AN OSTEEOLOGICAL AND MORTUARY ANALYSIS OF THE INSANE
ASYLUM OF CALIFORNIA CEMETERY, 1851-1854

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Master of Arts
in
Anthropology

by
Erika Collins
Fall 2009
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ABSTRACT

AN OSTEOLOGICAL AND MORTUARY ANALYSIS OF THE INSANE
ASYLUM OF CALIFORNIA CEMETERY, 1851-1854

by

Erika Collins

Master of Arts in Anthropology

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This thesis presents research conducted on 42 burials excavated in 2007 from the Insane Asylum of California cemetery, located in Stockton, California. These burials represent the first cemetery of the asylum, in use from 1851 until 1854. The research goals of this project incorporated both an osteological analysis and an analysis of the mortuary patterns observed at this cemetery. It was hypothesized that the mortuary patterns afforded to the individuals buried at this cemetery would follow the stylistic trends of the era, while demonstrating the limited means of the asylum. With regard to the skeletal remains, it was hypothesized that the osteological data would reveal a population with generally poor health, a high rate of violence, and a predominantly male demographic profile. Both the osteological and mortuary data were methodically compared to a selection of two historic California cemetery excavations; one of the Golden
Gate Cemetery and one of the Sacramento County Hospital cemetery. The mortuary data was further compared to an almshouse cemetery excavation from Massachusetts. With regard to the osteological findings, the results of this research revealed that these individuals did represent a predominantly male population and endured generally poor health. They did not however, reveal a higher than average incidence of trauma or violence. For mortuary patterns, the cemetery did not follow expected stylistic trends of the era. Additionally, the burial practices afforded to these individuals were very minimal. This research sheds new light on burial practices afforded to marginalized populations during Gold Rush era California.
CHAPTER I

INTRODUCTION

In the summer of 2007, 42 burials were excavated from the earliest cemetery of the Insane Asylum of California. Located in Stockton, this was the first insane asylum on the West Coast, accepting its first patients in 1851. These burials present a unique and important opportunity for osteological and mortuary analysis. What insight can these burials offer regarding the history of this institution? What can be learned about those who lived and died there? What can the analysis of this cemetery contribute to mortuary practice analysis in historical archaeology? What can the interpretation of this site contribute to the greater understanding of the history of Gold Rush era California? In short, the purpose of this study is to examine the mortuary practices afforded to these burials and to conduct a thorough osteological investigation of the burials, with both aspects considered within the larger context of the culture and society of Gold Rush era California.

To better understand the significance and research potential of this cemetery, the appropriate history and background relating to the institution must be addressed. A brief history of Gold Rush era California is included, as this will illustrate why the Insane Asylum of California was created so quickly after the settlement of California. For insane asylums in general, the evolution of insane asylums in the United States from their
inception until the mid-nineteenth century will be examined. This is when the Insane Asylum of California opened; it is also the era of the recently excavated burials.

During colonial times mental illness was viewed and handled much differently than it is today, in fact it was handled much differently than it would be by the turn of the nineteenth century. Throughout colonial times the mentally ill were usually cared for in the home by their family. Mental problems were not thought of as a medical problem or disease; this was largely because no treatments, or at least no effective treatments existed (Grob 1973:4-10). As the population of America began to grow exponentially, toward the end of the seventeenth century and into the eighteenth, associated demographic changes led to drastic changes in the care of the mentally ill. No longer were families able to care for mentally ill relatives (Grob 1973:36-40). With an increasing number of people moving to urban areas, and a corresponding decrease in the unity of the traditional, rural family homestead, an ever increasing number of mentally ill individuals found themselves without care and without a home (Deutsch 1949:51). After years of the burden of care resting with the families of the insane, the burden was now being transferred to government agencies.

At first, the new and rising populations of the destitute insane were most often sent to almshouses. Almshouses quickly proved to be a poor fit for the care of the insane. These facilities were designed to take in all dependent people; orphans, the elderly, the poor, the sick, and now the mentally ill too. They lacked the facilities, staff, and knowledge to care for the growing number of mentally ill residents (Grob 1973:25-26, 393). In a direct response to inadequate care provided by almshouses, the first purpose built insane asylum was founded in the late eighteenth century. Accepting its first patient
in 1773, the Virginia Eastern Lunatic Asylum, located in Williamsburg, was the first of many asylums for the mentally ill in America (Yanni 2003:26). However, about 30 years would pass until any significant advances in the medical treatment of the insane were recognized in America.

Pinel, an important early doctor for the insane, developed a new method called “moral treatment.” He published his research in France in 1801; five years later it was translated into English. His methods focused on creating carefully controlled social environments that would enable patients to regain stability and control of their emotional status. He believed that a calm environment, where patients were able to participate in religion, labor, and intellectual activities while socially interacting with others, would facilitate progress back to a normal mental state. He firmly believed that most cases of insanity were curable and that these treatments would aid in the patients’ recovery and ultimate return to society (Grob 1973:28-46, 1994:25-29).

Pinel was not alone in his new approaches to treating the mentally ill. Other doctors were realizing that with the new change of housing the insane, the treatment of the insane must be revised as well. William Tuke, Samuel Tuke, Benjamin Rush, and Thomas Kirkbride are among the most significant advocates for improvements of the treatment of the insane. Kirkbride, a medical superintendent of an early asylum, along with a group of 12 other such superintendents, formed the Association of Medical Superintendents of American Institutions for the Insane (AMSAII). Founded in 1844, this organization was largely responsible for the propagation of the idea of the state mental hospital (Curwen 1875:5-9).
Earlier asylums tended to be private, especially in the northeast, funded by wealthy philanthropists eager to help, based on the claims of nearly 100 percent curability of insanity. After the formation of the AMSAII, driven by a complex set of suggestions and even requirements deemed necessary for an asylum to be considered effective, there was a transition toward an emphasis on the state mental hospital. By the mid-nineteenth century, the majority of all new mental institutions were state funded.

Kirkbride, one of the key founders of the AMSAII, was fundamental in shaping mental hospitals to come. Shortly after, in 1854, Kirkbride published a book titled *On the Construction, Organization, and General Arrangements of Hospitals for the Insane*; this book clearly outlined the thoughts of the AMSAII on the ideals for new mental hospitals. By 1866, at least 30 state hospitals were designed under the auspices of Dr. Kirkbride (Yanni 2003:31). This era also roughly coincides with the decrease in the use of the term “asylum” and the beginning of the term “state hospital”; Dr. Kirkbride pioneered this change as well.

Around this time, the Insane Asylum of California accepted its first patients. Opening its doors in 1851, the Insane Asylum of California was the first designated insane asylum in California. In this regard, the Insane Asylum of California is rare in both its time and place. The insane asylum as an accepted and even respected public entity was well established by the time construction began on the Insane Asylum of California. However, few things in California were well established when the asylum opened. When the Insane Asylum of California opened, the nearest asylum was the Missouri State Lunatic Asylum No. 1, about 1,900 miles to the east. This asylum also
opened in 1851 and, like the asylum in Stockton, it represented the westward expansion of the United States.

It is the junction among so many important and distinct elements in American history that lends significance to this study of the human remains and burial patterns from the Insane Asylum of California. Such elements include the significance of this era in the spread and development of insane asylums, the westward expansion of the United States, the California Gold Rush, and trends in mortuary patterns in the United States. The archaeological data gathered as a result of the recent excavations can shed light on these topics.

The burials recovered from Insane Asylum of California represent the earliest burials of the hospital. Historical documents indicate that these burials represent a small, discrete cemetery used for only about four years just after the hospital accepted its first patients while the permanent hospital buildings were under construction. Given the dates of interment for the burials, these individuals also represent a first generation of California emigrants. Few, if any, of these individuals were born in California and many were born in foreign countries. Records kept of the hospital’s patients track these statistics and more. For many patients, the hospital kept detailed records including information such as age, sex, race, place of birth, type of or reason for insanity, and cause of death. Not all information was gathered for each patient, but a significant body of historical documents from the Insane Asylum of California is still in existence today.
Purpose and Scope of the Study

Two primary factors contribute to the relevance of this study. First, the uniqueness of these burials from the Insane Asylum of California alone is reason enough to warrant further research. The data and information potential from the analysis and interpretation of this site are irreplaceable. While excavations at this cemetery are complete, there are unknown numbers of similar cemeteries across the country. Realizing the data potential and history of these obscure cemeteries may, in the future, make it easier and more viable for archaeologists, anthropologists, historians, and developers alike to identify and manage these cemeteries as they are located. The potentially preventable destruction of these cemeteries could be limited. The data potential upon excavation could be maximized. As a result, the history and knowledge of these cemeteries and their relationship with the local culture could be richer and more accurate.

My research and analysis of this cemetery from the Insane Asylum of California has the potential to act as template for future projects. It can exemplify the type of mortuary and osteological data that may be garnered from such excavations. This project will also serve to demonstrate how integral historical research can and should be to projects of this nature. It can also draw attention to possible difficulties, and offer recommendations for how to plan for and best manage strategies.

The second factor contributing to the overall relevance of this study is the importance of furthering the methodological framework of the analysis of historic cemeteries. The majority of archaeological mortuary theories are developed from prehistoric mortuary practice analyses. Such methodologies are not applicable to historic mortuary analyses. There are some relatively recent attempts to address the shortcoming
of an adequate mortuary theory for historic cemeteries and offer solutions (Bartel 1982; Cannon 1989; Bell 1987; Little et al. 1992; Spencer-Wood and Baugher 2001; Pearson 2000). Though these examples are great improvements over the direct applications of prehistoric mortuary practice analysis methodologies upon historic burials, there still remains a deficiency in both the quantity and quality of such research. This is especially true of research in the western United States; the vast majority of such research in America takes place in the eastern United States.

In the case of the burials from the Insane Asylum of California, there is the additional difficulty in applying existing methodologies, because this cemetery represents a highly marginalized sector of the community. The marginalized are characteristically treated differently in life. Among countless other social injustices, their treatment results in fewer and less accurate historical documents available for reference. There is also much less potential for available ethnographic data (Spencer-Wood and Baugher 2001).

Historical documents, when available, must be interpreted with great caution; such documents are by nature created by outsiders and represent the non-marginalized view of a marginalized group (Falk 1991:108-109). This phenomenon of marginalization cannot be overlooked. The fact that the burials represent a known marginal population adds a great degree of difficulty and relevance to their analysis. Many of the patients of the Insane Asylum of California lived and died sequestered away from the public, their families, and loved ones. Their stories are largely untold.

Clearly, this project spans the boundaries of many related fields; it does not fit squarely and neatly into a single specialty. It is this union of physical anthropology, with the osteological assessment of the remains, and historical archaeology, with the mortuary
practice analysis framed by tenets of material culture analysis, which lends greater strength to this research project than either individual aspect could alone provide. This multifaceted approach will enable a better understanding and interpretation of the actions and behaviors at the Insane Asylum of California and, on the larger scale, in Gold Rush era California as well. This research will also bring to light new issues and avenues for future research.

