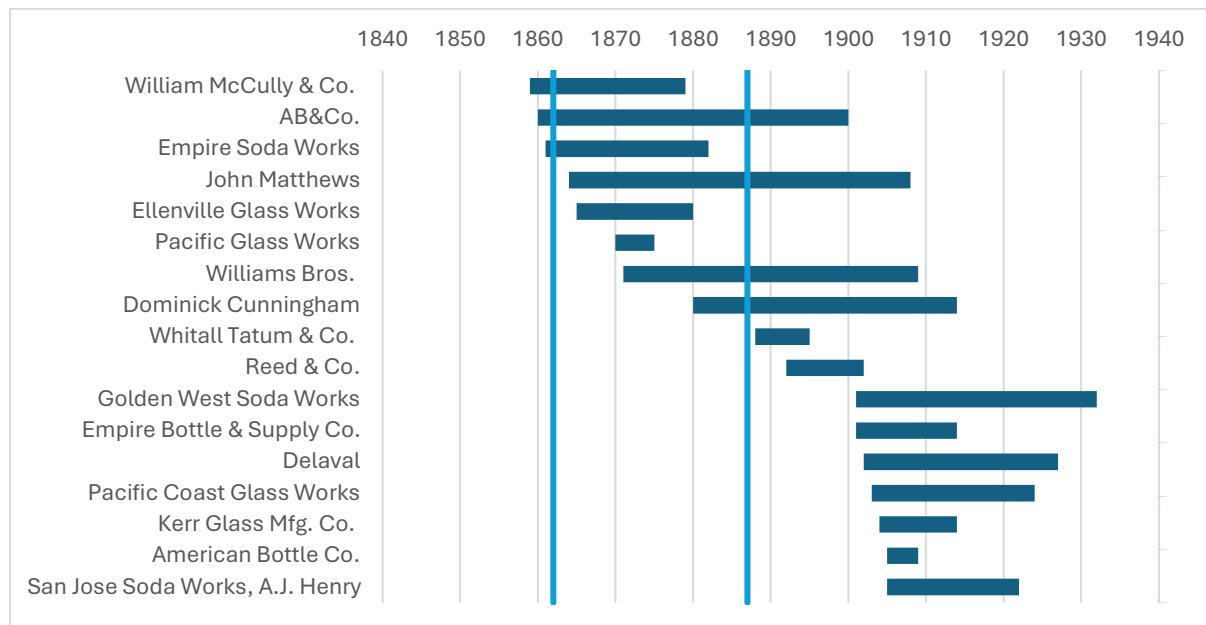


Figure 44: Years of vessel production for manufacturers and bottlers in ARS Project 86-36, with the occupation of the Market Street Chinatown shown in the lighter blue vertical lines.

4.3 Products

The brand names of contents of glass containers from ARS Project 86-36 were determined through analysis of embossed labels and other diagnostic features.

Table 9: Brands of products identified in ARS Project 86-36.

Name	Date From	Date To	Location	Likely Product	Feature
Andral Kilmer	1870s	1920s?	USA, NY, Binghamton	Medicine	1
Armour & Co.	1889	Late 1950s?	USA, IL, Chicago	Beef extract	9
Ayer's Cherry Pectoral	1845	1930s	USA, MA, Lowell	Medicine	5
Ayer's Pills	1845	1930s	USA, MA, Lowell	Medicine	7
A. von Hoboken	c. 1840s	c. 1920s	NETHERLANDS, Rotterdam	Gin/schnapps	0, 9
Benedictine	1870s	1920s	FRANCE, Normandy	Liqueur	9
Bixby	1860	1920s	USA, NY, New York	Glue/mucilage	9
Cantrell & Cochrane	1868	1910	IRELAND, Dublin or Belfast	Soda/mineral water	5
CB or BC	1888			Medicine	4
C.N. Crittenton	1861	1948	USA, NY	Medicine	5
Curtis & Perkins	1849	1906	USA, NY, New York	Medicine	17
Dr Kennedy	1848	1920	USA, MA, Roxbury	Medicine	17
Dr Perry's Last Chance Liniment	1872	1874	USA, CA, San Francisco	Medicine	17
Dr Wonser's Bitters	1875	1889	USA, CA, San Francisco	Bitters	17
Emerson Drug Co.	c. 1897	c. 1925	USA, MD, Baltimore	Medicine	1
Emil Frese	c. 1860	c. 1874	USA, CA, San Francisco	Jamaica Ginger	20
Gass & Co.	1870	1871	USA, CA, San Francisco	Champagne mead	5
Gordon's	1909	1914	UK, ENGLAND, London	Gin	0, 9
Hall's Sarsaparilla	1858	1909	USA, CA, San Francisco	Sarsaparilla	13
Joseph Burnett	1845	20 th century	USA, MA, Boston	Medicine, toiletry, or extract	5
J. Hostetter	1853	1958	USA, PA, Pittsburgh	Bitters	5, 9

J.H. Brough & Co.	1870	1947	UK, ENGLAND, Liverpool	Salt	2, 5
J.J. McBride	c. 1875	c. 1876	USA, CA, San Francisco	Medicine	17
John Henry Wood	1860	1872	USA, CA, Napa	Soda water	17
Keating & Bab	1873	1874	USA, CA, San Jose	Medicine	5
Lash's	1884	1905	USA, New York, Chicago, or San Francisco	Bitters	0
Lea & Perrins	c.1849	1957	UK, England, Worcestershire	Condiment	1, 17
Lubin	1798		FRANCE, Paris	Perfume	18
Mexican Mustang Liniment	c. 1825	c. 1948	USA, MO, St Louis, or NY, New York	Medicine	17
Meyer & Rottman	1853	1857	USA, NY, New York	Soda water	19
Murray & Lanman	1835	1871	USA, NY, New York	Florida water	20
San Francisco Gaslight Co.	1875	1905	USA, CA, San Francisco	Ammonia	5, 17
Sanford	1857		USA	Ink or mucilage	1
Scoville's Blood & Liver Syrup	1840	1916	USA, OH, Cincinnati	Medicine	20
Singer Manufacturing Co.	1863		USA	Sewing machine oil	7
Udolpho Wolfe	1848	1935	NETHERLANDS, Schiedam	Gin/schnapps	17

By placing these product production dates in a Gantt chart (Figure 45), it becomes clear that nearly all but a few of the products represented were in production and could have been available for purchase during the occupation of Block 1 by the Market Street Chinatown. A few products produced only during the pre-Chinatown era may indicate the presence of older deposits, or could be a result of bottle reuse. The products post-dating the Market Street Chinatown are related to later uses of the block.

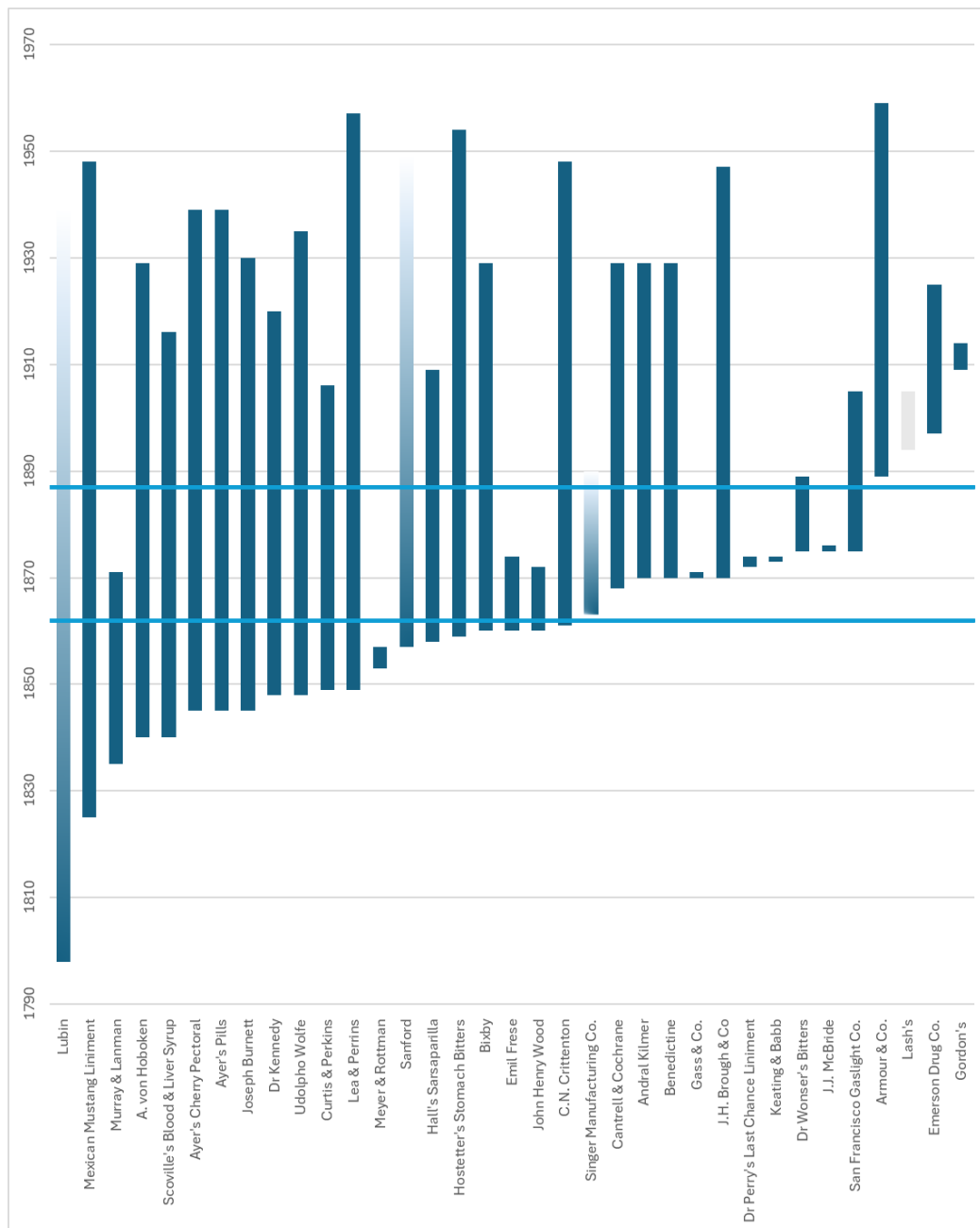


Figure 45: Years of product manufacture for products identified in ARS Project 86-36, with the occupation of the Market Street Chinatown shown in the lighter blue vertical lines and unprovenanced artifacts in the light grey. The gradient shows a level of uncertainty in the dates.

4.4 Discussion of Results, By Feature

Feature 86-36/1

Feature 86-36/1 was described by ARS archaeologists as a small, soft depression on the side of a truck path used by construction vehicles in 1986. It was described as a deposit of oyster shells overlaying a deposit of ash intermixed with historic artifacts. During excavation, ARS divided the feature into two horizontal sections: Unit 1 and Unit 2. Unit 2 consisted of soils recovered from a backfill cut through the feature. The dimensions of each unit and of the feature as a whole are unclear.

For Unit 1 (the undisturbed area of the feature), ARS excavated the feature in four layers: Layer 1 – gravel and clay fill underneath the modern parking lot on Block 1; Layer 2 – brown clay with a dense layer of oyster shell; Layer 3 – fine-grained ash; and Layer 4 – mix of ash and oyster shell. For Unit 2 (the area disturbed by construction activities), ARS excavated two layers: Layer 1 – grey ash; and Layer 2 – brown clay

However, the ARS artifact catalog uses different stratigraphic designations, including “Surface Below Crushed Ground” and “Oyster Layer,” the latter of which is further differentiated by quadrants (Kane 2011).

As a whole, Feature 86-36/1 contained one complete stopper and 220 fragments of glass (1,932.2g) likely to come from containers or tableware, representing at least 11 vessels.

It is not entirely clear how the layers described for Unit 1 relate to the layers named in the ARS artifact catalog. ‘Surface Below Crushed Ground’ is likely to correspond to Layer 1. Diagnostic glass from this layer included a sample bottle of Dr Kilmer’s Swamp Root Kidney Cure, an American Bottle Co. aqua bottle base, several fragments of a large bottle or demijohn, and an unidentified marked aqua bottle (Figure 46). The American Bottle Co. bottle dates to 1905-1909, suggesting a post Chinatown date for this layer.

The oyster layer contained no dateable glass containers or tablewares. This could refer to either Layer 2 or Layer 4. The catalog contains an ‘ash layer’ in Unit 1 which appears to correspond to Layer 3. This contained a TCM vial and a Bromo-Seltzer bottle (c. 1897-c.

1925). Altogether, it appears that Unit 1 was either disturbed or has a mixed deposit of Chinatown and post-Chinatown artifacts.

Unit 2 also shows signs of being a mixed deposit, with a twentieth century machine-made jar found in the ash layer alongside a TCM vial, a Lea & Perrins stopper (c. 1847 onwards, Figure 47), and a Sanford ink bottle (1857 onwards).

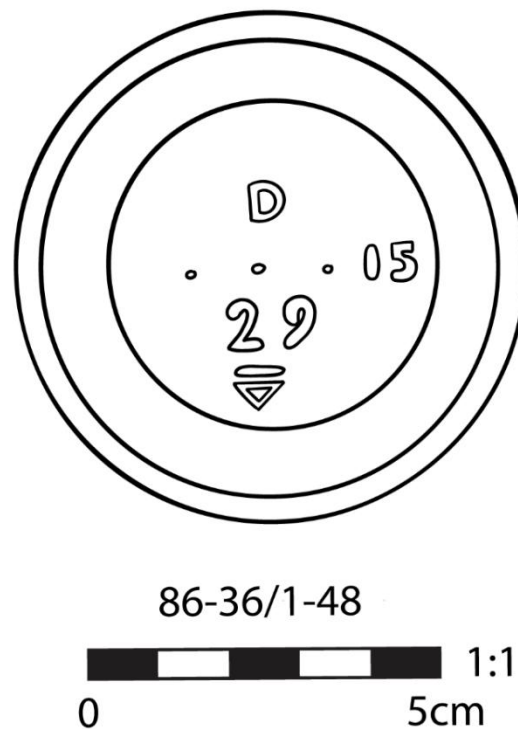


Figure 46: Unidentified marked aqua bottle (86-36/1-48).



Figure 47: Lea & Perrins glass stopper (86-36/1-226). This is one of only two possible examples of Lea & Perrins Worcestershire site which is much lower than is typical of 19th century domestic sites.

Feature 86-36/2

Feature 86-36/2 was described by ARS excavators as a shallow trash pit that was large in area, measuring 15m diameter and 1.5m deep. It was excavated without stratigraphic or horizontal distinction. ARS archaeologists reported that over the days that the feature was being excavated, it was disturbed by “unauthorized personnel,” likely bottle hunters, who were probing for artifacts. It is not clear from ARS records whether any glass artifacts were removed without authorization (Roop 1988, 18; Kane 2011).

Feature 86-36/2 contained 130 fragments (5,449.6 g) of glass likely to come from containers or tableware, from at least 18 vessels. The glass assemblage in this feature

consists of a single tumbler and predominantly olive, colorless, and aqua containers. One colorless fragment is embossed "... WARNER," a company which has not yet been identified (Figure 48). The one identifiable container is part of a circular, vertically ribbed salt jar produced by J.H. Brough & Co. of Liverpool (Figure 49). This mends with 86-36/5-94 but for the Minimum Number of Vessels calculation has only been included in 86-36/2 (see Section 2.0 for a discussion of artifacts from one or more features that cross-mend). This example matches a small but growing number of examples of this brand found in archaeological sites in San Diego; Quebec, Canada; and Sydney, Australia (Carter 2020; Chantier-école en archéologie U.Laval 2019; Connor 2023, 340).

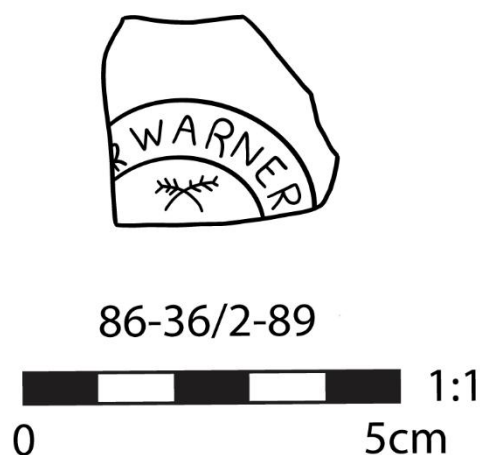


Figure 48: Fragment of bottle embossed "WARNER" (86-36/2-89).

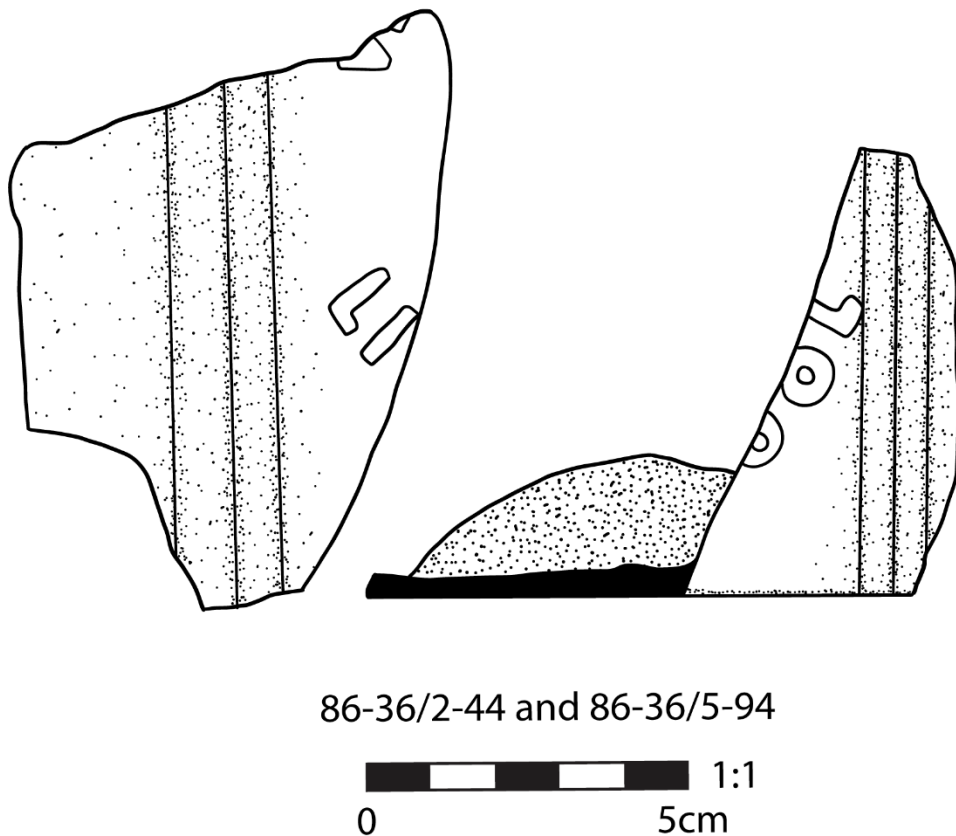


Figure 49: Fragments of a J.H. Brough salt bottle found in 86-36/2 and 86-36/5.

Feature 86-36/3

Feature 86-36/3 was described by ARS archaeologists as a shallow rectangular trash pit measuring 1.7m long, 1.5m wide, and 0.2 m deep (Kane 2011).

Feature 86-36/3 contained 507 fragments (5,841 g) of glass likely to come from containers or tableware, from at least 15 vessels. Of those 15 vessels, at least 10 are circular, olive glass bottles likely to have contained alcohol. In addition, there is one paneled tumbler, two colorless bottles with a one-part finish, and a circular aqua bottle. The only marked fragment is part of an olive paneled bottle marked “BE,” which is probably part of a case gin bottle (Figure 50).

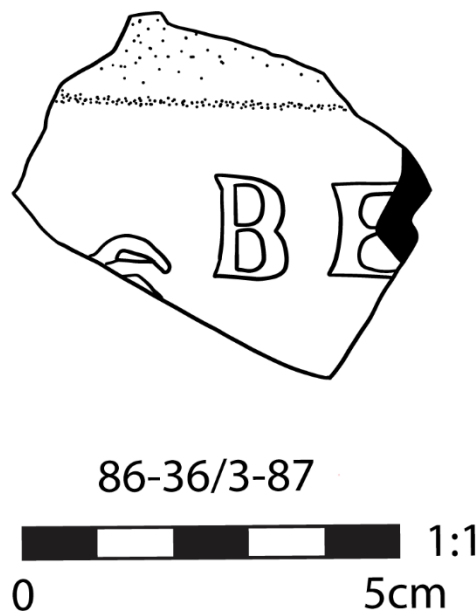


Figure 50: Embossed fragment, probably part of a case gin bottle (86-36/3-87).

Feature 86-36/4

Feature 86-36/4 was described by ARS archaeologists as an unlined pit approximately 2.0m long, 1.5m wide, and 0.9m deep. It was excavated in four layers (which are noted as “levels” in the ARS artifact catalog): Layer 1 – concentrated layer of historic artifacts with very little soil; Layer 2 – thick (40cm) deposit of oyster shell, ash, and charcoal showing some evidence of prior disturbance; Layer 3 – a small deposit of animal bone and historic artifacts in white ash and charcoal; and Layer 4: brown clay soil containing historic artifacts (Kane 2011).

In addition to these layers, the ARS artifact catalog includes two additional stratigraphic designations: “Surface 0-20cm” and “Burn Layer.” It is unclear whether these two stratigraphic designations are alternative names for layers already designated in the excavation report, or if they are additional stratigraphic layers that were not recorded in the report.

Feature 86-36/4 contained 1 whole vessel and 87 fragments (1,028 g) of glass likely to come from containers or tableware, from at least 10 vessels.

The surface layer contained several non-diagnostic bottles and part of a faceted drinking goblet, matching fragments of which were also found in Layer 1. These artifacts include a Whitall Tatum medicine bottle with a patent date of January 24, 1888, which post-dates the Market Street Chinatown.

Layer 1 contains the aforementioned fragments of faceted goblet (Section 4.1), as well as fragments of an aqua soda or mineral water bottle and fragments of an olive bottle. Layer 2 must post-date the Chinatown as it contains the base of a Reed & Co. bottle dating to 1892-1902 (Figure 51). Layer 3 contains a mineral or soda water bottle from the San Jose company Williams Bros. which dates between 1872 and 1909 so could be associated with the Market Street Chinatown or could post-date it. Layer 4 does not contain any temporally diagnostic glass containers. A bottle, likely for medicine, embossed "...EPH" and a circular dish molded with beads, a scalloped rim, and a sunburst/starburst on the base were found in this deepest layer.

In summary, the glass container analysis indicates that Layer 1 and 2, and the "Surface 0-20cm" and "Burn Layer" layers, were formed after the Market Street Chinatown's occupation of Block 1. The soda water bottle in Layer 3 was produced during and after the Market Street Chinatown. There are no chronologically diagnostic glass artifacts for Layer 4.

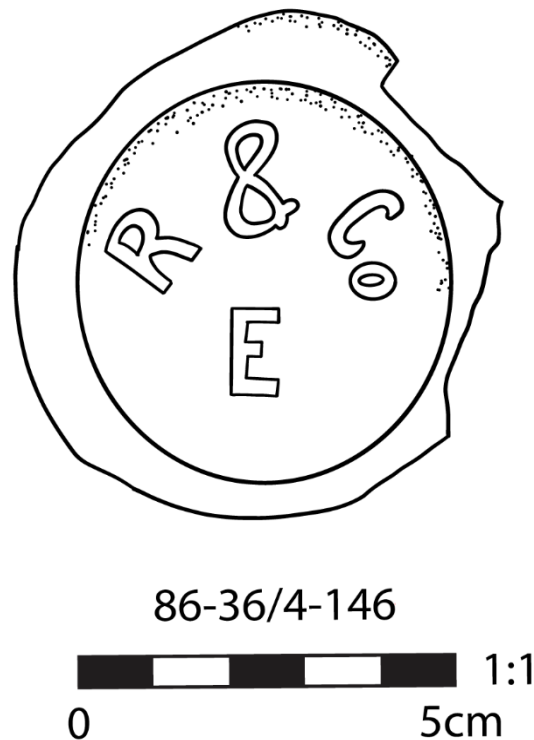


Figure 51: Reed & Co bottle base, which post-dates the Chinatown (86-3/4-146).

Feature 86-36/5

Feature 86-36/5 is perhaps the largest and most complex feature excavated by ARS in Block 1. ARS archaeologists described this feature as a wood-lined pit measuring 3.25m in length, 1.25m width, and 2.2m depth. In the excavation report, they designated several identifiable layers and sub-layers. These included:

- Upper Stratum - the uppermost extent of the feature, continuing a disturbed mixture of gravel, concrete, asphalt, artifacts, and animal bone.
- Layer 1: loose, gray-brown sandy silt with historic artifacts and more recent materials
 - Layer 1a - a pocket of loose ash and silt with historic artifacts and animal bones, which cut into Layer 1 on the west side of Feature 5
- Layer 2: shallow deposit of yellow clayey silt containing historic artifacts

- Layer 3: a clayey silt deposit containing a high quantity of gravel, concrete, and asphalt.
- Layer 4: loose brown silt containing animal bone, charcoal, and historic artifacts
- Layer 5: grey-yellow clay containing no visible artifacts
- Layer 6: Loose, fine-grained brown silt containing historic artifacts and animal bone
- Layer 7: Loose, fine-grained yellow silt containing no visible artifacts
- Layer 8: Loose, fine-grained brown silt containing historic artifacts.

However, a profile drawing of Feature 86-36 presents an alternative stratigraphic description, starting at the surface:

- 50cm thick green pebbles
- 1st cultural black matrix - 40-50cm
- Charcoal 3cm thick
- Ash 3cm thick
- Yellow brown silty clay (35cm) with pebbles
- Burn layer 6 cm
- Yellow silty clay approx 75cm
- 2nd Chinese deposit 15cm

Additionally, the ARS artifact catalog attributes artifacts to other stratigraphic layers not listed in the report or profile drawing. These include:

- “General Surface” and “Upper Strata”: these presumably correspond to “Upper Stratum” and “50cm thick green pebbles”
- “Dozer” and “Disturbed”: these likely refer to artifacts recovered from construction backdirt: in other words, artifacts that had been displaced from their original location by heavy machinery before archaeological excavation began.

What emerges from all three stratigraphic descriptions is a feature that contained modern deposits and re-deposited historic materials in the upper reaches, underlain by alternating layers of yellowish silt and clay with few or no artifacts, and layers of brown silt containing significant amounts of artifacts (Kane 2011).

Feature 86-36/5 contained 19 whole vessels and 1,102 fragments (16,800.3 g) of glass likely to come from containers or tableware, from at least 90 vessels.

Artifacts recorded in the ARS catalog as ‘General Surface’, ‘Dozer’, ‘Disturbed’, and ‘Upper Strata’ include two Chinese TCM vials, part of a twentieth-century machine-made bottle, a Bixby glue bottle (1865-1920s?), a Burnett bottle (1845-), a Dominick Cunningham bottle (1880-c.1914), and the other part of the J. H. Brough salt bottle described in 86-36/2. These artifacts are consistent with the interpretation of these strata as a disturbed mixture of historic and modern materials.

Layer 1 (Strata 1) contained a TCM vial and part of a pressed tableware vessel with molded grapes and leaves. 1A contained only indefinite fragments. while no glass from

No glass container or glass tableware artifacts were recovered in Layer 2.

Layers 3 and 4 both had fragments of possible gothic/cathedral bottles while Layer 4 also had fragments of an aqua bottle with likely useware.

No glass container or glass tableware artifacts were recovered in Layer 5.

Layer 6 contains a combination of glass tablewares and glass containers for foods, beverages, medicines, and household products. The tablewares consist of part of a bowl with a sunburst on the base; at least two tumblers; at least two stemmed drinking glasses, one with a fluted ovoid bowl, and the other with molded hearts on the circular bowl. There is also what appears to be a milk glass vase with gilded bands which has been heavily heat affected (due to the tentativeness of identification, this has not been counted as a minimum vessel).

All of the dateable bottles from Layer 6 could have been in use during the time of the Market Street Chinatown. Health related vessels include five TCM vials as well as two other small vials. The patent medicines include Ayer’s Cherry Pectoral (c. 1845-c.1937), Hale’s Honey of Horehound and Tar, J. Hostetter’s Stomach Bitters alongside a pharmacy bottle from the San Jose firm Keating & Babb (Figure 52). Part of a French perfume bottle was also found in this level.



Figure 52: Pharmacy bottle from San Jose druggists Keating & Babb with extremely faint embossing from a manufacturing defect (86-36/5-962).

Food and beverage containers include a Pacific Glass Works canning jar (1870-1875), three Williams Bros. soda or mineral water bottles with John Matthews gravitating stopper (1872-1909), a Cantrell & Cochrane soda or mineral water bottle (which was produced in Ireland and so is one of the few non-local carbonated beverage bottles)(Figure 53), and part of a Gass & Co. champagne mead bottle (1870-1871). There are also a selection of ribbed and gothic pickle/chutney bottles and several flat octagonal spice bottles. These are supplemented by a range of olive bottles likely to have held alcohol, and an olive snuff bottle.



Figure 53: Round-bottomed soda/mineral water bottle from the Irish firm Cantrell & Cochrane (86-36/5-456).

In terms of tableware, there were at least two paneled tumblers, a fluted ovoid drinking vessel, the stem from another vessel, and part of a bowl with a pressed starburst on the base. Household products include a complete conical inkwell (Figure 54) and part an ammonia bottle from the San Francisco Gaslight Co. (1875-1905), mending fragments of which were found in Feature 86-36/17 (see Section 2.0 for a discussion of cross-mending artifacts from multiple features). Ammonia was a by-product of gas production which was used as a household cleaner and disinfectant (Figure 55).

No glass container or glass tableware artifacts were recovered in Layer 7.

Layer 8 does not contain any dateable glass artifacts; however, the vessels are consistent with occupation of the Market Street Chinatown. They include at least five TCM vials, a complete ink bottle with a pouring spout, a complete umbrella inkwell, part of a paneled tumbler, and a piece of tableware with a molded sunburst on the base.



Figure 54: Complete conical inkwell with ring around shoulder (86-36/5-959).



86-36/5-873
and 86-36/17-128



Figure 55: Mending fragments of a San Francisco Gaslight Co. ammonia bottle (86-36/5-873 and 86-36/17-128).

Feature 86-36/6

Feature 86-36/6 was described by ARS archaeologists as a circular unlined pit measuring 0.8m to 1.0m diameter and 0.6m deep. A portion of the feature was damaged by construction equipment prior to archaeological excavation. The remainder was excavated in three layers: Layer 1 – brown clay-silt with brick fragments; Layer 2 – a thick deposit of ash and scattered charcoal containing animal bones and artifacts; Layer 3 – silt interspersed with metal fragments, ash, charcoal, and artifacts (Kane 2011).

Feature 86-36/6 contained 81 fragments (539.9 g) of glass likely to come from containers or tableware, from at least four vessels. These were a TCM vial and three probable alcohol bottles, none of which were identifiable to manufacturer, product company, or production dates.

Feature 86-36/7

Feature 86-36/7 was described by ARS excavators as a wood-lined pit, originally interpreted as a trash pit, and later reinterpreted as a cistern. The pit measured 3m in length, 2m width, and 1.5m deep. A portion of the feature had been damaged prior to 1986 and backfilled; this redeposited material contained a mixture of historical artifacts and modern materials. The south and west extent Feature 86-36/7 as well as its base were intact.

Feature 86-36/7 was excavated in four layers, described by ARS as follows: Layer 1 – although designated as a “Burn Layer” by ARS, this layer is also described as including modern asphalt and pebbles alongside charcoal, animal bone, and historic and recent artifacts; Layer 2 – described by ARS as disturbed, with ARS selectively retrieving visible historic artifacts; Layer 3 – grey, moist, fine-grained clayey silt with charcoal, pebbles, animal bone, and historic artifacts; and Layer 4 – a mixture of firm yellow clayey silt mixed with grey-brown clay (Kane 2011).

Feature 86-36/7 contained four whole vessels and 566 fragments (9,670.5 g) of glass likely to come from containers or tableware, from at least 51 vessels. Consistent with ARS archaeologists’ assessment that Layers 1 and 2 were previously disturbed, these

layers contain a variety of glass vessels and tablewares of mixed dates. Glass tablewares included three paneled tumblers and the feet from two stemmed drinking vessels. There were at least three TCM vials and a selection of different bottles and jars. One stippled fragment of tableware and an amber bottle were machine made, meaning that they post-date the Chinatown. The only other dateable artifacts from these layers are an olive circular bottle base marked “AB&Co” which is believed to be a British maker from around 1860 to the 1900s, and a Singer Manufacturing Company oil bottle which dates to after 1863.

Glass artifacts recovered from Layer 3 included part of a tumbler, the shank from a colorless glass stopper, part of a TCM vial, and fragments of olive, colorless, cobalt, amber, and aqua glass.

Layer 4 contained fragments of olive glass, likely from an alcohol bottle, part of an aqua bottle or jar, amber fragments, and an almost complete bottle of Ayer’s Pills (c. 1845-1936) (Figure 56).

In summary, the results of the glass container and glass tableware analysis are consistent with ARS archaeologists’ assessment of Layer 1 and Layer 2 as containing a mixture of historic and modern material, and of Layer 3 and Layer 4 as intact deposits dating to the period of the Market Street Chinatown.

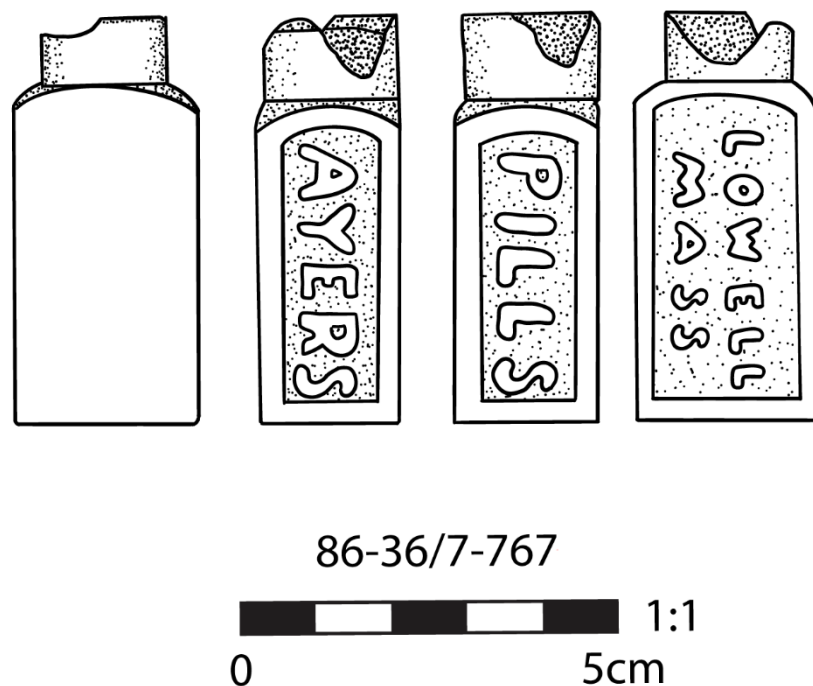


Figure 56: Illustration of a nearly complete Ayer's Pills bottle (86-36/7-767).