Research Questions

The distinct combination of elements; the time and place of the hospital, the dates of the burials, the body of historical data pertaining to the Insane Asylum of California, the osteological data, and the observed mortuary patterns; provide an opportunity to examine a rare intersect of American mortuary practices, Gold Rush era California, and the historical treatment of a marginalized population. By examining the mortuary practices afforded to these burials, I hope to determine if the mortuary practices observed among these burials are within the expectations of mortuary practices generally afforded to disadvantaged individuals for the era. If not, how do they differ and what are the possible explanations for the observed differences?

Expected mortuary practices will be established in part by examining historic documents for evidence of standards in burial practices, and also by reviewing modern texts concerning American deathways. The burial patterns observed among the burials recovered from Insane Asylum of California will further be compared to the best available selection of comparable previous mortuary analyses. Such analyses will be selected from the best attainable combination of similarities in time, place, and type of
cemetery. Mortuary analyses of the cemeteries of insane asylums, almshouses, county hospitals, and other marginalized populations will serve this purpose best. Other historic nineteenth-century insane asylums located in California, though all significantly later in origin, could be of great value for this assessment. Such hospitals include Napa State Hospital (1875), the Sonoma County Asylum (1889), Mendocino State Hospital (1889), Agnews Asylum in Santa Clara (1888), and the Patton State Hospital in San Bernardino County (1893). Unfortunately, there are no mortuary analyses or archaeological data available for these institutions.

The two valuable mortuary analyses from California that are available are a 2003 excavation of the Sacramento County Hospital cemetery, and a 1990s excavation of the Golden Gate Cemetery in San Francisco (Edwards et al. 2005; Chattan et al. 1997; Buzon et al. 2005). A third project, a 1985 excavation and analysis of a Massachusetts almshouse burial ground, while not physically close to the excavations of the Insane Asylum of California, complements my research well in other aspects (Bell 1987).

The Massachusetts site, the Uxbridge Almshouse Burial Ground, contained 32 individuals dating from 1830 to 1872. For the temporal aspect and number of burials recovered, this site is the closest comparable to the Insane Asylum of California cemetery. The methodology and theoretical framework utilized for the analysis of the Massachusetts burial ground provides one of the preeminent examples for my own research. Edward Bell’s (1987) application of material culture analysis in his study of mortuary practices at this cemetery is exemplary.

The data from the Sacramento County hospital, with estimated dates ranging between 1891 and 1927, and the Golden Gate Cemetery, with dates from 1868 to roughly
1906, will be utilized as comparable data sets. Both historic data and any available
evacuation reports or analyses for such sites will be utilized. A large part of the value of
this exercise lies in the fact that there are few comparable mortuary analyses. Mortuary
analyses of the marginalized are inherently lacking in both depth and breadth, especially
in the western United States as compared to the eastern part of the country and Europe.

Next, I consider the osteological evidence from the burials excavated from the
Insane Asylum of California and relate this information to the pertinent historical
evidence. What can the osteological evidence corroborate or contradict about the records
of the patients at the asylum? Is there noteworthy osteological evidence of medical
treatments or dentistry practices during the Gold Rush? What potential exists in learning
about the life and death of individuals who died at Insane Asylum of California? How
does the health of these individuals compare to the health of individual from other
historic California cemeteries? What information can the osteological analysis of these
remains provide which the historical documents cannot? How can this data be related to
the greater picture of health during the Gold Rush?

For each burial a complete osteological analysis was conducted. This data will
be used in a similar fashion as the mortuary data. The osteological data will be compared
to osteological data from like skeletal samples and also to any relevant historical data. I
will investigate how the health of these individuals, as measured by skeletal indicators,
compares to various aspects of the health of individuals recovered from a sample of
comparable cemeteries. Dental health, rate of infectious disease, traumatic injuries, and
degenerative joint disease will be considered here.
The primary hypotheses are that overall health will be below average, rates of trauma are expected to be high, and the demographic profile will reflect that men greatly outnumbered women in Gold Rush era California. Mortuary practices, considered on a spectrum of austere to elaborate, are expected to fall toward the low end while still reflecting the stylistic trends associated with the beautification of death movement.

Summary of Chapters

Following this introductory chapter, the remainder of this thesis is organized in a manner which allows the reader to clearly follow the development, progression, and culmination of this study. Chapter II will present a detailed historical background for the study. Here, the development of insane asylums in America, from colonial times to the mid-nineteenth century, will be chronicled. Next, an overview of the California Gold Rush of 1849 and how it relates to the creation of the Insane Asylum of California will be addressed. Chapter III provides an in-depth review of pertinent literature. Key methodologies, theoretical frameworks, and important authors and works will be addressed, with reference to how they guide the basis of my research. Previous research projects which will serve as valuable examples for my own research will be discussed here as well.

In Chapter IV, the methodology and theoretical framework for my thesis are presented. This will include a detailed description of my methodological approaches to this project and how this methodology is reflective of the theoretical framework for my research. I will address the necessity of a multi-faceted approach to this project. Field and laboratory methods are included in this chapter as well; outlining excavation procedures,
curation, recordation, and osteological analysis of the burials. This chapter will also discuss the archival and historical research. Archival research proved invaluable for discovering and understanding the history of the Insane Asylum of California. Here, these sources of information, as they relate to and reinforce methodologies, will be discussed.

Chapter V will present the results of this research, along with an in depth discussion of the findings. The data and results will be further separated into two parts, the osteological data and findings and the mortuary data and findings. A concluding section and ensuing discussion will bring these two elements together, providing an integrated discussion of the project results and interpretation as a whole. The following and final chapter will offer final conclusions and provide recommendations for further and similar research.

Limitations of the Study

Despite the significant potential for analysis of the burials from the Insane Asylum of California, there are limitations to what can be learned from these particular burials. Since these burials were excavated as part of a cultural resource management project, both time and money were limited. As such, both field methods and the potential for later research were two restrictions on the project. For field methods, one problem was the initial mechanical location of the graves. As fieldwork began, the heavy equipment operator began stripping soil back to search for the grave locations before an archaeologist was present on the site to monitor excavation. In doing so, the first five burials identified were damaged by heavy machinery. These burials, identified as numbers four through eight, range from 15 percent to 75 percent complete respectively.
Each individual burial was oriented East-West, in turn creating a row of burials oriented North-South. The damage is clearly correlated to the linear soil stripping of the excavator. The details of the damage endured to each involved burial will be thorough addressed in the results and discussion portion of this paper.

As fieldwork progressed and time grew to be a concern, the decision was made to cease in situ sketches of the burials. Though the remainder of the recordation process remained the same; burial record forms were still completed and photographs of the fully exposed burials were taken, sketches are highly useful sources of reference. Sketches allow the recorder or excavator to highlight specific and important details in a graphic format that photographs often do not adequately capture. For instance, in a sketch it is easy to demonstrate the exact placement of burial associated artifacts, disturbances to the articulation of specific bones, or variability in the soil. In the case of the burials from the Insane Asylum of California, buttons were the most common burial associated artifact. To have a sketch clearly showing the exact location of each button upon their exposure has the potential to suggest the garment type from which the button came. Such details are often not apparent in photographs and can be important in the analysis of the burials and burial associated artifacts. Thus, there is the potential to lose data by electing to save time in the field as opposed to gathering all data possible.

With regards to the osteological analysis; time, money, and reburial excluded the option of further studies. Were these things not an issue, trace element analysis may have been very appropriate for these burials. This proposal will be discussed in greater detail in the concluding chapter. Finally, while not necessarily a limitation, but rather a simple, unavoidable fact, the small number of the burials could be considered
problematic. With a total sample size of 42 individuals, this is not a large cemetery. Therefore, any statistical trends or patterns must be considered with this in mind. On the other hand, it is promising that the number of burials recovered very closely corresponds with historical records of the cemetery. Further, previous analyses of historic cemeteries with similar characteristics as the Stockton Insane Asylum cemetery have entailed the analysis of a similar number of burials and concluded with very relevant results. A discussion of the historical background is examined next in Chapter II.
CHAPTER II

HISTORICAL BACKGROUND

There is an extensive history of the treatment, or lack thereof, of mental illness in the United States. Though this history was briefly addressed in the first chapter, the complete breadth and depth of this history has not yet been presented. Nor has the association between mental illness and institutions within the United States and those outside of the country. The development of institutions for the mentally ill in Europe is closely linked to the development of such institutions in the United States. These topics will be dealt with here in greater detail. Key people, geographic and demographic trends, institutional design trends, noteworthy institutions, medical developments and so on will all be given consideration.

Following this, it will be useful to provide an overview of Gold Rush era California. As this was the time period in which the Insane Asylum of California was founded, this information can shed light on many pertinent questions about the asylum. Historical documents concerning California in the mid-nineteenth century lend insight as to why the asylum was needed, why Stockton was selected as a site, and how the mentally ill were treated prior to the establishment of the asylum. Integrating the history of the Gold Rush into the research of the Insane Asylum of California will enable a better understanding of this institution’s inception and ultimately the material culture left behind.
Once a comprehensive discussion of the history of asylums in general and an introduction to Gold Rush era California is presented, the focus will narrow to address how the Gold Rush is directly related to the founding of the Insane Asylum of California.

The Evolution of Insane Asylums in America

The rise, and eventual fall, of insane asylums is an interesting part of America’s history. The stigma that is so strongly associated with mental institutions today is very far from the early views of asylums. Treatment of the mentally ill, from colonial times to modern day approaches has undergone many transitions. This transition from the early views of mental disease toward more recent views can be rather clearly traced. Here, it is from colonial times to the mid-nineteenth century that will be most closely examined. These temporal changes will enable the relevance of the time and place of the founding of the Insane Asylum of California to be better addressed.

In colonial times, the collective view of the mentally ill was quite different than it was by the mid-nineteenth century. The changes and developments in the treatment of the mentally ill in America, though harsh and unpleasant at times, follow logic very relevant to a developing country. Initially, in colonial America, the mentally ill were viewed as a social and economic problem. During this time, individuals were most often dealt with by their families and remained in family homes (Grob 1973:4-10). This was possible due to the overall low population density and largely rural demographic pattern of colonial America. There were few remedies used to treat mental disorders and most had little, if any, beneficial effects. The care provided by families was palliative at
best. There was little that could be done aside from ensuring physical care and safety for those with mental illnesses.

It is important to keep in mind that at this time mental illness was not viewed as a medical problem. The combined lack of available medical treatment for the mentally ill and the close family structure that prevailed in early colonial America provides a logical explanation for the ordinary home care of the mentally ill during this era (Grob 1994:4-10). Since treatments and remedies offered essentially no benefit to either the patient or their families, access to medical treatments were hardly a consideration. Instead, any means to placate, calm, or quell the patient were usually the top priority of the caregiver. Thus, in early colonial America, government agencies were not often involved in the care of the mentally ill because they had no other course of treatment to offer the caregiver or the patient.

Governmental agencies were generally only involved in the care of the mentally ill in a few select situations. Transients, resident indigents, and violent mentally ill were usually the only individuals to receive assistance by the government. Resident indigents were sometimes loosely cared for by the community, since they had no family members to provide care. In such situations, simple provisions and housing were usually all that was offered. Transients posed more of a challenge. They were often roused from one town and pushed on toward the next town, only be treated in the same manner by each successive town (Deutsch 1949:43; McGovern 1985: 24-28). Some eventually received care, but many did not. Finally, those who were violent and considered a threat to the community were often provided with care, and when deemed necessary, physical confinement. This was done primarily to ensure the safety of the community, not
necessarily out of goodwill toward the individual (Grob 1973:11-14; Deutsch 1949:39-54). Deutsch offers this description of such treatment:

Contempt, cold and narrow, rather than sympathy and understanding, characterized the attitudes towards the destitute and dependent classes. Public provision for the latter was based not so much upon humane considerations as upon social expediency and economy. The individual in need of assistance was apt to receive public attention only when his condition was looked upon as a social danger or a public nuisance—and then he was ‘disposed of’ rather than helped. [1949:39-40]

Overall, any agency role in the care of the insane during the early colonial years was minimal and only when absolutely needed. It was only when a combination of demographic changes took place that the government was forced to step in and take an active role in the supervision and care of the insane.

By the late seventeenth century and continuing into the eighteenth century, increases in populations led to a corresponding increase in the number of dependent mentally ill individuals. At the same time, demographic profiles were rapidly changing. Instead of settling in rural areas, people were increasingly moving to urban settings. In these new towns and cities, families often did not have the capabilities to care for dependent family members, as most individuals’ workplaces were now outside of the home. Moreover, the family unit was more frequently being separated, with the immediate family no longer all living in a single household.

As a result, the number of indigent, transient, or otherwise neglected mentally ill in towns vastly increased. This phenomenon increasingly transferred the problem of the mentally ill from the family to the government. In most early cities, the pattern generally followed that once the population of mentally ill, sick, or otherwise dependent people reached a significant size, the community would respond and create a more
organized system to deal with these people (Grob 1973:36-40; Deutsch 1949:51; McGovern 1985:29-30). Initially, facilities to house dependent people were almshouses; they were designed to accept orphaned children, the elderly, the poor, the sick, along with the mentally ill. In many ways these facilities were a ‘catch all’ for dependent individuals; the varying patient types were not separately dealt with inside of the facilities. It was not until the late eighteenth century that the first facility founded specifically for the treatment of the insane was opened.

In 1770, the Virginia Eastern Lunatic Asylum was founded; this was the first establishment with the sole purpose of providing housing, care, and treatment for the mentally ill. The hospital accepted its first patients in 1773. With the capabilities of housing and treating a maximum of only 30 patients, this asylum was no indication of the expansive institutions that would later be established across the country (Grob 1973: 25-26).

As the mentally ill were moved out of homes and into institutional settings, the overall view of mental illness began to shift accordingly. Instead of being viewed as a social and economical issue, mental illness was slowly beginning to be considered a medical issue. Though it was gradually becoming increasingly common to house patients in medical facilities, the majority of the mentally ill were still cared for in almshouses or remained in family homes. Still, there were not yet corresponding advances in methods of treatment. Medical research and treatment of mental illnesses were still in their incipient stages. Common early treatments included bleeding, blistering, hot and cold baths, restricted diets, physical restraints, and sedatives. Collectively, these treatments offered no actual benefit to the patient.
McGovern accounts one such treatment given to a patient in New Hampshire by a Dr. Perley Marsh. The doctor’s treatment was to completely submerge the patient in ice-cold water until he lost consciousness. Dr. Marsh believed that the “stupefaction of the life forces” would break the “chain of unhappy circumstances” presumed to be the cause of the patient’s insanity (McGovern 1985:38). Examples such as this are not uncommon during this era. Luckily, some doctors were taking note that these treatments had no positive effects and strove to change this. These doctors would eventually go on to become the first psychologists.

Psychiatry in the United States was founded largely as a reaction to the treatment of the newly institutionalized of the mentally ill. There was a significant lag between the time that institutionalization of the mentally ill became the norm and the time that psychological treatments offered to these patients were of any value. It was not until the nineteenth century that psychiatry would prove beneficial to the treatment of the insane in this country. Throughout the remainder of the eighteenth century no further purpose built mental institutions were opened, and few other advances in the treatment of the mentally ill occurred.

The first half of the nineteenth century saw a dramatic increase in the number of lunatic asylums, with 24 institutions opening during this time period (Grob 1973:374-394). The demographic changes that brought on the need for such institutions in the first place continued; towns and cities grew larger and consequently had still larger numbers of dependent mentally ill. Fortunately, there was a trend toward philanthropic giving by the elite coupled with an increasing sensitivity and awareness of social issues. Many of the early asylums were founded upon such charitable gifts (Grob 1973:42-43, 50-64).
Closely tied with philanthropic giving were the advances in medical treatment of the mentally ill. As asylums grew throughout America, so did the burgeoning field of American psychology. These pioneering psychologists ensured that the general public knew of the recent medical progress with the treatment of the insane. As psychologists made advances, the treatment of mental illness took on a more relevant role. Instead of relying on useless traditional remedies, the concept of “moral treatment” was developed (McGovern 1985: 39-40).

Philippe Pinel, around the turn of the century, saw that current treatments were either not beneficial or were actually harmful to patients. Pinel’s observations of the ineffective treatment of the mentally ill led him to the conclusion that it would be beneficial to de-emphasize medical treatments and instead focus on the social environment of the patient. From his work in the 1790s in two Paris mental hospitals, Pinel concluded that a carefully constructed and controlled social setting provides the patient with an environment where they can regain control of their emotions. Published in 1801, his work, *Traite medico-philosophique sur l’alienation mentale*, illustrated his methods for successful treatment of the insane (Pinel 1801; McGovern 1985:39). This work would soon be translated to English; in 1806 *Treatise on Insanity* began to improve the treatment of the insane in America as it was already doing abroad (Pinel 1806).

Pinel’s moral treatment basically created a structured environment in which the patient was able to regain control. If the patient was exposed to positive social environments and participated in productive work, in time they would gain the mental strength to overcome their imbalance and reassert self-restraint and self-control (Grob:1973:44-47; McGovern 1985:38-40). He was one of the first to suggest removing
physical restraints from patients; as such he is often viewed as the liberator of the insane. This however, is not exactly the case. Pinel’s recommendations to remove chains from patients were based entirely on empirical observations. Each of his recommendations, this one included, were based on observing current treatments and gleaning what practices seemed to help the patients’ mental status and which had no effect or caused further mental disturbances. It was based on these observations that he gave the recommendations to remove chains, increase social activities, and provide moderate physical labor.

Pinel did, it should be pointed out, strongly believed that these procedures must be carried out while maintaining an authoritative relationship with the patient. He did not hesitate to assert the dominant position of the doctor over the patient and considered this essential to the effectiveness of the moral treatment; the patients were in dire need of an authoritative figure to provide guidance and regularity in their lives (Deutsch 1949:88-94). Grob quotes from Pinel’s *Treatise on Insanity* the “happy effects of intimidation, without severity; of oppression, without violence; and of triumph, without outrage,” clarifying Pinel’s view on the ideal relationship between doctor and patient (1973:42).

Like Pinel, William Tuke observed that existing treatments for insanity were ineffective at best. Tuke, a British Quaker, troubled by the crowding and treatment of the insane in public asylums, opened a private asylum in 1792. The York Retreat provided humane care for the Quaker insane. Though his methods of treatment were quite like those of Pinel, with the additional element of the incorporation of religious studies, Tuke’s ideas came from a different source. Tuke’s treatment was based on his ethical
disagreement with the normal standard of care provided at British asylums. Following in his father’s path, Samuel Tuke published a *Description of the Retreat* in 1813. This volume soon reached America, where it was eagerly received by physicians dealing with endless difficulties in treating the newly institutionalized insane (McGovern 1985:39-40).

Combined with the work of Benjamin Rush in Pennsylvania, these revolutionary new treatments of insanity paved the way for advances yet to come. Rush, more so than Pinel and Tuke, believed that the cause of insanity was medical, as opposed to a result of environment (McGovern 1985:40). Rush promoted medical treatments, still encouraging some bloodletting and highly restrictive diets, but he also began to realize the importance of the patient-doctor relationship. This relationship, along with the encouragement of physical and mental activities touted by Pinel and Tuke, coupled with medical treatments, Rush believed was the best treatment for the insane.

Rush, being the only of the three doctors working in America, also did the most to directly improve the treatment of American patients. He was also instrumental in aiding the introduction of Pinel and Tuke’s ideas. Despite differences among these three doctors, they all believed that many cases of insanity were completely curable. Some doctors claimed that up to 80 percent of cases of insanity could be cured with these new treatments (Grob 1994:99).

Vital to the continued growth and development of the asylum movement, doctors saw to it that their advancements were well known. Making certain that the public knew of such great progress served two main purposes. First, it affirmed to the public that the institutionalization of the mentally ill was the best course of treatment. Second, it reinforced both acts of charitable giving and government funding of mental
institutions. Both sources of funding were very much needed to found, construct, and operate asylums.

The resources necessary for these new treatments advocated by psychologists were not always readily or easily accessible. It took great investments to design acceptable conditions for the new moral treatment of insanity. Specialists from a wide range of disciplines including urban planners, architects, social reformers, and of course doctors, nurses, and psychologists all had to work together to create the conditions deemed necessary for insanity to be effectively treated. Among the more common stipulations were that the patient must be treated outside of the home, the architecture of the treatment facility must be open, with plenty of ventilation, and that each patient must be visited by the doctor or his wife each day. Additionally, the immediate environment must be close to nature with gardens, paths, water, and outdoor space (Yanni 2003:27-29).

The main building itself should be two stories high, and follow a shallow V design, thus ensuring that all rooms received ample ventilation and natural light. The structure should be built of brick, to protect against fires set by unruly patients. Even the location where different types of patients were to be housed within the asylum was prescribed; the most troublesome should be on the outer wings of the first floor. At the other end of the spectrum, the most well behaved patients should reside close to the core of the building, and would do fine on the second floor (Yanni 2003:30-34). These strict models and guidelines led to the creation of many rather beautiful—if not elaborate—institutions. Many of these so-called “Kirkbride Buildings” are still standing today.
In 1844, a gathering of 13 superintendents of asylums marked the inception of the Association of Medical Superintendents of American Institutions for the Insane (ASMAII). This organization, which eventually became the American Psychiatric Association, quickly became the driving force behind the rise of the state hospital system. The members of ASMAII were, with each annual meeting, refining the requirements of creating an ideal asylum (Dowdall 1996:27-32). One of the key figures in this movement, Dr. Thomas Kirkbride, authored a book titled *On the Construction, Organization, and General Arrangements of Hospitals for the Insane*. Published in 1854, the guidelines set forth in this book resulted in 70 mental hospitals built according to Kirkbride’s precise specifications (Tomes 1981:120-140; Yanni 2003:31).