Feature 86-36/8

Feature 86-36/8 was described by ARS archaeologists as a shallow, oval-shaped pit measuring 1.44m long, 1.48m wide, and 0.5m deep. The feature contained loose yellow silt, animal bones, and a small number of historic artifacts (Kane 2011).

Feature 86-36/8 contained 37 fragments (110.1 g) of glass likely to come from containers or tableware, from at least 2 vessels, one aqua container and one olive bottle.

Feature 86-36/9

Feature 86-36/9 was described by ARS archaeologists as a rectangular, wood-lined pit measuring 1.9m long, 1.6m wide, and 0.5m deep. Feature 86-36/9 is located next to Feature 86-36/7, and initially ARS archaeologists thought that it was all one deposit.

Shortly afterwards, however, they reversed this decision and designated the second area Feature 86-36/9. After the initial discovery of Feature 86-36/9, the feature was disturbed overnight by unauthorized individuals, presumably bottle hunters. A portion of the wood lining was damaged and soil from outside the pit had fallen into it. ARS archaeologists did not excavate the remaining feature stratigraphically, describing the feature as a “thick deposit of burn layer” (Kane 2011).

Feature 86-36/9 contained 26 whole vessels and 585 fragments (18,645.63 g) of glass likely to come from containers or tableware, from at least 63 vessels. This feature stands out because of the large number of complete and nearly complete vessels as well as the presence of multiple versions of the same vessels. Despite the ARS description potentially associating the deposit with the 1887 fire that destroyed the Market Street Chinatown, analysis of the glass artifacts reveals that much of the assemblage post-dates the Chinatown.

This feature contains a relatively large assemblage of tablewares with at least 18 tumblers, some with ribbing or paneling, and several which are optic molded with faint paneling visible on the interior of the tumbler. In addition to these tumblers, there is a nearly complete packing tumbler (Figure 57). This would have initially held a packaged food product but was designed to be reused as a drinking tumbler. The five lines of fine, vertical ribbing below the rim were used for an Anchor Cap closure, used between 1908 and the 1960s (Jones 2000, 219). Tableware is further represented by a faceted, cut-glass goblet.



Figure 57: Packing tumbler with lines of vertical ribbing for Anchor Cap closure (86-36/9-106).

The containers from this feature are very varied. They include two cylindrical, aqua battery jars, one made with a cup-bottom mold embossed “B1” and the other a rare machine-made example embossed “1” with molded horizontal bands at the rim that may be part of a closure. These jars would have held an early type of wet cell battery used to power a device like a telegraph or electric bells. Bill Lindsey of the SHA Historic Glass Bottle Identification and Information Website notes that he has never seen a machine made example but posits that such jars must exist from the first quarter of the twentieth century (Lindsey 2022). 86-36/9-163 appears to be just such an example (Figure 58).



Figure 58: Selected fragments of a machine-made battery jar (86-36/9-163). Note the ejection valve mark on the base.

Alcohol bottles include a complete Bénédictine bottle with its distinctive finish and molded crescent on the shoulder. There are also at least six bottles of Gordon’s Dry Gin which have a boar’s head embossed on the base (Figure 59). Although Gordon’s dates back to the eighteenth century, the brand does not appear to have been available in the

United States prior to about 1898 and similar bottles found at Sandpoint, Idaho have been dated to c. 1909-1914 (Warner 2014, 63; *Buffalo Times* 1898). Gin or schnapps are also represented by A Van Hoboken & Co. case gin bottle from Rotterdam. These are supplemented by at least three flasks, probably for liquor.



Figure 59: Gordon's gin bottles from 86-36/9.

Health-related vessels are quite underrepresented in this feature. There is a complete Hostetter's Stomach Bitters bottle, and a complete amber bottle embossed "PCGW | PC" which was probably also for bitters. There are also at least three homeopathic vials (Figure 60). Homeopathy became a popular form of medicine in the late nineteenth and early twentieth centuries as a cheaper, less harmful alternative to many mainstream treatments (LaFave et al. 2022). These vials would have contained highly diluted remedies containing a single drug which was chosen based on its ability to induce the same symptoms as the disease it was being used to treat.



Figure 60: Homeopathy vials from 86-36/9 (86-36/9-25 and 86-36/9-26).

Food containers in this feature are dominated by eight olive or pickle bottles (Figure 61), three of which are machine made. If these represent a single activity in the vicinity, then they must post-date the Chinatown. There are also a complete machine-made jar and a machine-made Economy jar by Kerr Glass Mfg. Co. of Portland, Oregon. Finally, there are two white milk glass extract jars from Armour & Co. Packers of Chicago which probably held a beef extract. These could be related to the Chinatown or could post-date it. These are supplemented by two soda or mineral water bottles from San Jose: a twentieth century San Jose Soda Works bottle, and a Golden West Soda Works bottle. Finally, this feature also had several complete but unmarked glass bottle stoppers.



Figure 61: Olive bottles from 86-36/9 (86-36/9-19, 86-36/9-20, 86-36/9-21, 86-36/9-30).

Overall, the picture that emerges from this feature is primarily of food and beverage consumption in the early twentieth century, suggesting Feature 86-36/9 post-dates the Market Street Chinatown.

Feature 86-36/10

Feature 86-36/10 was described by ARS archaeologists as a circular, unlined trash pit measuring 1m diameter and 0.35m deep. The entire deposit was excavated as a single layer (Kane 2011).

Feature 86-36/10 contained 189 fragments (1,015.5 g) of glass likely to come from containers or tableware, from at least six vessels. These consist of a paneled tumbler, an aqua bottle, a colorless bottle, and at least three olive bottles with champagne finishes likely to have held alcohol.

Feature 86-36/11

Feature 86-36/11 was described by ARS archaeologists as an oval-shaped unlined trash pit, measuring 0.56 long, 0.8 wide, and 0.35 deep. The feature was excavated in two layers: Layer 1 – grey clay silt with assorted artifacts and animal bone; Layer 2 – grey brown with ash (Kane 2011).

Feature 86-36/11 contained 10 whole vessels and 44 fragments (293.7 g) of glass likely to come from containers or tableware, from at least 16 vessels. With the exception of one possible fragment of tableware, this glass in this feature consists entirely of 15 small dodecagonal medicine bottles (Figure 62).



Figure 62: Dodecagonal medicine vials from 86-36/11 (86-36/11-1, 86-36/11-3, 86-36/11-5, 86-36/11-6).

Feature 86-36/12

Feature 85-36/12 was described by ARS archaeologists as an oval, unlined pit measuring 0.82m long, 1.16m wide, and 0.1m deep. The feature was excavated in a single layer (Kane 2011).

Feature 85-36/12 contained one whole vessel and 12 fragments (607.2 g) of glass likely to come from containers or tableware, from at least six vessels. The assemblage

consists of a complete olive bottle made with a x and a double ring finish, a single fragment of an amber bottle, and tiny fragments of indefinite colorless, blue, olive, and aqua glass.

Feature 86-36/13

Feature 86-36/13 was described by ARS archaeologists as the remains of a wooden structure consisting of wooden walls on the west, east, and south sides, with a partial wooden floor. The deposit within the walls of Feature 13 was partially excavated in four layers; however, the relationship among these four layers is not clear; as Kane (2011) notes, “different accounts of the excavation appear to contradict each other.” For this reason, the glass container and glass tableware artifacts from Feature 86-36/13 are presented as a single group.

Feature 86-36/13 contained two whole vessels and 74 fragments (1,275.2 g) of glass likely to come from containers or tableware, from at least nine vessels. This includes a complete footed dish with a scalloped rim (Figure), a paneled tumbler, a TCM vial, a circular bottle with horizontal ribbing likely to have held a liquid condiment, and a complete paneled bottle of Hall’s Sarsaparilla (1858-1909).

Feature 86-36/14

Feature 86-36/14 was described by ARS archaeologists as a wood-lined pit measuring 1.7m in length, 1.7m in width, and 0.35m deep. A significant portion of the feature was damaged by construction equipment prior to discovery. The feature was not excavated stratigraphically (Kane 2011).

Feature 86-36/14 contained 368 fragments (637.4 g) of glass likely to come from containers or tableware, from at least five vessels: an amber bottle, an aqua square gothic pickle/chutney bottle, an aqua octagonal paneled bottle, a paneled tumbler, and an olive bottle with a champagne finish.

Feature 86-36/15

Feature 86-36/15 was described by ARS archaeologists as the remains of a wooden structure. It was located only 32cm to the east of Feature 86-36/13, and most likely both features are part of the same structure. The feature was excavated in layers, however, like Feature 86-36/13, the relationship of the layers is not clear (Kane 2011).

Feature 86-36/15 contained 10 fragments (14.6 g) of glass likely to come from containers or tableware, from at least three vessels. The assemblage consists entirely of tiny indefinite fragments of aqua, olive, and colorless glass.

Feature 86-36/16

Feature 86-36/16 was designated by ARS archaeologists as an unlined rectangular pit, measuring 1.1m long, 0.9m wide, and 0.25m depth. It was not excavated stratigraphically (Kane 2011).

Feature 86-36/16 contained 1,342 fragments (8,249.1 g) of glass likely to come from containers or tableware, from at least 21 vessels. The vessels in this feature appear to be largely associated with alcohol, including two amber bottles, 16 olive circular bottles, and an olive case gin bottle. There is also a paneled colorless bottle and an aqua circular bottle.

Two olive glass seals provide further evidence of the alcoholic contents of some of these bottles and suggest the presence of imported French beverages (Figure 63). One is embossed “ST JULIEN | MEDOC,” referring to a red wine from the Médoc region of Bourdeaux. The second reads “VIEUX COGNAC” or old cognac, which may also be of French origin. A fragment of an amber embossed bottle reads “SORGEL” which has not yet been identified.



Figure 63: Bottle seals from Feature 86-36/16. A) 86-36/16-24 is a seal marked 'St Julien Medoc' which refers to a red wine from Bourdeaux. B) 86-36/16-25 is a seal marked 'Vieux Cognac' or 'old cognac'.

Feature 86-36/17

Feature 86-36/17 was described by ARS archaeologists as a wood-lined trash pit measuring 1m long, 1.5m wide, and 0.3m deep. The shallow depth is most likely because Feature 86-36/17 was damaged by construction equipment during the discovery process. The feature was not excavated stratigraphically (Kane 2011).

ARS archaeologists speculated that due to its depth of 10 feet below modern grade, Feature 86-36/17 could have been the lower extent of a previously excavated feature in the same area, such as Features 86-36/7, 86-36/13, or 86-36/15. However, this was not resolved during field research and thus Feature 86-36/17 is best analyzed as a stand-alone assemblage.

Feature 17 contained three whole vessels and 369 fragments (4,127.6 g) of glass likely to come from containers or tableware, from at least 23 vessels. This feature is notable for the amount and range of health-related bottles found. It has parts of two TCM vials as well as parts of bottles containing Dr Wonser's Bitters, Mrs Winslow's Soothing Syrup, Dr McBride's World Relief, Dr Perry's Last Chance Liniment, Dr Kennedy's Medical Discovery, Dr Kennedy's Rheumatic Liniment, Mexican Mustang Liniment, essence of Jamaica ginger, and Udolpho Wolfe's Aromatic Schnapps.

All but one of the medicines represented by the bottles were in production at the time the Market Street Chinatown occupied Block 1. The square Dr Wonser's Bitters bottle began to be made around 1875 (Fike 1987, 44), McBride's World Relief begins to be advertised the same year, while part of an ammonia bottle could also not pre-date 1875 (see 86-36/5). A Wood's Napa Soda bottle (Figure 64) must have been made before April 1872 when the company was sold and renamed. However, there is one specimen – an aqua, machine-made base fragment with a suction scar – that clearly post-dates the Chinatown.



Figure 64: Fragment of Wood's Napa Soda bottle (86-36/17-121).

In addition to Wood's Napa Soda, there is at least one soda bottle from Williams Bros. (1872-1909). Part of a club sauce with the embossed shoulder probably belonging to Lea & Perrins (1849-1944) is one of the only pieces of evidence for the typically ubiquitous Worcestershire Sauce in the Market Street Chinatown collection. Tableware is represented by a paneled tumbler, a mug handle, and a piece of colorless glass with a honeycomb pattern.

Feature 86-36/18

Feature 86-36/18 was described by ARS archaeologists as a wood-lined pit measuring 2.7m length, 1.3m width, and 1.0m depth. One side of the pit's wood lining was covered by a thin layer of painted ferrous metal, and there was also a horizontal layer of wood planks that separated some layers of soil inside the pit from other layers. ARS archaeologists interpret these aspects of the feature as evidence that the pit was a "rat proofed" underground storage compartment (Kane 2011).

ARS archaeologists also reported that "the feature was divided into 3 cells and recovered by natural layers" (Roop 1988, 35-36). It is unclear whether these three cells were defined through actual attributes of the feature itself or whether they were arbitrary divisions used to segment archaeological excavation. Each of the three cells was excavated in multiple layers, which are described in full in Kane 2011. Given the small size of the glass container and glass tableware assemblage, these cells and layers are not considered in interpreting the artifacts analyzed for this research project.

Feature 86-36/18 contained eight whole vessels and 207 fragments (4,726.2 g) of glass likely to come from containers or tableware, from at least 24 vessels. Where 86-36/17 stood out for the quantity of patent medicine bottles, 86-36/18 is notable for the number of TCM vials (at least 11). This feature also shows greater variability in the types of TCM

vials, with colorless vials (Figure 65). The other vessels appear to be largely alcohol or medicine bottles, and a circular perfume bottle from the Lubin brand in France.

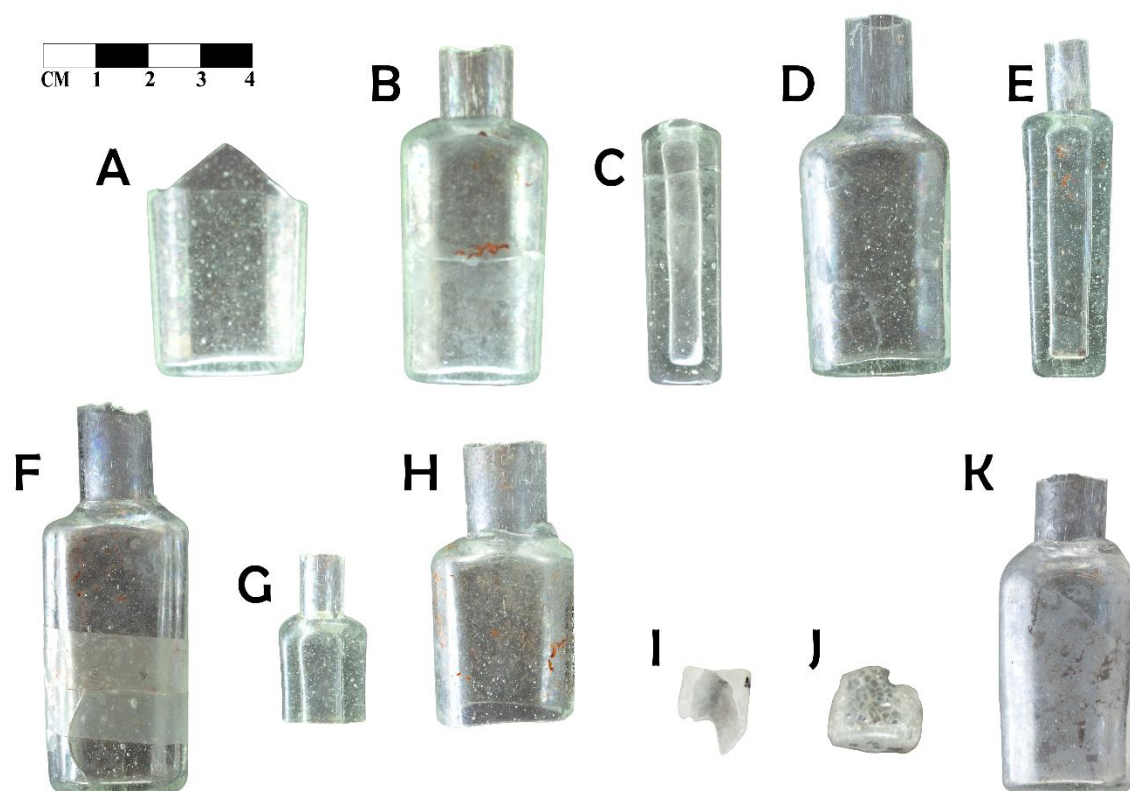


Figure 65: Selected examples of TCM vials found in Feature 86-36/18. A) 86-36/18-8 B) 86-36/18-9 C) 86-36/18-11 D) 86-36/18-85 E) 86-36/18-86 F) 86-36/18-87 G) 86-36/18-88 H) 86-36/18-89 I) 86-36/18-90 J) 86-36/18-91 K) 86-36/18-417.

Feature 86-36/19

Feature 86-36/19 was described by ARS archaeologists as a roughly rectangular, unlined, trash pit measuring 2.6m long, 1.2m wide, and 0.3m deep. A portion of this feature was destroyed by construction activity during the discovery process, which might account for the shallow depth. The feature was not excavated stratigraphically although ARS archaeologists described at least two layers as well as differences in soil between the east and west sides of the feature (Kane 2011).

Feature 86-36/19 contained one whole vessel and 33 fragments (1295.8 g) of glass likely to come from containers or tableware, from at least 11 vessels. This includes two paneled tumblers, a pressed dish in the Horn of Plenty pattern (Figure), and a frosted stem (Figure). There is a single TCM vial, and a Meyer & Rottman soda water bottle (1853-1857). The other vessels are likely to have held alcohol and medicine, including one bottle embossed “[LO]WELL, MASS.”

The Meyer & Rottman soda water bottle clearly pre-dates the Market Street Chinatown. If deposited after its original use, it could indicate that the feature represents earlier American-period uses of the block. Alternatively, as bottle reuse was common in the 19th century, this early bottle could have been re-used and then deposited during the Market Street Chinatown occupation of Block 1.

Feature 86-36/20

ARS archaeologists described Feature 86-36/20 as a wood-lined trash pit measuring 0.7m long, 0.5m wide, and 0.4m deep. It was excavated in a single layer (Kane 2011).

Feature 86-36/20 contained 1058 fragments (5972.5 g) of glass likely to come from containers or tableware, from at least 25 vessels. Datable glass artifacts include a Winslow & Williams soda water bottle (1851-1871), an Emil Frese Essence of Jamaica Ginger bottle (1860-1874), and a bottle of Murray & Lanman’s Florida Water (1835-1871). Other vessels include a bottle of Scoville’s Blood & Liver Syrup, a demijohn, a stemware foot with traces of red paint (Figure), a spice bottle, and a variety of bottles likely to have held medicines and alcohol.

Feature 86-36/21

Documentation from the ARS excavations and laboratory work provide conflicting information about Feature 86-36/21. The number was originally assigned to two different groups of artifacts. The error was recognized during ARS lab research and the feature labeled Feature 86-36/21 in field notes was renumbered as Feature 86-36/25. Feature 86-36/21 was retained to describe a collection of artifacts recovered during pre-construction soil testing around the perimeter of the construction area. Thus, as a group,

the small number of artifacts currently designated Feature 86-36/21 have no association with any particular archaeological deposit beyond the project area as a whole (Kane 2011).

Feature 86-36/21 contained 11 fragments (863.1 g) of glass likely to come from containers or tableware, from at least five vessels. This includes two olive bottles likely to have held alcohol, two aqua bottles, and an aqua Empire Soda Works bottle (Figure 66; c. 1861-1871 or 1880-1882 Burton 2023, 24–25).



Figure 66: Empire Soda Works bottle (86-36/21-17).

Feature 86-36/22

Feature 86-36/22 was used by ARS archaeologists as a designation for any artifacts whose provenience was lost or unknown. Thus, the small number of artifacts designated Feature 86-36/22 have no association with any particular archaeological deposit beyond the project area as a whole (Kane 2011).

Feature 86-36/22 contained 13 fragments (83.6 g) of glass likely to come from containers or tableware, from at least five vessels. These include a Williams Bros. soda water bottle (1871-1909), a honeycomb molded piece of tableware, a colorless and an olive bottle, and a vessel of white milk glass.

Feature 86-36/23

Feature 86-36/23 is a designation given to artifact found during laboratory analysis that were labeled “Feature 5, West side approximately 90cm below surface, exposed by backhoe” (Roop 1988:39). However, ARS archaeologists later determined that these artifacts were *not* associated with Feature 86-36/5, although the basis for that determination is unclear. Regardless, the artifacts were assigned as a group to the designation Feature 86-36/23 (Kane 2011).

Feature 86-36/23 contained 17 fragments (1,379.9g) of glass likely to come from containers or tableware, representing a minimum of eight vessels. They include two machine-made milk bottles, one from the Delaval company (c. 1902-1927), and an Empire Bottle & Supply Co. bottle (1901-1914). These are supplemented by a soda or mineral water bottle and a variety of olive bottles likely to have held alcohol. The two milk bottles indicate that Feature 86-36/23, if indeed representing a group of associated artifacts, come from a depositional context post-dating the Market Street Chinatown.

Feature 86-36/24

Feature 86-36/24 is a continuation of Feature 85-31/27, a linear feature - a filled-in ditch - that extended across the areas of both ARS Project 85-31 and ARS Project 86-36. In total, approximately 200 linear feet of the feature were excavated in 1985 and 1986. The

width or depth dimensions of the feature were either not recorded or were lost. At the time of excavation, the feature contained fill soils that contained assorted artifacts. The feature was not excavated stratigraphically, nor were the horizontal locations of specific artifacts recorded (Kane 2011).

ARS excavators and Laffey (1993, 1994) interpreted Feature 85-31/27 and Feature 86-36/24 as an *acequia* (water canal or drainage ditch) dating to the Spanish-colonial and Mexican-era Pueblo de San José, although no documentation has been found to support this interpretation. Laffey and Parsons (1993) document that a ditch of this description had been filled in during the late 1880s during the expansion of San Jose's underground sewer system (Kane 2011).

The ditch fill excavated as 86-36/24 contained 27 fragments (1,242.3 g) of glass likely to come from containers or tableware, from at least eight vessels. These consist of five olive bottles likely to have held alcohol, including one probable whiskey bottle with the Ellenville Glass Works mark (c. 1865 to at least 1880; Figure 67), an amber bottle, a colorless vessel, and an aqua spice bottle. The production dates of these containers are consistent with ARS's and Laffey's assessment of the fill date for the ditch. Unlike Feature 85-31/17, there are no 20th century bottles cataloged in Feature 86-36/2



Figure 67: Ellenville Glass Works base, probably from a whiskey bottle (86-36/24-12).

5.0 ARS PROJECT 88-91 RESULTS

Unlike ARS Project 85-31 and ARS Project 86-36, ARS Project 88-91 involved excavation of a single archaeological feature located approximately 10 meters from the front steps of the present-day San Jose Art Museum (Kane 2011, 9-14). The feature was designated 88-91/26, continuing the feature numbering sequence first used in ARS Project 86-36.

For Feature 88-91/26, there are 125 catalog numbers for glass containers and glass tablewares. These represent 3 whole vessels and 970 fragments, together weighing 8.7 kg. These artifacts represent 38 minimum original vessels (Appendix C). After cataloging, 314 specimens were selected for analysis (Section 2.2.3 and Appendices A and B).

5.1 Form and Function

5.1.1 Glass Containers

Feature 88-91/26 contained a range of glass container and tableware forms. As with features from ARS Project 85-31 and ARS Project 86-36, identifiable containers in this feature were dominated by olive-colored bottles likely to have held alcohol. However, the proportion of container contents differ from those evidenced in ARS Project 85-31 and ARS Project 86-36: using the Bottle Style field in the analysis form, for Feature 88-91/26, alcohol bottles represented only 8% of the assemblage by MNV, and 28% of the assemblage by weight. Correspondingly, there is a higher proportion of all other categories including indefinite sherds (29% by both MNV and weight) and medicine bottles (18% of MNV and 22% by weight).

Table 10: Feature 88-91/26: Glass specimens by function (Group, Category, and Description, as measured by count, weight, and MNV.

Functional Group	Functional Category	Functional Description	Count	Weight (g)	MNV
Domestic					
	<i>Drinking Vessel</i>		4	132.4	1
		Tumbler	4	132.4	1
	<i>Food Container</i>		57	1,641.3	8
		Condiment bottle	1	239.6	1
		Mustard bottle	4	10.3	1
		Pickle/chutney bottle	21	763	2
		Soda/mineral water bottle	2	48.4	1
		Spice bottle	29	580	3
	<i>Tableware</i>		6	29.6	1
		Indefinite	6	29.6	1
Personal					
	<i>Grooming</i>		2	67	1
		Hair-tonic bottle	2	67	1
	<i>Health</i>		61	2032	13
		Bitters bottle	20	851	3
		Extract bottle	6	404	1
		Medicine bottle	5	162.3	1
		Sarsaparilla bottle	4	368.7	1
		Schnapps bottle	5	139.7	1
		Vial	21	106.3	7
Indefinite					
	<i>Misc. Containers</i>		749	4218.86	12
		Bottle	749	4218.86	12
	<i>Indefinite</i>		91	612.6	2
		Indefinite	91	612.6	2
Total			970	8733.76	38

Table 11: Feature 88-91/26: Bottle style by count, weight, and MNV.

Bottle Style	Count	Weight (g)	MNV
Alcohol bottle	188	2464.3	3
Barrel mustard	2	10.3	1
Case gin bottle	7	165	2
Pickle/chutney bottle	22	778.7	2
Medicine bottle	30	1887.9	7
Soda/mineral water bottle	1	48.4	1
Oil/vinegar bottle	2	241.4	2
Spice bottle	20	417	3
TCM bottle	15	95.6	6
Indefinite	561	2478.86	11
Total	848	8587.46	38

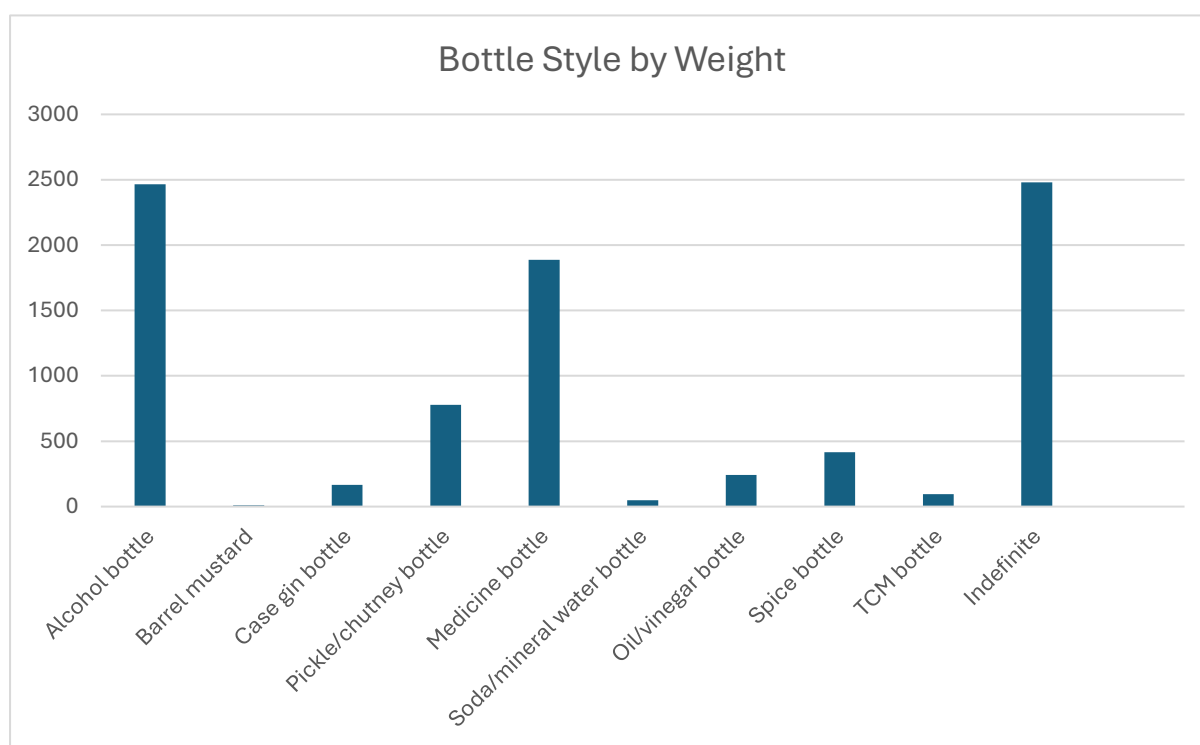


Figure 68: Feature 88-91/26: bottle style by weight in grams.

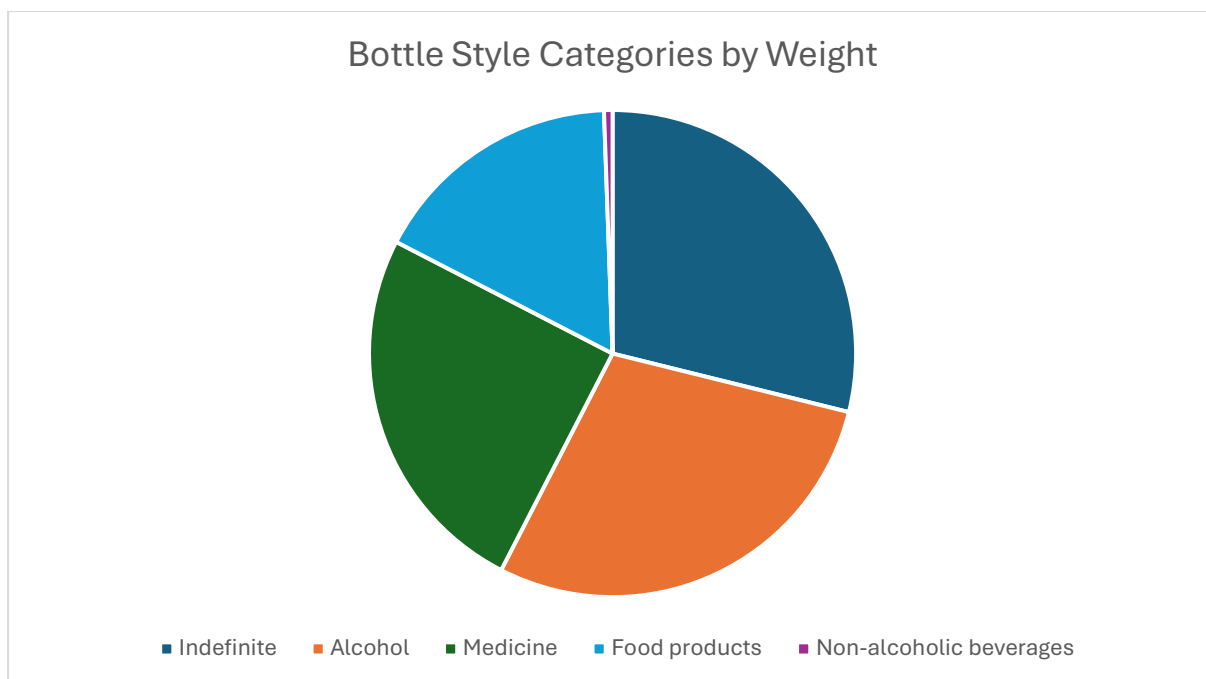


Figure 69: Feature 88-91/26: bottle style categories by weight.

5.1.2 Tablewares

Feature 88-91/26 contained very few tableware specimens. The fragments represent at least one paneled tumbler, and a press molded vessel with a starburst on the base and a diamond hatch pattern on the body.

5.2 Products

Containers represented by glass specimens in Feature 88-91/26 original held the below-listed brand-name products.

Table 12: Feature 88-91/26: Brands of identified products

Name	Date From	Date To	Location	Likely Product
Joseph Walker	Mid 1860s	1917	USA, CA, or NY	Bitters
Henry Peck Wakelee	1864	1886	USA, CA, San Francisco	Hair tonic
Ayer's	1845	1930s	USA, MA, Lowell	Medicine
Pratt's Abolition Oil	c. 1866	1920s	USA, CA, San Francisco	Medicine
David Jayne	1838	1923	USA, PA, Philadelphia	Hair tonic
Williams Bros.	1871	1909	USA, CA, San Jose	Soda water
H.C. Hudson	c. 1861	c. 1892	USA, CA, San Francisco?	Mustard or spices
J. Hostetter	1853	1958	USA, PA, Pittsburgh	Bitters
C.W. Roback	1855	c. 1907	USA, OH, Cincinnati	Bitters
Udolpho Wolfe Company	1848	1935	NETHERLANDS, Schiedam	Gin/schnapps

By placing these product production dates in a Gantt chart (Figure 70), it becomes clear that all of the products represented were in production and could have been available for purchase during the occupation of Block 1 by the Market Street Chinatown.