As a new organization, ASMAII, though clear in their guidelines for new state hospitals, lacked a liaison with the states needed to incite projects of such a magnitude. Dorothea Dix enthusiastically filled this role. Dix, known as the “apostle of the insane” crusaded tirelessly pushing, states to open mental hospitals. She was trained as a teacher, but because of health reasons, worked only irregularly. In 1841, she volunteered to teach at the East Cambridge Jail, there she taught Sunday school to women convicts. When walking through the jail Dix observed a number of mentally ill individuals locked among the violent, hardened criminals. It was this sight that impacted her so greatly that it led her to a life-long crusade for the humane treatment of the insane. She spent the next year thoroughly examining the current status of mental care facilities in Massachusetts (Dwyer 1987:38-42; Grob 1994:46-47; Deutsch 1949:158-185). The presentation of the culmination of this year of research, a document titled *Memorial to the Legislature of Massachusetts*, was successful in convincing the state to improve upon conditions
provided to its mentally ill (1843). Dix soon joined forces with AMSAII to further the cause of improvements in care for the mentally ill. Over the course of the next nearly 30 years, Dix would follow a similar pattern; she would visit a state, thoroughly assess the current status of the care of the mentally ill, and then offer recommendations to the state government for improvements in care (Grob 1973:104-108; Grob 1994:46-50). Her recommendations largely followed the template for state hospitals put forth by AMSAII.

The construction of Insane Asylum of California is centered at the heart of this significant time; as AMSAII was gaining a reputation as an upstanding organization, Dix was pioneering in the push for humane treatment and conditions for the insane, while the medical doctors and incipient psychologists were developing new treatments with the ambition of a cure for insanity. This history, the temporal development of insane asylums in America up to the mid nineteenth century, is important in considering the specifications of the establishment of the Insane Asylum of California. Though temporally the Insane Asylum of California is consistent with the overall development of state mental hospitals throughout the country, other unique variables played a significant role in the establishment of this institution in Stockton.

The Gold Rush and the Insane Asylum of California

The rapid population growth in California brought on by the Gold Rush beginning in 1849 was, by and large, the ultimate reason that an insane asylum was needed so shortly after the settlement of the state. Cahn and Bary state (1936:xiii) that “California, unlike other states, had no initial period of growth; the early history of the state is a record of emergencies, and the needs of the time were met in emergency
fashion.” The extraordinary circumstances created by this deluge of settlers quickly created an unprecedented need for the facilities to care for the staggering numbers of physically and mentally ill in California.

With James W. Marshall’s discovery of gold at Sutter’s Mill in Coloma, California on January 24, 1848, the Gold Rush was imminent. By June of the following year, California’s population had grown exponentially, with thousands of new settlers entering California daily. Though exact population counts are inaccurate for these early years, a few estimates clearly tell the magnitude of California’s rapid growth. One count prior to the Gold Rush, gives the population of San Francisco in 1847 as 459 individuals. Given the precise number, this is likely a fairly accurate count (Lovell 1943:69). A few years later, in 1849, San Francisco was estimated as having 40,000 immigrant arrivals. The resident population of the city was estimated at 20,000 to 25,000, with the difference accounting for the transient new arrivals quickly moving on to the mining fields (Lovell 1943:69-70; Roth 1997:529). Jacobus tenBroek estimates the total population influx of California in 1849 as gaining over 100,000 new settlers. Like Lovell and Roth, he accounts for approximately 40,000 coming through San Francisco (1957:279).

Another 35,000 are said to have entered California coming by the northern route with 42,000 more passing through Fort Laramie along the California Trail. Prior to this flood of newcomers, tenBroek (1957:129) places the estimated population for all of California as 25,000 in January of 1849, with half of these individuals being Mexican or Native Californian in origin and the other half American or foreigners.

The following year similar numbers of gold seekers flooded San Francisco on their way to the goldfields. At this time, during 1849 and well into 1850, there was
essentially no functioning government, and thus no organization prepared to manage this
massive influx of people (Lovell 1943:70; Baur 1949:97; 107, Roth 1997:529-534).
Living conditions were foul, stress was high, disease quickly ran rampant, and alcohol
was readily available; with regards to health, California during the Gold Rush was not an
appealing place.

The physical health of California’s new residents were soon affected, as
epidemic levels of cholera, typhoid fever, rheumatic fever, dysentery, meningitis,
malaria, and various unknown fevers spread through San Francisco, Sacramento, and into
the ever-growing mining settlements. Nutritional deficiencies, scurvy in particular, took
the lives of many arriving by sea. The climate of the San Francisco Bay Area proved
problematic for many, causing or exacerbating an array of respiratory disorders. As late
as 1880, a significant number of deaths in San Francisco were attributed to pneumonia,
bronchitis, consumption, and other respiratory disorders (Baur 1949:100).

Poisoning too, played a role in health during the Gold Rush. Mercury, used to
aid in the extraction of pure gold from its ore, was commonly responsible for eye
disorders. Interestingly, symptoms of mercury poisoning include neuropsychiatric
disturbances such as memory loss, irritability, paranoia, changes in personality, and
depression (Alpers and Hunerlach 2005; Agency for Toxic Substances and Disease
Registry 1999; Malecki 1998:180). The possibility of a link between the widespread
mercury use in California’s goldfields and the exceedingly high occurrence of insanity in
this era should not be overlooked. The tie between mercury poisoning and insanity is well
documented historically, with some well-known cases of insanity and even death brought
on by medical use of mercury (Johnson and Wolbarsht 1979).
Nowhere else in America had seen such rapid growth, California had to quickly respond to these mounting and unprecedented health care problems. In 1849, although California drafted its first constitution, this document made no provisions for the insane. By 1851, this was changing; the updated document now included language directing each town or county to provide for their indigent sick (tenBroek 1957:274). Some charters mentioned the care of the insane, but most grouped the insane along with the indigent. At the same time, the state was taking action and forming the first state welfare programs (Cahn and Bary 1936:137-138). Though the state had granted each town or county the power to create their own independent welfare program, it was quickly realized that these local governments were not meeting the needs of the state’s indigent (Lovell 1943: 72-75; tenBroek 1957:278).

Soon, the state began to create a plan to care for the indigent sick; as this group had the most pressing welfare needs at the time. The three most important cities in Northern California at the time, San Francisco, Sacramento, and Stockton, were to be the locations of facilities to take care of the sick and the poor. San Francisco and Sacramento were the primary cities of entry for newcomers to California. Stockton was unique in its role during the Gold Rush; the town served as a major center of movement to and from the mines. Additionally, Stockton was the largest inland port, and easily enabled transport of people and goods to and from the larger cities of San Francisco and Sacramento (Figure 1).

In 1851, the state legislature sought federal assistance to collect the monies needed to establish adequate medical facilities. With the authorization of Congress, California began collecting taxes from all ships entering the port of San Francisco
Figure 1. Northern California vicinity map. Scale 1:2,500,000.

This money was divided among the three new state hospitals; the Marine Hospital in San Francisco, the Sacramento State Hospital, and the Stockton State Hospital (State Controller’s Reports n.d.). Note that at this time state hospital does not denote a mental hospital; it is a medical hospital, with an insane department, and is operated with state funds. The Marine Hospital drew many of its patients directly from the incoming ships (Kerr 1854). By this time, upon arrival all incoming ships were inspected for sick passengers in an attempt to halt the rampant spread of disease in California. Those that were deemed ill when they arrived in San Francisco were immediately quarantined in the Marine Hospital. The Sacramento and Stockton hospital’s patients came from all over the state. Both hospitals were directed to accept both the indigent sick as well as lunatics (tenBroek 1957:283). However, the hospital in Stockton soon became the primary repository for the insane. The journals of the hospital’s first medical superintendent tell of sending insane patients to the hospital in Sacramento for medical treatment, only for them to be returned to Stockton for mental treatments (Reid n.d.). In a similar vein, Reid records patients whose mental status was deemed recovered, but remained physically ill. These patients were released to the hospital in Sacramento.

Initially, the commutation monies collected in San Francisco were split among the three hospitals giving 20 percent each to the hospitals in Stockton and Sacramento, while 60 percent of the total went to the Marine Hospital. In July of 1852, $24,177.50 was collected. Of this sum, $4,835.50 went to Sacramento and the same amount to Stockton. The remainder, $14,506.50, went to the Marine Hospital. Two years later, in 1853, the hospitals were reorganized. The hospital in Stockton now only accepted the
state’s mentally ill and was referred to as the Insane Asylum of California. The name Stockton State Hospital would remain in use as well for years to come. The Sacramento Hospital and the Marine Hospital accepted only the physically ill. The July 1853 commutation records reflect these changes: now the majority of the money collected was sent to what the original document lists as the “Stockton State Hospital and Insane Asylum Fund” (State Controller’s Reports n.d.). Though much less total money was collected, only $2,817.00, 40 percent, $1,126.80, went to Stockton. This proportional increase in funding sent to Stockton was to pay for the costs of the new buildings under construction for the quickly expanding asylum. The remaining 60 percent, $1,690.20, was split between Sacramento and the Marine Hospital, giving each institution only $845.10 (State Controller’s Reports n.d.). The Marine Hospital was closed in 1855 (tenBroek 1957:285).

The following aims to clarify the various dates and names attributed to the Insane Asylum of California. What would soon become the Insane Asylum of California accepted its first patients in 1851, but at that time it was the ‘insane department’ of the Stockton State Hospital. This is further complicated because some years later the hospital’s name was changed from the Insane Asylum of California and the name Stockton State Hospital was once again favored; however by that time the hospital was only for the mentally ill, as it had not been a general hospital for years. Over the years, the asylum was known by many variations on the theme; Stockton Asylum, Stockton State Mental Asylum, Stockton State Asylum (Figure 2). When the institution eventually closed in 1996 after 145 years of operation, it was called by a different name entirely; the Stockton Developmental Center.
Figure 2. Male Department of the Insane Asylum of California, circa 1912. The photo is from a scanned postcard.


A few documents available from the early years of the Insane Asylum of California have proven very valuable for my research. The journals kept by Robert K. Reid, the first medical superintendent and resident physician of the asylum, from 1850 to 1856, contain detailed patient information. Upon admittance, for each patient, Dr. Reid made an entry in the journal to include name, age, nativity, occupation, and marital status. He went on to give the cause or description of insanity, sometimes including detailed descriptions of traumatic events thought to cause the case of insanity. Dr. Reid would periodically update the patient information as their insanity either worsened or improved. Occasionally, greater detail about a patient was recorded. Cases with more
detailed information tended to be patients in contact with their families, either in California or more often, back east. Dr. Reid appears to have maintained some contact with these patients’ families, recording letters sent by patients and notifications of discharges and deaths of patients.

Short of the few patients that escaped the asylum, the only two ways to leave the institution were via discharge or death. If the patient was discharged, this information was recorded along with where the newly released patient was headed. In many cases, the journal listed a date discharged followed by “sent to the mines” (Reid 1852-1853:24, 43, 96; 1854-1855:38, 44; 1855:35). If a patient died, the date was recorded. Often a presumed cause of death was listed as well. At the end of each calendar year, Dr. Reid recorded various statistics for the asylum, or in 1852, for the “Insane Department.” Data included are the total number admitted, discharged, died, and “in hospital” or “remaining” (Reid 1852-1853:133; 1855:145). Each of these categories is further tallied by sex.

Dr. Reid’s journals coupled with volumes of state reports; including the 1853—Report of the Trustees of the Stockton State Hospital, multiple years of the Biennial Report of the Directors of the Insane Asylum of California, and transcripts of all pre-1900 death ledgers provided by the California Department of Mental Health—provides an excellent array of historical data for the Insane Asylum of California (Kerr 1854, Clayes 1864). Many of the figures presented in these texts are tabular representations of the patient data gathered by Dr. Reid and recorded in his journals. Reports from visiting and junior doctors serve to give a more well-rounded view of the hospital. Included are comparisons of the Insane Asylum of California to asylums in the
eastern United States. The strengths, weaknesses, and very unique characteristics of the asylum are discussed in great detail. It is significant that, as late as the 1863 Annual Report, the physicians continually note how the Stockton asylum is not on par with institutions back east. Even the location of the asylum, they indicate, is extraordinarily unfit.

Indeed, the chief features of the Insane Asylum seem to have been amazingly overlooked in the institution in question. In the first place, an inquiry into the policy of European and Eastern States in founding such Asylums, will show that a primary object is sought for in the location of the buildings and grounds, an object which can only be accomplished in a topography which affords altitude, picturesque scenery, fertility of soil, natural and complete drainage, ample water facilities, accessibility, and good health; yet, while the State of California abounds in sites which would fulfill the indications of such a policy to an unsurpassable extent, the Asylum is located upon grounds so destitute of these general features that drainage, scenery, and water must be revealed and maintained by artificial means, which are expensive, continuous, and troublesome. [Clayes 1864:17-18]

They implore that more money is required to operate the Insane of Asylum of California as it should be, under the recommendations of the AMSAII (Annual Report 1863).

The history of Gold Rush era California, leading up to the need for the Insane Asylum of California, is invaluable in explaining how and why the asylum came to be. It clearly demonstrates the unprecedented need for an asylum in such a young state. The biennial reports, Dr. Reid’s journals, and the other state published documents provide insight to the character of the asylum and the overall state of mental and medical care in Gold Rush California. These sources will be further integrated in later chapters in considering details of human behavior as observed from the mortuary practices of the first burials from the Insane Asylum of California. The statistical information available in these various volumes will also be utilized later; the information available from Dr. Reid’s journals, death ledgers, and the annual reports will be especially useful for
comparison against the osteological evidence gathered from the individuals excavated in 2007. The following chapter, reviewing pertinent literature, will identify a methodological and theoretical framework which can then be applied to this research project to correlate the historical information and data presented here with the body of archaeological data.
CHAPTER III

LITERATURE REVIEW

Introduction

Prior to the rise of Native American rights movements in the 1970s, and the subsequent passage of the Native American Graves Protection and Repatriation Act in 1990, the vast majority of cemeteries excavated and analyzed by archaeologists in the United State were those of prehistoric Native Americans. More recently, as construction and development of the land continues on a large scale, a larger proportion of cemeteries excavated are historic. In particular, the cemeteries most often disturbed today are historic cemeteries of groups who were marginalized in life; people who were economically and socially disadvantaged (Bell 1994:3-8).

Historic cemeteries of the marginalized are more often slated for removal, relocation, or excavation for two main reasons. First, many times few or no living people can link themselves to the individuals buried in these cemeteries. Without familial links between the living and the deceased, there is often little personal interest in ensuring the preservation of these cemeteries. Thus, there is often no opposition to the removal or relocation of such cemeteries.

Secondly, these cemeteries are more likely to be unmarked or poorly marked. In such cases, it is oftentimes not known that a cemetery is present until it is disturbed. The excavation of the cemetery at the Insane Asylum of California fits this trend. There
were no above ground markers for any graves at this cemetery. Only after burials were discovered during construction activities did archival research come to light indicating the location of the asylum’s first cemetery and its years of use. For this cemetery and others like it there is much less of a precedent for mortuary theory and standardized analysis.

Individuals who are marginalized in life are often not treated in accordance with the social and cultural norms of the era, whatever they may be. The same holds true in death. In many ways, though harsh, the resulting phenomenon is easily understood, that those on the fringes of society are not buried in the same manner as the middle class or upper class. But the specifics of this phenomenon create many intricate difficulties. The marginalized often do not fit into an easily identified category. Whereas people who are an integral part of a larger social network are more easily associated with their “place” in life, such as the middle class, upper class, religious, mother, wife, husband, father, community leader, and so on, this is not the case with the marginalized. Aside from being “insane” or “mad,” who were the people in the Insane Asylum of California? As evidenced by archival documents, some of these individuals were well educated at one time in their lives, had respectable careers, and some even came from rather well off families. How are they to be, or can they be, categorized once committed as patients in an insane asylum? If even possible, could such categorization assist in predicting the expected manner of burial treatment?

Where many avenues of mortuary practice analysis may help in the burial of an esteemed religious leader, a wealthy aristocrat, or even a hard-working father and husband; much less relevant help is available for research in the expected burial patterns
for the indigent, the sick, the incarcerated, or the insane (Bell 1987; Bell 1994; Rathbun 1987). This void in relevant mortuary analysis theory stems from a variety of sources, some academic and some practical.

There are problems with applying methods developed primarily for prehistoric cemeteries to any historic cemeteries, but especially to the cemeteries of those who lived on the periphery. This is because the majority of mortuary analyses assume that the burial population is consistent with the corresponding cultural group as a whole (Binford 1971; Saxe 1971; Brown 1971).

For example, a prehistoric burial site associated with a village site would generally be assumed to be representative of those individuals who resided at the village. Or in a historic context, a cemetery of a colonial American town would most often represent those who made up the entire town (Brown 1993:146-157). In either case, families, males, females, infants, the elite, the middle class, would all be expected with a few exceptions. Those few exceptions would generally include known criminals, atheists, prostitutes, and the insane. Historically, all of these groups were usually given different burial treatments. As a consequence of these general practices, most mortuary theories have been developed to analyze such sites with a tendency to focus on teasing out meanings from burial sites which are used by the majority of the population. The primary objective among countless prehistoric and many historic burial analyses is to assess status among burials. This is precisely why cemeteries devoted to the marginalized pose such a problem; the status of the individuals buried in these cemeteries is already known. There are no strong theoretical frameworks designed explicitly to explore other aspects of
mortuary analyses. Thus, cemeteries of the marginalized are exceedingly difficult to assess using traditional theoretical frameworks intended for mortuary analyses.

In the academic realm, mortuary practice analysis is often based on ethnographic and observed burial patterns and beliefs (Binford 1971; Saxe 1971; O’Shea 1984; Pearson 2000). Because of this, the mortuary patterns of cultural groups with recorded history are the groups most often utilized to theorize and postulate. Burial rituals are generally perceived as representational; they are intended to convey meaning such as status, importance, love, remembrance, relationships, wealth, power, and even personality. Or, at the other end of the spectrum, burial rituals of war deaths may display the opposite sentiments.

Of course, there are many other things that burials can convey between these extreme and the more usual positive implications. For the living to have any need or desire to convey meaning about the recently deceased, they almost inherently must have some relationship with the dead, be it positive or negative. These elements are often lacking in the burials of the marginalized. One does not devote time or money to bury a person unknown and unimportant to them; it defeats human logic. This results in little information about how the living bury the dead with whom they have little or no relationship.

To wade through the development and changes in mortuary analysis, from the earliest studies of prehistoric burials to more modern methodologies of analysis, eventually gives way to the realization that there is not a single, effective methodology to analyze and assess all inclusive aspects of the cemetery. To thoroughly investigate both the mortuary practices and the osteological data, the selected theoretical approach must
take the best of multiple methodologies designed to address each specialty and incorporate these individual elements in a cohesive manner. In doing so, it is possible to construct a suitable methodological and theoretical framework by which to assess the burials, cemetery, and overarching mortuary patterns of the cemetery of the Insane Asylum of California.

Following is review of all relevant academic literature examined to facilitate the construction of such a framework, one which is able to address the particular concerns of my projects, as outlined above. First, a discussion of osteological analysis of historic cemeteries is presented. Next, the development of mortuary practice analysis is addressed. This may, at first glance, seem redundant to the review of osteological analysis, but in fact the two vary greatly. In most instances, analyses of mortuary practices address osteology very little and instead focus on the development of hypotheses to be tested against observed burial patterns. In the reverse, many studies whose focus is the osteological aspect of the given project, often deal very little with overarching theories applicable to the act or process of the burial. This section is divided into two parts; first the earliest works in mortuary practice analysis are discussed. Next, more recent applications and developments in the field are presented; these works, concerning historic cemeteries, integrate historical archaeology in the application of mortuary practice analysis. It is in these approaches that one can find relevant studies to assist in an interpretation of both the individual burials and the cemetery as a whole from, Stockton or elsewhere. Finally, this chapter is concluded with a look at similar previous research, especially studies pertaining to analysis of class, status, and the marginalized. These elements of particular studies are addressed, as are the theoretical framework, the
specific site, or individual components of an analysis that will be useful in the structuring of this research.

Osteological Analysis of Historic Burials

A surprising number of studies of historic cemeteries do not involve the analysis of human remains. In fact, many do not even involve excavation (Rainville 1999; Cannon 1989; Bell 1987; Gorman and DiBlasi 1981). While much can be learned from the investigation of gravestones alone, and the analysis of coffin details and burial associated artifacts contributes additional elements to the study of historic cemeteries, the value of these interpretations can be vastly strengthened if human remains are analyzed as well. The inclusion of osteological analysis of skeletal remains from historic cemeteries provides a unique avenue to contribute to these studies, with the ability to reveal otherwise unavailable data.

At the very least, osteological analysis can provide details of the age at death and sex of the individuals buried in a cemetery. It is likely that estimates of stature and race are possible, depending on skeletal preservation, can be provided as well. Pathological conditions, congenital conditions or disease, infectious disease, general health, dental health, diet and nutrition, trauma, injuries, violence, occupation, and mortality profiles are among the long list of information that osteological studies can potentially yield (Bass 1995; Owsley 1990; White 2000; Ortner and Putschar 1985; Larsen 1997). With the integration of historic information, in some instances it may be possible to positively or tentatively identify individuals.
The application of trace element and isotopic analyses to the study of historic burials adds yet another means to glean data from skeletal remains, with the potential to shed light on aspects of diet, poisoning, and nativity (Handler et al. 1986; Bower et al. 2005; Cox et al. 2001). All of the potential evidence that osteological studies can provide, especially when coupled with historical documents, offers a greater breadth and depth of knowledge historic cemeteries and those buried within them. Data gathered via osteological studies may reveal previously unknown patterns of health, disease, or violence. Such studies may also elucidate data in sharp contrast to that provided by historical documents, especially in the case of burials of marginalized or low status individuals.

A significant portion of the published research in this vein tends to come from plantation archaeology (Owsley et al 1987; Rathbun 1987; Corruccini et al. 1982; Handler and Lange 1978; Rathbun and Scurry 1983). These studies, while addressing historical aspects of class and race, are greatly strengthened by the incorporation of osteological analysis of skeletal remains. Aspects of health, disease, violence, and contradictions of falsehoods presented in historical documents are some key contributions of the osteological evidence.