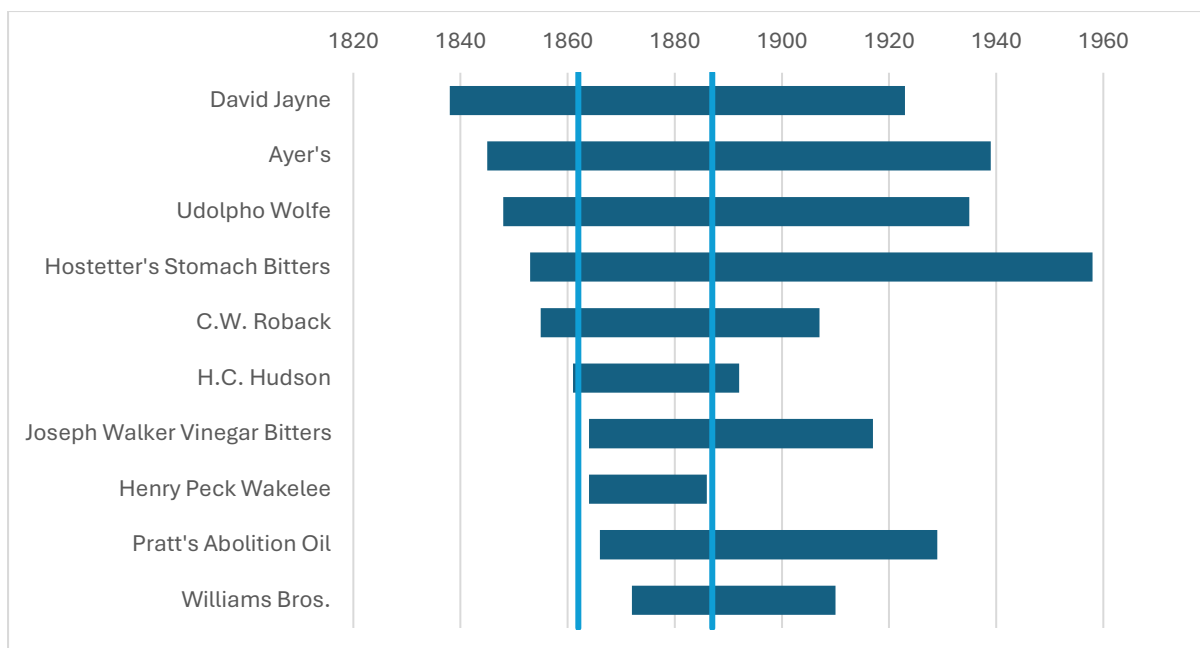


Figure 70: Feature 88-91/26: Years of known manufacture for identified brand-name products, with the occupation of the Market Street Chinatown shown in the lighter blue vertical lines.

5.3 Discussion of Results

Feature 88-91/26 was originally described by ARS archaeologists as an irregular-shaped trash pit. The feature was excavated in a single layer, and only 40% of Feature 88-91/26 was excavated (Kane 2011).

Feature 88-91/26 contained three whole vessels and 845 fragments (8587.46 g) of glass likely to come from containers or tableware, from at least 38 vessels. This feature had a very small amount of tableware, consisting of at least one paneled tumbler and a pressed vessel with a starburst on the base and diamond hatch pattern on the body.

The food containers were dominated by condiment bottles including a complete gothic oil/vinegar bottle, a nearly complete gothic chutney/pickle bottle (Figure 71), and a barrel mustard jar with horizontal ribbing. There were at least three spice bottles, one embossed H.C. Hudson (c. 1861-c.1892) and an additional oil/vinegar bottle and pickle/chutney bottle. The only soda or mineral water bottle was a local Winslow & Williams bottle (1851-1871).



Figure 71: Nearly complete gothic oil/vinegar bottle (88-91/26-259).

Health and grooming were represented by six TCM vials and a small circular vial with a trumpet finish. Patent medicines included Nelson's Extract of Roses and Rosemary (1864-1886), Ayer's Compound Extract of Sarsaparilla (1855-) (Figure 72), Pratt's Abolition Oil (c. 1866-1920s), and Dr D. Jayne's Hair Tonic. These were supplemented with three brands of bitters: Dr J. Hostetter's Stomach Bitters, Dr Roback's Stomach Bitters, and Udolpho Wolfe's Aromatic Schnapps (1848-1930s), along with at least three olive-colored bottles likely to have held alcohol.



Figure 72: Ayer's Compound Extract of Sarsaparilla bottle (88-91/26-261).

In their observation forms, ARS archaeologists described Feature 88-91/26 as consisting of clay soil with large quantities of ash, charcoal, and burned bone, which they interpreted as a burn layer created by demolition activity after the 1887 fire that destroyed the Market Street Chinatown (Gosser and Flynn 1988).

Analysis of glass containers and glass tablewares confirms that this deposit dates to the occupation of the Market Street Chinatown. However, very little of the glass assemblage is heat affected. It is possible that ARS archaeologists were incorrect in attributing Feature 88-91/26 to the post-fire demolition events. Alternatively, Feature 88-91/26 may have contained intact, pre-1887 deposits that were overlain by a layer of demolition debris after the fire.

6.0 DISCUSSION AND CONCLUSIONS

As a researcher trawls through hundreds of kilograms of artifacts, they begin to form impressions of the assemblage as a whole and to notice particular patterns which stand out from the rest. This section focuses on some of the impressions which I formed from both close physical engagement with the glass assemblage and through the process of data analysis. This is necessarily shaped by both my interests (food and beverages), my familiarity or lack thereof with specific artifact types (Traditional Chinese Medicine vials), and my previous experience with assemblages (Types of Alcohol). There are many other stories that could be told from this data, but here I draw out a few salient areas for discussion.

One of the limitations inherent to a material-specific study is that it limits the researcher's impressions to the products and practices at hand. For example, it is abundantly clear that the Market Street Chinatown collection contains large numbers of teacups, both of Chinese and European manufacture. Tea, however, is made from dried leaves which would likely have been shipped in non-glass containers such as wooden boxes, crates, and chests. Tea, in addition to being a refreshing beverage, also has medicinal uses. Consequently, the following discussions of medicines and beverages evidence from the glass container assemblage do not include any discussion of tea, or of any other beverages or medicines or foods that were not packaged in glass.

6.1 Traditional Chinese Medicine Vials

Traditional Chinese Medicine (TCM) vials are the only type of container in the Market Street Chinatown collection that appears to have been produced in China. This is in sharp contrast to, for example, the tableware ceramics of which more than half (56.46%) were imported from China (Voss 2019, 33). In the mid-nineteenth century, glass bottles and vials began to replace earlier forms of packaging in China and Hong Kong (Go 2003, 9), apparently drawing on inspiration from Western bottle styles while showing continuities in style with earlier porcelain medicine bottles and glass snuff bottles. These vials held liquid, powdered, or pelletized medicine in small doses.

TCM vials are commonly found on archaeological sites associated with Chinese immigrants in the Western United States, Canada, South America, Australia, New Zealand, and Southeast Asia (e.g., Blandford 1987; Bowen 2008, 209–11; Greenwood 1996; S. C. Heffner 2015; Ross 2017). To date, the most comprehensive study of these artifacts is Roberta Greenwood's study of 695 vial fragments from the Los Angeles Chinatown (1996). Greenwood produced a typology of TCM vials with four main categories (Figure 73):

- Type 1 (tubular) – This type was described by Lister & Lister as “Chinese glass medicine vials that were made as tubes, then were dipped into molten glass and shaped on a hard surface to produce a rectangular form in the gather” (1989, 82). Greenwood found that this method of production was also used to produce vials with round, oval, lobed, and hexagonal cross-sections.
- Type 2 (blown) – These bottles are blown and so have thinner walls and a body cavity wider than the neck with rectangular, square, oval, octagonal, or round cross-sections.
- Type 3 (mold-blown) – “clear round bottles with drawn necks ... typically embossed on the base” (Greenwood 1996, 111).
- Type 4 (teardrop) – flat, teardrop shaped vials made either with a gather around a tube, or by blowing to produce a larger cavity.

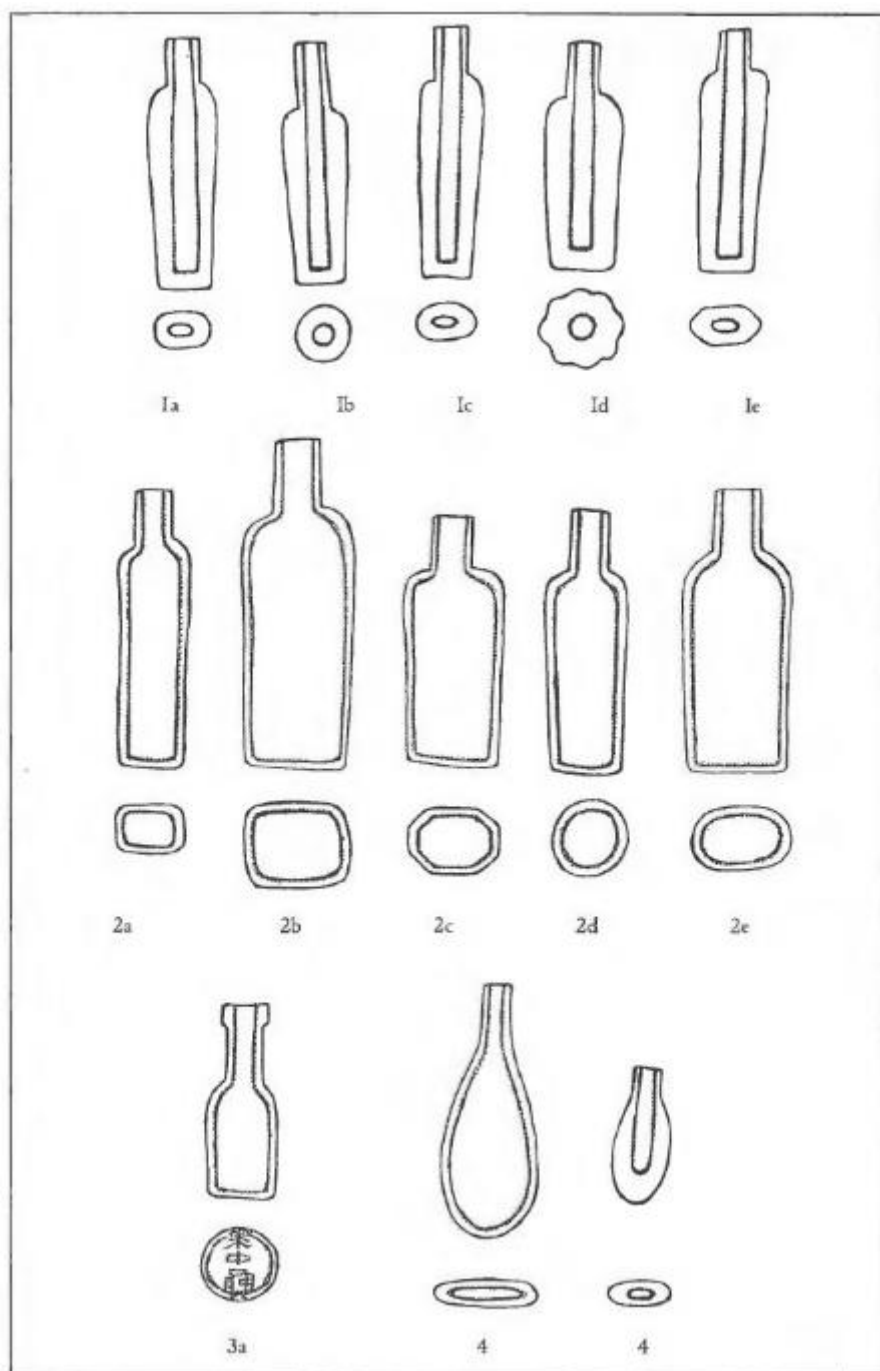


Figure 73: Greenwood's typology of Traditional Chinese Medicine Vials, drawing by Helle Girey. Figure 6.4 in Greenwood 1996, pg. 111.

Types 1, 2, and 4 all typically have cracked or sheared off necks from where the vessel was detached from the tube or blowpipe (Lister and Lister 1989, 82). They are typically described as being closed with a cork and wax seal, but wooden stoppers, metal and Bakelite screwcaps, and glass marbles are also known (Greenwood 1996, 111; Go 2003,

115; Lister and Lister 1989, 82). Some bottles are embossed, while others have painted or paper labels.

Table 13: Traditional Chinese Medicine Vials from across the Market Street Chinatown site.

NUMBER	GREENWOOD TYPE ²	CONTENTS (VON WANDRUSZKA ET AL. 2014; VON WANDRUSZKA AND WARNER 2021; VOSS ET AL. 2015)
85-31/0-860	Type 1A	
85-31/0-861	Type 1A	
85-31/0-862	Type 1A	
85-31/0-864	Type 1A	
85-31/0-865	Type 1A	
85-31/0-953	Type 3A but no embossing.	
85-31/0-1122	Too small to tell.	
85-31/1-140	Type 1, but too melted for more detail	
85-31/2-33	Type 1A	
85-31/2-34	Type 1A	
85-31/10-29	Type 1A?	
85-31/13-318	Type 2C	
85-31/18B-1	Type 1A	Cinnabar or Zhu Sha (辰砂)
85-31/20-220	Type 1A	Stone drug with calcium and iron, possibly opihalcite
85-31/20-29	Type 1A	
85-31/20-141	Type 1A	
85-31/24-47	Type 1, probably 1A	
86-36/1-120	Type 1A	
86-36/1-233	Type 2C	
86-36/1-234	Type 2, probably 2C?	
86-36/5-38	Type 2C	
86-36/5-41	Type 1A	
86-36/5-212	Between a Type 2C and 2E	
86-36/5-340	Type 1A	
86-36/5-692	Type 2B	Calamine lotion
86-36/5-693	Type 2C	Calamine lotion
86-36/5-694	Type 1A	Minium (red lead oxide)

² Several of these vials previously had types published in Voss et al. 2015. Re-analysis of the collection, however, has led to re-categorization of these vials within the typology based on the manufacturing technique and vial morphology.

86-36/5-695	Type 1A
86-36/5-696	Type 2C
86-36/5-697	Type 1A
86-36/5-698	Type 1A
86-36/5-1385	Type 1A
86-36/5-1507	Type 2C
86-36/5-1508	Type 2C
86-36/5-1616	Just neck present
86-36/6-96	Type 1A
86-63/7-8	Type 2C
86-36/7-15	Type 1, probably 1A but too fragmented
86-63/7-623	Type 1A
86-36/7-854	Type 1A
86-36/7-1237	Type 1 but too fragmented to tell shape
86-36/13-239	Type 1A
86-63/17-1	Type 2C
86-36/17-122	Type 1, probably 1A but fragmented
86-36/17-235	Just neck, full of dirt
86-36/18-7	Type 2C
86-36/18-8	Type 2C
86-36/18-9	Type 2C
86-36/18-10	Type 2 but broken so can't tell shape
86-36/18-11	Type 1A
86-36/18-85	Type 2C
86-36/18-86	Type 1A
86-36/18-87	Type 2C
86-36/18-88	Type 1A
86-36/18-89	Type 2C
86-36/18-90	Just neck
86-36/18-91	Heat affected and too fragmented
86-36/18-417	Type 2C
86-36/19-3	Type 1A
86-36/20-265	Type 1A
86-36/20-266	Type 1A
86-36/20-267	Type 2C
88-91/26-313	Type 1A
88-91/26-314	Type 1A
88-91/26-315	Type 1A
88-91/26-316	Type 1A
88-91/26-318	Type 1A
88-91/26-319	Type 1A

Comparing the collection from the Market Street Chinatown to other sites is made challenging by a lack of consistency in distinguishing the different types of vials and quantification. TCM vials appear to be found, often in small numbers, at most sites associated with the Chinese diaspora in North America. Sarah Heffner's (2012) survey of collections from Nevada, for example, showed Chinese medicine bottles or vials at six out of the seven sites.

Thanks to their size, thickness, unique form, and manufacturing method, TCM vials are highly diagnostic, in fact they are often found complete. This makes it quite plausible that they are overrepresented in MNV calculations compared to more generic glass bottle forms manufactured in Europe and North America. The 54 TCM vials (excluding those from Feature 0) of the Market Street Chinatown collection are few in both absolute numbers, compared to the 666 whole or nearly complete vials from the Los Angeles Chinatown, and as a proportion of the total MNV, making up only 6.5% compared to 10-38% at other sites (Table). The Market Street Chinatown collection also shows a remarkably limited range of vial forms, with only tubular (Type 1A) and blown vials found (Types 2B and 2C) and one molded but un-embossed Type 3a. Teardrop forms and forms with embossing appear to be completely absent.

TCM vials have substantial research potential, including historical and material analysis of their contents, glass recipe, manufacturing technique, and place and date of production. Without more investigation of the development of TCM vials over time it is difficult to be definitive, but the relatively early date of the Market Street Chinatown and the absence of embossed vials and teardrop forms may suggest that these attributes are primarily features of 20th century vials. This is consistent with the evidence from Yemapo which also did not have either embossing or teardrop forms and was not occupied into the 20th century. This would suggest increasing diversification in the cross-sections of tubular vials, the introduction of teardrop shapes, and greater use of Euro-American mold-blowing technology over time.

Table 14: Comparison between number of Traditional Chinese Medicine Vials found at the Market Street Chinatown and other sites in North America.

SITE	DATE	DESCRIPTION OF TCM VIALS	NUMBER OF VIALS	NUMBER OF EURO-AMERICAN BOTTLES	PERCENTAGE OF TCM VIALS
MARKET STREET CHINATOWN	1866-1887	34 tubular, 17 blown, 3 not identified. Unprovenance d collection includes tubular and 1 mold-blown.	54 (excluding Feature 0)	780 (excluding Feature 0)	6.5%
LOS ANGELES (GREENWOOD 1996)	1880s -1933	497? tubular, 147 blown, 18 mold-blown, 4 teardrops. Numerous embossed.	666 whole/early complete vials, 695 total.		
RIVERSIDE (BLANDFORD 1987)		115 tubular, 47 blown, 1 teardrop, 5 embossed mold blown.	168		
YREKA (LIU 2006)	1886-1940s	73 tubular vials, 1 embossed mold-blown	74	121	37.9%
YEMA-PO (MILLER AND SMITH 2023)	1874-1889?	24 tubular vials, 4 blown (2 octagonal, 2 oval), 2 cylindrical mold-blown.	30	124	19.5%
LOVELOCK (ARMSTRONG 1979)		8 molded and embossed, 62 tubular/blown, 3 teardrop	73	611	10.7%
ISLETON (FONG 2013)	1915-1950s	4 teardrops, 3 square vials, 1 circular molded with embossment,	9		

		1 hexagonal tiger balm jar			
LION ISLAND (ROSS 2013, 206)	1885- 1930	10 tubular, 4 blown, 4 teardrop	18?	9?	
SPRUCE STREET (THIEL 1997)		4 or 5 vials, tubular?	4 or 5	9	

6.2 Types of Alcohol

As is typical of nineteenth century sites, the Market Street Chinatown glass assemblage is dominated by fragments of olive glass circular bottles which are typically associated with alcoholic beverages, notably wine and beer. While the overall proportion of alcohol bottles at the Market Street Chinatown site is similar to other sites, there are also real differences in the types of alcohol bottles compared to other Chinese diaspora sites. One is the small range of marked beer bottles and the absence of Japanese beer; the collection has only five marked beer bottles (one from Dominick O. Cunningham, one from the American Bottle Company, one from the Adolphus Busch Glass Manufacturing Company, two from the San Jose Bottling Company). All but the first post-date the Chinatown itself. By contrast, the Lovelock Nevada site had marked bottles from 17 British and American companies, one Russian company, and 15 Japanese beer bottles from at least four companies (Armstrong 1979).

One highly recognizable bottle form is the case bottle – typically in dark olive glass, with a square cross section, tapering from a wider shoulder to a narrower base, and commonly associated with gin. Over time, case bottles were produced in a wider variety of colors and lost the taper but retained the square shape; these later styles are often called bitters bottles. These square bottles typically held products which were high in alcohol distilled with herbs such as schnapps, gin, or bitters which were consumed for both their alcohol and medicinal value, and it is not normally possible to separate these uses archaeologically.

From my perspective as an Australian researcher, the small number of case bottles at the Market Street Chinatown is striking. Archaeologists working on Chinese diaspora sites in Australia and New Zealand have found that among glass liquor bottles, gin and schnapps bottles are the most abundant (Bowen 2008, 201; Ritchie and Bedford 1983, 248; see also Burke and Grimwade 2013, 134).

Comparable data from other Chinese diaspora sites in North America show that gin and schnapps were widely used in many Chinese diaspora communities. Data from one Oregon store in 1864-1865 shows that many Chinese miners regularly purchased liquor, primarily whiskey, brandy, and gin. This is substantiated by the archaeological recovery of some liquor and bitters bottles from local mining camps (J. M. LaLande 1981, 267). Several archaeologists have noted in particular the presence of bitters bottles, especially J. Hostetter's Stomach Bitters, at Asian American sites (Douglass 2000, 130; French 2016, 90–91; Greenwood 1996, 117; Orser 2007, 170; Ross 2013, 162). However, with the notable exceptions of the 61 bottles of Hostetter's Bitters from the Los Angeles Chinatown (Greenwood 1996, 117), the number of square case gin and bitters bottles at Chinese American sites appear to be relatively low.

At some sites, the number of bottles for gin and bitters is roughly equal to the number of whiskey bottles and flasks. For example, in the rather small collection from the Jacksonville Quarter Chinese site, there was evidence of at least two bitters bottles, including one case bottle, alongside three flasks (Rose and Johnson 2016, 79). Similarly, at Chinese mining camp near Yreka, archaeologists found two gin bottles and one whiskey bottle (J. LaLande et al. 2015). At other sites, the whiskey bottles and flasks outnumber the gin and bitters bottles. At Lovelock, for example, archaeologists found one Gordon's gin bottle and two bottles of Hostetter's Bitters alongside 63 whiskey flasks and 73 whiskey-style bottles (Armstrong 1979). At Yema-Po, 24 liquor bottles were found, of which only one is associated with gin while the others all originally held whiskey or bourbon (Miller and Smith 2023, 98–101).

At Market Street, there were at least nine traditional case bottles including the brands Udolpho Wolfe's Aromatic Schnapps, Voldner's Aromatic Schnapps, and A Van Hoboken of Rotterdam. These were supplemented with two amber bottle of

Rosenbaum's bitters, one of Lash's Kidney and Liver Bitters, three amber bottles of Hostetter's Stomach Bitters, an aqua bottle of Dr Wonser's Bitters, and two circular bottles likely bitters or schnapps. In terms of whiskey and bourbon, there are at least seven flasks and one Ellenville Glass Works whiskey bottle similar to those found on the wreck of the Bertrand in the Missouri River (Switzer 1974, 29, 32). There are no bottles directly marked with a whiskey or bourbon brand. However, a great many of the plain amber and olive cylindrical bottles are consistent with those typically identified as liquor bottles.

It seems plausible that locally made whiskey and bourbon were more readily available in America where there was a preference for those flavors over European made gin, but this is an area where transnational studies would be useful. This then raises the question of whether such a trend does indeed continue on Chinese American sites. If so, is it the result of market availability or of consumer preference? The presence of the Edouard Couvet absinthe bottle provides an intriguing counterpoint. The numbers are very small but three out of the five discoveries of this particular brand of absinthe have been found on sites associated with Chinese Americans, at Pon Yam's store (1873-1904) in Idaho City (Campbell 2023, 68), the Yreka Chinatown in California (Liu 2006, 103), and now at the Market Street Chinatown. Does this indicate a particular preference for this product, or that specific market forces were making this brand available to Chinese American communities?

6.3 Non-alcoholic Beverages

In addition to the alcoholic beverages discussed above, there is evidence for consumption of a range of non-alcoholic beverages among the glass containers. The largest category is undoubtedly that of soda or mineral water. Technically, soda water refers to artificially carbonated water whereas mineral water refers to mineral-rich water from natural springs which may or may not be naturally carbonated. In practice, and historically, the two terms are often used interchangeably and so are used together throughout this report. The range of soda/mineral bottles in the collection span periods prior to, during, and after the occupation of Block 1 by the Market Street Chinatown, reflecting their enduring use and popularity.

The Market Street Chinatown glass assemblage contains bottles from a number of soda/mineral water producers. The majority of these are local, including John Henry Wood's Napa Soda Works (1860-1872); Empire Soda Works (c.1861-c.1871, or c.1880-c.1882) of San Francisco; Golden West Soda Works (1901-1932) of San Jose; and a suite of related companies based in New Almaden and San Jose, including Winslow & Williams (1851-1871), Williams Bros. (1871-1909), San Jose Soda Works – John Balzhauser (1892-1905), and San Jose Soda Works - A.J. Henry (1905-1922) (see Appendix D for company histories).

A handful came from further afield: Meyer & Rottman (1853-1857) was from New York while Cantrell & Cochrane (1868-1948) was from Ireland, made in both Dublin and Belfast. The predominance of local companies reflects the fact that carbonated beverages were heavy and difficult to transport because of the inherent risk of explosion. Instead, many towns had local bottling factories which could re-fill bottles over and over again.

The history of soda/mineral water consumption harks back to the older practice of 'taking the waters' in spa towns such as Spa, Belgium; Baden-Baden, Germany; and Bath, England (Dixon 2018). The consumption of mineral water was believed to be medically beneficial, offering a cure for diseases ranging from scurvy to diarrhea to bronchitis (Malin 2022; Yamin 1997). Flavorings and other medicinal ingredients could be added, leading to products like ginger beer, sarsaparilla, root beer. These offered a relatively cheap, 'natural,' and widely available therapy which could be self-administered (Linn 2010), features which likely made carbonated beverages an attractive form of treatment to consumers across class and ethnic lines.

Both plain and flavored carbonated beverages were touted as temperance beverages which were safer, healthier, and more respectable alternatives to beer or spirits. Other products found at the Market Street Chinatown were also promoted as temperance drinks, although some were actually highly alcoholic. In the late nineteenth century, the temperance campaign became a mass movement advocating for moderation or abstinence from alcohol consumption based on a combination of Christian religious beliefs and social concerns.

Two bottles of Gass & Co. Champagne Mead (85-31/28-31 and 86-36/5-740) represent a relatively short-lived fad for this non-alcoholic sparkling beverage which was widely advertised as a temperance drink. Walker's Vinegar Bitters and Brown's Essence of Jamaica Ginger were also advertised as temperance products, although subsequent analysis of the ingredients revealed that both were highly alcoholic (Dunlap 1909, 14; *Pharmazeutische Rundschau* 1886, 91). The presence of this range of temperance products raises the possibility that inhabitants of the Chinatown were deliberately entering into the discourse of the temperance movement.

6.4 Food Products

Previous research on food at the Market Street Chinatown has been based on the faunal and botanical remains and revealed a diet of staple grains, primarily rice, with fresh and dried meat, fruit, and vegetables (Becks and Bestel 2013; Cummings et al. 2014; Kennedy 2016; 2017; Kennedy et al. 2018; 2022; Popper 2019). The Chinese Brown Glazed Stonewares found at the site probably held a variety of shelf-stable goods imported from China including soy sauce, pickles, and liquor. The glass containers provide a glimpse of both a different source of food purchases and a different range of foods being consumed at the site.

Bottles likely to have held food products at the site tend to be those used for either condiments or dry ingredients. Some flavors would have been familiar in Cantonese cooking, whereas others may have been used as substitutes for unavailable products, or as additions to the cooks' repertoires as they experimented with the foods available in America. Many contained products with strong flavors, which would have helped provide the foundational flavors of Cantonese cuisine: sweet, sour, salty, bitter, and spice (Peterson 2025, 22). The ubiquitous spice bottles, for example, could have held a range of dried spices such as cinnamon, peppercorns, mace, thyme, cloves, marjoram, or whole or ground mustard seeds (McDougall 1990, 68; Switzer 1974, 60–61; Zumwalt 1980). The J.H. Brough salt jar is evidence of another basic seasoning, although much of the dietary salt may have come from soy sauce.

Condiments from the site include mustard and Worcestershire sauce. The square gothic paneled bottles and many of the unidentified bottles may have held other liquid condiments, ranging from oils and vinegars to prepared sauces like pepper sauce and catsup. The one, perhaps two, bottles of Worcestershire sauce are notable because these they are so few; Worcestershire sauce bottles are abundant on Euro-American 19th century sites (Lunn 1981). Much more frequent are wide-mouthed pickle or chutney jars, again typically with a gothic molded pattern. The pickles or chutneys in these jars were typically eaten as a snack or used in cooking. They may have supplemented or been a substitute for imported Chinese pickled vegetables. Like the Chinoiserie ceramics found at the site (Voss 2019), chutneys and sauces like catsup and Worcestershire sauce were British attempts to recreate Asian flavors (Atkins 2016; Kreklau 2025). Were these products recognizable to Chinese immigrants in California? Were they satisfactory substitutes for hard-to-acquire items from China? Or were they purchased as something funny, or even exotic to try (Voss 2018, 111; 2019)?

6.5 Chronology

One of the most important results of this study has been the finely-grained chronological detail about particular features. Here I draw out some of the most interesting discoveries, but detailed information about the chronology of each feature is provided in Sections 3.0, 4.0, and 5.0.

Only a very small amount of the glass found is likely to pre-date the Market Street Chinatown, including a J.W. Peters alcohol bottle (85-31/3-60, 1833-1860) and two Meyer & Rottman soda/mineral water bottles (85-31/21-4 and 86-36/19-43, 1853-1857). These may represent either pre-Chinatown deposits or, and perhaps more likely, the common practice of bottle reuse.

The great majority of the glass is likely to be associated with the Market Street Chinatown, occupied from the 1860s until 1887. Features with particularly high potential for future research include Feature 85-31/5, and the lower strata of Feature 86-36/4 and Feature 86-36/5. These contain numerous glass vessels which can be confidently associated with the period of the Chinatown's occupation. In particular, Level 6 and below of Feature

86-36/5 and all of Feature 86-36/20 contain bottles which appear to date to the earliest years of the Chinatown's existence.

The glass assemblage has also revealed a number of vessels which must post-date the Chinatown's destruction in 1887. This includes machine-made bottles as well as those from manufacturers or companies which could only have been produced after 1887. There is a low-level of these vessels across the site, as well as concentrations in specific features, notably Feature 85-31/35, Feature 86-36/9, and Feature 86-36/23. That is not to say that everything in these features post-dates the Chinatown, but that the unfortunate lack of stratigraphic resolution makes it challenging to separate earlier and later materials so care must be taken in the interpretation of results from these features.

These chronological results need to be cross-validated with other material types but provide the foundation for an update to Kane's report (2011) on the archaeological potential of the features.

6.6 Conclusions

The Market Street Chinatown's glass container and tableware assemblage is extensive and diverse, making this analysis a significant addition not just to the study of American Chinatowns and Chinese diaspora communities, but also to the literature on communities in the American West after the transcontinental railroad, and on daily life in late nineteenth century life in America more broadly.

Within the context of the Chinatown, the glass containers reveal the consumption of a large variety of packaged food and beverage products, ranging from salt and mustard to soda water and absinthe. This knowledge enriches our understanding of foodways in the Chinese diaspora, showing how the inhabitants substituted and experimented with locally-available products in America. It also, however, raises new questions. Where did the inhabitants purchase these products? How did they use Euro American style condiments in their meals and cooking? And are there specific products, perhaps like Pernod's absinthe or Hostetter's Bitters, which are particularly associated with Chinese American sites because of the way they were marketed or sold?

The medicine bottles are perhaps even more promising for future research, with a broad range of identifiable products and the potential for further residue analysis. What is striking about the glass evidence for medical care at the site is how it encompasses a variety of medical traditions: homeopathic treatments, allopathic medicine, and Traditional Chinese Medicine alongside self-treatment with patent remedies. As recent research has shown, this is entirely consistent with the heterogenous nature of the history of American medicine (Reifschneider 2025).

The end of every research study often raises new questions. For example, the fine-grained results of the glass container and glass tableware analysis now can be put into dialogue with the findings of other material-specific studies to gain a greater holistic understanding of daily life in the Market Street Chinatown. One example might be integrating the data presented here on glass containers with analysis of similar data from ceramic containers such as the abundant Chinese Brown-Glazed Stoneware that is also present in the Market Street Chinatown collection. Similarly, several studies have already been conducted on animal bones and botanical remains (e.g., Kennedy 2016; Popper 2016; Yost 2016). How do the spices, condiments, and preserved foods documented through glass container analysis change our existing understanding of the meals eaten in the Market Street Chinatown households?

Another interesting finding of this research study is the diverse geographic origins of the products used by Market Street Chinatown residents. It is difficult to conclusively interpret these findings in isolation: were such products widely used by all residents in San Jose, or are there some products that were specifically marketed to and consumed by Chinatown residents? How did products from Boston, Rotterdam, London, and Paris travel from their points of manufacture to point of sale in San Jose? These kinds of questions require large-scale, finely-grained studies using standardized methods of analysis across wide regions, pointing towards the need for regional comparative research and international cooperation.

Finally, the historic research undertaken for this research study (see Section 2.0 and Appendix D) illustrates the important changes that have occurred as a result of digitization and open access to historical content such as newspapers, directories, and

censuses. On the one hand, this has enabled more fine-grained histories of the manufactures that produced both the glass containers themselves and the products they contained. Two of the most exciting developments in this area are deep mapping and Historical Spatial Digital Infrastructure (HSDI) which have high potential for community-based history such as that undertaken by MSCAP.

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APPENDICES

Appendix A - Glass Cataloging and Analysis Appendix

This appendix consists of the newly developed cataloging procedures for glass containers and tablewares which were developed for this project and which is now Appendix A in the MSCAP Laboratory Handbook.

Appendix A: Guidelines for Cataloging Glass Artifacts

Glass is one of the most commonly found artifact classes on historical archaeology sites. This appendix provides details for how to complete the general catalog form and the glass analysis form. At this stage of analysis, we are cataloging and analyzing glass containers and glass tablewares only (and not window glass, small finds, or lamp glass and other furnishings).

MAIN CATALOG FORM

Artifact-Group

Glass artifacts will typically fall into one of the following categories:

Activities - glass gaming pieces and ink bottles/inkwells

Domestic - glass furnishings e.g. lamps, as well as glass food containers (e.g. condiment bottles or jars) and tablewares (e.g. tumblers or wine glasses)

Personal - glass containers which held products for health and recreation (e.g. medicine bottles, alcohol bottles), grooming (e.g. perfume bottles or toothpaste containers), as well as toys (e.g. marbles) and accouterments (e.g. beads or eyeglasses)

Structural - window glass

Indefinite - glass containers with unidentifiable contents

NOTE: Most glass containers will be cataloged as Indefinite. They should only be cataloged in other categories if the contents can be identified from a label, embossing, or bottle form.

Material = Glass-(Color)

The color categories used in this stage of processing are chosen to expedite the cataloging process by separating lots into groups most likely to represent single vessels or vessel types. Color, in consideration with vessel shape, size, finish style, and labeling may be helpful in identifying container function. Color is not reliably useful by itself for determining date or function of artifacts.