Ted Rathbun’s (1987) analysis of a nineteenth-century South Carolina plantation cemetery illuminates the value of incorporating osteological data to the analysis of historic cemeteries. In introducing the role of osteology in such projects, he states (1987:240) “human skeletal remains, besides deserving comprehensive analysis in their own right, can provide complementary findings to historical and archaeological research.” Thirty-six individuals were analyzed in this study. The information provided
by these skeletal remains was compared to historical documents from that plantation and from the larger body of historical information concerning plantation archaeology. In addition to completing all standard analyses of the skeletal remains, this project included trace element analysis for the remains of all adults and complete x-rays for all individuals. From the trace element analysis levels of calcium, zinc, strontium, copper, and lead in bone were identified. Results of these indicated that the diets of the slaves buried in this cemetery likely consumed a diet lacking in animal protein and high in plant materials; this data is corroborated by historical accounts of slave diets.

For the analysis of lead present in bone, both males and females revealed higher levels than recorded for whites buried on southern plantations. However, the males had levels significantly higher than the females. Rathbun indicates that more historic and archaeological research investigating this suggestion of differential access to food sources by males and females should be conducted to shed further light on the subject (1987:249-250). The x-ray analysis enabled the investigation of the frequency of Harris lines, generally interpreted as developmental arrest followed by a period of recovery. The condition appears as lines of increased bone density formed on long bones at the position of the epiphyseal plate when the developmental arrest occurred (White 2000:526). The underlying causes of the condition include infectious disease, malnutrition, or trauma (White 2000:382).

The standard osteological analysis of these skeletal remains provided the bulk of the data in this study. Following the determination of sex and age at death, as appropriate additional observations considered relative frequency between the sexes and also age at death. Dental disease, including antemortem tooth loss, caries, abscesses, and
hypoplastic lesions were analyzed. Aspects of disease and health, including occurrence of infectious disease and cribra orbitalia were investigated. Indicators of physical stress were also considered; this included the investigation of all observable degenerative changes.

Osteological evidence can be applied in a similar fashion to the cemeteries of the institutionalized, such as the case of the Insane Asylum of California, and the otherwise marginalized (indigent populations, paupers, etc.). Examples of this type of study are not as common as osteological analysis in plantation archaeology, but every bit as informative (Edwards et al. 2005; Buzon et al. 2005; Gust et al. 2007; Lanphear 1990; Grauer et al. 1999; Bower et al. 2005; Lee and Magilton 1989).

The paucity of data from historic skeletal samples, especially from the western United States, has not gone unnoticed by physical anthropologists and historical archaeologists alike (Buzon et al. 2005). Buzon’s research, concerning the analysis of 90 out of a total 751 burials excavated from the Golden Gate Cemetery in San Francisco, may be one of the largest collections of early historic skeletal remains from the western United States. From California, published works of such studies are few. The Buzon et al. article concerned only the skeletal evidence of the cemetery. The complete report of the excavations of the Golden Gate Cemetery, which includes discussion and analysis of mortuary patterns and coffin types, is unpublished and not available to the general public (Chattan et al. 1997). Similar reports include the analysis of excavations at the historic Sacramento County Hospital cemetery and the Historic Los Angeles Cemetery. Although these reports are helpful for comparative value, both are CRM reports and are lacking a cohesive theoretical base which fully integrates the osteological data with the greater
understanding of interpretations of mortuary practices as they relate to human behavior and culture.

Temporal Development of Mortuary Practice Analysis

Some of the earliest well-known work pertaining to status and social aspects of prehistoric burials was conducted by Binford, but a few much earlier sources offer some relevant ideas; ideas that were built upon by Binford and his contemporaries (Binford 1964, 1971; Saxe 1971; Brown 1971; Tainter 1975). These early works generally offered more by way of observation and hypothesis development, but with little by way of hypothesis testing.

In 1927, Alfred Kroeber, upon observing great variance in burial patterns among California’s Native Americans, suggested that the burial and disposal of the dead have little association with one’s relationships or social status in life. He also indicated that it was his belief that emotions play a small role in burial patterns. About death related activities he writes “…the immediacy and intensity of emotion concerning a cultural practice are no index of the origin or durability of the practice (Kroeber 1927:313).

Even at that time, it seems that Kroeber had little support in these ideas. Most anthropologists did believe, as is usually the case today, that social status, interpersonal relationships, and emotion all play a role in mortuary patterns. A more readily acceptable assessment of burial treatment comes from Lubbock (1900). His analysis of nearly 300 burials considers traits for each burial that are still examined in modern analyses; body orientation, method of corpse disposal, grave goods, and type of grave. He suggested that
the “monumentality,” interpreted as the investment of time, wealth, and labor to create the burial observed was a direct indicator of the status of the individual within the grave (Lubbock 1900:134-137). This simple, direct correlation remains common today.

In discussing Lubbock’s work, Bartel (1982:36-37) observes three central themes that he views as typical to many late nineteenth- and early twentieth-century mortuary studies. The three related points are as follows: (1) archaeologists acknowledge the “extreme variability found in the worldwide ethnographic sample of mortuary practice;” (2) they apply “simple singular analogic argumentation to archaeological cases;” and (3) they make “direct correlations among socioeconomic status, qualitative and quantitative aspects of grave goods, and monumentality of burials.” Bartel contends that these points are still commonly held in more modern analyses, and that they impede the progress of the field. In Bartel’s words “these early simplistic correlations which still subtly permeate recent excavation reports have made the transition to more behaviorally realistic interpretations difficult” (1982:37).

Still working in the first quarter of the twentieth century, Radcliffe-Brown provides another useful example of mortuary practice research (1922). Radcliff-Brown, more so than Lubbock and certainly more so than Kroeber, attempted to view the death of an individual as it related to the larger social group. According to Bartel (1982:39), much of the contemporary research, and the significant work of Binford, of mortuary practice stems from the work of Radcliffe-Brown. Radcliffe-Brown’s work marked the beginning of what Bartel terms the ‘problem-oriented ethnographic research concerning mortuary practice within the context of social relationships.”
Radcliffe-Brown was one of the first researchers to contest the idea that the corpse is instinctively feared, and thus dealt with primarily on these emotions. Instead, understanding the place an individual held in life, death was viewed as a loss of a part of the social group. In his primary work directly addressing processes of death, writes

A person occupies a definite position in society, has a certain share in the social life, is one of the supports of the network of social relations. His death constitutes a partial destruction of the social cohesion, the normal social life is disorganized, the social equilibrium is disturbed. [1922:285]

Though this is likely easily understood by most individuals on a personal level, this is not how anthropologists had treated the event of death or the actions that follow a death. Such an idea is much harder to interpret or understand archaeologically. I cannot help but consider this quote and think of what a death would have been or meant to the Insane Asylum of California. Those people did have a definite position in society, at least while patients at the asylum; but were they in any way “supports of the network of social relations”? Did deaths in the Insane Asylum of California constitute, in any way, shape, or form “a partial destruction of the social cohesion” or disturbance in the social equilibrium? Possibly, within the patient population these effects would have been felt after the death of a fellow patient. However, the clear separation between the patients as a social group and the asylum staff, who must carry out the burial, creates interesting challenges in applying Radcliffe-Brown’s (1922) ideas about death and burial practices with reference to the mortuary practices afforded to the institutionalized.

Much later, in 1971, Binford’s work picks up where that of Radcliffe-Brown, Lubbock, and Kroeber left off. Binford not only suggests what can and should be done to
examine status, class, and the like in a mortuary context, but also attempts to test several hypotheses. However, the execution of these analyses leaves much to be desired.

Binford used the Human Relations Area Files (HRAF), drawing 40 ethnographic samples from non-state organized societies to test his hypotheses. The HRAF, founded in 1949 by Yale University, is an internationally known organization primarily intended for the field of cultural anthropology. The database is intended to further enable comparative studies of behavior, culture, and society. Binford creates three hypotheses to be tested with the data from the HRAF. First, he says “there should be a high degree of isomorphism between (a) the complexity of the status structure in a socio-cultural system and (b) the complexity of mortuary ceremonialism as regards differential treatment of persons occupying different status positions” (1971:18).

Unfortunately, this hypothesis is immediately followed by a declaration that the hypothesis proved untestable. Binford (1971:18) states “This proposition could not be directly tested since in no case was the ethnographic description adequate either for determining all the forms that mortuary ritual might take in a single society or for determining the correlates of different forms.”

His next hypothesis, basically stating that there should be an observable correspondence between the differential mortuary treatment and criteria for status differentiation of individuals is based on a progression of simple to complex societies. He expected to see mortuary treatment for simple societies, such as hunter-gatherers, as more egalitarian. Here, mortuary treatment would differ based largely on factors such as sex and age. In more complex societies, agriculturalists and pastoralists, he expected status,
social role, and ranking systems to have an increased role in determining differential mortuary treatment.

His tests use four classes of societies, from most simple to most complex; hunter-gatherer, shifting agriculturalist, settled agriculturalist, and pastoralist. Binford (1971:20) concludes that the “striking differences noted between agriculturalists and hunters and gatherers are taken as confirmatory evidence for the proposition advanced.”

It should be reiterated that Binford used only 40 ethnographic cases and no archaeological data whatsoever. Of the 40 cases, 15 were hunter-gatherer, eight were shifting agriculturalists, 14 were settled agriculturalists, and only three were pastoralists.

Binford’s third, and final, hypothesis looks to relate aspects of group size and age ranking with how these factors effect the burial rituals afforded to an individual in the given society. He examines differential treatment and preparation of the body, along with contributions to the body. It is his assumption that younger individuals, with lower status, will receive less elaborate burial treatment than older individuals within the same society. Binford concluded that the burial treatment of children and infants fell into the realm of the immediate family only, whereas the treatment of adults was more likely to incorporate the entire community. He does, albeit briefly and without specific evidence, address the instance of a child with high social status by stating that, “When a child dies within a society in which social position is not inherited, very few duty-status relationships outside of the immediate family are severed” (1971:22). For this hypothesis, he makes no distinction among the four classes of society used for his two previous analyses. Overall, the conclusions of this last test are vague at best.
For the shortcomings apparent in the tests of Binford’s three hypotheses, he does accomplish significant steps toward testable mortuary theory. Binford is somewhat successful in showing that mortuary practices are affected by the social structure and organization of group carrying out burials. Even with a small data set, it is shown that the more complex a society, the more variability in mortuary practices. The link between social status, or the inference of social status, and mortuary practice continues to be the subject of studies today. Bartel’s summary of Binford’s work is appropriate; he claims that Binford’s work “is of great importance,” but then points out in the decade that had passed since its publication, there had been very few archaeological studies testing or elaborating upon similar hypotheses (Bartel 1982:50-52).

Around the same time Binford’s work was published, Saxe (1971), in the volume *Approaches to the Social Dimensions of Mortuary Practices* and related publications, makes equally important contributions. Saxe created and tested eight hypotheses, each with an assumption concerning the complexity of a society and the place of an individual within the society or concerning the complexity of a society as compared to another society. Only four hypotheses, those concerned with intrasocietal aspects, were testable.

Observations of mortuary behavior afforded to individuals of known status or rank within a society with a known structure, served to either corroborate or contradict his predictions. These hypotheses each address how varying degrees of social organization and one’s place within the social structure may be used to predict the mortuary treatment afforded to the individual.
Saxe (1971), much like Binford (1971), concluded similar results, through direct linkage; between treatment in death one should be able to infer the organization and complexity of the society which carried out the observed treatment of the dead. Saxe’s work ultimately varies little from that of Binford; it nearly follows his hypotheses, data sets, and tests. Saxe’s data too is taken from ethnographic, not archaeological, sources. The problem with both Saxe’s and Binford’s work is not in the hypotheses they are testing or in their conclusions. Their paradigm, that social status can be observed through mortuary patterns, has become commonplace today. One problem lies in the manner by which they each reach their conclusions; neither actually uses archaeological data. Nor do they offer real suggestions for how one may go about conducting like research while utilizing archaeological data, as opposed to purely ethnographic data. A second problem is that no researchers appear to be interested in mortuary research concerning any topic other than aspects of class and status.

Nearly a decade later archaeologists like Bartel (1982), O’Shea (1984), Chapman et al. (1981), Cannon (1989), and Bell (1994) began to build beyond the work of Binford and Saxe. O’Shea’s (1984) *Mortuary Variability* is an excellent source for developing a strong theoretical base for analysis of prehistoric mortuary variability. O’Shea, unlike most previous researchers, has a clear focus on archaeological evidence and statistical data analysis. Previous studies, utilizing primarily ethnographic data, failed to address the difficulties in developing hypotheses with ethnographic data and then finding an appropriate manner by which to apply them to archaeological settings. O’Shea (1984:33) outlines a set of four principles; these principles are intended to create “an explicit and logical foundation upon which analysis can be based.” Each principle is an
expected norm of the variability within mortuary behavior. For example, principle two
states “a mortuary population will exhibit demographic and physiological characteristics
reflecting those of the living population” (O’Shea 1984:34).

While these principles are intended to be implicit, and they are for the
prehistoric populations that O’Shea presents in his own research, they are not necessarily
implicit for many historic cemetery populations. This is the case for the cemetery of the
Insane Asylum of California, an assumption of an intact social structure of the living
population is clearly false. These principles, and those of nearly all previous works, are
directed at intact societies. It is assumed that a burial population is representative of the
society’s cultural norms for the era.

O’Shea’s (1984:50) study is designed to investigate three aspects of mortuary
variability in an archaeological setting: (1) mortuary variation as an expression of social
differences within the living society; (2) changes in a society’s mortuary treatment
through time; and (3) “the expression of ethnic distinction through mortuary practices.”
O’Shea is very clear in pointing out the importance and difficulties of actually testing
archaeological mortuary theories with archaeological data. He draws attention to
depositional processes which may falsely amplify or obscure mortuary patterns and also
to considerations of excavation and recovery of archaeological data. The examples that
he used for his three test cases, the Arikara, the Pawnee, and the Omaha, were chosen
because of the availability of ethnographic data as well. O’Shea (1984:50) intends for this
to serve as an “independent check” on the conclusions reached by the archaeological
analysis. This choice also makes O’Shea’s work easily compared to the earlier works of
Binford and Saxe; an invaluable asset in justifying his conclusions and furthering his approach to the study of mortuary practices.

O’Shea does find that mortuary practices observed through archaeological data are consistent with the ethnographic data for each of his examples. In concluding, O’Shea (1984:302) remarks

Conversely, by transforming archaeologically observed mortuary patterning into a structural description of societal differentiation, it may finally be possible to identify varieties of societal organization that are wholly undocumented in the ethnographic record.

Unfortunately, for my research, O’Shea’s research concerns only prehistoric burials. So the distinct element of correlating historical archaeology to the analysis of burials is lacking in his work. Still, O’Shea’s work serves to greatly buttress the work of his predecessors and illuminate ways in which future studies of mortuary practices may yet improve. Shortly after O’Shea’s study was published, Edward Bell began producing a wealth of information specifically concerning historic mortuary practices (1987, 1994).

Historical Archaeology and Recent Mortuary Practice Analysis

Bell (1994), in *Vestiges of Mortality and Remembrance: A Bibliography on the Historical Archaeology of Cemeteries*, provides an excellent and relevant overview of mortuary practice analysis specifically as it relates to historic cemeteries. He addresses many of the difficulties inherent in applying theories originally developed for prehistoric archaeological studies to a setting of historical archaeology. These difficulties include that fact that historic cemeteries are being increasingly disturbed and excavated, challenges in analyzing the cemeteries of the lower class, and the lack of published data
pertaining to such excavations. While Bell addressed many of these particular difficulties, he also focuses on the opportunities in working with such cemeteries. He states:

Increasingly, archaeologists are investigating historical burial sites, nearly always in response to accidental discoveries or in the course of archaeological surveys undertaken in advance of new construction ... Historical archaeology, with its combined historical, anthropological, and archaeological approaches, has the advantage over purely documentary history in encountering often informatively divergent material assemblages left behind by many social groups, whose past has been misrepresented in written sources or completely lost in the passing of time and memory. Comparisons among cemeteries can detect trends among disparate segments of society.... [1994:2]

Though they are the primary sources that must be drawn upon, Bell (1994) acknowledges that most existing applications of mortuary practice analysis may be of little value to historic cemetery analysis. One example, the problem of interpreting mortuary artifacts unilaterally as an indicator of status, as is commonplace in prehistoric mortuary analyses, is not readily applicable to historic applications. Bell suggests instead approaching the interpretation of historic mortuary patterns within the framework of material culture analysis. His seminal work (1987), *The Historical Archaeology of Mortuary Behavior at a Nineteenth-Century Almshouse Burial Ground*, is a study of nineteenth-century American deathways as evidenced via the artifacts recovered from the Uxbridge Almshouse cemetery in Massachusetts. The excavated portion of the cemetery, used between 1830 and 1872, contained 31 individuals. Around this same time, the beautification of death movement was well underway. In the late eighteenth and nineteenth centuries, there was a dramatic shift in the treatment of death and burial in America.

Prior to this movement, death in America was a much more somber affair. Decorative themes of death’s head, skull and crossbones, scythes, skeletons, and hour-
glasses prevailed. As the beautification of death movement progressed, themes of willows, flowers, seraphs, cherubs, and heaven’s gates prevailed (Dethlefsen and Deetz 1966; Deetz and Dethlefsen 1971; Bell 1987:40-46). Death photography, paintings, needlework, and embroidery gained popularity, as a means to commemorate and remember the dead (Pike 1980; Mitford 1963). Instead of viewing death as the grim end, death was increasingly interpreted as release to heaven. As such, it was not remembered darkly and negatively, but instead with romanticism and sentimentality. Even the cemetery changed, instead of crowded and dismal churchyard cemeteries, cemeteries were increasingly designed as landscaped parks intended for the pleasure of visitors (French 1974). This gave rise to the rural cemetery, still very popular today.

Aside from these changes in memorial items and above ground aspects of the burial, the beautification of death movement incorporated new ideas for the coffin and associated items as well. The business of manufacturing coffin furnishings; including decoration, glass viewing plates, handles, screws, hinges, and nameplates, grew and changed dramatically during this period. This marked the first mass-production of coffin hardware, which was marketed across the country in the catalogs of the newly formed manufacturing companies.

Bell’s work at the Uxbridge Almshouse examines evidence of this movement, while bearing in mind particular reference to the social class of those buried in its cemetery. While the beautification of death movement is well documented historically, and to a lesser degree archaeologically, little of this documentation concerns marginalized groups of people. Bell’s research of the Uxbridge almshouse is designed to address this deficit. His research unveiled aspects of the mortuary practices afforded to
those on the periphery. Bell (1987:128-129) found that the burials of the almshouse clearly followed the trends of the beautification of death movement, albeit with a notable emphasis on lower-cost materials. For example, where two coffins had glass viewing plates, which are very strongly associated with the beatification of death movement and are somewhat costly, it appears that the viewing plates of these two coffins were roughly fashioned out of repurposed window pane glass.

Bell (1994:22) suggests that “mortuary assemblages are first placed within the historical and cultural context of deathways in the industrializing world. Funerary artifacts are not viewed simply as status indicators, but are understood as playing an active role in communicating ideas about class and class relations.” First, the mortuary practices of a cemetery should be interpreted with reference to site-specific context. For example, any historical evidence available pertaining to the site should be used, as well as any references about the cemetery or the population that used it should be considered. Second, parallel lines of evidence examined, including osteological findings and artifacts, are incorporated from comparative examples drawn from other cemetery sites. Finally, the results are interpreted on three levels; site-specific, intersite, and on a larger, cultural scale. What is notable about the mortuary patterns observed at the cemetery, particularly with respect to the historic context of the cemetery? How is it similar to and different from comparable studies? How, if at all, do the mortuary patterns observed at the cemetery differ from the expectations of mortuary practices for the time? Bell (1994:23) summarizes this approach easily as, “multiple scales of observation and meaning guide the interpretation.”
This approach that Bell advocates, framed within tenets of material culture analysis, is an excellent fit for my analysis of the cemetery excavations at the Insane Asylum of California. This will make use of all types of data and resources available and construct a framework in which the results have the ability to strengthen existing knowledge, provide new information, and lead to further research questions.

Comparable Previous Research

Though Bell, Cannon, and Little et al. have provided some of the preeminent sources where mortuary practice analysis of historic cemeteries has been conducted using a strong theoretical base, most of these research cases are of little comparative value to my research interests. One could say that Bell’s research, examining the nineteenth-century almshouse burial ground in Massachusetts, is the best single example of a historic cemetery analysis. Unfortunately, his research does not incorporate osteological data, and the site is located too far away to relate spatially to my data from Stockton, California.

Cannon’s research examining status displays in mortuary practices large via headstone types, while intriguing, again offers little in direct relation to the Insane Asylum of California (1995). No headstones were present in the asylum’s cemetery. The research of Little et al., working with a nineteenth-century family cemetery in Virginia, is well executed and does incorporate osteological data. However, since this study is of a small family cemetery and not an institutional cemetery, many variables relevant to the analysis of the Insane Asylum of California burial patterns are not a part of this analysis, thus Little et al.’s (1992) research is not useful for comparative value.
A few specific archaeological studies of the marginalized prove helpful in fleshing out ways to address the artifacts, or lack of artifacts, found at the Insane Asylum of California. These studies strongly focus on how the material culture left behind by institutions can be interpreted as expressions of the ideology social reformers of these institutions (Spencer-Wood and Baugher 2001; Baugher 2001). The Spencer-Wood and Baugher (2001) study titled an *Introduction and Historical Context for the Archaeology of Institutions of Reform. Part I: Asylums* discusses three asylums with dates ranging, inclusive of all institutions, from 1845 to 1917. This time period overlaps with that of the cemetery of the Insane Asylum of California. Though the institutions examined here are located in Tasmania, South Australia, and Philadelphia, many of the general trends in asylums and institutions during this time were similar throughout Western cultures. This study entails the analysis of architecture, artifacts, and landscape design of institutions. Though none of these elements were present at the excavations in Stockton, this paper does provide a strong background of the history of such institutions, as it directly relates to their interpretation in an archaeological setting.