Name	Description	Example
Colorless	This term should only be used for objects that are truly colorless, without any visible tint to the glass. Colorless glass was produced using decolorizing agents to remove the greenish tint commonly brought to glass by other impurities (often iron).	
Aqua	A light aqua tint is one of the most common colors present in container glass, and is produced by small amounts of iron in the glass.	
Solarized (manganese)	A light to dark purple tint which occurs when glass decolorized with manganese dioxide is exposed to ultraviolet radiation. The depth of color is dependent on the level of exposure to light, and fragments from the same vessel may show different levels of solarization.	
Solarized (selenium)	A straw-yellow tint which occurs when glass decolorized with selenium is exposed to ultraviolet radiation.	
Blue	Use only for true, blue colors without a greenish tint, such as the familiar, cobalt blue Milk of Magnesia bottles.	

Green	One of the most widely variable color ranges in container glass. Use “Green” for all glass that tends toward bright green (like a 7-up bottle), true greens, or slightly bluish-greens. If the color has more yellow in it, refer to it as “olive” rather than green.	
Olive	Also fairly common in container (especially bottle glass). Olive glass has a more yellow tint to the green than true-greens, and can range from very light to very dark (almost black).	
Black	“Black” looking glass is usually a very dark olive in color, when held to the light. Only use for very, very dark specimens which are essentially opaque.	
Amber	The color we most commonly associate with beer bottles, an amber/brown tint may range from very light to very dark.	
White	Use this term for mostly- or completely opaque glass, sometimes referred to as “milk glass”	

Other Color Choices

Some containers, and tablewares have been made in **yellow, red, blue-green** (turquoise), **pink, orange**, and **marbled** color combinations. If a color choice is not in the catalog, the color may be added to the choice menu (see the lab director) or you may select Glass-Other and describe the color in the comments section of the catalog record.

Color Modifiers - Add to Remarks

A small number of modifiers may be used to more specifically describe glass colors, and can be added to the comments section of the catalog record. These include, **Opaque, Marbled, and Iridescent**. Only use the “iridescent” modifier if the glass is intentionally treated on its surface to achieve an iridescent effect, such as on carnival glass produced in the early 20th century. It should not be used when glass is patinated, with a flaky, iridescent surface caused by interaction of the glass with groundwater.

Artifact Category/Type/Description

- The first stage in sorting glass will be to separate flat glass (generally from windows or mirrors) from curved container glass and tableware glass. All window glass should be catalogued as “Building Material – Building Material – Window,” whereas mirrors will be catalogued as “Furnishings – Furnishings – Mirror.”
- Some paneled bottles may have flat portions – generally, window and mirror glass will be of uniform thickness with parallel surfaces. Paneled bottle glass may have variations in thickness, and the interior and exterior surfaces may not be parallel.
- When cataloging a glass artifact, it is generally best to be conservative in assigning a functional category. It’s better to call a fragment of curved aqua glass a “Misc. Container” than a bottle or jar, if you are not sure. Similarly, brown, green, olive, or aqua body fragments may not necessarily be attributable to alcohol bottles, even though they **look** like them. Container size, shape, finish/closure, and labels should all be used, when possible, in your determination of container function.
- Glass “small finds” such as beads, buttons, and jewelry elements should be cataloged as most appropriate, in Artifact Categories such as clothing, clothing maintenance, and Artifact Types such as clothing, decorative item, or jewelry.
- When cataloging flat (window) glass, there is no need to separate aqua from colorless fragments. If one catalog number has both aqua and colorless within it, use “Glass-Other”, and then list the colors in the “Remarks” field.
- Within the existing Market Street Chinatown Archaeological Project cataloging system, the following categorizations might be helpful:

Group	Artifact Category	Artifact Type	Description
Domestic	Drinking Vessel	Drinking Vessel	Cup Goblet Mug Stemware

Group	Artifact Category	Artifact Type	Description
			Tumbler
	Tableware	Serving Tableware	Bowl Compote dish Cruet Decanter Dish Egg cup Nappie Oval dish Pitcher Plate Platter Salt Slop jar Sugar bowl
	Food Container	Container	Condiment bottle Extract bottle Certo Jamaica-ginger bottle Jelly jar Ketchup bottle Milk bottle Mustard bottle Olive oil bottle Pickle bottle Preserves Relish bottle Root-beer bottle Sarsaparilla bottle Sauce bottle Soda-pop bottle Soda-water bottle Spice bottle Syrup bottle Worcestershire bottle
	Food Storage	Container	Canning jar Carboy Jar Jug
	Cleaning	Container	Ammonia bottle Bleach bottle Chemical bottle Glue bottle Poison bottle Polish bottle

Group	Artifact Category	Artifact Type	Description
	Furnishings	Lamp	Lamp Chimney Lantern Light bulb Oil bottle Oil lamp Shade
		Decorative Item	Vase
Personal	Health	Container	Bitters bottle Chemical bottle Cod-liver-oil bottle Medicine bottle Ointment bottle Peroxide bottle Pills bottle Vaseline bottle Vial
		Indefinite	Dropper Syringe Eyeglass Feeding bottle
	Clothing Maintenance	Container	Blacking bottle Shoe-polish bottle
	Grooming	Container	Cosmetic jar Cream/Creme jar Florida-water bottle Hair-coloring bottle Hair-tonic bottle Perfume bottle Pomade jar
	Alcohol Container	Container	Alcoholic-beverage bottle Ale/Beer bottle Brandy bottle Cider bottle Cordial bottle Flask Gin bottle Liquor bottle Whiskey bottle Wine/Champagne bottle
	Opium Paraphernalia	Container	Opium lamp
	Tobacco Container	Container	Snuff bottle
	Writing	Container	Ink bottle Inkwell
Indefinite	Misc. Containers	Container	Bottle Bottle/Jar Jar
	Misc. Closures	Closure	Cap

Group	Artifact Category	Artifact Type	Description
			Club-sauce stopper Crown cap Jar lid Lid Lightning stopper Stopper

MNI

This is the Minimum Number of Individual vessels represented by this catalog number.

Glass Cataloging – Use of the “Remarks” Field

Use only if required to add information not captured elsewhere, e.g. about pontil scars.

GLASS ANALYSIS FORM

Control Data

- Enter your name and the date on the upper line.
- Enter the catalog number.
- Enter the tracking number. This number is a unique 11-digit number built from the catalog number in the following way:
 Digits 1 and 2 = Project year
 Digits 2 and 3 = Project number
 Digits 5 and 6 = Feature number. If the number is <10, put a “0” in front – e.g., Feature 6 is 06
 Digit 7 = Feature subdesignation. Some features include a subdesignation (e.g., feature 6A)
 If your feature DOES NOT have a subdesignation, enter 0.
 If your feature DOES have a subdesignation, enter the number that corresponds to the letter of the alphabet: e.g., for Feature 6A = 1, Feature 18B = 2
 Digits 8, 9, 10, 11 = Artifact number. If the number is <1000, then enter zeros in front.

Examples:

Catalog number: 85-31/6A-43
 Tracking number 85310610043

Catalog number: 86-36/13/1092
 Tracking number: 86361301092

Quantity

This information is copied directly from the catalog form. Round all weights to 1 decimal place.

Vessel Form

Adapted from Jones and Sullivan 1989, mark the vessel form. If uncertain, choose *Indefinite*. If you think you have identified a vessel form that is not listed, check with a supervisor before entering a new form.

Containers

Name	Description
Bottle	vessel for storing liquid; narrow-mouthed, with a shoulder but no handles
Case bottle	bottle with a square cross section, widening from base to shoulder, with a short neck and indented base, and usually in dark green glass.
Egg bottle	bottle with a pointed base
Round-bottom bottle	bottle with a round base
Flask	bottle with two flattened sides, cross-section generally ovoid
Vial	very small bottle
Ampule	very small container which is filled, then sealed with glass which must be broken to open it
Jar	wide-mouthed storage vessel, generally with rim and base of similar diameter and lacking a shoulder
Inkwell	small bottle with a wide base and narrow mouth, often decorated, and used for writing. Includes umbrella bottles.
Demijohn	large, narrow-necked bottle with capacity larger than a gallon
Container	general term for closed storage vessel (not tableware) which cannot be further identified

Tableware

Name	Description
Bowl	deep open vessel, generally wider than it is high, with a flat or footed base
Carafe/Decanter	a narrow-mouthed vessel without a spout used for serving and/or storing beverages
Vase	a vessel generally taller than it is wide with an open mouth, often decorated
Castor	a small bottle with an attached, perforated top for sprinkling or shaking the contents
Cruet	a small, stoppered bottle used for liquid condiments with a pouring lip. It is more likely than a castor to have a handle and less likely to have an attached top.
Drinking glass	a stemmed glass used for drinking
Flatware	open tableware not further identified e.g. plates or saucers
Goblet	large stemmed drinking glass, thick with a large bowl. In earlier years the stem is very short, but over time it elongates.
Hollowware	closed tableware not further identified e.g. bowls or cups

Jug	handled vessels with a short neck and a comparatively small handle near the lip and on the shoulder, often with a spout
Pickle dish	small dishes with a leaf- or shell-like form
Plate	flat vessel for solid foods, generally circular or polygonal (as opposed to ovoid platters)
Salt	small, open dishes for holding salt on the table
Stemware	vessels consisting of a foot, a stem, and a bowl, not further identified
Tumbler	closed drinking vessels without a stem, with a flat or shallow concave base, a plain rim, and a circular horizontal cross section.
Tableware	general term for tableware (not containers) which cannot be further identified

Closures and Other

Name	Description
Glass stopper	a glass closure which fits inside the bore of the neck of the bottle.
Lid	a glass lid for a container
Indefinite	otherwise unidentified

Vessel Elements

Choose all that apply, and note any other elements not listed.

Containers	Tableware	Closures	All
Base	Base	Finial	Complete
Body	Foot	Shank	Indefinite
Shoulder	Foot-ring		
Handle	Body		
Lug	Handle		
Neck	Knop		
Finish	Stem		
Seal	Rim		
Label			

Manufacturing Technique

Adapted from Jones and Sullivan 1989

Name	Description
Free-blown	Mouth-blown entirely without a mould. Typically asymmetrical with no mould seams.

Mouth-blown	Generic term for unidentified type of mouth-blown vessel with no visible mould seams, no distinctive mould-blown texture, no distinctive freeblown traits, and no machine-made indicators. May be partially mould-blown and partially free-blown.
Mould-blown	Generic term for glass made using a mould, used where generic elements of mould are evident e.g. mould seam or embossed lettering, but where specific type is not determined.
Dip-moulded body	Body is formed with a one-piece mould but the shoulder and neck are not - often has a distinctive overflow mark at shoulder where the mould ends.
Two-piece mould	The base, body, shoulder, and neck of the bottle are formed together in a two-piece bottle mould but the finish is hand-tooled. Seams do not extend into the finish.
Two-, three-, or four-piece mould	The mould consists of a two- or more piece, mould for the body and a separate base part - either a post or a cup.
Multi-piece mould with free-blown shoulder	Body up to shoulder is made with a multi-piece mould, while the shoulder and neck are freeblown.
Ricketts-type mould (three-piece mould)	Three-part mould consisting of a dip mould for shaping the body and two matching shoulder or shoulder-neck shaping halves. There may be a fourth part, for forming the base, or the base can be formed after the bottle is removed from the mould.
Turn- or Paste-moulded	Mouth-blown using a mould, the bottle is rotated during blowing eliminating the mould seams. Produces polished, symmetrical bottles with no mould seams and may have faint horizontal lines from the turning process.
Cup-bottom mould	A two-part body mould with a separate complete base plate, leaving a mould seam around the heel of the bottle.
Post mould	A two-part body mould with a separate central base plate making a distinctive circular or oval shape on the base.
Pattern moulding	A mould with a simple repeating pattern is used and glass blown into the mould to get the decoration, the glass is then removed from the mould and free blown to get the final shape.
Optic moulding	Like pattern moulding, a patterned mould with simple repeating shapes is used to get the pattern, then the glass is transferred to a mould and blown to shape.
Press moulding	Hot glass is placed in a mould (which may or may not be patterned) and a plunger pressed into the glass to form the interior shape of the piece.
Machine-made	Containers made fully by machine, characteristically with many mould seams. May also have ghost seams, valve marks or Owens suction scars.
Indefinite	

Size

Measures of size can be difficult. You may need to use rim radius charts, rulers, or calipers. Don't force a size measurement – some specimens are not measurable.

Circular Vessels

- Use a radius chart to calculate the base and/or rim diameter to the nearest centimeter and estimate the percentage present.
- Typically rims and bases are not measurable if <10% of the circumference is present.
- Remember that the rim chart provides radius, not diameter, so you need to double the measurement.

All Other Vessels

- Use a ruler or calipers to measure the maximum width and depth of the rim or base to the nearest centimeter.

Lids

- Use a radius chart to calculate the rim diameter to the nearest centimeter and estimate the percentage present.
- Typically rims are not measurable if <10% of the circumference is present.
- Remember that the rim chart provides radius, not diameter, so you need to double the measurement.

Height

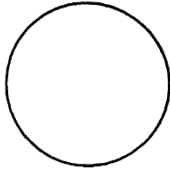
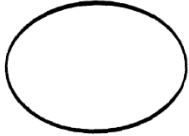
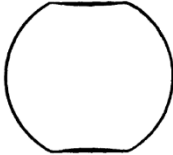
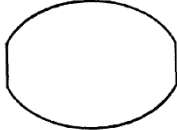
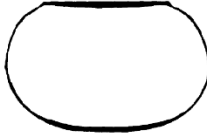
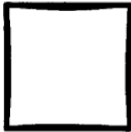
- Where the whole bottle height is available (either because the vessel is complete, or because the fragments mend), use a ruler or calipers to measure the height of the vessel.

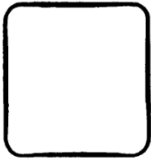
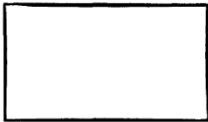
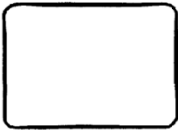
Body Shape

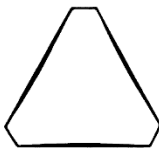
Adapted from Jones and Sullivan.

Select whether the vessel has chamfered corners (where the corner is cut away, or grooved) or sides with recessed panels. Then select the body cross-section, or note a different shape if required.

Name	Example
------	---------

Circular	
Ovoid	
Kidney	
Round with flat sides	
Ovoid with flat sides	
Philadelphia oval	
Square	

Square with rounded corners	
Rectangular	
Rectangular with rounded corners	
Hexagonal	
Octagonal	
Flat octagonal	
Triangular with recessed panels	

Triangular with chamfered corners	
Flask	
Millville round	

Maker ID- This should be used for the manufacturer of the vessel.

Name: enter the last name first in capitals, followed by the first name or other information.

Example: WILLIAMS, Edward & Sons.

Location: enter the country of origin first, in capital letters. Be sure to include reference information. If you can identify a specific city or region that the object was made in, enter that following the country. If you can't securely identify the area of origin, leave the field blank.

Date (of manufacture): Sometimes you will be able to pinpoint a specific year when manufacture began or ended – e.g., 1897. If the year cannot be precisely determined, use the beginning date of the decade you think the begin or end manufacture date corresponds to, and enter “ca.” after the date – e.g. 1890 ca. If either the beginning or ending date cannot be determined, then leave that field blank. Be sure to enter any references used to define the date range of the object in the **References** field.

Brand ID - This should be used for the brand of the contents of the vessel e.g. Lea and Perrins Worcestershire Sauce.

Name: enter the name of the product and/or brand.

Location: enter the country of origin first, in capital letters. Be sure to include reference information. If you can identify a specific city or region that the object was made in, enter that following the country. If you can't securely identify the area of origin, leave the field blank.

Date (of production): Sometimes you will be able to pinpoint a specific year when production began or ended – e.g., 1897. If the year cannot be precisely determined, use the beginning date of the decade you think the begin or end manufacture date corresponds to, and enter “ca.” after the date – e.g. 1890 ca. If either the beginning or ending date cannot be determined, then leave that field blank. Be sure to enter any references used to define the date range of the object in the *References* field.

Marks

Marks are an incredibly important part of glass analysis. Please examine every sherd closely for evidence of any marks when cataloging and when completing this section of the form, especially on the base of bottles. Note the presence/absence, location, and type of marks. Note that there may be more than one mark.

Embossed: Consists of raised letters, numbers, or designs that were part of the bottle mould.

Engraved: Consists of letters, numbers, or designs cut or carved into the vessel surface.

Paper Label: A printed paper label attached with an adhesive to the surface of the bottle.

Seals: A design impressed into a blob of glass that is applied to the exterior of the container. Most common on wine/liquor bottles.

Transcription - copy out exactly what the mark says. Start and end using quotation marks “...” and use a vertical line (|) to distinguish line breaks. Where text is illegible, use ..., to fill in text that is missing use [] and where you can make a guess at the text use [?].
e.g. “... Syrup of [R?] | New York Bottle Com[pany] |.

Description

Use to add any additional comments or information.

Finish Type

Broadly following the SHA Historic Glass Bottle Identification Website. See <https://sha.org/bottle/finishes.htm> for more information on each type and example photographs and drawings. Select both whether is it a one-part, two-part, or three-part finish as well as the exact finish type if possible.

Name	Description
One-part finish	Just a lip, no specific type of finish identified
Two-part finish	Lip and a string rim, no specific type of finish identified
Three-part finish	Lip, string rim, and third element, no specific type of finish identified
Double ring finish	Two-part finish with two stacked rings, the upper is normally thicker and wider. The rings may be rounded, or they may be shaped into a pointed ridge.

Mineral finish	Two-part finish with a flat-sided, slightly tapered or rounded upper part above a narrow lower part which typically flares downwards.
Bead finish	One-part finish with a single, relatively thin ring.
Stove pipe finish	Three-part finish with three stacked rings or bands which become progressively wider from the string rim to the lip.
Flared finish	One-part finish with a thin to moderate flare of glass projecting away from the lip at an approximately 90° angle.
Patent finish	One-part finish consisting of a squared off or slightly rounded narrow band around the rim.
Packer finish	One-part finish consisting of a squared off or slightly rounded wide band around the rim with not taper.
Prescription finish	One-part finish which is a moderate band of glass projecting away from the lip at an approximately 90° angle with a tapered outside surface. Unlike the patent and bead finishes it is tapered, and it is thicker than the flared finish.
Reinforced extract finish	Generally a two-part finish although sometimes seen with three parts, it consists of a bead on top of a packer finish.
Oil finish	One-part finish which is as tall or taller than it is wide and tapers from a narrower lip to a wider base.
Brandy finish	Two-part finish with a tall, tapered section above a narrow ring (essentially an oil finish above a bead).
Trumpet finish	A cracked off finish which flares outwards at the lip.
Straight finish	The bottle neck is simply tooled and possibly fire polished to make it smooth with no additional glass added.
External thread finish	Two or three-part finish with external ridges for a screwed on cap or lid.
Champagne finish	One-part finish with a flat band of glass applied below the lip.
Crown finish	Typically a two-part finish with a narrow bead above a string rim.
Blob finish	One-part finish with a distinctly rounded 'blob' of glass.
Grooved ring finish	Two-part finish with a groove between an upper, taller band and a lower, shorter band. Both the upper and the lower have flat sides.
Stacked ring finish	Three-part finish with three stacked rings of similar width.
Collared ring finish	Two-part finish with a bead above a band of roughly equal height.
Straight brandy	Two-part finish with a tall, straight section above a narrow ring. It is an un-tapered version of the brandy finish.
Cracked off finish	The bottle neck is broken off, by cracking or bursting, with minimal if any additional tooling leaving a broken lip.
Mushroom finish	One part finish with a downwards flaring finish that looks like the cap of a mushroom. Only really found on Tippecanoe bottles.
Pouring finish	Any finish modified to have a spout for pouring.

Inside thread finish	Any finish with an internal thread for a closure.
Rolled finish	One-part finish where the broken off lip is rolled to the interior or exterior to form a smooth lip.
Groove ring wax seal finish	One-part finish has a wide applied band or blob which is then shaped to have a groove on the upper-most surface which could be filled with sealing compound such as wax for an airtight seal.
Capeat finish	One-part finish with a wide bead and a small ledge on the interior of the finish for a cap.
Club sauce finish	Three-part finish with a bead above a taller, tapered middle, and a narrow rounded collar. Inside may have a ledge for the stopper.
Ground finish	Round surface of the broken off finish was ground down to form a smooth surface.
Tapered down finish	One-part finish that tapers from a wider lip to a narrower base.
Tapered collar finish	One-part finish with a moderately tall (around 1 inch or more), thick band that tapers from a narrow lip to a wide base. Similar but shorter/squatter than an oil finish.
Sprinkler top finish	Two-part finish with a narrow externally threaded upper part above a bead collar.

Bottle Style

Since we are taking a deliberately conservative approach to cataloging function, this section allows us to make an informed assessment of the likely contents of a glass container based on form, color, marks etc. In this section, all round olive or black glass bottles, for example, can be marked as likely alcohol bottles while wide-mouthed bottles can be marked as pickle/chutney bottles.

Bottle Contents

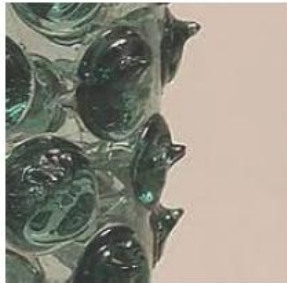
This is for more specific notation of bottle contents and is typically only possible where there is a label or brand ID e.g. Florida Water.

Decoration

Adapted from Jones and Sullivan and the DAACS Glass Cataloging documentation. This describes the techniques used to create the decoration.

Name	Description	Example
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Moulded	The surface of the glass is shaped using a mould e.g. contact moulding, optic moulding, or press moulding.	
Painted	Paint is applied to the surface.	
Air Bubbles	Air bubbles intentionally trapped in the vessel e.g. in knop or finial.	
Air twist	Air bubbles intentionally trapped in the vessel then twisted to form decorative element.	

Opaque twist	Opaque glass encased in glass then twist to form decorative element e.g. in marbles or stemware.	
Mixed twist	Air twist and opaque twist in the same vessel.	
Applied glass	Extra glass is added to the vessel to form decorative lines or marks.	
Punts	Blobs of glass applied to the vessel.	
Casing	Layers of different glass fused together, then the layers can be cut away to expose the inner layers.	

Die-impressed	Generally used on tumbler bases, the nearly completed glass is placed on a die to pick up the pattern.	
Etched	Acid is used to dissolve or frost glass in a pattern.	
Iridescent glass	Chemicals sprayed on hot glass produce a rainbow finish, sometimes called Carnival glass.	
Engraved	Shallow cuts are made in the glass to produce a design, often floral or naturalistic.	
Cut glass	Deep cuts are made in the glass to form geometric designs like panels or flutes. Creates sharp cut edges.	

Sand blasted	Sand is blasted under high pressure onto the glass, creating a frosted texture.	
Enamelled	Powdered colored glass is fused onto the glass surface	
Gilded	Gold is painted onto the vessel then fired.	

Stylistic Element

This describes the decorative design or the elements thereof.

Name	Description	Example
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Band	Solid band of any thickness	
Botanical	Flowers, leaves, or other botanical design.	
Cartouche	An enclosed shape surrounding letters or a design	
Cross-hatching	Lines crossing each other in two directions	

Double-wavy	Two intersecting wavy lines	
Diamonds	Diamond shapes	
Dots	Small dots or circles	
Facets	Multiple faces made by cutting away glass	
Fan	Fan shapes	
Flutes	Repeating pattern of parallel concave scoops	

Mitre	V-shaped groove or incision	
Panels	Flat panels or sides, typically of equal size. Can extend the whole height of the vessel, or might end below the rim, often in an arch shape.	
Prunt	Small blobs of applied glass.	
Ribs	Repeating pattern of parallel, convex curves.	

Scallops	Repeating pattern or rounded or pointed projections.	
Star	Star or asterisk cut, engraved, or etched into glass.	
Stippled	Repeating pattern of closely spaced small dots which may be moulded or etched, often forming a background texture.	
Sunburst	Radiating rays cut or engraved into the vessel, often on the base.	
Swag	Draped garland.	
Wavy line	One or more undulating lines which do not intersect.	

Imagery

Circle Yes or No for whether a photograph has been taken and whether a drawing has been completed.

Heat Affected

Circle yes or no for whether the items are heat affected i.e. showing signs of melting or burning.

Conservation Assessment

Mark and notate the appropriate category regarding the condition assessment. Most glass items will be either 1. or 2.

GLASS BAG TAGS

Complete a paper tag (Bag Tag), printed on archival paper, with the information copied from the catalog form. Place the paper tag in a 4x4 plastic bag before inserting it into the artifact bag e.g.

Catalog Number: 86-36/13/1092

ARS Location: Feature 13

ARS Depth/Location: 15-20 cm

Material: Glass

Vessel Type: Bottle

KEY GLASS REFERENCES

Society for Historical Archaeology Historic Glass Bottle Identification & Information Website <http://www.sha.org/bottle/>

Jones, Olive, et al. (1989) The Parks Canada Glass Glossary (Ottawa: National Historic Parks and Sites / Canadian Park Service / Environment Canada)

Jones, Olive (2000) 'A Guide to Dating Glass Tableware: 1800 to 1940' in Karklins, K. Studies in Material Culture Research (California, Pennsylvania: Society for Historical Archaeology) pp. 141-232.

Fike, Richard (1987) The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles (Salt Lake City: Peregrine Smith Books).

US National Park Service: Bill Hunt's Medicine Bottle Glass Index
http://www.nps.gov/history/mwac/bottle_glass/

Toulouse, Julian (1971) *Bottle Makers and Their Marks* (New York: Thomas Nelson).

Aultman, Jennifer et al. (2012) DAACS Cataloging Manual: Glass Vessels, Digital Archaeological Archive of Comparative Slavery website,
<https://www.daacs.org/about-the-database/daacs-cataloging-manual/>

Appendix B – Glass Analysis Form

For the process of analyzing the glass, I developed a new analysis form to capture data on attributes such as vessel form, manufacturing technique, size, decoration, and likely function. This form was completed for artifacts which had diagnostic features such as a base, finish, or embossment. All data was then entered into the computer database, then combined with data from the catalog form for assemblage analysis.

Glass Analysis and Conservation Analysis (v1) Analyst: _____ Date: ____/____/____		
Catalog No.: _____		Temporary Box No.: _____
Tracking No.: _____		TBN in catalog: Y / N
<u>Quantity</u> _____ Whole Count _____ Frag Count _____ CAT# MNI _____ Weight (g) <u>Vessel Form</u> ☐ Container-bottle ☐ Container-bottle-case ☐ Container-bottle-egg ☐ Container-bottle-round-bottomed ☐ Container-bottle-flask ☐ Container-vial ☐ Container-ampule ☐ Container-jar ☐ Container-demijohn ☐ Container-inkwell ☐ Container ☐ Tableware-bowl ☐ Tableware-plate ☐ Tableware-vase ☐ Tableware-drinking glass ☐ Tableware-tumbler ☐ Tableware-jug ☐ Tableware-stemware ☐ Tableware-flatware ☐ Tableware-hollowware ☐ Tableware ☐ Closure-Glass stopper ☐ Closure-Lid ☐ Indefinite ☐ _____	<u>Vessel Elements) - Select all</u> ☐ Complete ☐ Base ☐ Body ☐ Shoulder ☐ Handle ☐ Lug ☐ Neck ☐ Finish ☐ Seal ☐ Label ☐ Foot ☐ Knop ☐ Stem ☐ Rim (tableware) ☐ Finial ☐ Shank ☐ _____ <u>Manufacturing Technique</u> ☐ Free-blown ☐ Mouth-blown ☐ Mould-blown ☐ Dip-moulded body ☐ 2 piece mould ☐ 2, 3, or 4 piece mould ☐ Multi-piece mould with free-blown shoulder ☐ Ricketts-type mould (3 piece) ☐ Turn or paste mould ☐ Pattern moulding ☐ Optic moulding ☐ Press moulding ☐ Machine-made ☐ Indefinite ☐ Post-bottom mould ☐ _____	<u>Size (cm)</u> Max width _____ Max breadth _____ Base Diameter _____ Base Percentage _____ Rim Diameter _____ Rim Percentage _____ Lid Diameter _____ Lid Percentage _____ Height _____ <u>Body Shape</u> ☐ Chamfered ☐ Panelled ☐ Circular ☐ Ovoid ☐ Kidney ☐ Round with flat sides ☐ Ovoid with flat sides ☐ Philadelphia oval ☐ Square ☐ Square with rounded corners ☐ Rectangular ☐ Rectangular with rounded corners ☐ Hexagonal ☐ Octagonal ☐ Flat octagonal ☐ Triangular ☐ Flask ☐ _____ <u>Maker ID</u> Name: _____ Location: _____ Dates: _____ <u>Brand ID</u> Name: _____ Location: _____ Date: _____
Marks: present Y / N embossed engraved paper label seal _____ Mark transcription: _____		

Description: _____

<u>Finish Type (select all)</u> ☐ One-part finish ☐ Two-part finish ☐ Three-part finish ☐ Double ring finish ☐ Mineral finish ☐ Bead finish ☐ Stove pipe finish ☐ Flared finish ☐ Patent finish ☐ Packer finish ☐ Prescription finish ☐ Reinforced extract finish ☐ Oil finish ☐ Brandy finish ☐ Trumpet finish ☐ Straight finish ☐ External thread finish ☐ Champagne finish ☐ Crown finish ☐ Blob finish ☐ Grooved ring finish ☐ Stacked ring finish ☐ Collared ring finish ☐ Straight brandy finish ☐ Cracked off finish ☐ Pouring finish ☐ Inside thread finish	☐ Rolled finish ☐ Groove ring wax seal finish ☐ Capseat finish ☐ Club sauce finish ☐ Ground finish ☐ Tapered down finish ☐ Tapered collar finish ☐ Sprinkler top finish ☐ _____ <u>Bottle Style</u> ☐ Alcohol bottle ☐ Case gin bottle ☐ Chutney bottle ☐ Oil/vinegar bottle ☐ Mineral water bottle ☐ Blacking bottle ☐ Ink/bottle inkwell ☐ Champagne bottle ☐ Perfume bottle ☐ Medicine bottle ☐ TCM bottle ☐ Spice bottle ☐ _____ <u>Bottle Contents</u> _____	<u>Decoration</u> ☐ Moulded ☐ Painted ☐ Air bubbles ☐ Air twist ☐ Opaque twist ☐ Mixed twist ☐ Applied glass ☐ Prunts ☐ Casing ☐ Die-impressed ☐ Etched ☐ Iridescent glass ☐ Engraved ☐ Cut glass ☐ Sand blasted ☐ Enamelled ☐ Gilded ☐ _____ <u>Stylistic element:</u> _____ Photograph Y / N Drawing Y / N <u>Heat Affected</u> Y / N
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Conservation Assessment

- ☐ 1. Vessel is stable with no apparent conservation problems.
- ☐ 2. Vessel exhibits material based conservation problems e.g. patination, disintegration, delamination, spalling, crazing Describe:
- ☐ 3. Vessel has been mended with glue and appears stable.
- ☐ 4. Vessel has been mended with glue and glue is disintegrating, discoloring, or otherwise causing damage.
- ☐ 5. Vessel has been mended with tape and, at least for the moment, appears stable.
Circle tape type: cellophane packing masking strapping duct electrical other
- ☐ 6. Vessel has been mended with tape, and the tape is contributing to disintegration of the vessel.
Circle tape type: cellophane packing masking strapping duct electrical other
- ☐ 7. Vessel has other conservation problem. Describe:

Appendix C - Minimum Number of Vessels

Minimum number of vessels or MNV is a widely used archaeological measurement to describe the minimum number of whole vessels which could account for the fragments in a given assemblage or portion thereof. To calculate the MNV for the ARS Projects as part of MSCAP, I followed a process similar to that described by Voss and Allen (2010) for ceramic sherds. For each feature, cataloged glass fragments were sorted into mutually exclusive categories by color, form, size, type of finish, and decoration to produce a conservative estimate of the minimum number of each type of vessel represented in that feature. The presence of a single fragment of olive bottle glass, for example, produces an MNV of one, as would 70 body sherds of olive bottle glass. However, two partial olive bottle finishes, one mineral and one champagne, would produce an MNV of two because it is not possible that they came from the same bottle.

Table 1: Minimum number of vessels for ARS Project 85-31

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/1	Circular bottle	amber	8 cm base		1
85-31/1	paneled medicine bottle	amber		Lash's Bitters	1
85-31/1	TCM vial, Greenwood 1	aqua			1
85-31/1	Gothic/cathedral condiment bottle	aqua			1
85-31/1	Ribbed condiment bottle	aqua			1
85-31/1	Rectangular medicine bottle	aqua	5 cm base	Pratt's Abolition Oil	1
85-31/1	Bottle with tapered collar finish	aqua	2 cm rim		1
85-31/1	Bottle with double ring finish	aqua	3 cm rim		1
85-31/1	Bottle	colorless			1
85-31/1	Bottle with champagne finish	olive	3 cm rim		2
85-31/1	Bottle with mineral finish	olive	3 cm rim		1
85-31/1	Bottle with one part finish	olive	3 cm rim		1
85-31/1	Paneled bottle	Olive		Udolpho Wolfe	1
85-31/2	TCM vial, Greenwood 1A	aqua			2

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/2	Bottle with champagne finish	olive	7 cm base, 2.5 cm rim		1
85-31/2	Circular bottle	amber			1
85-31/2	Spice bottle, fluted oblong	aqua	6cm by 3.5cm		1
85-31/2	Medicine bottle	aqua		Pratt's Abolition Oil	1
85-31/2	Medicine bottle	aqua		Hall's Sarsaparilla	1
85-31/2	Inkwell with molded rings	aqua	2.5 cm rim		1
85-31/2	Circular bottle, cup-molded	aqua			1
85-31/2	Ovoid bottle with flat sides, cup-molded	aqua	3cm base		1
85-31/2	Container	blue			1
85-31/2	Fluted, stemmed drinking glass	colorless			1
85-31/2	paneled tumbler	colorless	8 cm rim	paneled	1
85-31/2	Bottle/jar with rolled finish	colorless	6 cm rim		1
85-31/2	Bottle with double ring finish	colorless (solarized - selenium)	2.5 cm rim		1
85-31/2	Circular bottle	olive	7 cm base		1
85-31/2	Circular bottle	olive	7.5 cm base		4
85-31/2	Circular bottle	olive	8 cm base		2
85-31/2	Circular bottle	olive	9.5 cm base		1
85-31/2	Indefinite	white			1
85-31/3	Ovoid medicine bottle with bead finish	amber	3 cm rim	Warner's Safe Liver and Kidney Cure	1
85-31/3	Circular gin/schnapps bottle	amber	2.5 cm rim	JW Peters	1
85-31/3	Bottle with double ring finish	amber	2.5 cm rim		1
85-31/3	Canning jar with groove wax ring seal finish	aqua	5 cm rim		1
85-31/3	Circular bottle/jar	aqua	8.5 cm base		1
85-31/3	Square bottle with rounded corners, ribbed, embossed with diamond registration mark	aqua	6.5 cm base		1
85-31/3	Square bottle	aqua	7 cm base		1
85-31/3	Circular bottle, free-blown	aqua	7 cm base		2

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/3	Circular glue bottle, molded, rolled finish	aqua	6.5 cm finish	glue	1
85-31/3	Hollowware, wide mouth with straight finish	colorless			1
85-31/3	Ribbed tumbler	colorless	7 cm base	ribbed	1
85-31/3	paneled tumbler	colorless	6 cm base	paneled	1
85-31/3	Tumbler	colorless	7 cm base		1
85-31/3	Bottle	colorless (solarized - selenium)	4 cm rim		1
85-31/3	Octagonal inkwell	olive	6 cm base		1
85-31/3	Circular bottle, dip-molded	olive	6 cm base		1
85-31/3	Circular bottle	olive	6.5 cm base		1
85-31/3	Circular bottle	olive	7 cm base		5
85-31/3	Circular bottle	olive	7.5 cm base		7
85-31/3	Circular bottle	olive	8 cm base		12
85-31/3	Circular bottle	olive	8.5 cm base		1
85-31/3	Circular bottle	olive	9 cm base		5
85-31/3	Circular bottle	olive	9.5 cm base		3
85-31/3	Circular bottle	olive	10 cm base		3
85-31/3	Bottle with patent finish	white			1
85-31/6	Circular bottle	aqua	5 cm base		1
85-31/6	Bottle with prescription finish	colorless			1
85-31/6	Circular bottle with champagne finish	olive	3 cm rim		1
85-31/7	Bottle	amber			1
85-31/7	Bottle with oil finish	aqua	1.5 cm rim		1
85-31/7	Bottle with prescription finish	aqua	4 cm rim		1
85-31/7	Circular hollowware	colorless	5 cm rim		1
85-31/7	Hollowware with floral molding	colorless	8 cm base, 11 cm rim		1
85-31/7	Circular container with rolled finish	colorless	9 cm rim		1
85-31/7	Circular bottle	olive	7 cm base		1
85-31/7	Circular bottle	olive	8 cm base		1
85-31/7	Circular bottle	olive	9 cm base		1
85-31/9	Bottle or jar	aqua		Cooper Silica & Glass Co	1
85-31/9	Indefinite	cobalt blue			1
85-31/9	Indefinite	colorless			1
85-31/9	Circular bottle	olive	7 cm base		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/9	Tableware	white		basketweave pattern	1
85-31/10	Rectangular paneled medicine bottle	aqua	5 cm by 3 cm	Shiloh's Consumption Cure	1
85-31/10	TCM vial, Greenwood 1A?	colorless	1 cm base		1
85-31/10	Circular bottle	olive			1
85-31/12	Bottle	amber			1
85-31/12	Bottle	aqua			1
85-31/12	Container	colorless			1
85-31/12	Circular bottle	olive			1
85-31/12	Indefinite, probably tableware	colorless		pressed diamonds	1
85-31/13	Indefinite	white			1
85-31/13	Circular bottle	amber	8 cm base		1
85-31/13	Rectangular paneled bottle with prescription finish	aqua	3 cm by 1.5 cm		1
85-31/13	Rectangular paneled bottle with patent finish	aqua	2.5 cm by 4 cm		1
85-31/13	Circular condiment bottle with bead finish	aqua	4.5 cm base, 2.5 cm rim		1
85-31/13	paneled bottle with oil finish	aqua	1.5 cm rim		1
85-31/13	TCM vial, Greenwood 2C	aqua	2.5 cm by 2 cm		1
85-31/13	Circular bottle with blob finish	aqua	2.5 cm rim		1
85-31/13	Hexagonal inkwell	aqua	6.5 cm base		1
85-31/13	Octagonal inkwell	aqua			1
85-31/13	Ovoid medicine bottle/vial	colorless			1
85-31/13	Millville round medicine bottle with prescription finish	colorless	4 cm by 3.5 cm	Shaw & Callisch	1
85-31/13	Circular jar	colorless	5 cm base		1
85-31/13	Bottle with prescription finish	colorless	2 cm rim		1
85-31/13	Square bottle	colorless	2 cm base		1
85-31/13	Square bottle	colorless	3.5 cm		1
85-31/13	Square bottle	colorless	4 cm		1
85-31/13	Faceted lid	colorless	4.5 cm base		1
85-31/13	Knop from stemware	colorless			1
85-31/13	Circular bottle	olive	7 cm		1
85-31/13	Ovoid bottle	olive			1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/14	Octagonal umbrella inkwell	aqua	5.5 cm		1
85-31/14	Flatware with ribbing	aqua			1
85-31/14	Bottle with molded ribbing	aqua			1
85-31/14	Bottle with blob finish	aqua	2.5 cm		1
85-31/14	Pressed glass square salt	aqua	5 cm		1
85-31/14	Bottle with mineral finish	olive	2.5 cm rim		1
85-31/17	Bottle	olive			1
85-31/17	Circular bottle with mineral finish	amber	8 cm base, 2.5 cm rim		1
85-31/18	Indefinite	blue			1
85-31/18	Demijohn with oil finish	amber	15 cm base, 3.5 cm rim		1
85-31/18	Circular bottle, turn molded, mineral finish	amber	8 cm base, 2.5 cm rim		1
85-31/18	Bottle base	amber		stippled	1
85-31/18	Bottle with oil finish	aqua	3 cm rim		1
85-31/18	Bottle with double ring finish	aqua	3 cm rim		1
85-31/18	Wide mouth jar? Finish	aqua	6 cm rim		1
85-31/18	Circular bottle	colorless	5 cm base		1
85-31/18	Square or rectangular bottle	colorless	3 cm base		1
85-31/18	Philadelphia oval medicine bottle	colorless	6.5 cm by 4 cm	Shaw & Callisch	1
85-31/18	Stemmed drinking vessel	colorless		hexagonal facets	1
85-31/18	Container	colorless (solarized - manganese)			1
85-31/18	Wide mouth bottle or jar	green			1
85-31/18	Circular bottle	olive	7 cm base		4
85-31/18	Circular bottle	olive	7.5 cm base		1
85-31/18	Circular bottle	olive	8 cm base		3
85-31/18	Circular bottle	olive	9 cm base		1
85-31/18	Saucer	white	5 cm base	basketweave pattern	1
85-31/18	Bottle, dip-molded	yellow			1
85-31/19	Circular bottle	aqua	7 cm base		1
85-31/19	Square or rectangular bottle	aqua			1
85-31/19	paneled bottle	colorless			1
85-31/19	Circular wide-mouthed bottle with straight finish	green	5 cm rim		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/19	Circular bottle	olive	8 cm base		1
85-31/19	Tableware, possible lid	colorless		sunburst	1
85-31/19	Stemmed drinking glass	colorless			1
85-31/20	Circular bottle	amber			1
85-31/20	TCM vial, Greenwood 1A	aqua	1 cm by 1.5 cm		3
85-31/20	Rectangular cup-bottom mold with prescription finish	aqua	4 cm by 2.5 cm		1
85-31/20	Bottle with tapered collar finish	aqua	4 cm rim		1
85-31/20	Bottle with oil finish	aqua	2 cm rim		1
85-31/20	paneled tumbler	colorless		paneled	1
85-31/20	Bottle with straight finish	colorless			1
85-31/20	Bottle with mineral finish	olive	2.5 cm rim		1
85-31/20	Bottle with two-part finish	olive	3 cm rim		1
85-31/21	Circular bottle with champagne finish	olive	7 cm base, 2.5 cm rim		1
85-31/21	Dodecagonal bottle	aqua	3 cm base, 2 cm rim		1
85-31/21	Circular mineral water bottle with blob finish	aqua	6.5 cm base, 2.5 cm rim	Meyer and Rottman	1
85-31/21	Medicine vial	colorless	2 cm base, 2 cm rim		1
85-31/21	Rectangular bottle with double ring finish	aqua	5 cm by 3 cm	Lyon's Kathairon	1
85-31/22	Bottle	amber			1
85-31/22	Bottle with rolled finish	aqua	2 cm rim		1
85-31/22	Stemware	colorless	5.5 cm foot		1
85-31/22	Indefinite (possible jar liner)	green			1
85-31/22	Circular bottle	olive	8 cm base		1
85-31/22	Bottle with blob finish	colorless			1
85-31/23	Circular bottle	amber	8 cm base		1
85-31/23	Wide mouth pickle/chutney bottle with a rolled finish	aqua	6 cm rim		1
85-31/23	Paneled bottle	blue			1
85-31/23	Flask with double ring finish	colorless	3 cm rim		1
85-31/23	Circular bottle	colorless	10 cm base		1
85-31/23	Cup-molded bottle	colorless	2.5 cm base		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/23	Bladed knop from stemware	colorless			1
85-31/23	Case bottle	olive			1
85-31/23	Bottle with mineral finish	olive	2.5 cm rim		2
85-31/23	Bottle with champagne finish	olive	3 cm rim		1
85-31/23	Bottle with mineral finish	olive	3 cm rim		1
85-31/23	Bottle with mineral finish	olive	2 cm rim		1
85-31/24	Circular bottle	amber			1
85-31/24	Circular multi-piece mold bottle with oil finish	aqua	5 cm base, 2 cm rim	Murray and Lanman	1
85-31/24	Circular multi-piece mold bottle	aqua	5.5 cm base	Murray and Lanman	1
85-31/24	Circular mineral water bottle	aqua	6.5 cm base	Williams Brothers	1
85-31/24	Flat octagonal spice bottle	aqua	6 cm by 4 cm	Hunnewell and Co	1
85-31/24	Rectangular two-piece mold bottle	aqua	4.5 cm by 3.5 cm	Lyon's Kathairon	2
85-31/24	Gothic/cathedral condiment bottle	aqua			1
85-31/24	TCM vial, Greenwood 1	aqua			1
85-31/24	Circular bottle	aqua	3 cm base		1
85-31/24	Rectangular or flat octagonal bottle	blue	5.5 cm by 3 cm		1
85-31/24	Bottle with patent finish	colorless	2 cm rim		1
85-31/24	Bottle with prescription finish	colorless	1.5 cm rim		1
85-31/24	Bottle with prescription finish	colorless	2.5 cm rim		1
85-31/24	Egg cup	colorless	3.5 cm base, 5 cm rim	Pressed stars above circles	2
85-31/24	Stemware, knop fragment	colorless			1
85-31/24	Fluted tumbler	colorless	5.5 cm base	fluted	2
85-31/24	Fluted tumbler	colorless	5 cm base	fluted	1
85-31/24	Fluted tumbler	colorless	6 cm base	fluted	2
85-31/24	Ribbed tumbler	colorless		ribbed	1
85-31/24	Circular bottle	olive	7 cm base		2
85-31/24	Circular bottle	olive	8 cm base		3
85-31/24	Circular bottle with champagne finish	olive	9 cm base, 3 cm rim	Edouard Pernod seal	1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/24	Circular bottle	olive	9 cm base		2
85-31/24	Stemware, knop	yellow			1
85-31/24	Indefinite, ribbed	amber			1
85-31/25	Indefinite	aqua			1
85-31/25	Bottle	amber			1
85-31/25	Stopper	colorless	2 cm shank		1
85-31/25	Indefinite, beaded	colorless	16 cm rim		1
85-31/25	Circular	olive	7 cm base	GW&J or W&JG	1
85-31/25	Circular bottle	olive	4 cm base		1
85-31/26	Circular bottle	olive	7 cm base		1
85-31/26	Circular bottle	aqua	4 cm base		1
85-31/27	Circular bottle	amber	6 cm base		1
85-31/27	Circular bottle	amber	7 cm base		1
85-31/27	Case bottle	amber		Rosenbaum's Bitters	1
85-31/27	Dodecagonal bottle	aqua	4 cm base		2
85-31/27	Decagonal bottle	aqua	2.5 cm base		1
85-31/27	Rectangular bottle	aqua	2.5 cm base		1
85-31/27	Bottle with bead finish	aqua	2.5 cm rim		1
85-31/27	Bottle with patent finish	aqua	4 cm rim		1
85-31/27	Bottle with flared finish	aqua	4 cm rim		1
85-31/27	Bottle with oil finish	aqua	2 cm rim		1
85-31/27	Bottle with rolled finish	aqua	4 cm rim		1
85-31/27	Bottle with rolled finish	aqua	2 cm rim		1
85-31/27	Octagonal inkwell	aqua	7 cm base		1
85-31/27	Dodecagonal umbrella inkwell with rolled finish	aqua	4 cm base		1
85-31/27	Octagonal umbrella inkwell with rolled finish	aqua	6 cm base		1
85-31/27	Rectangular bottle	colorless	4.5 cm by 2 cm		1
85-31/27	Circular bottle	colorless	7 cm base		1
85-31/27	Container	colorless	5 cm base		1
85-31/27	Paneled tumbler	colorless	5 cm base	paneled	1
85-31/27	Hollowware base, possibly vase	colorless (solarized - manganese)	6 cm base		1
85-31/27	Circular bottle	green	7 cm base	Ernst Eduard Meyer bitters	1
85-31/27	Case bottle	olive		Udolpho Wolfe	1
85-31/27	Circular bottle	olive	6 cm base	1 marked AB&Co	2
85-31/27	Circular bottle	olive	6.5 cm base	5 marked GW&J or JG&W	7

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/27	Circular bottle	olive	7 cm base		2
85-31/27	Circular bottle	olive	7.5 cm base	1 marked GW&J or JG&W	5
85-31/27	Circular bottle	olive	8 cm base		2
85-31/27	Circular bottle	olive	8.5 cm base		2
85-31/27	Circular bottle	olive	9 cm base		2
85-31/27	Rectangular perfume bottle	white	3 cm by 3.5 cm	GW Laird	1
85-31/28	Rectangular perfume bottle with patent finish	colorless	3.5 cm by 2.5 cm	vertical edges molded with diamonds and circles	1
85-31/28	Bottle with prescription finish	colorless	2.5 cm rim		1
85-31/28	Octagonal alcohol bottle with blob finish	aqua	6.5 cm base	Champagne mead	1
85-31/28	Gothic/cathedral pickle/chutney bottle with bead finish	aqua	8 cm base		1
85-31/28	Bottle with patent finish	aqua	3 cm rim		1
85-31/29	Indefinite	white			1
85-31/29	Bottle with flat finish	aqua	2.5 cm rim		1
85-31/29	Bottle with flat finish	aqua	3 cm rim		1
85-31/29	Bottle with flanged finish	aqua			1
85-31/29	Circular tumbler	colorless			1
85-31/29	Circular bottle	olive	8 cm base		1
85-31/29	Circular bottle	olive	9 cm base		1
85-31/31	Square bottle	olive			1
85-31/31	Circular bottle	olive			1
85-31/33	Dip-molded circular bottle	amber	8 cm base		1
85-31/33	Oval strap sided flask	aqua			1
85-31/33	Circular mineral water bottle with blob finish	aqua	3 cm rim		1
85-31/33	Bottle with straight brandy finish	colorless	2 cm rim		1
85-31/33	Fluted drinking glass with ground stem	colorless			1
85-31/33	Paneled tumbler	colorless	6 cm rim	paneled	1
85-31/33	Case bottle	olive	7 cm by 7 cm	Voldner's Aromatic Schnapps	1
85-31/33	Circular bottle	olive	6 cm base		1
85-31/33	Circular bottle	olive	8 cm base		1
85-31/33	Circular bottle	teal	6 cm base, 2.5 cm rim	Joseph S Pederson	1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/34	Circular vial with flared finish	colorless	1 cm base, 1 cm rim		1
85-31/34	Heat affected fragments	aqua			1
85-31/35	Hexagonal bottle, machine-made	amber	3 cm wide		1
85-31/35	Circular bottle with blob finish	amber	7 cm base, 2.5 cm rim	Mallinckrodt Chemical Works	1
85-31/35	Circular bottle base	amber	7.5 cm base	San Jose Bottling Co.	1
85-31/35	Circular bottle base	amber	8 cm base		1
85-31/35	Circular mineral water bottle with blob finish	aqua	5.5 cm base, 2.5 cm rim	San Jose Soda Works	1
85-31/35	Circular post-molded bottle base	aqua	6.5 cm base, 2.5 cm rim	Adolphus Busch Glass Manufacturing Co.	1
85-31/35	Cup-molded bottle, ovoid with flat sides with bead finish	aqua	5cm by 3.5 cm, 3 cm rim	Whittemore	1
85-31/35	Circular, cup-molded bottle with oil finish	cobalt blue	4 cm base, 1.5 cm rim		1
85-31/35	Bottle with prescription finish	colorless	2 cm rim		1
85-31/35	Bottle with machine-made collared ring finish	colorless	2 cm rim		1
85-31/35	Bottle with prescription finish	colorless	2.5 cm rim		2
85-31/35	Bottle with mineral finish	colorless	2.5 cm rim		1
85-31/35	Ovoid bottle with flat sides, flared finish	colorless	3 cm rim		1
85-31/35	Circular bottle	olive			1
85-31/18B	Indefinite	blue			1
85-31/18B	Circular bottle with mineral finish	amber	7 cm base		1
85-31/18B	Circular tumbler	colorless	7 cm base		1
85-31/18B	Philadelphia oval medicine bottle	colorless		Shaw & Callisch	1
85-31/18B	Small bottle or vial with flared finish	colorless			1
85-31/18B	Circular bottle with champagne finish	olive	3 cm rim		2
85-31/18B	Container	yellow			1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
85-31/18B	Indefinite, probably tableware	colorless		sunburst	1
85-31/18B	TCM vial, Greenwood 1A	aqua	1.5 cm by 1 cm		1
85-31/18B	Paneled bottle	aqua			1
85-31/2B	Bottle	olive			1
85-31/BH	Circular bottle	aqua	6 cm base		1
85-31/BH	Bottle with a packer finish	Blue	3 cm finish		1
85-31/BH	Paneled tumbler	colorless	4.5 cm base	paneled	1
85-31/BH	Paneled tumbler	colorless	5 cm base	paneled	2
85-31/BH	Circular bottle, Rickett's mold	olive	7.5 cm base		1
85-31/BH	Circular bottle	olive	9cm base		1

Table 2: Minimum number of vessels for ARS Project 86-36.

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/1	Bottle	Amber			1
86-36/1	Complete TCM vial, Greenwood 1A	Aqua	1 cm by 1 cm base		1
86-36/1	TCM vial, Greenwood 2C	Aqua	2 cm by 1.5 cm base		1
86-36/1	Circular bottle	Aqua	7 cm base		1
86-36/1	Circular bottle	Aqua	6 cm base	American Bottle Co.	1
86-36/1	Circular bottle	Blue		Emerson Drug Co. Bromo- Seltzer	1
86-36/1	Circular bottle with patent finish	Colorless	2.5 cm base, 1.5 cm finish	Dr Kilmer's Swamp Root Kidney Cure	1
86-36/1	Machine made jar with external thread finish	Colorless	6 cm finish		1
86-36/1	Circular bottle	Colorless	7 cm base	Sanford	1
86-36/1	Ovoid flask	Colorless (solarized - selenium)		strap-sided flask?	1
86-36/1	Circular bottle	Olive	7 cm base		1
86-36/2	Container	Amber			1
86-36/2 AND 86- 36/5	Circular, ribbed salt jar	Aqua	10 cm base	JH Brough & Co	1
86-36/2	Paneled bottle	Aqua			1
86-36/2	Paneled tumbler	Colorless	5 cm base		1
86-36/2	Circular bottle	Colorless	5 cm base		1
86-36/2	Paneled bottle	Colorless		R Warner	1
86-36/2	Circular bottle	Olive	6.5 cm base		1
86-36/2	Circular bottle	Olive	7 cm base		1
86-36/2	Circular bottle	Olive	7.5 cm base		5
86-36/2	Circular bottle	Olive	8 cm base		2
86-36/2	Circular bottle	Olive	8.5 cm base		1
86-36/2	Circular bottle	Olive	9 cm base		2
86-36/3	Circular bottle	Aqua	7 cm base		1
86-36/3	Paneled tumbler	Colorless			1
86-36/3	Bottle with one part finish	Colorless	1.5 cm finish		1
86-36/3	Bottle with one part finish	Colorless	2 cm finish		1
86-36/3	Circular bottle	Olive	7 cm base		1
86-36/3	Circular bottle	Olive	7.5 cm base		3
86-36/3	Circular bottle	Olive	8 cm base		4
86-36/3	Circular bottle	Olive	9 cm base		1
86-36/3	Circular bottle	Olive	10 cm base		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/3	Paneled bottle	Olive			1
86-36/4	Bottle	Amber		FE Reed & Co	1
86-36/4	Circular soda-water bottle with blob finish	Aqua	7 cm base, 2 cm finish		1
86-36/4	Soda-water bottle with blob finish	Aqua	2.5 cm finish		1
86-36/4	Bottle with patent finish	Aqua	2.5 cm finish		1
86-36/4	Complete ovoid bottle	Colorless	4.5 cm by 3 cm base, 2.5 cm finish	Whitall Tatum	1
86-36/4	Paneled bottle	Colorless			1
86-36/4	Circular dish	Colorless	10 cm base, 18 cm rim	Beads, scalloped rim, hint of a sunburst on base	1
86-36/4	Circular goblet	Colorless	8 cm rim	Honeycomb	1
86-36/4	Paneled tumbler	Colorless	6 cm base		1
86-36/4	Circular bottle	Olive	8 cm base		1
86-36/5	Circular bottle with a pouring spout	Amber	7 cm base, 1 cm finish		1
86-36/5	Paneled and chamfered bottle	Amber		William McCully & Co	1
86-36/5	Paneled bottle	Amber		"ER R T"	1
86-36/5	Circular bottle	Amber	7.5 cm base		2
86-36/5	Circular bottle	Amber	7.5 cm base	Dominick O. Cunningham	1
86-36/5	Bottle with flared finish	Amber	3 cm finish		1
86-36/5	Paneled octagonal bottle	Aqua		Gass & Co	1
86-36/5 AND 86-36/17	Circular bottle	Aqua		San Francisco Gaslight Co	1
86-36/5	Canning jar	Aqua		Pacific Glass Works	1
86-36/5	Glue/mucilage bottle with straight finish	Aqua	6.5 cm base, 2 cm finish	Bixby	1
86-36/5	Circular inkwell with straight finish	Aqua	5.5 cm base, 2 cm finish		1
86-36/5	Octagonal inkwell with straight finish	Aqua	6.5 cm by 6.5 cm base		1
86-36/5	Complete paneled bottle	Aqua	5 cm by 3 cm base	CN Crittenden	1
86-36/5	Paneled bottle	Aqua	2.5 cm finish	Ayer's	1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/5	Chutney bottle with molded ring at neck and bead finish	Aqua	6 cm finish		1
86-36/5	Soda-water bottle with gravitating stopper	Aqua	6 cm base	Williams Bros, John Matthews	3
86-36/5	Round-bottomed soda water bottle	Aqua	5.5 cm diameter	Cantrell & Cochrane	1
86-36/5	Round-bottomed soda water bottle	Aqua	5 cm diameter		1
86-36/5	Spice bottle, post-bottom mold	Aqua			2
86-36/5	Spice bottle, 2 piece mold	Aqua			2
86-36/5	Rectangular vial	Aqua	2 cm by 1.5 cm base		1
86-36/5	Flat octagonal vial	Aqua	2.5 cm by 2 cm base		1
86-36/5	TCM vial, Greenwood 1A	Aqua			7
86-36/5	TCM vial, Greenwood 2C	Aqua			4
86-36/5	Circular bottle	Aqua	5.5 cm base		1
86-36/5	Circular bottle	Aqua	6 cm base		5
86-36/5	Circular bottle	Aqua	6.5 cm base		2
86-36/5	Circular bottle	Aqua	7 cm base		1
86-36/5	Circular bottle	Aqua	9 cm base		1
86-36/5	Circular bottle	Aqua	10 cm base		1
86-36/5	Flat octagonal bottle	Aqua	7.5 cm by 4 cm base	Joseph Burnett	1
86-36/5	Philadelphia oval bottle	Aqua			1
86-36/5	TCM vial, Greenwood 1A	Aqua			1
86-36/5	Rectangular bottle with a double ring finish	Aqua	2.5 cm finish		1
86-36/5	Bottle with double ring finish	Blue	2.5 cm finish		1
86-36/5	Bottle with blob finish	Blue	2.5 cm finish		1
86-36/5	Bowl with sunburst	Colorless	9 cm rim		1
86-36/5	Fluted drinking glass	Colorless	4.5 cm foot		1
86-36/5	Faceted stem	Colorless	8 cm foot		1
86-36/5	Paneled tumbler	Colorless	9 cm rim		1
86-36/5	Fluted tumbler	Colorless	8 cm rim		1
86-36/5	Square TCM vial	Colorless	2.5 cm by 2 cm base		1
86-36/5	TCM vial	Colorless			1
86-36/5	Complete paneled medicine bottle with prescription finish	Colorless	5 cm by 4 cm base, 2.5 cm finish	Keating & Babb	1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/5	Bottle with prescription finish	Colorless	2 cm finish		3
86-36/5	Bottle with patent finish	Colorless	2 cm finish		1
86-36/5	Bottle with prescription finish	Colorless	2.5 cm finish		3
86-36/5	Bottle with brandy finish	Colorless	2.5 cm finish		1
86-36/5	Bottle with slightly flared finish	Colorless	3 cm finish		2
86-36/5	Bottle with bead finish	Colorless	3.5 cm finish		2
86-36/5	Bottle with capseat finish	Colorless	6 cm finish		1
86-36/5	Bottle with external thread finish	Colorless	6 cm finish		1
86-36/5	Tableware	Colorless	11 cm rim	molded with grapes and leaves?	1
86-36/5	Circular bottle	Colorless (solarized - manganese)			1
86-36/5	Vial with prescription finish	Colorless (solarized - selenium)	1 cm finish		1
86-36/5	Bottle with champagne finish	Green	3 cm finish		1
86-36/5	Complete circular bottle with champagne finish	Olive	9 cm base, 3 cm finish		1
86-36/5	Complete circular bottle with collared ring finish	Olive	6 cm base, 2.5 cm finish		1
86-36/5	Complete circular bottle with grooved ring finish	Olive	6 cm base, 2 cm finish		1
86-36/5	Bottle with champagne finish	Olive	2.5 cm finish		3
86-36/5	Bottle with brandy finish	Olive	2.5 cm finish		1
86-36/5	Bottle with champagne finish	Olive	3 cm finish		1
86-36/5	Indefinite milk glass	White			1
86-36/6	TCM vial, Greenwood 1A	Aqua	1.5 cm by 1 cm base, 1 cm finish		1
86-36/6	Bottle	Aqua			1
86-36/6	Circular bottle	Olive	6 cm base		1
86-36/6	Circular bottle	Olive	7 cm base		1
86-36/7	Circular bottle	Amber	8 cm base		2
86-36/7	Paneled bottle	Amber			1
86-36/7	Jar with pinching around finish	Aqua	8 cm finish		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/7	Rectangular bottle with rounded corners and rolled finish	Aqua	2 cm by 1.5 cm base	Ayer's Pills	1
86-36/7	Paneled and chamfered bottle	Aqua	8 cm by ? Base		1
86-36/7	Rectangular bottle	Aqua	5 cm by 2 cm base	Singer Sewing Machine Oil	1
86-36/7	Spice bottle with bead finish	Aqua	3 cm finish		1
86-36/7	TCM vial, Greenwood 1A	Aqua			3
86-36/7	TCM vial, Greenwood 2C	Aqua			1
86-36/7	Circular bottle	Aqua	5.5 cm base		2
86-36/7	Circular bottle	Aqua	6 cm base		1
86-36/7	Circular bottle	Aqua	7 cm base		1
86-36/7	Circular bottle	Aqua	7 cm base		1
86-36/7	Circular bottle	Aqua	8 cm base		1
86-36/7	Square bottle	Aqua	5 cm by 5 cm		1
86-36/7	Bottle	Blue			1
86-36/7	Flask with double ring finish	Colorless	3 cm finish		1
86-36/7	Stemware foot	Colorless	9 cm foot		1
86-36/7	Stemware foot	Colorless	8 cm foot		1
86-36/7	Paneled tumbler	Colorless	5 cm base		2
86-36/7	Paneled tumbler	Colorless	5.5 cm base		1
86-36/7	Fluted tumbler	Colorless	7 cm rim		1
86-36/7	Circular bottle	Colorless	6 cm base		1
86-36/7	Complete circular bottle with patent finish	Colorless	5.5 cm base, 2.5 cm finish		1
86-36/7	Circular bottle	Colorless	7 cm base		1
86-36/7	Tableware, paneled	Colorless	6 cm base		1
86-36/7	Circular bottle	Colorless	4 cm base		1
86-36/7	Rectangular bottle	Colorless			1
86-36/7	Tableware, stippled with beading	Colorless			1
86-36/7	Circular bottle with prescription finish	Colorless (solarized - manganese)	3 cm finish		1
86-36/7	Square bottle with rounded corners	Colorless (solarized - manganese)	4 cm base		1
86-36/7	Indefinite	Colorless (solarized - selenium)			1
86-36/7	Complete circular bottle with mineral finish	Olive	7.5 cm base, 2 cm finish		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/7	Circular bottle with champagne finish	Olive	2 cm finish		1
86-36/7	Bottle with mineral finish	Olive	2.5 cm finish		3
86-36/7	Bottle with mineral finish	Olive	3 cm finish		4
86-36/7	Bottle with champagne finish	Olive	3 cm finish		2
86-36/7	Bottle with patent finish	Olive	3 cm finish		1
86-36/7	Bottle with mineral finish	Olive	4 cm finish		1
86-36/7	Jar	White	5 cm base		1
86-36/8	Bottle	Aqua			1
86-36/8	Bottle	Olive			1
86-36/9	Machine made battery jar with bands at rim	Aqua	15 cm base, 15 cm finish		1
86-36/9	Cup-bottom mold battery jar	Aqua	17 cm finish		1
86-36/9	Complete Benedictine bottle	Olive	8.5 cm base, 3 cm finish	Benedictine	1
86-36/9	Complete square bottle with oil finish	Amber	7 cm base, 2.5 cm finish	Pacific Glass Works	1
86-36/9	Complete square bottle with oil finish	Amber	6.5 cm base, 2.5 cm finish	Hostetter's Bitters	1
86-36/9	Bottle	Amber			1
86-36/9	Square bottle with boar's head on base	Aqua	7.5 cm base	Gordon's Dry Gin	6
86-36/9	Bottle	Aqua	6.5 cm base	San Jose Soda Works	1
86-36/9	Circular bottle	Aqua	6 cm base	Golden West Soda Works	1
86-36/9	Circular bottle	Aqua	6 cm base		1
86-36/9	Circular bottle with champagne finish	Aqua	7 cm base, 3 cm finish		1
86-36/9	Indefinite	Blue			1
86-36/9	Machine made canning jar	Colorless	9.5 cm base, 7.5 cm finish	Kerr Glass Mfg Co.	1
86-36/9	Picnic flask with external thread finish	Colorless	8.5 cm base, 2.5 cm finish		1
86-36/9	Flask with double ring finish	Colorless	2.5 cm finish		2
86-36/9	Goblet with cut facets on stem and bowl	Colorless	7.5 cm foot		1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/9	Complete machine made jar with external thread finish	Colorless	6 cm base, 5 cm finish		1
86-36/9	Circular olive bottle with capseat finish	Colorless	5 cm base, 4.5 cm finish		8
86-36/9	Packing tumbler	Colorless	5.5 cm base, 6.5 cm finish		1
86-36/9	Ribbed tumbler	Colorless	4 cm base		1
86-36/9	Ribbed tumbler	Colorless	5 cm base		1
86-36/9	Complete optic molded tumbler	Colorless	4.5 cm base, 6 cm rim		1
86-36/9	Optic molded tumbler	Colorless	3.5 cm base		2
86-36/9	Optic molded tumbler	Colorless	5 cm base		1
86-36/9	Paneled tumbler	Colorless	5 cm base		1
86-36/9	Circular tumbler	Colorless	3.5 cm base		1
86-36/9	Circular tumbler	Colorless	4 cm base		1
86-36/9	Circular tumbler	Colorless	4.5 cm base		3
86-36/9	Circular tumbler	Colorless	5 cm base		5
86-36/9	Circular tumbler	Colorless	5.5 cm base		1
86-36/9	Homeopathy vial	Colorless			3
86-36/9	Rectangular bottle	Colorless	3.5 cm by 2.5 cm		1
86-36/9	Circular bottle	Colorless	3.5 cm base		1
86-36/9	Ovoid bottle with flat sides with prescription finish	Colorless	5.5 cm by 3 cm base, 2.5 cm finish		1
86-36/9	Bottle with double ring finish	Colorless (solarized - manganese)	2 cm finish		1
86-36/9	Machine made circular bottle with 2-part finish	Colorless (solarized - selenium)	8 cm base, 2.5 cm finish		1
86-36/9	Indefinite	Colorless (solarized - selenium)			1
86-36/9	Square case gin bottle	Olive	8 cm base	A Van Hoboken	1
86-36/9	Case gin bottle	Olive			1
86-36/9	Extract jar	White	5 cm base	Armour & Co.	2
86-36/10	Circular bottle	Aqua	6 cm base		1
86-36/10	Paneled tumbler	Colorless	5.5 cm base		1
86-36/10	Bottle with one part finish	Colorless	2 cm finish		1
86-36/10	Bottle with champagne finish	Olive	3 cm finish		2
86-36/10	Bottle with champagne finish	Olive	2 cm finish		1
86-36/11	Indefinite, tableware base?	Colorless			1
86-36/11	Dodecagonal small bottle or vial	Colorless	2.5 cm base, 2 cm finish		15

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/12	Complete circular bottle with double ring finish	Olive	6.5 cm base, 2.5 cm finish		1
86-36/12	Bottle	Amber			1
86-36/12	Indefinite	Colorless			1
86-36/12	Indefinite	Blue			1
86-36/12	Indefinite	Olive			1
86-36/12	Indefinite	Aqua			1
86-36/13	Indefinite	Amber			1
86-36/13	TCM vial, Greenwood 1A	Aqua			1
86-36/13	Circular bottle with horizontal ribbing	Aqua			1
86-36/13	Paneled bottle	Aqua			1
86-36/13	Rectangular, paneled bottle	Aqua		Hall's Sarsaparilla	1
86-36/13	Complete footed dish with scalloped rim	Colorless	5 cm foot, 7 cm rim		1
86-36/13	Paneled tumbler	Colorless	5 cm base		1
86-36/13	Circular bottle with prescription finish	Colorless	6 cm finish		1
86-36/13	Circular bottle	Olive	7 cm base		1
86-36/14	Bottle	Amber			1
86-36/14	Square gothic pickle/chutney bottle	Aqua	7 cm by 7.5 cm base		1
86-36/14	Octagonal paneled bottle	Aqua	4 cm base		1
86-36/14	Paneled tumbler	Colorless	4 cm base		1
86-36/14	Bottle with champagne finish	Olive	3 cm finish		1
86-36/15	Indefinite	Aqua			1
86-36/15	Indefinite	Olive			1
86-36/15	Indefinite	Colorless			1
86-36/16	Circular bottle with grooved ring finish	Amber	8 cm base, 2.5 cm finish		1
86-36/16	Bottle	Amber			1
86-36/16	Circular bottle	Aqua	7.5 cm base		1
86-36/16	Paneled bottle with straight finish	Colorless	2 cm finish		1
86-36/16	Bottle with champagne finish	Olive	2 cm finish		1
86-36/16	Bottle with champagne finish	Olive	2.5 cm finish		6
86-36/16	Bottle with mineral finish	Olive	2.5 cm finish		1
86-36/16	Bottle with champagne finish	Olive	3 cm finish		8

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/16	Paneled bottle	Olive			1
86-36/17	Bottle	Amber	1 cm finish		1
86-36/17	Square bottle	Amber	7 cm base	Dr Wonser's Bitters	1
86-36/17	Circular bottle	Aqua	3 cm finish	Mrs Winslow's Soothing Syrup	1
86-36/17	Rectangular bottle	Aqua	5 cm by 3 cm base	Dr McBride's World Relief	1
86-36/17	Rectangular bottle	Aqua	5 cm by 2.5 cm base	Dr Perry's Last Chance Liniment	1
86-36/17	Paneled bottle	Aqua		Dr Kennedy's Medical Discovery	1
86-36/17	Paneled bottle	Aqua		Dr Kennedy's Rheumatic Liniment	1
86-36/17	Circular bottle	Aqua		Mexican Mustang Liniment	1
86-36/17	Circular bottle with gravitating stopper	Aqua		Williams Bros, John Matthews	1
86-36/17	Circular bottle	Aqua		Wood's Napa Soda	1
86-36/17	TCM vial, Greenwood 1A	Aqua	1.5 cm by 1 cm base, 1 cm finish		1
86-36/17	TCM vial, Greenwood 2C	Aqua	2.5 cm by 1.5 cm base, 1.5 cm finish		1
86-36/17	Worcestershire Sauce Bottle	Aqua		Lea & Perrins	1
86-36/17	Paneled bottle	Aqua		Essence of Jamaica Ginger	1
86-36/17	Mug	Colorless	7 cm rim		1
86-36/17	Paneled tumbler	Colorless	3.5 cm base		1
86-36/17	Tableware	Colorless		honeycomb	1
86-36/17	Square bottle with patent finish	Colorless	3.5 cm by 3.5 cm base, 2.5 cm finish		1
86-36/17	Square bottle	Colorless	3.5 by 2.5 cm base		1
86-36/17	Circular bottle	Colorless	5.5 cm base		1
86-36/17	Circular bottle	Colorless (solarized - manganese)	5.5 cm base		1
86-36/17	Bottle	Olive			1
86-36/17	Complete case bottle	Olive		Udolpho Wolfe	1
86-36/18	Indefinite	Amber			1
86-36/18	Complete square bottle with patent finish	Aqua			1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/18	Bottle with straight finish	Aqua			1
86-36/18	TCM vial, Greenwood 2C	Aqua			6
86-36/18	TCM vial, Greenwood 1A	Aqua			3
86-36/18	TCM vial, Greenwood 2	Colorless			1
86-36/18	Vial	Aqua			1
86-36/18	TCM vial	Colorless			1
86-36/18	Circular bottle	Colorless	3.5 cm base	Lubin	1
86-36/18	Circular bottle with prescription finish	Colorless	4.5 cm base, 2.5 cm finish		1
86-36/18	Paneled bottle	Colorless			1
86-36/18	Bottle	Green			1
86-36/18	Complete circular bottle with champagne finish	Olive	8.5 cm base, 2.5 cm finish		1
86-36/18	Circular bottle	Olive	7 cm base		1
86-36/18	Circular bottle	Olive	7.5 cm base		2
86-36/18	Circular bottle	Olive	9 cm base		1
86-36/19	Bottle with brandy finish	Amber	3 cm finish		1
86-36/19	TCM vial, Greenwood 1A	Aqua			1
86-36/19	Paneled bottle	Aqua		Lowell, Mass	1
86-36/19	Circular bottle	Aqua		Meyer & Rottman	1
86-36/19	Dish	Colorless	9 cm foot, 12 cm rim	Sunburst, scalloped rim and circles with dimples and cross-hatching	1
86-36/19	Fluted tumbler	Colorless	9 cm rim		1
86-36/19	Bottle with prescription finish	Colorless	4 cm finish		1
86-36/19	Bottle with rolled finish	Colorless	4 cm finish		1
86-36/19	Stemware	Colorless		Frosted	1
86-36/19	Tableware	Colorless		Square hobnails	1
86-36/19	Bottle with brandy finish	Olive	2.5 cm finish		1
86-36/20	Bottle with brandy finish	Amber	2.5 cm finish		1
86-36/20	Bottle with grooved ring finish	Amber	2.5 cm finish		1
86-36/20	Flat octagonal spice bottle	Aqua			1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/20	TCM vial, Greenwood 1A	Aqua			1
86-36/20	TCM vial, Greenwood 2C	Aqua			1
86-36/20	Circular bottle	Aqua		Winslow & Williams	1
86-36/20	Ovoid bottle	Aqua		Emil Frese	1
86-36/20	Circular bottle	Aqua		Murray & Lanman	1
86-36/20	Bottle	Blue			1
86-36/20	Stemware	Colorless		traces of red paint	1
86-36/20	Bottle with straight finish	Colorless	3 cm finish		1
86-36/20	Bottle with straight finish	Colorless	2.5 cm finish		1
86-36/20	Bottle with prescription finish	Colorless	2.5 cm finish		1
86-36/20	Circular demijohn	Olive			1
86-36/20	Bottle with mineral finish	Olive	2 cm finish		1
86-36/20	Bottle with mineral finish	Olive	2.5 cm finish		4
86-36/20	Bottle with brandy finish	Olive	2.5 cm finish		3
86-36/20	Bottle with champagne finish	Olive	2.5 cm finish		1
86-36/20	Bottle with champagne finish	Olive	3 cm finish		2
86-36/21	Circular bottle	Aqua		Empire Soda Works	1
86-36/21	Bottle with champagne finish	Aqua	3 cm finish		1
86-36/21	Bottle with rolled finish	Aqua	3 cm finish		1
86-36/21	Circular bottle	Olive	7.5 cm base		2
86-36/22	Circular bottle	Aqua		Williams Bros	1
86-36/22	Tableware	Colorless		diamonds	1
86-36/22	Bottle	Colorless			1
86-36/22	Bottle	Olive			1
86-36/22	Indefinite	White			1
86-36/23	Demijohn with tapered collar finish	Aqua	3.5 cm finish		1
86-36/23	Circular bottle with bead finish	Aqua	3.5 cm finish		1
86-36/23	Ovoid bottle	Aqua			1
86-36/23	Machine made circular bottle	Colorless	9 cm base	Empire Bottle & Supply Co	1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND/ DECORATION	MNV
86-36/23	Machine made circular bottle	Colorless	6 cm base	Delaval	1
86-36/23	Bottle	Green			1
86-36/23	Circular bottle	Olive	7.5 cm base		1
86-36/23	Circular bottle	Olive	8 cm base		1
86-36/24	Bottle	Amber			1
86-36/24	Flat octagonal spice bottle	Aqua			1
86-36/24	Indefinite	Colorless			1
86-36/24	Circular bottle	Olive	6.5 cm base		1
86-36/24	Circular bottle	Olive	7 cm base		1
86-36/24	Circular bottle	Olive	7.5 cm base		1
86-36/24	Circular bottle	Olive	8 cm base	Ellenville Glass Works	1
86-36/24	Circular bottle	Olive	8.5 cm base		1

Table 3: Minimum number of vessels for ARS Project 88-91.

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND / DECORATION	MNV
88-91/26	Square gothic/cathedral condiment bottle	aqua	4.5 cm by 4.5 cm	gothic/cathedral	1
88-91/26	TCM vial	aqua	1.5 cm by 1 cm		1
88-91/26	Circular vial	colorless	2 cm base, 1.5 cm rim		1
88-91/26	Case gin bottle	amber		Hostetter's Stomach Bitters	1
88-91/26	Circular barrel bitters bottle	amber	6.5 cm base	horizontal ribbing, CW Roback's Stomach Bitters	1
88-91/26	Circular cup-bottom mold	aqua	7 cm base, 3.5 cm rim	J Walker's Vinegar Bitters	1
88-91/26	Flat octagonal bottle with club sauce finish	aqua	8 cm by 3.5 cm	Wakelee's Extract of Roses and Rosemary	1
88-91/26	Circular mineral water bottle	aqua		Williams Bros	1
88-91/26	Square gothic/cathedral pickle/chutney bottle	aqua	9 cm base, 6 cm rim	gothic/cathedral	1
88-91/26	Rectangular cup-bottom mold	aqua	7 cm by 4 cm	Ayer's Compound Extract of Sarsaparilla	1
88-91/26	Spice bottle	aqua	3.5 cm finish		2
88-91/26	Spice bottle	aqua	3 cm finish		1
88-91/26	TCM vial	aqua	1 cm finish		4
88-91/26	TCM vial	aqua	0.5 cm finish		1
88-91/26	Pickle/chutney bottle with packer finish	aqua	4 cm finish		1
88-91/26	Bottle with packer finish	aqua	3 cm finish		1
88-91/26	Bottle with patent finish	aqua	3 cm finish		1
88-91/26	Bottle with bead finish	aqua	3 cm finish		1
88-91/26	Bottle	blue			1
88-91/26	Square with rounded corners bottle	colorless	4 cm by 4 cm	Dr Jayne's hair tonic	1

FEATURE	VESSEL FORM	COLOR	SIZE	MAKER/BRAND / DECORATION	MNV
88-91/26	Rectangular with rounded corners bottle	colorless	5 cm by 3 cm	Dr Pratt's Abolition Oil	1
88-91/26	Barrel mustard jar with horizontal ribbing	colorless			1
88-91/26	Tumbler with eight paneled arches	colorless	5 cm base		1
88-91/26	Tableware with pressed starburst and diamonds	colorless			1
88-91/26	Circular bottle	colorless	5 cm base		1
88-91/26	Square bottle with molded columns at corners	colorless	3 cm by 3 cm		1
88-91/26	Bottle with rolled finish	colorless - solarized (manganese)	3 cm rim		1
88-91/26	Indefinite	green			1
88-91/26	Circular bottle	olive	7.5 cm base		2
88-91/26	Circular bottle	olive	9 cm base		1
88-91/26	Square bottle	olive		Udolpho Wolfe	1
88-91/26	Indefinite	white			1
88-91/26	Bottle	yellow			1

Appendix D – Research on Products in Glass Containers

Dates for glass manufacturers in this report are generally based on Lockhart et al. (2013b) which provided an update on Toulouse (1971). Unfortunately, such a comprehensive study does not exist for the products contained within glass vessels. For products, many of the dates given in this report are based on standard glass reference volumes such as Burton (2023), Fike (1987), Zumwalt (1980), which drew primarily on earlier collector's volumes. The increasing availability of digitized sources such as directories and newspapers means that it is sometimes possible to improve upon those dates.

Initially, I had hoped to conduct additional research into all of the companies whose products were found at the Market Street Chinatown. Because of time constraints, I was not able to complete them all. I completed the research on all of the companies from ARS Project 85-31 and some of the companies from ARS Project 88-91. Additional product research for ARS Projects 86-36 and 88-91 prioritized those for which information was not available in published sources.

Table 3: List of products identified in the Market Street Chinatown assemblage, showing those for which additional research was conducted and included in this appendix.

COMPANY/ PRODUCT	START DATE	END DATE	LOCATION	IN APPENDIX
A. Von Hoboken	c. 1840s	c. 1920s	NETHERLANDS, Rotterdam	NO
Andral Kilmer	1870s	1920s	USA, NY, Binghamton	NO
Armour & Co.	1889	Late 1950s?	USA, IL, Chicago	YES
Ayer's	1845	1930s	USA, MA, Lowell	YES
Benedictine	1870s	1920s	FRANCE, NORMANDY	NO
Bixby	1860	1920s	USA, NY, New York	NO
C.N. Crittenton	1861	1948	USA, NY	NO

C.W. Roback	1855	c. 1907	USA, OH, Cincinnati	NO
Cantrell & Cochrane	1868	1910	IRELAND, Dublin or IRELAND, Belfast	NO
CB or BC	1888			NO
Chesebrough Mfg Co.	c. 1887	c. 1900	USA, NY or USA, NJ	NO
Clorox	1929	1930	USA, CA, Oakland	NO
Curtis & Perkins	1849	1906	USA, NY, New York	NO
David Jayne	1838	1923	USA, PA, Philadelphia	NO
Dr Kennedy	1848	1920	USA, MA, Roxbury	NO
Dr Perry's Last Chance Liniment	1872	1874	USA, CA, San Francisco	YES
Dr. Wonser's Bitters	1875	1889	USA, CA, San Francisco	NO
Edouard Pernod	1827	1910	SWITZERLAND, Couvet	NO
Emerson Drug Co.	c. 1897	c. 1925	USA, MD, Baltimore	NO
Emil Frese	c. 1860	c. 1874	USA, CA, San Francisco	NO
Ernst Eduard Meyer	1853	present	GERMANY, Stadthagen	NO
Frederick Brown	1848	1919	USA, PA, Philadelphia	YES
Gass & Co.	1870	1871	USA, CA, San Francisco	YES
Gordon's	1909	1914	UK, ENGLAND, London	NO
H.C. Hudson	c. 1861	c. 1892	USA, CA, San Francisco	NO
Hall's Sarsaparilla	1858	1909	USA, CA, San Francisco	YES
Henry Peck Wakelee	1864	1886	USA, CA, San Francisco	YES

J. Hostetter	1853	1958	USA, PA, Pittsburgh	NO
J.H. Brough & Co.	1870	197	UK, ENGLAND, Liverpool	NO
J.J. McBride's World Relief	c. 1875	c. 1876	USA, CA, San Francisco	NO
J.W. Hunnewell & Co.	1853	1917	USA, MA, Boston	YES
John Wood (Wood's Napa Soda)	1860	1872	USA, CA, Napa	YES
Joseph Burnett	1845	20th century	USA, MA, Boston	NO
Joseph S. Pederson	1868	1905	USA, NY, New York	YES
Joseph Walker Vinegar Bitters	Mid 1860s	1917	USA, CA or USA, NY	YES
J.W. Peters	1833	1860	GERMANY, Hamburg	NO
Keating & Babb	1873	1874	USA, CA, San Jose	YES
Laird	1859	1916	USA, NY, New York	YES
Lash's Bitters	1884	1905	USA, NY, New York or USA, IL, Chicago or USA, CA, San Francisco	NO
Lea & Perrins	c. 1849	1957	UK, ENGLAND, Worcestershire	NO
Lubin	1798		FRANCE, Paris	NO
Lyon's Kathairon	1851	c. 1922	USA, NY, New York	YES
Mallinckrodt Chemical Works	1867	c. 1920s	USA, MO, St. Louis	YES
Mexican Mustang Liniment	c. 1825	c. 1948	USA, MO, St. Louis or USA, NY, New York	NO
Meyer & Rottman	1853	1857	USA, NY, New York	YES
Murray & Lanman	1835	1871	USA, NY, New York	NO

Pratt's Abolition Oil	c. 1866	1920s	USA, CA, San Francisco	YES
Rosenbaum's Bitters	1858	1870	USA, CA, San Francisco	YES
San Francisco Gaslight Co.	1875	1905	USA, CA, San Francisco	YES
Sanford	1857		USA	NO
Scoville's Blood & Liver Syrup	1840	1916	USA, OH, Cincinnati	NO
Shaw & Callisch	1878	1884	USA, CA, San Jose	YES
Shiloh's Consumption Cure	c. 1873	c. 1918	USA, NY, LeRoy	YES
Singer Manufacturing Co.	1836		USA	NO
Udolpho Wolfe Company	1848	1935	NETHERLANDS, Schiedam	YES
Voldner's Aromatic Schnapps	1856	1864	USA, NY, New York	YES
Warner's Safe Kidney & Liver Cure	1878	1911	USA, NY, Rochester	YES
Whittemore	1873	1960s	USA, MA, Boston	YES
Winslow & Williams, Williams Bros., San Jose Soda Works	1851	1932	USA, CA, San Jose	YES

Armour & Co

The history of the Chicago-based meat-packing company Armour & Co. and its owner, Philip Danworth Armour (1832-1901), has been covered extensively elsewhere (e.g., Graff and Martino 2024; Wade 2003) so I am not going to detail it here. Unfortunately, less attention has been paid to the packaging of its products which would help understand

the dating of milk glass (opaque white glass) extract jars (see Figure 1). Armour's Extract of Beef began to be advertised in 1889 and was sold in California the following year (*The Indianapolis News* 1889; *Los Angeles Herald* 1890). Armour meat products are still produced today, and it is unclear when meat extract ceased to be sold; it was advertised through at least the late 1950s.

The MSCAP assemblage includes at least two extract jars, 86-36/9-17 and 86-36/9-18.



Figure 1: "Happy as a King", advertisement for Armour's Extract of Beef, ca. 1870-1900. Digital Commonwealth, <https://ark.digitalcommonwealth.org/ark:/50959/gq67k130c>

Ayer's Compound Extract of Sarsaparilla, Ayer's Cherry Pectoral, and Ayer's Pills

James Cook Ayer (1819-1878) built one of the most successful patent medicine businesses of the nineteenth century. By 1839, Ayer was working as a clerk for Jacob Robbin's drug store in Lowell, Massachusetts and studied medicine on the side (Ancestry.Com 2011; Coburn 1920, 18). In 1841 he purchased the store for his own business (Coburn 1920, 18). Although the biographer Coburn records him developing Ayer's Cherry Pectoral even before he purchased the store, advertisements don't start to appear until several years later. One, in the *Missouri Telegraph* in 1845, extols the benefits of Ayer's Cherry Pectoral for coughs in children, and also advertises Ayer's Pills for constipation (*Missouri Telegraph* 1845). Later products included Ayer's Extract of Sarsaparilla (1855), Ayer's Ague Cure (1857), and Ayer's Hair Vigor (1869) (Coburn 1920, 19).

James Cook Ayer died in 1878, but the business continued under his brother Frederick Ayer who had been a partner in the business since about 1855 and had already been running it for several years after James suffered a mental breakdown (Coburn 1920, 19; *United Opinion* 1877; *New York Tribune* 1878). Later, James' son Frederick Fanning Ayer would take over and the business continued well into the twentieth century. Ayer's Cathartic Pills were still being advertised in 1936, and Cherry Pectoral appears as late as 1937 (*Tonkawa News* 1936; *Richmond Item* 1937).

The MSCAP assemblage contains at least one bottle of Ayer's Cherry Pectoral (86-36/5-732), one bottle of Ayer's Pills (86-36/7-767), and one bottle of Ayer's Extract of Sarsaparilla (88-91/26-261). One additional specimen could be from Ayer's Cherry Pectoral or Ayer's Ague Cure (86-36/5-935).

Champagne Mead, Gass & Co

"In street cars, on fences, walls, rocks, sides of houses, in hotels, on sidewalks, and in fact everywhere you turn, the words "Champagne Mead" stares you in the face. And then again, everybody asks everybody else if they have had "some of that champagne mead," (*Daily Alta California* 1870a). In early 1870, a new product hit the market in

California: champagne mead. Although both champagne and mead are alcoholic beverages, champagne mead was a carbonated but unfermented, non-alcoholic soft drink. A recipe patented by the San Francisco soda-maker Asher S. Taylor calls for spiced cider to be carbonated and mixed with water and a honey or sugar syrup (Taylor 1870). Bill Lindsey (2009) notes that there was probably a relationship between Asher and Gass & Co.,—especially since Kenyon, Gass & Co. manufactured Calisaya Bitters which was another of Taylor's products (*Daily Alta California* 1870b)—but the nature of this connection remains unclear.

On the 5th of April 1870, Frank Kenyon filed for a trademark for 'Champagne Mead' on behalf of Kenyon, Gass & Co. (California Secretary of State's Office 1870a). Kenyon (1842-1879) was an unlikely beverage manufacturer. He was a wanderer who travelled across the western United States setting up newspapers in Oregon, Nevada, Utah, Idaho, California, Montana, and died en route to start a paper in Guatemala (*Yerington Times* 1879). For his foray into soda manufacturing, he partnered with William Washington Fowler (c. 1813-1889) and Fowler's stepson William Cortes Gass (1847-1897). They also do not appear to have experience in the industry: Fowler was a merchant and Gass was a machinist.

Nonetheless, the trio began advertising their champagne mead in April 1870 in exuberant terms: "A Delightful Temperance Drink! Champagne Mead! It has no competitor! There is No Drink Like It! When You Are Thirsty, Try It. It is Recommended by the Medical Fraternity as the only Temperance Drink... A New Sensation ... new, original, and utterly unlike any other—a drink, moreover, which while it exhilarates will not intoxicate," (*Alameda Encinal* 1870). They patented a label in May, but they were already facing competition as McGettigan's Sparkling Champagne Mead, Lippincott & Belding's Excelsior Mead, and Billings' Champagne Mead entered the market (*San Francisco Chronicle* 1870; *The Sacramento Bee* 1870; *Marysville Daily Appeal* 1870; *The Solano-Napa News Chronicle* 1870). It seemed like a runaway success: by June they could no longer keep up with demand and withdrew from the Sacramento area to focus on supplying San Francisco and by July they were offering to sell manufacturing rights (*Sacramento Daily Union* 1870b; *Scientific Press* 1870). But the very next month, the

partnership was dissolved with Gass buying out Fowler and Kenyon and moving to new premises at 114 Turk Street (*Daily Alta California* 1870b).

The Champagne Mead Works at 114 Turk Street is listed in the San Francisco directory in 1871, under the ownership of William C. Gass, John H. Bolland and W. H. Emerson, but Gass & Co.'s champagne mead essentially ceases to be advertised in October 1870 (Langley 1871, 270). It is replaced in the newspapers by Taylor's Champagne Mead (presumably the product patented by Asher Taylor above) until the end of 1871, by which point the fad for champagne mead seems to have ended.

The MSCAP assemblage contains parts of at least two bottles, a whole bottle (85-31/28-31) and an additional fragment (86-36/5-740).

Frederick Brown's Essence of Jamaica Ginger

Frederick Brown (1796-1864) opened a drug and chemical store on the corner of Chestnut and Fifth Streets in Philadelphia in 1822 (*The Philadelphia Inquirer* 1822). He offered everything needed for medical care from patent medicines such as Swaim's Panacea and Wistar's cough lozenges to medical ingredients such as chamomile, sulphate of quinine, and pearl tapioca, as well as carbonated beverages like Congress Spring Water. Eventually, Brown began producing his own medicines for sale.

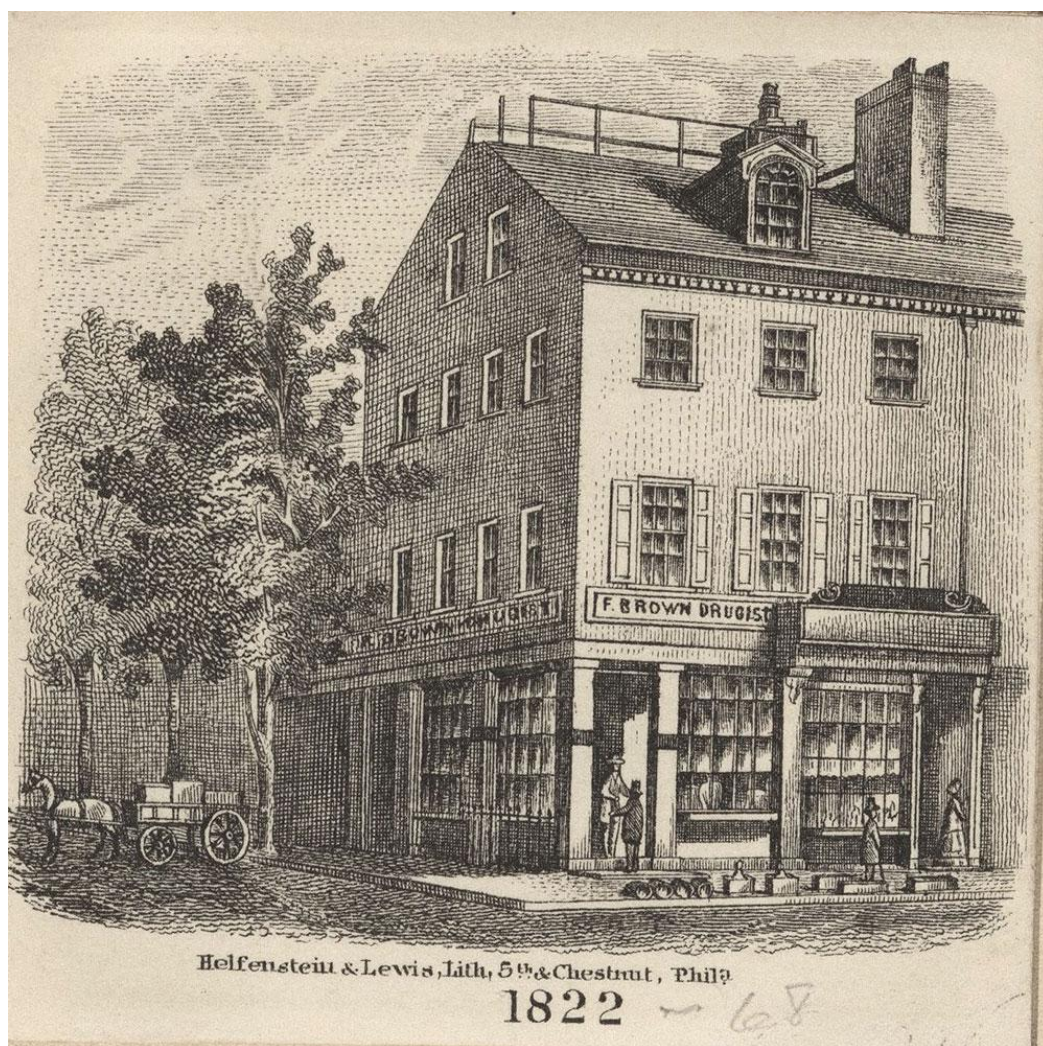


Figure 2: F. Brown druggist, storefront, 1822. Lithograph c. 1868, printed by Helfenstein & Lewis. Courtesy of the Free Library of Philadelphia, item no. pdcp00016.

In 1848, Brown began advertising Brown's Essence of Jamaica Ginger (*Philadelphia Inquirer* 1848) which was:

“particularly recommended as a tonic, to persons recovering from fever or other diseases, a few drops imparting to the stomach a glow and vigor, equal to a wine glass of brandy or other stimulant, without any of the debilitating effects, which are sure to follow the use of liquor of any kind: and it is therefore especially serviceable to children and females. To the aged, it will prove a great comfort; to the dyspeptic, and to those who are predisposed to gout or rheumatic affections, it gives great relief; and to the inebriate who

wishes to reform, but whose stomach is constantly craving the noxious liquor, it is invaluable—giving tone to the digestive organs, and strength to resist temptation; and is consequently a great agent in the cause of temperance,” (*The Sunbury Gazette and Northumberland County Republican* 1849).

Although advertised as a temperance drink, Brown’s Essence of Jamaica Ginger was made largely of alcohol (Dunlap 1909, 14). This did not impede its popularity, and by 1856, it had crossed the country and was being advertised in California (*Weekly Columbian* 1856).

Frederick Brown Sr. died in 1864 and was succeeded by his son, Frederick Brown Jr. (1837-1894) who had trained at the Philadelphia College of Pharmacy and focused on the patent medicine business rather than retail (Parsons 1894, 361). The building on Chestnut Street was greatly expanded around 1868 before the retail part of the business was sold off in 1890 and the Frederick Brown Company was incorporated (Crittenden and Helffrich 1892, 122; Parsons 1894, 361).

In 1894, Frederick Brown Jr. was succeeded by his son, Frederick Zerban Brown (1872-1938) who had to contend with the changing regulatory environment of the Federal Food and Drugs Act of 1906 and the Volstead Act of 1917 which introduced prohibition. With an alcohol content of approximately 75% (Dunlap 1909, 14), Brown’s Essence of Jamaica Ginger became untenable, and the company shuttered in 1919 (Strang 2014).

The MSCAP assemblage contains one whole bottle, 85-31/0-13.

Golden West Soda Works

Golden West Soda Works was started by Max Schmidt (c. 1867-) and William Henry Ebeling (c. 1866-1932) in 1901. Both men had been working in the soda industry for some time; Ebeling had worked for Azule National Seltzer Water Company and Schmidt had been working on his own at 217 Locust St, San Jose. The partnership began in 1900 with the company listed as Schmidt & Ebeling in the San Jose directory but, by the following year, they were using the name Golden West Soda Works and working out of 709 Locust

St (*San Jose City Directory* 1900, 758; *San Jose City Directory* 1901, 715). The company was at the same location in 1920 (*Polk-Husted Directory of San Jose City and Santa Clara County* 1920), and may have continued later, perhaps until Eberling's death in 1932 as he was still listed as a soda water maker in the 1930 census. There were also two companies also called Golden West Soda Works in San Francisco, one which dissolved in 1900 by the partners Pierre or Peter Soms (of the extensive French Soms family who had a number of soda businesses in California) and Francois Paillet, as well as Golden West Soda Works which ran out of 1619 O'Farrell St, San Francisco in the early twentieth century.

The MSACP assemblage contains part of one bottle, 86-36/9-137.

G.W Laird Perfume

George W. Laird (c. 1838-1916) emigrated from England to New York with his family when he was a child. His father, James Laird, was a hairdresser and wigmaker who produced hair pieces and products such as his 'Atrapilatory' or liquid hair dye. In 1862, Laird & Co. was advertised as "Perfumers & Importers of Human Hair, Manufacturers of Wigs, Toupees, Braids, *c. Also A Large Stock of Hair Jewelry, Constantly on Hand and Made to Order" based at 439 Broadway (Wilson 1862, 494). That year, for the first time, his son George was also listed in the directory as a perfumer working at the same premises. By the following year, the business is listed specifically under George's name (Wilson 1863, 489).

The Lairds' most famous product appears to have been Laird's Bloom of Youth or Liquid Pearl which was advertised in newspapers in 1859 (*New York Daily Herald* 1859). Whether it was developed by James or George, the product was strongly associated with George in advertising. In an 1868 directory, for example, George was listed as "sole proprietor of the genuine Laird's Bloom of Youth" (Ancestry.Com 2011). Bloom of Youth was packaged in white milk glass bottles of various sizes, like the one found at the Market Street Chinatown. It was sold into the first quarter of the twentieth century but had probably ceased production by the time of George Laird's death in 1916.

The MSCAP assemblage contains part of one bottle, 85-31/27-49.



Figure 3: Advertisement for Laird's Bloom of Youth, c. 1863. Library of Congress, 90706991, <https://lccn.loc.gov/90706991>.

Hall's Sarsaparilla

Hall's Sarsaparilla was another patent medicine local to San Francisco. It was produced first by R. Hall & Co., and later by J.R. Gates & Co., Shephardson & Gates, and finally the Gates Drug Co. (Fike 1987, 216–17). Richard Hall was an Englishman who, from the mid-1850s, worked as a clerk for the druggists firm C. & A.J. Langley. In 1858, San Francisco directories began to list R. Hall & Co. or Richard Hall & Co. as importers and sellers of

wholesale drugs on Clay St. In the same year, the earliest advertisements for Hall's Sarsaparilla began to appear in California newspapers. They claimed that it was a purer and safer form of sarsaparilla made from a compound syrup of sarsaparilla, yellow dock, and iodide of potash without spirits or mercury (*Hall's Sarsaparilla Yellow Dock and Iodide Potass* 1858). The company continued to be listed as affiliated with Langley and it was not until 1862 that the association was dropped by which point R. Hall & Co. were selling not just wholesale and retail drugs but also fishing tackle.

Around 1861, R. Hall & Co. hired James Russell Gates (1832-1907) as a clerk. By 1864 the company had moved to new premises on the corner of Sansome and Commercial and Gates was clearly becoming more important to the business. 1865 is the last year that R. Hall & Co. is listed in the directory, and Gates is given as the proprietor. It is unclear what happened to Richard Hall but eventually his wife ends up in the directory as a music teacher.

Meanwhile, Gates had a short-lived partnership with Hart Franklin Shepardson (c. 1832-1881) from about 1866 until 1869. Their building was damaged in the 1868 earthquake to the tune of \$600 or \$800 (*San Francisco Morning Call* 1868), and within a year afterwards Shepardson had moved to Alameda to work in life insurance and real estate. Gates, however, continued to run the business on the corner of Sansome and Commercial until 1905. It left Gates a wealthy man, with property worth about \$98,000 at the time of his death in 1907 (*Ancestry.Com* 2015a). The company, however, did not prosper after his retirement and closed in 1909 in significant debt (*The San Francisco Examiner* 1909). In addition to Hall's Sarsaparilla, these companies also sold Hall's Pulmonary Balsam (c. 1866-c. 1902), Crockett's Amygdaline (1868), and Dr Barnes Essence of Jamaica Ginger.

The MSCAP assemblage contains one whole bottle (86-36/13-31) and part of a second bottle (85-31/2-78).

Henry Peck Wakelee, Nelson's Extract of Roses and Rosemary

Nelson's Extract of Roses and Rosemary was a hair treatment produced by a George Nelson of Holborn, London. In America, the agent was California-based druggist Henry

Peck Wakelee (c. 1832-1884). Wakelee operated a series of drug stores in San Francisco, including one underneath the Occidental Hotel on Montgomery Street between Bush and Sutter (Figure).



Figure 4: "Occidental House, San Francisco, Cal.", 1865. Courtesy of New York Public Library Digital Collections.

He began advertising Nelson's Extract in 1864 (*Daily California Express* 1864). In 1870, the firm of Wakelee, Painter, and Calvert applied for a California trademark for the product (California Secretary of State's Office 1870b). Newspaper advertisements suggest that Nelson's Extract was sold almost exclusively in California. In 1880, Wakelee sold the company to Charles W. Randall and George C. Randall who continued to run it as Wakelee & Co. (*San Francisco Examiner* 1880). They advertised Nelson's Extract until 1886 when it ceased to appear in California newspapers (*San Francisco Chronicle* 1886).

The MSCAP assemblage contains part of one bottle, 88-91/26-260.

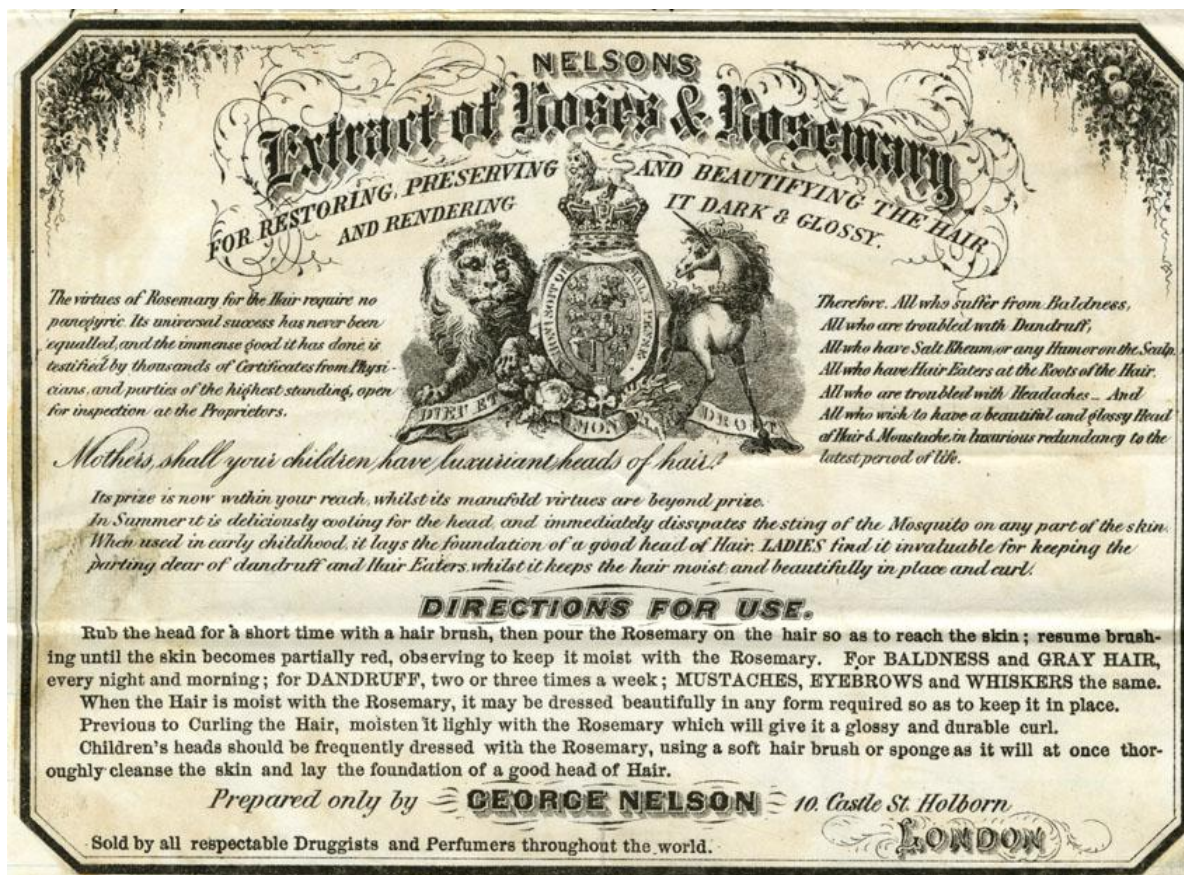


Figure 5: Advertisement for Nelson's Extract of Roses and Rosemary from Wakelee's 1870 California trademark application. Courtesy of California State Archives.

Johann Hoff's Malt Extract, Joseph S Pedersen

In 1868, Joseph Silvey Pedersen (c. 1839-1875) became the agent for Hoff's Malt Extract in the United States (Wilson 1868, 852). The product had been introduced to the United States two years earlier by Leopold Hoff, nephew to the eponymous Johann Hoff (*New York Daily Herald* 1866). According to later advertisements, the following year the druggists Tarrant & Co. became the sole agents and importers, but they seem to have continued using the Pedersen bottles which are monogrammed JSP. Pedersen may have been involved until his death in 1875, and, in his will, he encouraged his children to invest in Tarrant & Co. (Ancestry.Com 2015b). They continued to produce Hoff's Malt Extract until at least 1905 (*The Lincoln Herald* 1905).



Figure 6: Washington Chronicle, 20 August 1869, pg. 3. Note the use of the JSP monogram which is also found on the bottles.



Figure 7: Bottle of Hoff's Malt Extract produced by Tarrant & Co. Note the signature of Joseph S. Pedersen at the base while the monogram appears on the rear (not shown).

MG.M-10766 [dup12], National Museum of American History,

<https://n2t.net/ark:/65665/ng49ca746aa-5ab7-704b-e053-15f76fa0b4fa>.

Although Leopold Hoff had begun the American arm of the business with his uncle's approval, over time the two men became embroiled in a legal dispute over the rights to the name Hoff's Malt Extract and sales in America (Goldstein 2014). Eventually they were selling two competing products through two different American agents: Johann Hoff's Malt Extract sold by Eisner & Mendelson Co. and Leopold Hoff's Malt Extract sold by Tarrant & Co. Johann's bottles are typically olive green or amber with "JOHANN HOFF" or "JOHANN HOFF | BERLIN" embossed on the shoulder and an oil finish. Leopold's bottles are taller and narrower, often in a vibrant teal color, embossed "JSP" with a tall brandy finish (Figure). Those found with labels often include the "JSP" embossing, the addition of the word "Tarrant's," and specify production by Leopold Hoff at Hamburg, a combination in use from 1889 (Figure). This suggests that bottles embossed "JSP" were in use long after Joseph Pedersen had ceased to have any role with the company.

The MSCAP assemblage contains one whole bottle, 85-31/33-1.



Figure 8: Pamphlet for Hoff's Malt Extract showing the addition of the word "Tarrant's" from 1889. Pamphlet for sale on AbeBooks <https://www.abebooks.com/Hoffs-Malt-Extract-Tarrant-New-York/31423191907/bd>.

Joseph Walker Vinegar Bitters

Joseph (Chuck) Walker (1804-1881) was something of a nineteenth-century business celebrity, acclaimed as having risen from a charcoal vendor to a millionaire through the power of advertising. The story runs that, after a stint peddling charcoal in New York City, the Massachusetts born Walker set off for the gold rush California:

“A number of years ago, an individual coming overland with a company to California, served as cook for the company, and was styled “doctor” on that account. He settled in Calaveras County and labored as a miner, without much success. His attention then turned to the medicinal qualities of the herbs growing about him, and he came to San Francisco with the idea of making and vending a preparation to be called “Indian Vegetable Bitters,” and to contain no alcohol. He fell in with an enterprising druggist of this city, who saw money in the project and embarked in it. At the suggestion of the latter, the “Indian” was struck out, and as the new medicine got sour by fermentation, it was concluded to call it “Vinegar Bitters,” and to identify it with the movement against alcoholic drinks. The mountain herbs were thrust aside, and aloes, being a cheap bitter, was substituted. “Nine sick people out of ten,” said the druggist, “will be cured by purging.” Wherefore the aloes. So the cook became doctor, and the decoction became sour, and “Doctor Walker’s Vinegar Bitters” began their career in the newspapers,” (Gibbons 1874, 18–19).

Walker began small-scale production of his Vinegar Bitters in Stockton, California during the mid-1860s and his business and de facto partner, Eliza Jane Brenton (née Quick) sold bottles out of a basket locally (*The Evening Mail* 1888). By 1867, the bitters were being stocked by local druggists (*Williams & Moore* 1867) and soon afterwards Walker moved to San Francisco where he and his son, Joseph Walker Jr., produced Vinegar Bitters at 703 Hyde St which was sold by R.H. McDonald & Co. (Langley 1867, 485).

Richard Hays McDonald (c. 1820-1903) was an entrepreneur from Kentucky who began practicing medicine in Illinois and then California (*Los Angeles Times* 1888). It was in the

patent medicine business, however, that he made his fortune, ultimately enabling him to become president of Pacific Bank in San Francisco. R. H. McDonald & Co. are described in the 1864 directory as “importers and jobbers drugs, chemicals, and dental goods, SE corner Sansom and Pine,” (Langley 1864, 272).

Apparently, the business was good enough for Walker and McDonald to move the business to New York, but his personal fortunes began to decline. After a highly public divorce, a series of bad investments, and surviving being hit by a train, the elderly Joseph Walker died in 1881 (*The New York Times* 1875; *Boston Daily Globe* 1879; *Lewisburg Chronicle* 1881). His heirs sued the R.H. McDonald Drug Co. for profits that they claimed had not been paid to them. The case became another scandalous public affair as the court examined whether, and at what point, Joseph and Eliza had been legally married (*The Evening Mail* 1888).

McDonald’s company continued to produce Walker’s Vinegar Bitters into the first quarter of the twentieth century, even after McDonald’s death in 1903. Advertisements in newspapers appear until at least 1915 and, as late as 1917, Walker’s Vinegar Bitters was referred to as evidence in the debate over prohibition (*Wausau Daily Herald* 1917). The question of the product’s alcohol content was an ongoing subject of interest, as Walker’s Vinegar Bitters touted itself as a temperance remedy, free of alcohol. Instead, analysis showed that it contained alcohol and a selection of commonly used pharmaceutical ingredients (*Pharmazeutische Rundschau* 1886, 91).

The MSCAP assemblage contains one reconstructable bottle, 88-91/26-257.

J. W. Hunnewell & Co

The Hunnewell family are prominent in the history of Boston and left their mark on both business and the landscape of the city. However, the similarity between several of the men’s names and their intersecting commercial interests mean that there has been some confusion over the history of the various companies.

Jospeh Hunnewell (c. 1787-1875) of Charlestown, Boston wore several hats in his lifetime. He first appears in Boston newspapers in 1818 as the Deputy Sheriff (*The*

Middlesex Gazette and Advertiser 1818), and he then became a coroner and auctioneer in the early 1830s while also owning a boarding house on Gill St (*Columbian Centinel* 1835; Ancestry.Com 2011). In 1836, he moved into retail as a druggist and paint dealer working out of premises on Commercial Wharf (*Columbian Centinel* 1836). By 1838, he was describing himself as an “Importer and Dealer in Drugs, Paints, Dye-Woods, Window Glass, and Sperm Oil” (*Columbian Centinel* 1838). In this he may have benefited from his merchant brother James Hunnewell’s connections in the Pacific and particularly Hawaii.

Perhaps it was another family connection that inspired Joseph to become a druggist. His son, John L. Hunnewell (1813-1892), had been working for first Rogers & Co. and then Rogers, Devens, and Co., with both firms also dealing in pharmaceuticals and paints (Stimpson 1834, 302). By about 1838, John was probably working for his father’s business and is listed in the directories as a druggist.

In 1843, the business appears to have passed from Joseph to his sons, John and Joseph W., under the name John L. Hunnewell & Co (Stimpson 1843, 284). The 1853 directory shows that John left the company to become the treasurer of the North Wayne Scythe Co., and the druggist business was taken over by his two junior partners, Joseph Warren Hunnewell (1819-1873) and their brother-in-law Elias Crafts (1807-1896), becoming known as J. W. Hunnewell & Co. (*The Boston Directory* 1853, 151). Frederick M. Creamer joined the partnership around 1856 (*The Boston Directory* 1856, 178), and remained until about 1869, even after Crafts left to set up a competing business around 1863 (Adams, Sampson & Co 1863, 186). In 1869, Joseph’s business partner was George C. Goodhue who was joined in 1873, the year of Joseph’s death, by Robert Davis Archer (c. 1845-1920). Archer ran the business until around 1917 when J.W. Hunnewell & Co. ceases to appear in the records (Ancestry.Com 2011).

J.W. Hunnewell sold a remarkably broad range of products, from the patent medicines produced by John L. Hunnewell such as Hunnewell’s Universal Cough Remedy, Hunnewell’s Tolu Anodyne, and Hunnewell’s Eclectic Pills, to their specialty in paints, oils, and dye-stuffs (Gould 1914, 29–31). Hunnewell’s is also credited with popularizing the spice bottle form, with its flat-octagonal cross-section and often deeply concave panels (Zumwalt 1980, 253).

The MSCAP assemblage contains part of one bottle, 85-31/24-27. 86-36/24-15 might also be from a Hunnewell & Co. bottle but is not complete enough to be certain.

Keating & Babb

Keating & Babb's Eagle Drug Store was a short-lived pharmacy at 332 First St, San Jose. They began advertising in 1873, were listed in the 1874 directory and appear for the last time in newspapers the same year (*San Jose Mercury* 1873; *San Jose Mercury* 1874; Ancestry.Com 2011).

The MSCAP assemblage contains one whole bottle, 86-36/5-962.

Lyon's Kathairon

Emanuel Thomas Lyon (c. 1816-) was a German immigrant to New York who, in 1847, announced a partnership with Leoline Jenkins and their financial backer Charles H. Adams to produce chemical compounds (*The Evening Post* 1847). The company's first successful product were Magnetic Powder and Pills which were an insecticide and rodenticide respectively (*The Springfield Daily Republican* 1848). In 1851, Lyon introduced two new products: Lyon's Kathairon and Lyon's Extract of Jamaica Ginger. Lyon's Kathairon promised to "leave your Hair a healthy state, and effectually destroys dandruff, leaving the Hair under its application always CLEAN, SOFT AND GLOSSY, dressed in any style. It is invaluable for its beautifying and invigorating qualities, imparting to the Hair the fragrance of the most delightful flowers," (*Buffalo Daily Dispatch and Evening Post* 1851).

From 1855, Lyon's Kathairon was being offered by the company Heath, Wynkoop & Co. based at 63 Liberty St, New York. The partners Henry Heath and Robert Wynkoop produced perfumes and a range of medical products until the business failed in 1862 (*New York Times* 1862). By that point, it seems that the Lyon's products had already been sold on. Towards the end of 1858, Lyon announced his retirement from business and he and his wife left America in 1859 (*New York Tribune* 1858; *New York Tribune* 1859). The Lyon's brands were taken over by Demas Barnes and John D. Park who were selling patent medicines and wine from Broadway, New York.

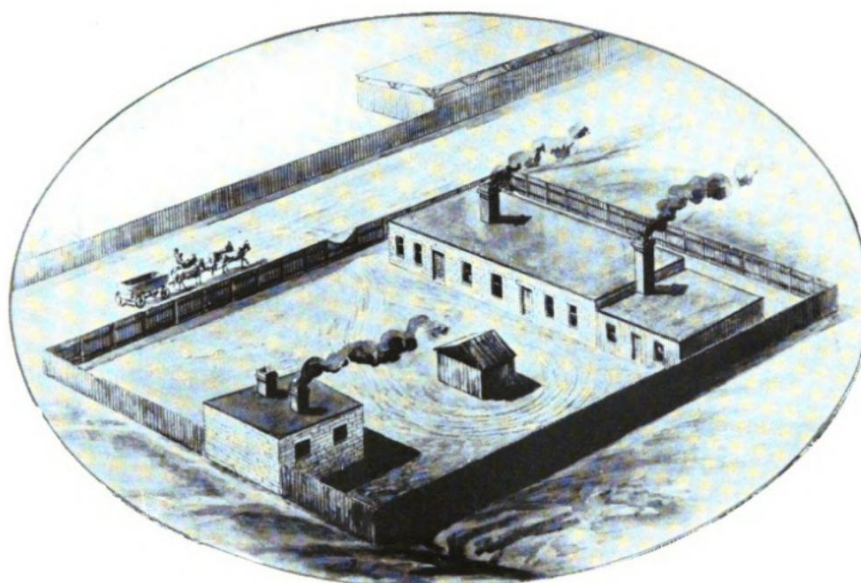
Barnes (1827-1888) was a drug wholesaler based in New York who later went on to be a politician. He seems to have run the business from New York while Park managed his own wholesale business in Cincinnati, Ohio. The two advertised their 'Family Medicine Depot' in 1855 but parted ways around 1861 (*New York Tribune* 1855). By 1862, Barnes was advertising Lyon's Kathairon under the business name D.S. Barnes & Co. (*Brooklyn Eagle* 1862).

Between 1869 and 1871, the Lyon's brands were transferred to Lyon Manufacturing Co at 53 Broadway, New York (*Kansas City Weekly* 1871). This probably coincides with Barnes' retirement from everyday involvement in the wholesale medicine business, as he moved into politics. That company was still manufacturing Lyon's Kathairon in 1910 (*The South Alabamian* 1910), and it continued to be advertised until at least 1922 (*The Daily Chronicle* 1922).

The MSCAP assemblage contains one complete bottle (85-31/21-2) and fragments from at least two other bottles (85-31/24-29 and 85-31/24-33). Additional fragments were unprovenienced (85-31/0-966).

Mallinckrodt Chemical Works

Mallinckrodt Chemical Works was started in 1867 by three of the Mallinckrodt brothers: Gustave (1840-1877), Edward (1845-1928), and Otto (1847-1876) as G. Mallinckrodt & Co. (for a more detailed company history, see Mercelis 2015). The brothers brought complementary skills to the enterprise. Edward and Otto had trained in chemical production in Germany, while Gustave had been working as a sales associate for the drug and chemical importers Richardson & Co. in St Louis (1867 *Directory for St. Louis City* 1867; *St Louis Post Dispatch* 1928). They began their enterprise on their father's farm in St Louis (Figure).



Plant of the Mallinckrodt Chemical Works in 1868—original buildings were the oblong stone factory and adjoining wooden shed in the rear.

Figure 9: Illustration of the original Mallinckrodt Chemical Works in 1868. Published in Chemical Pioneers by Williams Haynes, 1939, pg. 144.

After the deaths of his brothers, Edward ran the company alone and incorporated it as Mallinckrodt Chemical Works in 1882. The company produced a range of pharmaceutical and industrial chemicals including bromides, iodides, chloroform, and ether before moving into chemicals for photography and then refrigeration (Beeby et al. 2024). From the turn of the 20th century the company came to specialize in medical chemicals including painkillers such as morphine and codeine, contrast for imaging, and nuclear medicine (Mallinckrodt, n.d.). Edward Mallinckrodt Sr. was succeeded by his son, Edward Mallinckrodt Jr. (1878-1967). Beginning in 1982, the company was acquired by a succession of conglomerates before reemerging as Mallinckrodt Pharmaceuticals in 2013 (Mallinckrodt, n.d.).

The MSCAP assemblage contains fragments of one bottle, 85-31/35-18.

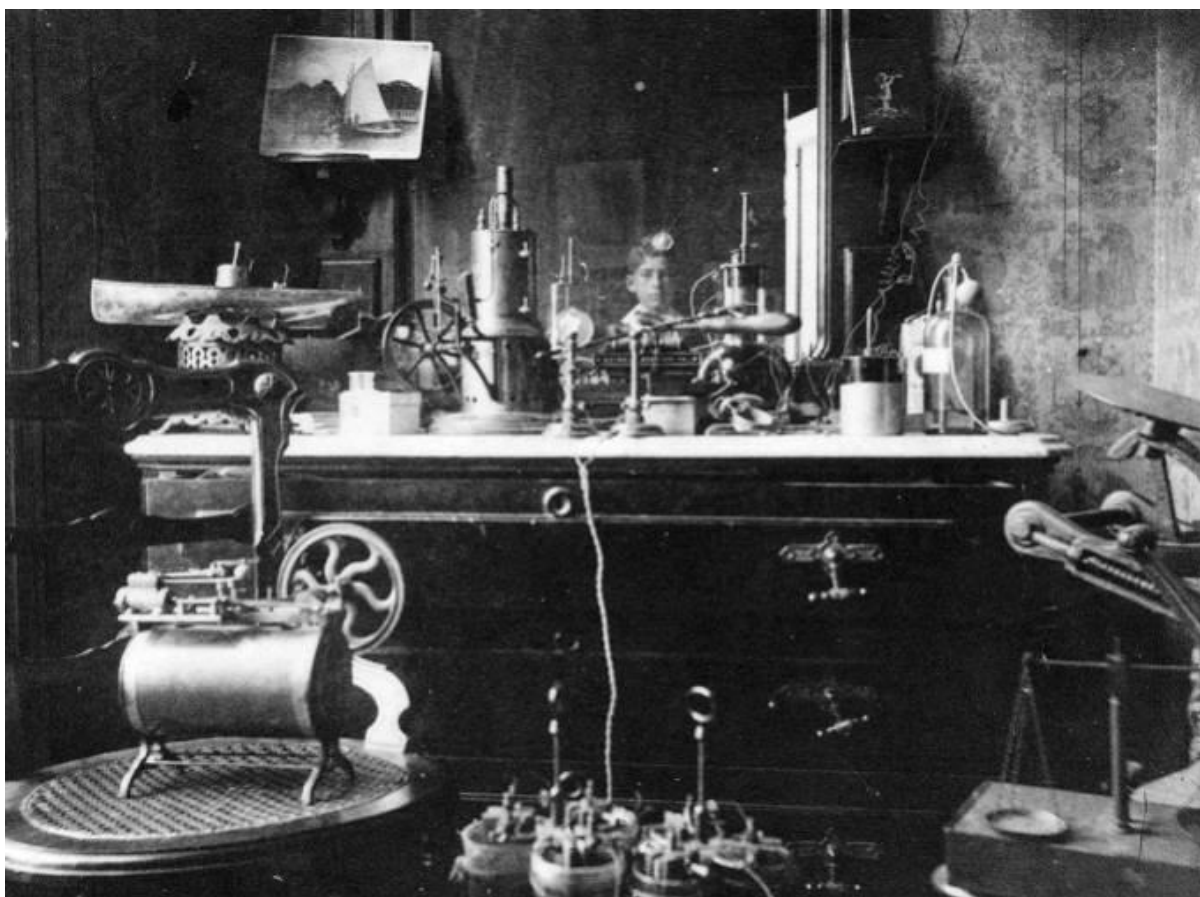


Figure 10: Early Mallinckrodt Laboratory, circa 1880. S0452, Edward J. Mallinckrodt, Jr. Papers, The State Historical Society of Missouri. Public domain.

Meyer & Rottman

Meyer & Rottman was a soda-manufacturing firm set up by two German immigrants: Herman Meyer (c. 1819-) and John F. Rottman (c. 1826-1888). Both had arrived in New York City by 1850 when they were both listed as grocers in the census, and they went into business together shortly afterwards. In the 1853 directory Meyer and Rottman was listed as a soda water business based at 566 Greenwich St (Meyer was listed as a manufacturer at this address in 1851), which was also the home address given for both men (Wilson 1853, 481, 596). By 1855 the premises had moved a few blocks east to 96 Thompson St, but in 1858 Meyer was listed alone before he too disappeared from the directories (Wilson 1855, 581, 715; 1858, 555).

Although Meyer & Rottman appears to have closed around 1857, after a hiatus both men returned to soda manufacturing. In around 1868 Herman Meyer went into business with his brother, John Frederick Meyer, who had previously made soda in Augusta, Georgia, and they worked together until about 1876 using bottles marked H & J.F. Meyer (Rakes 2020). John F. Rottman, meanwhile, eventually opened the brewery John F. Rottman & Sons.

The MSCAP assemblage contains one complete bottle (85-31/21-4) and part of a second bottle (86-36/19-43).

Pratt's Abolition Oil for Abolishing Pain and Dr Perry's Last Chance Liniment

Fike says that Pratt's Abolition Oil was produced by James N. Pratt of San Francisco. Pratt started his business in the 1850s before being taken over by his son Perry, who gave the agency to Alexander Boyle (1987, 195). However, while there are two druggists in San Francisco called James N. Pratt and Perry Pratt during this period, they do not appear to be related and cannot be father and son.

James Newcomb Pratt (c. 1833-1896) was a druggist from Massachusetts who moved to California in the 1850s. Listed in San Francisco directories between 1862 and 1891 as, variously, a clerk, druggist, apothecary, chemist, and physician, James N. Pratt worked for several San Francisco health institutions including W.H. Keith & Co. and the J.C. Young Medical Institute.

Meanwhile, Perry Pratt (1830-1927) was born in Vermont to Jonathan Howard Pratt and Statira Garland. After getting married in Illinois, he moved to San Francisco in 1865 where he began to be assessed for taxes as a peddler. In 1868, he is listed in the city directory as a druggist, and the following year he was associated with McBoyle & Co druggists. He was listed as a druggist or a producer of patent medicines in San Francisco consistently in the early 1870s and sporadically into the 1880s when he appears to have left the city and eventually settled in Colorado.

Perry was a colorful character who travelled widely across the west to promote the Pratt's line of products. In 1867 the Placer Herald reported on a visit he made to Colfax:

“The same evening Perry Pratt of San Francisco, held forth in the street in front of Starr’s Exchange. He goes about selling what he calls Abolition Oil, which he offers to the public. He commences by making a stump speech or singing a song, at the same time handing out a bottle of his oil to any one who wishes to purchase, and thus he goes on for an hour or two until he fills his pockets with dollars from the credulous crowd. He is a funny fellow; he may visit your place, so you will get to see one of his exhibitions, if so, do not miss it,” (*The Placer Herald* 1867).

His performances in Marysville also made the papers: “PERRY PRATT, of Wizard Oil, Abolition Oil, Web-Foot Pills and Last Chance fame, dropped in upon us yesterday, just from Colusa, where he has been twanging the catgut, giving his usual droll recitations, and impressing upon the minds of Colusians the necessity of using the “Bitter Witch,” a preparation which he is now introducing to the public” (*Marysville Daily Appeal* 1873). The following year the *Marysville Daily Appeal* advertised that “Perry Pratt, the musical compounder of the celebrated “Bitter Witch” and Web-foot Pills, is in the field again, as will be seen by his advertisement. Mr. Pratt will visit us in about ten days, and with his medicine and guitar commence a battle against Spring chills,” (*Marysville Daily Appeal* 1874a). And in 1876 they endorsed him saying that “Mr. Pratt has been one of our advertisers for a long time. He is no relative of the Mormon Pratts, but is usually known as Bitterwitch Pratt. Pratt’s a good boy,” (*Marysville Daily Appeal* 1876).

The newspapers also carried advertisements for Pratt’s products. The earliest I have found for Pratt’s Abolition Oil is from the Napa firm Pond & Stockman in 1866 (*Napa Daily Reporter* 1866). It was advertised widely until the end of the century, and perhaps as late as 1921 (Fike 1987, 195), as a safe, cheap, and essential part of every medicine cabinet. Claiming to be made of “active penetrating Vegetable ingredients” it was advertised as a cure for a wide range of ailments including rheumatism, neuralgia, headaches, toothaches, sore throats, diphtheria, colic, cramps, diarrhea, stiff joints, sprains, bruises, back pain, bowel complaints, gout, and paralysis (*Sacramento Daily Union* 1867).

The oil was produced and sold by A. McBoyle & Co. Druggists; a San Francisco company set up by Scottish immigrant Alexander McBoyle. The company also produced Pratt’s

New Life but does not seem to have been involved with Perry's Last Chance Liniment or Bitter Witch. Dr Perry's Last Chance began to be advertised in 1872 but was only short-lived, with advertisements ceasing in 1874 (*San Francisco Chronicle* 1872; *Marysville Daily Appeal* 1874b).

The MSCAP assemblage contains parts of three bottles of Pratt's Abolition Oil (85-31/1-47, 85-31/2-75 and 88-91/26-262), and one bottle of Perry's Last Chance Liniment (86-36/17-110).

Rosenbaum's Bitters, N.B. Jacobs

Napoleon Bonaparte Jacobs (c. 1828-1869), like so many others, came to California seeking gold but ended up a jack of all trades and entrepreneur as he moved around the state. In 1850, he was a miner at Mud Springs, El Dorado (Ancestry.Com 2009). In 1854, he was an agent for the *Daily California Statesman* but the following year the newspaper disavowed all association with him (*Daily California Statesman* 1854; *Daily California Statesman* 1855). In 1856, he was in Volcano, another small mining village, and serving as agent for Coover & Co.'s coach service to Sacramento (*Amador Ledger* 1856). Later that year, he opened the Spirit of the Age Saloon on K Street in Sacramento offering billiard tables and the best liquors (*The Sacramento Age* 1856). And then, in May 1858, the first advertisement appears for his newest venture; he is now the Pacific Coast agent for Dr Rosenbaum's Bitters (*The Sacramento Bee* 1858a).

Simultaneously, another San Francisco liquor dealer started advertising Dr Rosenbaum's Bitters. George Thacher or Thatcher had been selling wines and liquors from a store on the corner of K Street, the same street where Jacobs had his saloon but moved the business to San Francisco in mid-1858 (*The Sacramento Bee* 1858b). Shortly thereafter, Thatcher and Jacobs were advertising together from San Francisco (figure). N.B. Jacobs & Co., Jacobs' partnership with William T. Reynolds, are listed as the general agents while Geo. Thatcher & Co. (also partnered with William T. Reynolds) at 188 Front Street are the San Francisco agents (*The Sonoma County Journal* 1858). Their business connection continued into 1859, when they warned against counterfeits: the real bottles of Rosenbaum's Bitters had N.B. Jacob's & Co.'s signature on the label and the cork was

branded George Thatcher & Co. (*Columbia Weekly News* 1859). Later that year, however, Thatcher moved south to Los Angeles and the business was run entirely by N.B. Jacobs & Co. (*Los Angeles Star* 1859). They operated out of various premises in San Francisco until Jacobs' death in 1869 (Ancestry.Com 2014). There are a few more advertisements for Rosenbaum's Bitters in 1870, but the business seems to have petered out quite quickly.

ROSENBAUM'S
STOMACH BITTERS!
If you have
DYSPEPSIA,
If you have
FEVER & AGUE,
Are you annoyed by
INDIGESTION,
OR
CONSTIPATION,
Are you weak from the effects of
BILLIOUS DISEASES,
Then try a few bottles of
ROSENBAUM.
And be relieved.
N. B. JACOBS, & Co.,
General Agents,
GEO. THACHER & Co.,
128 Front Street, San Francisco Agents.
San Francisco, July 23, 1858. 4 -m

Figure 11: Advertisement for Rosenbaum's Stomach Bitters! which lists both Jacobs and Thatcher as agents. *Sonoma County Journal*, 30 July 1858.

But who was Dr Rosenbaum? The earliest newspaper advertisements claim that Dr. Rosenbaum's Stomach Bitters would cure "Dyspepsia, Indigestion, Constipation, Loss of Appetite, or any Bilious Complaints arising from a morbid action of the Stomach or Bowels," (*The Sacramento Bee* 1858a). It was apparently "Prepared by DR. ROSENBAUM, Manufacturer and Proprietor, South Front St, Philadelphia" and sold "generally throughout the United States, Canada, and South America" (*The Sacramento Bee* 1858a). There are, however, several reasons to be skeptical of these claims.

I have not been able to find any evidence for the existence of a Dr. Rosenbaum in Philadelphia at or around this time in either newspapers or city directories. If this product was made in Pennsylvania and spread to the West Coast, you would expect to see it advertised in East Coast newspapers but, instead, advertisements for Dr. Rosenbaum's Bitters are essentially limited to California, Nevada, Oregon, and Washington State.³ It is possible that Jacobs invented Dr. Rosenbaum to legitimize his product and its medical claims.

The MSCAP assemblage contains part of two bottles, 85-31/0-804 and 85-31/27-168.

San Francisco Gaslight Company

The San Francisco Gaslight Company was incorporated in March 1873 and produced gas for lighting, heating, and cooking in the city (*Sacramento Daily Union* 1870a). One of the by-products of the process was ammonia and the San Francisco Gaslight Co. began advertising ammonia for "Cleansing Woolen Fabrics, Cutlery, Carpets, or Crockery; for Scrubbing Floors, Washing Paint, Removing Grease Spots, Shampooing or Bathing" (*Mariposa Gazette* 1875). In 1893, the company moved into the iconic headquarters at 3636 Buchanan St (Figure) before merging with the Edison Light and Power Company in 1896 to become the San Francisco Gas and Electric Company which became part of Pacific Gas and Electric Company in 1905 (Coleman 1952, 71). With that merger, the

³ The one possible exception is an ad for Dr. Rosenbaum's Oriental Bitters in the New York Tribune on August 11 1855, but this does not appear to be related to the Western Rosenbaum's Bitters.

ammonia production was turned over to the Pacific Ammonia Bottling Company (*San Francisco Examiner* 1905).

The MSCAP assemblage contains part of one bottle, mending fragments of which were found in two contexts, consisting of 86-36/5-873 and 86-36/17-128.



Figure 12: The San Francisco Gaslight Co. building on Buchanan Street, with one of the storage tanks in the rear. “[Gas Light building, San Francisco](#)” by [RadioNn](#), [CC BY-NC 2.0](#)

San Jose Bottling Co

The San Jose Bottling Company was incorporated in 1895 by a group of former employees of the Fredericksburg Brewing Company who had begun bottling for the brewery several years earlier (*Sacramento Daily Union* 1895). Around 1901, the company was purchased by German immigrant Charles Maurer who had been operating another bottling company in San Jose (Guinn 1904, 802). Around 1905, the company began to be listed as being owned by C. Maurer and Son, and Charles’ son Carl Maurer ran the business into at least the 1920s (*San Jose City Directory* 1905, 747).

The MSCAP assemblage contains two bottles, one reconstructable (85-31/35-22) and one whole but unprovenienced (85-31/0-1105).

Shaw & Callisch

Louis Callisch (c. 1849-1927) was born in New Jersey to the German tailor Louis or Lewis Callisch (1813-1898) and Amelia Ann Fisk (c. 1819-1882) of Massachusetts. Although Lewis would later claim to have been a 49er on the Bonne Adele, it seems likely that the family moved to California in the early to mid-1850s, after the birth of Louis' brother Frank (1852-1945) in New Jersey. They were certainly living in Sacramento by 1857, where Lewis set up shop as a tailor. In the late 1860s, Louis began working as a clerk for the wholesale druggists R.H. McDonald & Co., the agent for J. Walker's Vinegar Bitters (*Sacramento City and County Directory* 1868, 91). By 1874, Louis had been promoted to apothecary at the Boston Drug Store (Ancestry.Com 2011 Sacramento City Directory 1874) and the following year he became a partner in the business J. Doherty & Co. with Jane Doherty (*Sacramento Daily Union* 1875). This, however, was short-lived and by June 1887 Callisch had moved to San Jose and opened a pharmacy at 393 First St under the name Shaw & Callisch, probably in partnership with CJ Shaw (*San Jose Herald* 1877). By the end of 1878, they had moved next door to 392 First St where they practiced until 1884 at which point both Callisch and Shaw began their own businesses with Shaw on the corner of First St and San Fernando, and Callisch operating at 93 First St (*San Jose Herald* 1878; *San Jose Herald* 1884; *San Jose Mercury* 1885b; *San Jose Herald* 1886).

The MSCAP assemblage contains one whole bottle (85-31/13-2), and fragments of at least two more (85-31/18-202 and 85-31/18-651; 85-31/18B-252).

Shiloh's Consumption Cure

Shiloh's Consumption Cure was one of several products offered under the aegis of Shiloh's Family Cures by Schuyler Charles Wells (1840-1897). After earlier entrepreneurial ventures as a druggist with his brother-in-law Dr Samuel Lucius Hooker and manufacturing in partnership with James P. Kneeland, Wells began producing drugs in the early 1870s under the name Shiloh's Family Remedies. While several newspaper

articles suggest that Wells was producing the Shiloh medicines as early as 1871 (*Poultney Journal* 1897; *Rochester Democrat and Chronicle* 1900; *Lansing Journal* 1907), the earliest advertisement I have found comes from 1874. In that year, in the nearby Hornellsville Weekly Tribune, Shiloh's Consumption Cure was advertised as a guaranteed cure for consumption (i.e., tuberculosis), coughs, hoarseness, bronchitis, asthma, whooping cough, and croup (*Hornellsville Weekly Tribune* 1874). It did not appear in California papers until several years later, by which point Wells was also offering Shiloh's Porous Plaster, Shiloh's Vitalizer, and Hackmetack perfume (*Stockton Independent* 1879). Schuyler Wells was joined in the business, now called S.C. Wells & Co. by his brother, George H. Wells (1848-1897), by at least 1878 (*Poultney Journal* 1878). George left S.C. Wells & Co. in 1892 (*The Buffalo Commercial* 1897) and began his own patent drug business in Le Roy, G.H. Wells & Co. which sold the Park's Sure Cure line (Fike 1987, 229).

After Schuyler Wells' death in 1897, the business continued to operate first under his brother-in-law Walter Hulburt Hooker (1852-1908) who was already operating Acker's Remedy Company and later his son Schuyler Charles (Carl) Wells (1881-1964). The company expanded, buying out a number of other medicine companies and products including the Carter Smart Weed Company, Dr Fenner's Golden Relief, Begy's Musterine, Dr Carter's Kidney & Bladder Tea, Celery King, Ramon's Red Oil, and Rough on Rats (*Democrat and Chronicle* 1914; *Democrat and Chronicle* 1967). After Carl's death in 1964, the company was finally sold to James Hadley.

Like other patent medicines described here, Shiloh's Consumption Cure had been affected by greater regulation in the 20th century. The product had come under fire from journalist Samuel Hopkins Adams (Adams 1906, 47–49) for containing chloroform and prussic acid (hydrogen cyanide) and, after 1906 when packaging had to reveal the presence of addictive ingredients, bottles of Shiloh's Consumption Cure had to admit the presence of both heroin and chloroform. The 1912 Sherley Amendment prohibited the use of unproven claims to cure certain diseases. This may have been part of the impetus for changing the name of the product which over time became known as either Shiloh's Cough Cure or Shiloh's Cure. However, the product was still listed in

newspapers as Shiloh's Consumption Cure until at least 1918 and Shiloh's Cure was advertised as a cure until at least 1925: "Cures consumption, coughs, croup, sore throat. Sold by all druggists on a guarantee," (*Frank & Barber Drugs* 1918; *The Sentinel Democrat* 1925).

The MSCAP assemblage contains one bottle, 85-31/10-28. 85-31/10-22 may also be one of Shiloh's remedies.

Udolpho Wolfe, Aromatic Schnapps

Udolpho Wolfe (c. 1811-1869) was "The Great Gin Man of the World" and the largest gin manufacturer in the world in the late nineteenth century (*The Charleston Daily Courier* 1860). Obituaries, newspaper articles like the one already mentioned, and Walter Barrett's (1885, 152-59) account of the merchants of New York City agree on the broad outlines of Wolfe's life. Born in Virginia, he moved to New York around 1826 to work for his brother Joel who was importing spirits from Europe. By 1832, Udolpho was advertising his own partnership, Udolpho Wolfe & Co. (*Longworth's New York Directory* 1832, 725).

At first both brothers imported spirits produced by other companies, but in 1839 Joel set up a distillery in the Netherlands. Although it apparently produced gin and brandy, newspaper records suggest that it was his brandy which became particularly well known. Canonically, in 1848 Udolpho followed his brother's lead and began producing Udolpho Wolfe's Aromatic Schiedam Schnapps at the same distillery in Schiedam. In 1850, Wolfe's gin was one of several products being imported (figure) but, shortly thereafter Wolfe seems to have turned his whole business to the production and wholesale importation of his own gin (*The Lancaster Examiner* 1851).

**WOLFE'S SWAN, HERCULES COLOGNE
AND SCHNAPPS GIN.**

The Subscriber
begs leave to inform
his customers and
the trade, that he
continues to receive
and forward orders
to his House in Rot-
terdam, for the di-
rect importation of
his Swan, Hercu-
les Cologne and
Schnapps GIN, in-
to any port in the
United States and
the Canadas. My
Gins are so well
known and appre-
ciated, that it has

induced others to imitate my brands, pretending to sell a
genuine article, though in reality a *mere imitation*, the
quality being very inferior to my Gin. By sending orders
direct to my House, persons will be sure of receiving a
genuine article.

UDOLPHO WOLFE,
22 Beaver street, New-York.

ALSO ON HAND, ENTITLED TO DEBENTURE,
500 blf., qr. and eighths Seignette BRANDY, pale and dark
200 do. do. do. Otard, Dupuy & Co., various vin-
tages
150 Jas. Hennessy & Co. London Dock and direct impor-
tation
300 pipes Wolfe's Swan GIN
100 do. Hercules Cologne Gin
100 do. Schnapps do.
WINES of various kinds.

tu8 F 5

Figure 13: Udolpho Wolfe advertisement, February 5, 1850, in *The Charleston Daily Courier*. Note that at this stage he refers to 'my gins' and to schnapps gin generically, without the later branding.

The gin was advertised as a medicine, "made from the best barley that can be selected in Europe, with the essence of an aromatic Italian berry, of acknowledged and extraordinary medicinal properties... In Gravel, Gout, and Rheumatism, in obstructions of the Bladder and Kidneys, and in General Debility, its effects are prompt, decided and invariably reliable; and it is not only a remedy for these maladies, but in all cases where they are produced by drinking bad water, which is almost universally the cause of them, it acts as a *sure preventative*," (*The Shasta Courier* 1859). Wolfe's business expanded

rapidly, with a bottling facility set up in Hamburg to ship to Australasia, South America, Asia and beyond.

Although Fike (Fike 1987, 187) stated that Udolpho moved to New Orleans in 1869 and left the business to his brother S.M. Wolfe, this is not correct. Udolpho died in September 1869 (*New York Tribune* 1869), and the business was taken over by his son Joel Burke Wolfe and his brother-in-law David Hutchinson Burke (1828-1898) (*The Argus* 1886). They operated as the Udolpho Wolfe Company from 1872 and vigorously defended the company's name and packaging against imitators. However, Joel Wolfe and David Burke fell out in 1882. In 1886, Joel B. Wolfe sued his uncle for selling Burke's Schiedam Schnapps in bottles identical to the Udolpho Wolfe bottles with a label referring to Udolpho Wolfe (*The Argus* 1886). After Joel's death in 1900, the Udolpho Wolfe Co. Ltd. continued to sell gin into the 1930s but declined in the face of legal troubles and prohibition (*Bayonne Evening News* 1929; *The Commercial Appeal* 1935).

The MSCAP assemblage contains one whole bottle (86-36/17-118), and fragments of three others (85-31/1-65, 85-31/17-37, 88-91/26-479).

Voldner's Aromatic Schnapps

The life of John George Voldner (c. 1818-1870) has been most thoroughly covered by Eric McGuire (2011), although it is possible to draw out some more detail. Oldner entered the liquor business in Virginia before moving to New York in the early 1850s. By 1854, Oldner had partnered with John Carr and Mitford Burnett in the firm Carr, Burnett & Oldner out of 109 Water Street (Wilson 1854, 127). The three ran the company until 1856 but then entered a period of rapid transition, just as they began to produce Voldner's Aromatic Schiedam Schnapps (*The Sunday Delta* 1856). By January 1857 Carr had left the firm and been replaced by a new partner, Charles VanZandt Jr. (*New York Daily Herald* 1857a). By September, VanZandt seems to have departed, and the enterprise was suspended (*The Independent* 1857), one of the many companies affected by the Panic of 1857. Burnett & Oldner resumed business, however, by December but "owing to the dullness of the times" were selling their stock in retail quantities at wholesale prices (*New York Daily*

Herald 1857b). By the following year, Burnett & Oldner had ceased to exist, and Voldner's Aromatic Schiedam Schnapps was sold to Antoine Emile Goulard.

Voldner's Aromatic Schiedam Schnapps was one of a number of competitors to Udolpho Wolfe's Aromatic Schiedam Schnapps, capitalizing off the similarity of the name and packaging. In 1858, Wolfe cautioned customers against buying imitations, including Voldner's, saying they were "nothing but American Whiskey, flavored with the Oil of Juniper, and reduced thirty per cent below proof" (*The Times-Picayune* 1858). Wolfe received an injunction preventing imitations but, in 1859, Goulard successfully challenged this in court by arguing it was not possible to trademark a place name and generic name (Schiedam Schnapps) (*The New York Times* 1859). Voldner's Schnapps continued to be advertised regularly through 1862 and there are occasional references as late as 1864 (*Daily Alta California* 1864).

As McGuire (2011) has shown, the West Coast was one of the major markets for Voldner's Schnapps and Oldner himself travelled to San Francisco in 1861-1862 to expand the sale of his later range of products including Oldner's Delta Eye Opener, Oldner's Ladies' Holland Gin Tonic, Old Miner's Protection Whiskey, Oldner's Aromatic Schiedam Schnapps, and Oldner's Superior Stoughton Bitters. When he returned to New York in 1862, Oldner offered the rights for many of these products for sale, including Oldner's Celebrated Aromatic Schiedam Schnapps which he noted was "the same as Voldner, of which there has been sold in this market, at least 20,000 cases within the past four years" (*Daily Alta California* 1862). As McGuire (2011, 40) has postulated, it is likely that Oldner simply added a 'V' to his name to make the product sound more authentically Dutch. After Oldner sold the rights to Voldner's to Goulard, Oldner produced the same product under his own name (Oldner's, not Voldner's).

The MSCAP assemblage contains one bottle, 85-31/33-107.

A Rare Chance.

THE SUBSCRIBER BEING COMPEL-
Led to return to New York, will sell the whole right and title for the Pacific Coast, of the following popular drinks, which are his own trade-marks and brands:

OLDNER'S CELEBRATED DELTA EYE-OPENER, of which there has been sold in this market, within two years, some 3,000 to 4,000 cases, and a constant demand for it. It is advertised throughout the State and Oregon.

OLDNER'S CELEBRATED AROMATIC SCHIEDAM SCHNAPPS, the same as Voldner, of which there has been sold in this market, at least 20,000 cases within the past four years.

OLDNER'S SUPERIOR STOUGHTON BITTERS sells as fast as it can be put up; together with all kinds of Bottled Liquors, the recipes for putting up all the above, and all information given concerning the same, and anything connected with the business: together with all fixtures for carrying on the business, office furniture, labels of various kinds, and in fact everything appertaining to the business. All of which will be sold at a great sacrifice. Any one who wishes to engage in the business will find this a good opportunity.

Apply to **JOHN G. OLDNER,**
 jy25-2p3* 406 Front street, up stairs.

Figure 14: A Rare Chance, newspaper advertisement by John Oldner selling the rights to his products before his return to New York. The Daily Alta California, San Francisco, 25 July 1862, pg. 2.

Warner's Safe Kidney & Liver Cure

Hulbert Harrington Warner (1842-1923) made his fortune selling safes before moving into the patent medicine business. The story goes that, burned out by his success in business he was "prostrated with very severe, and by [what] many physicians said to be incurable,

kidney disorder” but was miraculously cured by a simple patent medicine (Mercer 1885). Following his recovery, around 1878, he purchased the product Dr Craig’s Kidney Cure and began to market it, first under that name and then under the name Warner’s Safe Kidney & Liver Cure or sometimes just Warner’s Safe Cure (Atwater 1975, 160; *Daily Free Press* 1878). The medicine promised to cure “Bright’s Disease, Diabetes, and ALL Kidney, Liver, and Urinary Diseases” (*Swanton Courier* 1879). The advertisements also claimed that these diseases were the root cause of a variety of other conditions which could be improved by the medicine including consumption, impaired eyesight, opium addiction, rheumatism, bladder disorders, blood congestion, female complaints, blood disorders, stomach disorders, constipation, piles, and headaches (*Iowa County Democrat* 1886).

This was only one of the many Warner’s Safe Remedies, the name and logo of which played on the double meaning of safety and Warner’s former profession selling safes. Other products included: Warner’s Safe Pills (*Daily Free Press* 1878), Warner’s Safe Bitters (*Daily Free Press* 1878), Warner’s Safe Diabetes Cure (*Swanton Courier* 1879), Warner’s Safe Nervine (*Swanton Courier* 1879), Warner’s Safe Rheumatic Cure (*The Cincinnati Post* 1883), Warner’s Safe Throatine (*Concordia Blade-Empire* 1884), Warner’s Safe Asthma Cure (*Fort Scott Daily Monitor* 1887), as well as Warner’s Safe Yeast (*Democrat and Chronicle* 1886). He also introduced Tippecanoe Bitters (*Fall River Daily Evening News* 1883), and the Log Cabin line of remedies with Warner’s Log Cabin Sarsaparilla (*North Carolina Herald* 1886), Warner’s Log Cabin Cough and Consumption Remedy (*North Carolina Herald* 1886), Log Cabin Hair Tonic (*The Representative* 1886), Warner’s Log Cabin Rose Cream (*North Carolina Herald* 1886), Warner’s Log Cabin Hops and Buchu Remedy (*The Representative* 1886), Warner’s Log Cabin Scalpine (*The Greensboro Patriot* 1887), Warner’s Log Cabin Extract (*The Coshocton Tribune* 1887), Warner’s Log Cabin Liver Pills (*The Greensboro Patriot* 1887), and Warner’s Log Cabin Plasters (*The Greensboro Patriot* 1887).

Although based in Rochester, New York, the business expanded rapidly in the 1880s and opened offices in Toronto, London, Frankfurt, Melbourne, Dunedin, Bratislava (at the time, named Pressburg), and Kreuzlingen to become a global sensation. The firm went public in 1890 as H.H. Warner & Co., Ltd. with Warner serving as managing director (*The*

Riverina Recorder 1890). This, however, was the beginning of the end for Warner who became embroiled in financial speculation which collapsed in 1893 (Atwater 1975, 186–88) and in 1900 he declared bankruptcy to the tune of \$2,319,027 (*The Pittsburgh Post* 1900).

Warner's products continued to be produced in America and internationally even after Warner himself had left the business. By 1911, the name of Warner's Safe Kidney & Liver Cure had been changed to Warner's Safe Kidney & Liver Remedy (*The Kansas City Star* 1911). Eventually sold under the name Warner's Safe Cure, the product was still being sold in 1946 (*Port Fairy Gazette* 1946; Atwater 1975, 189).

The MSCAP assemblage contains fragments of one bottle across three catalog numbers: 85-31/3-33, 85-31/3-35, and 85-31/3-50.

Whittemore Bros & Co.

The Whittemore brothers, John Quincy Adams Whittemore (1848-1819) and Charles Whittemore (1850-1923), grew up in the shoe business. Their father, David Whittemore (1819-1892) made shoes and shoe polish before specializing in the machinery used for making shoes and boots. John worked for his father's business as a clerk before he and his younger brother Charles went into business for themselves. Their company, Whittemore Brothers & Co. was first listed in the 1873 directory when they were producing leather dressings from 176 Lincoln St, Boston along with their partner W. Augustus Paine (*The Boston Directory. [1873, December Supplement]* 1873, 105). This should not be confused with Whittemore Bros., also of Boston, which sold agricultural products.



Figure 15: Trade card for Whittemore Bros. & Co. Gilt Edge, EP001.01.023.07.07.02.003, Historic New England.

The company was very successful, introducing a wide range of products and expanding rapidly in the early 20th century. In 1902, they moved out of Boston to a five story brick factory at 20 Albany St, Cambridge (*The Boston Globe* 1902). In 1911, they decided to expand their factory to increase production by another 50% (*The Daily Item* 1911). The company was incorporated in 1915 and continued to produce shoe polishes at least into the mid-1960s after being purchased by the industrialist A.M. Sonnabend (*Boston Evening Transcript* 1915; *The Boston Globe* 1956).

Throughout the company's history, they made strong use of advertising and promoted different products to different demographics. Gilt edge, for example, was advertised to women (Figure) whereas products like 'Dandy' and 'Elite' were marketed towards men (Figure). The company also leaned heavily into its heritage, claiming to be "The Oldest and Largest Manufacturers of Shoe Polishes in the World." Some of the claims appear to hark back to a shoe polish produced by their father David; in 1947, for example, Whittemore shoe polish was recognized as having been introduced in 1840 (*The Boston Globe* 1947).

The MSCAP assemblage contains one bottle, 85-31/35-16.



Figure 16: Newspaper advertisement for Whittemore Bros. & Co. products, *Journal of the U.S. Cavalry Association*, 1 November 1911, pg. 222.

Winslow & Williams, William Bros. & San Jose Soda Works

The biographies of the Williams Brothers, David (c. 1821-1898) and Thomas (c. 1826-1899), are given by J.M. Guinn in *History of the State of California & Biographical Record of Coast Counties, California* (1904) which describes them as 49ers arriving on the *Panama* in search of gold (Guinn 1904, 1042–43; 1076–79). I have been able to verify some, but not all, of the commercial activities attributed to the two pioneers of the San Jose area although in most cases the dates that can be confirmed are several years after those given by Guinn.

Certainly, Thomas Williams was living in Santa Clara by 1852, when he was listed on the state census as a merchant alongside Daniel Taber Winslow (c. 1822-1871), a business partner of the brothers (Ancestry.Com 2010). The company Winslow & Williams begins appearing in Californian newspapers the following year, and shortly thereafter they appear to be running a retreat at the mineral springs in New Almaden available for day trips or longer stays (*Sierra Citizen* 1854). In the 1850s and 1860s, the three men diversified their business interests, opening the American Bakery on St John St in San Jose which also became a trading point for products from their ranch in Calaveras, including wine from the vineyard (*San Jose Daily Mercury* 1861; *San Jose Weekly Mercury* 1864).

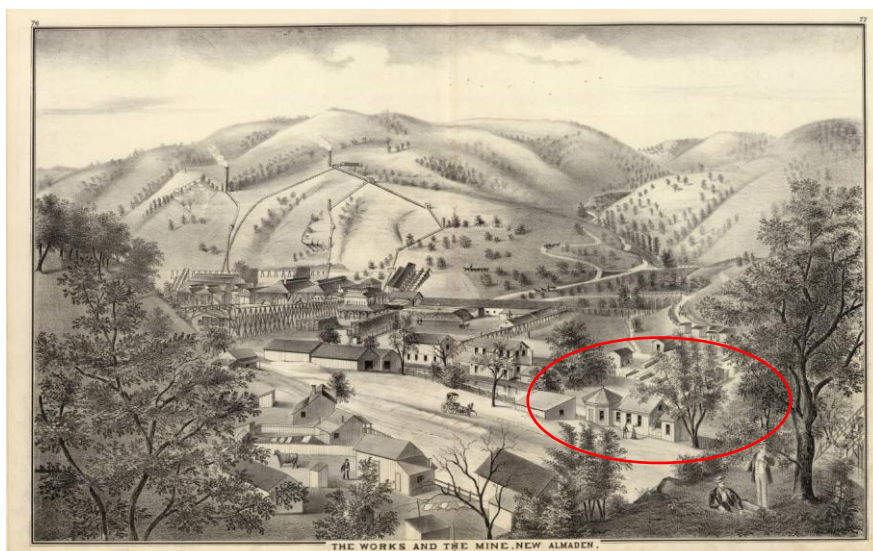


Figure 17: New Almaden Mine, with the mineral spring circled in red. From “The works and the mine, New Almaden, 1876”, by C.L. Smith. Courtesy of the David Rumsey Historical Map Collection.

Guinn (1904, 1076–79) suggests that Winslow & Williams began bottling mineral waters from New Almaden in 1851 whereas *The History of Santa Clara County* (Munro-Fraser 1881, 522) says that bottling began at New Almaden in 1854 before moving to San Jose in 1857. Independent evidence of these early dates is hard to come by, but the company trademarked their W&W brand for bottles in 1862 (Figure) and won the prize for best soda water at The Santa Clara Valley Agricultural Society’s Fair in 1863 (*San Jose Weekly Mercury* 1863). Daniel Winslow died in 1871 and shortly afterwards the firm became known as Williams Bros. while the soda manufacturing part of the business eventually became known as San Jose Soda Works (*San Jose Mercury* 1885a; *San Jose Herald* 1885).

In 1885, Mary Williams (née Brady) sued to divorce her husband Thomas Williams in a highly public trial which was covered in great detail by the *San Jose Herald* and the *San Jose Mercury*. She asserted that Thomas had signed over his property to his brother David in order to avoid paying support for her and her children after she threw him out of the house for physical, verbal, and financial abuse. The property included “the San Jose Soda Works, the Riverside quartz mine in Tuolumne County, a large amount of cattle and other property in Calaveras valley, and a large amount of real estate in this city and county” (*San Jose Herald* 1885). At this time, David testified that the lot on St John Street, where the soda factory was located, was purchased in 1852 or 1853, which may support an

early 1850s date for the commencement of the soda business (*San Jose Mercury* 1885a). In October 1885, the court found in favor of Mary Williams and granted her custody of her children, exclusive use of the family home, compensation, and ongoing maintenance costs.

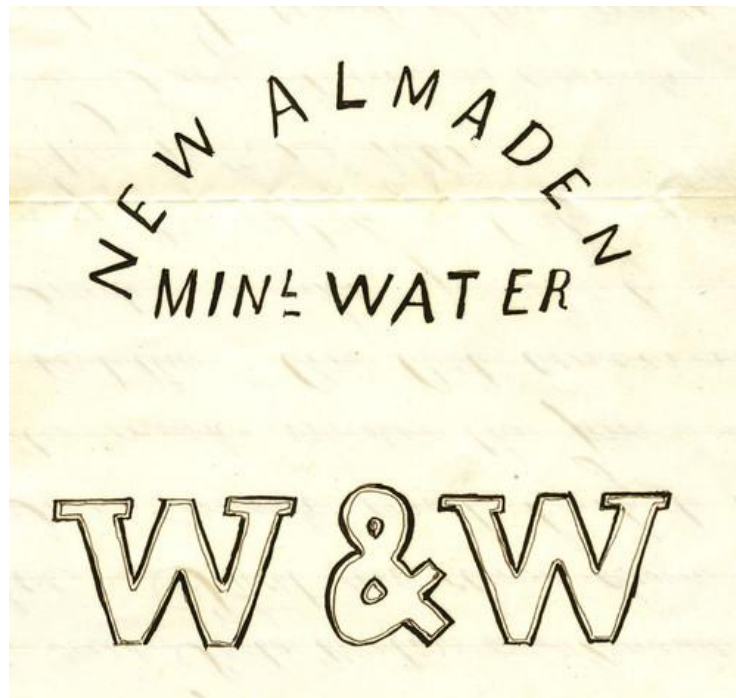


Figure 18: 1862 registration of the W&W trademark. Courtesy of the California State Archives, Old Series Trademark No. 0005.

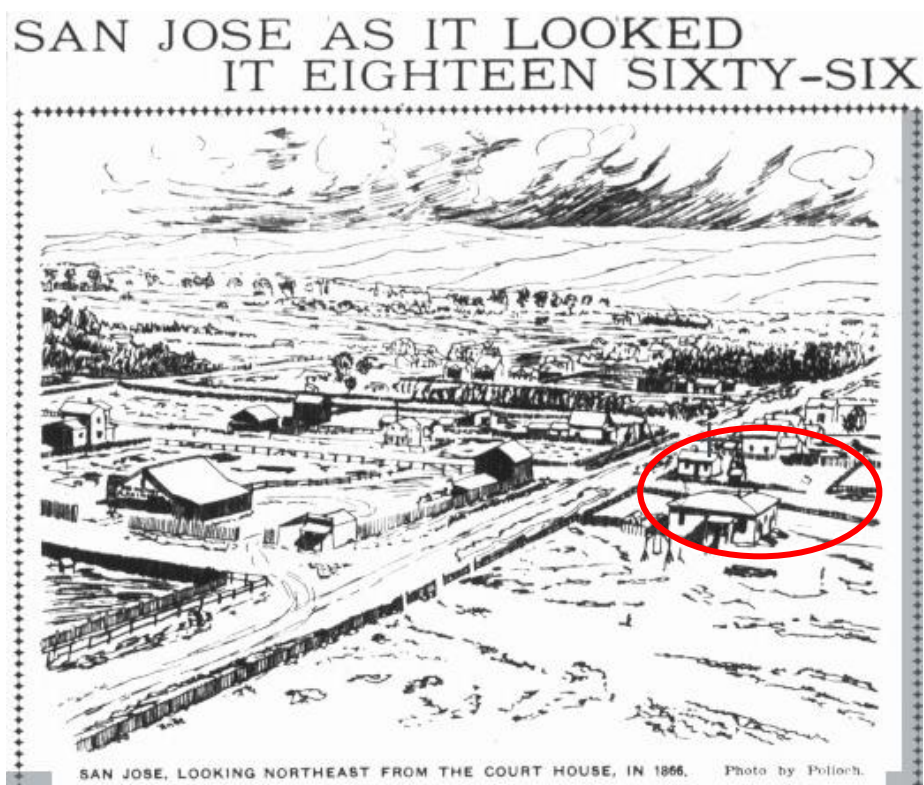


Figure 19: Image reproduced from an 1866 photograph of San Jose by Pollock. The accompanying text describes “Farther along on the same side of St. James are seen the houses of Dave and Tom Williams, with their soda water works in the rear.” While the houses were located on St James Street, the soda manufacturing appears to have been on the southern side of the block, bordering on St John Street which is further to the right and not shown in this picture. San Jose Mercury News, 30 June 1904.

David Williams died in 1898 and Thomas in 1899. According to Guinn, Thomas’ ex-wife Mary Williams ran the business after their deaths, “she personally superintended the bottling of soda waters, ginger ale and cider, and also acted as agent for Pacific Congress water and Seltzer mineral waters in siphons” (Guinn 1904, 1076). By 1906, Williams Bros. was being run by Eugene Ransom Vallandigham (1868-1955) who had previously run the Sheyenne Bottling Works in North Dakota (*San Jose City Directory* 1906, 462). The business seems to have been short-lived as he is listed as a roofing contractor in the 1910 census.

Meanwhile, the San Jose Soda Works had been running under the direction of John Balzhauser for several years. Balzhauser (c. 1851-1938) was an immigrant from Germany who arrived in San Jose around 1880. He worked as a brickmaker before opening a soda

manufacturing business at his residence on Marliere Street in 1891 or 1892, then moved to Prevost St by 1895 (*San Jose City Directory* 1892, 1019; *San Jose City Directory* 1895, 685; Mulock 1928). As early as 1892, Balzhauser was listed as proprietor of San Jose Soda Works at the location on the corner of Marliere and St Carlos St (*San Jose City Directory* 1892, 81). Around 1905, the San Jose Soda Works was taken over by August Henry, and Balzhauser began running a saloon on Park Avenue where his son Charles (or Carl) worked as a bartender (Ancestry.Com 2006).

On April 1, 1905, the Concord Transcript proudly announced that “August Henry, who has been in business in this place [Alamo] for a number of years, has gone into the soda water business in San Jose. His many friends wish him success in his new venture,” (*Concord Transcript* 1905). August J. Henry (1872-1922) was born in Alamo, Contra Costa County to a French father and Irish mother. In 1905, he moved to San Jose and began running the San Jose Soda Works out of 133 Locust Street (*San Jose City Directory* 1906). Henry appears to have run the soda works until his death in 1922.

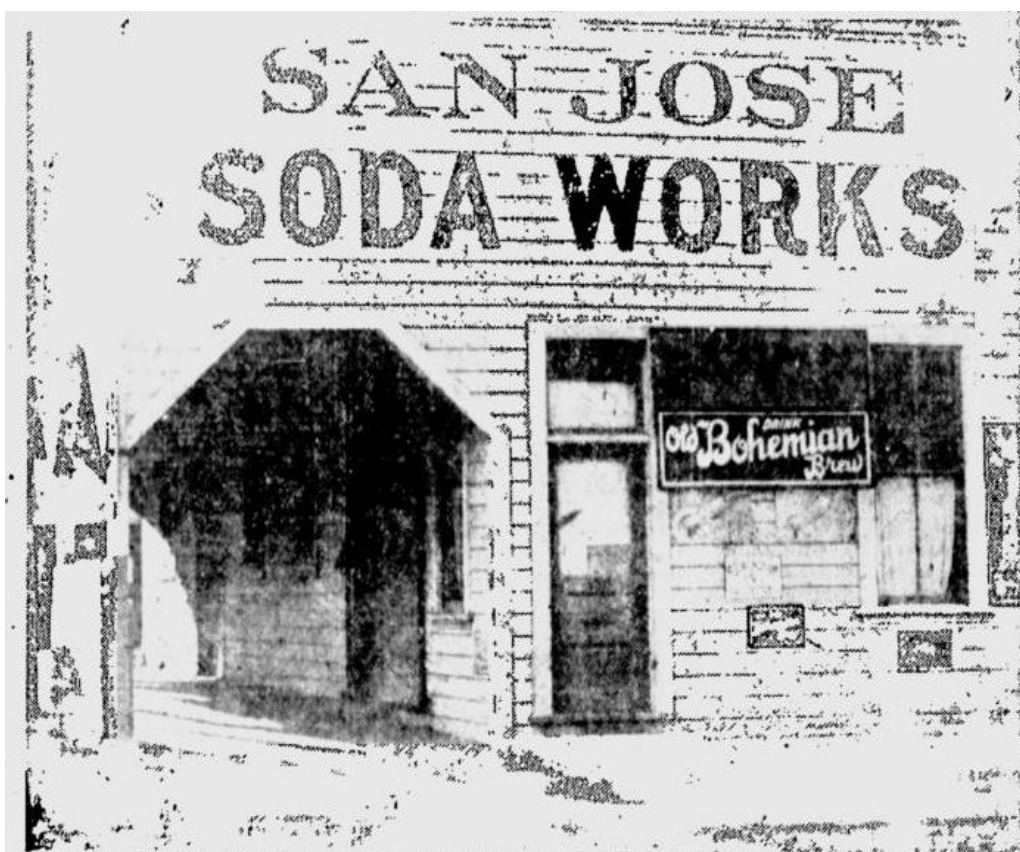


Figure 20: The San Jose Soda Works premises on Locust St. Described as front view of plant and entrance to delivery department. Image from the San Jose Evening News, November 19, 1928.

Following Henry's death, San Jose Soda Works seems to have returned to the Balzhauser family with Charles (1891-1963) taking over. He had been working in the San Jose bottling industry on and off since 1913 and directories show that he had worked as a bottler for the San Jose Soda Works under A. J. Henry (1913, 1915, 1917) and C. J. Vath (1916 and 1922). He continued to run the business into the early 1930s, but despite being able to fill 960 bottles an hour (Mulock 1928), San Jose Soda Works finally closed in around 1932.

The MSCAP assemblage contains a number of vessels from the different phases of the company. There are at least three Winslow & Williams bottles (85-31/24-15, 86-36/20-257, and 88-91/26-292) and at least six Williams Bros. bottles (86-36/4-160, 86-36/5-874, 86-36/5-875, 86-36/5-2069, 86-36/5-2070, 86-36/17-113, 86-36/17-129, 86-36/22-

110). There is one San Jose Soda Works bottle from J. Balzhauser's time (85-31/35-1) and one from A.J. Henry (86-36/9-14). 86-36/5-401 may also be San Jose Soda Works.

Wood's Napa Soda

The Napa Soda Springs were discovered around 1855 and had a number of operators. In particular, there was a prolonged and often violent dispute between Amos Buckman and John Henry Wood (b. 1822) in the 1860s. Wood claimed that he had owned the property since 1860, whereas Buckman claimed to have occupied the land since 1855 (*History of Napa and Lake Counties, California* 1881, 292–96). In 1861, Buckman had possession, and Wood led a group of men who evicted and beat Buckman's family and employees (*Daily California Express* 1861). The following year, Buckman destroyed the bottling house which Wood and his business partner, George Whitney, had built at the springs (*Daily California Express* 1862). Nonetheless, Wood managed to begin bottling again and ran the business until he sold the property in 1872 to Colonel John P. Jackson who began bottling under the name Jackson's Napa Soda Water (*Solano-Napa News Chronicle* 1872).

The MSCAP assemblage contains part of one bottle, 86-36/17-121.

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