The work of Baugher (2001), an archaeological analysis of artifacts from the New York City Municipal Almshouse Complex dating from 1736 to 1797, is primarily an investigation of artifacts and faunal remains. The findings revealed a significant amount of artifacts that would generally be thought of as “middle class,” not items that one living in an almshouse would posses. Such items included decorated dishes, tea sets, Chinese porcelain, and pewter ware (Baugher 2001). The Baugher (2001) and Spencer-Wood and Baugher (2001) articles proved useful in providing background information and examples of the application of material culture analysis to sites of institutional reform.
Although the published works discussed above offered a great deal of data, insight, and useful methodologies; none are adequate for use in comparative data analysis for my particular research project. After careful consideration, two previous studies were selected for comparative analysis. Neither are published works, like those discussed previously. Instead, these reports are all the work of cultural resource management firms. As such, they tend to lack a strong theoretical framework. In exchange, they offer the nearest correlation of demographic, osteological, and mortuary data to that of the Insane Asylum of California. Both are from relatively recent excavations of historic cemeteries in California. Though these cemeteries are not as old or as temporally discrete as that of the Insane Asylum of California, they each contribute elements to strengthen my analysis of the cemetery excavation in Stockton, California. While the Insane Asylum of California cemetery was most used only briefly, from 1851 until approximately 1854, the cemeteries of the two selected comparative studies were each used for about 35 years. The first study, an excavation of 72 burials from the Sacramento County Hospital, with estimated dates of use from 1891 to 1927, is physically the closest site to the cemetery in Stockton (Edwards et al. 2005). Additionally, the Insane Asylum of California records indicate that patients were frequently transferred to the Sacramento County Hospital for medical treatment. The second study selected for comparison is the excavation of the Golden Gate Cemetery in San Francisco. This excavation, conducted in 1997, exhumed 751 burials. Of that number, the skeletal remains of 90 individuals were further analyzed (Buzon et al. 2005). Through archaeological and historic data, the dates of use for this cemetery are estimated to range from 1868 to circa 1906. Both the Sacramento County
Hospital cemetery and the Golden Gate Cemetery served socially marginalized and economically disadvantaged populations.

Using tenets of material culture analysis in framing the mortuary practice analysis aspect of my research, paired with the osteological analysis, provides a strong foundation for the analysis of the cemetery of the Insane Asylum of California. From there, the mortuary practice analysis and osteological analysis can be coupled with the use of these two comparable studies, thus placing the entire investigation on a larger, inter-site level of investigation. Incorporating the array of historic information available about the Insane Asylum of California, Gold-Rush era California, and the development of asylums in America will add another dimension to the value of this research, as will the contributions of the data gathered directly from the cemetery excavations. This approach will enable the cemetery of the Insane Asylum of California to be interpreted on three significant levels; first on an intra-site level, then an inter-site level, and finally, on a larger cultural scale. This mirrors the overall approach advocated by Bell (1987, 1994).
CHAPTER IV

METHOD AND THEORY

In designing the research methodology for this project, it was clear that the underlying theoretical framework must be able to bring together all the elements of the project. Material culture studies quickly stood out as an excellent way to incorporate and address all avenues of evidence available from the excavation. This, at first, seemed a bit counterintuitive, given that there is very little by way of material items recovered from the cemetery of the Insane Asylum of California. However, the interpretive value of any site lies equally in what is not present as it does in what is present. For this research, it is what is not present that can shed light on aspects of the behavior some of California’s earliest settlers.

With this material culture analysis, under the larger umbrella of interpretive archaeology, it is possible to incorporate supporting avenues of research. First and foremost, the osteological data is integrated into this study. This data is interpreted and analyzed with reference to historical information about the Insane Asylum of California and also against comparable previous research projects. Archival research will be integrated with a similar approach as well; incorporating accounts of life in California during the Gold Rush era and documents pertaining to the Insane Asylum of California.

This interpretive approach for the analysis of mortuary practices emerges as the best way to thoroughly explore the research potential of this project. In this manner,
all possible avenues of data and interpretation may be investigated in order to gain access
to the larger picture, interpreting the site first with reference to Gold Rush era California
and then with regard to trends across the country.

Theoretical Framework

While the majority of mortuary practice analyses are grounded in processual
archaeology, this same majority of research is also concerned with prehistoric burial
practices. As such, these approaches prove to be a poor fit for the research of historic
cemeteries. As discussed in the previous chapter, many archaeologists whose research
concerns historic cemeteries have lamented this problematic paradigm (Bell 1987, 1994;
Little et al. 1992; Cannon 1989). The work of Bell in particular has greatly advanced
mortuary practice analyses of historic cemeteries.

His own research design is intended to accomplish two goals. First, to
approach research of historical cemeteries armed with an appropriate theoretical
framework, interpretive archaeology as opposed to the processual approach that is
typically used. Second, Bell is intent on creating a methodology which will enable him to
address larger questions of the site; creating an examination of the site on three levels.
Bell suggests intra-site and inter-site interpretations; along within interpretation of the
site with reference to broad, overarching questions or trends.

Utilizing this methodology developed within a framework of interpretive
archaeology, Bell’s research set a new precedent for the research and interpretation of
historic cemeteries. Since Bell’s seminal work in 1987, his more recent work and that of
others investigating historic cemeteries have increasingly used interpretive archaeology

Interpretive archaeology, though often thought of as analogous to postprocessual archaeology, is more clearly viewed as a focus within postprocessual archaeology. Postprocessual archaeology, with its emergence in the 1980s, developed as a direct reaction to processual archaeology. Where processual archaeology was rooted in hard science and took a largely anti-humanistic and purely objective view, postprocessual archaeologists touted a dramatically different point of view (Hodder 1991:8-10; Erickson 1998:121).

Instead of proclaiming objectivity, researchers must acknowledge that they are inherently biased; inevitably, this affects research design, hypothesis formulation, and data analysis. Contrary to the approach of processual archaeology, these inherent biases are not viewed as detrimental. Simply, this natural subjectivity must be acknowledged and addressed by the researcher. In doing so, research is placed within a larger, cultural context; it includes, rather than excludes, the researcher. Though this process guides and shapes the archaeologist’s research from beginning to end, it also serves to create a more realistic understanding of the past, one that always has been and always will be created by humans with their inherit beliefs, agendas, and biases.

Due to the reactive environment the led to the inception of postprocessual archaeology, there has been a tendency to focus on theory over methodology and discourse over analysis. Interpretive archaeology offers a remedy; it incites the archaeologist to act as an interpreter of the data and to present a story of the past. Ian Hodder (1991:15-16), a prominent figure in postprocessual and interpretive archaeology,
summarizes it well; “To interpret is therefore to act because the interpretation releases the past into public debate. It forces us to translate the past into a story we can understand. Interpretation forces us to say something, and therefore engage with others who would tell different stories.”

Bell’s 1987 research of the Uxbridge Almshouse cemetery in Massachusetts does exactly this. In this study, he examines four components of mortuary patterns on multiple scales of reference. The beautification of death movement, beginning in the late eighteenth century and continuing throughout the nineteenth century, was marked by a transformation in attitudes toward death, treatment of the dead, and perhaps most notable, the inception of mass produced funerary items (Pike 1980). These changes are well documented historically, and to a lesser degree archaeologically (Bell 1987:viii). However, these trends are not well documented archaeologically among marginalized populations. Bell argues that this deficiency can be remedied:

If the descriptive and explanatory baselines provided by studies of historical American death practices were more fully integrated within the research strategies of historical archaeologists, then studies of mortuary sites could yield significant information on changes in death practices, especially among underdocumented social groups. [1987:2]

In Bell’s study he examined the gravestones, burial containers, coffin furnishings, and burial associated artifacts found at the Uxbridge cemetery. These materials are analyzed first with reference to Uxbridge almshouse site and the town of Uxbridge, and then on a greater scale of the trends associated with the beautification of death movement in America. My research of the Insane Asylum of California cemetery in Stockton largely followed this framework; I examined the same four components from the Stockton cemetery. These elements are interpreted on varying scales of significance;
first with reference to the asylum site, then with regard to Gold Rush era California, and
finally with reference to temporal trends in mortuary practices throughout America. In
addition to the four elements considered by Bell, I also examine interment patterns of the
site. This data may provide additional insight as to how the mortuary patterns of the
Insane Asylum of California relate to mortuary patterns of more mainstream populations.

The other primary facet of this site, the skeletal remains, are subject to a
complete investigation as well. This data is analyzed with regard to evidence and patterns
of health and disease among the insane asylum population. The data is, in a manner
somewhat similar to the material elements of the site, compared against existing data
from other early California historical cemeteries.

While the material culture from the Insane Asylum of California cemetery and
the skeletal remains are, by methodological necessity, analyzed independent of each
other, in the end the resultant information from these two facets are brought together. The
ultimate intent of this project is that the full spectrum of information gathered provides a
realistic depiction of life and death at this unique insane asylum, while at the same time
addressing how the institution relates to the larger picture.

Documentary Research

This project benefited greatly from documentary and archival research. Two
repositories, the California State Archives and the California Department of Mental
Health, proved to be by far the most valuable sources of information specific to the early
years of the Insane Asylum of California. While there is a wealth of information easily
available concerning insane asylums in general in the United States and abroad (Grob
1994; McGovern 1985; Deutsch 1949), there is understandable significantly less information available pertaining to the specifics of an individual asylum.

The California Department of Mental Health (DMH) provided invaluable information in the form of death ledgers from the Insane Asylum of California kept since the hospital’s inception. Though these documents, provided transcribed as Excel files, did contain some inconsistencies and occasional errors, the served as an excellent base of information. These files provided the first information available as to the number of individuals expected to have been buried in the cemetery between 1851 and 1854. To the best of my knowledge, these files are not available elsewhere. Also provided by DMH was an 1863 Annual Report from the IAC (Clayes 1864). This document provided useful information concerning some early problems encountered by the asylum.

A visit to the California State Archives, located in Sacramento, California, identified the journals of Dr. Reid, the first medical superintendent of the IAC. These journals provided very detailed information about each patient admitted to the hospital. The journals also corroborated, with high but not exact accuracy, the names and number of individuals that died in the IAC between 1851 and 1854, as compared to the death ledgers provided by DMH. Also found at the state archives were ledgers from the State Controller’s reports, these documents provided information concerning the funding sources for the IAC, the Marine Hospital, and the Sacramento County Hospital.

For archival research, the information found at the California State Archives and that provided by DMH was very valuable. All of the information received from these repositories presumably not available elsewhere, as none are published documents. Further, in the case of all documents examined at the California State Archives, all
Field and Laboratory Methods

The cemetery was initially identified in December of 2005 during excavations to construct a water retention pond at the east end of Acacia Street on the California State University, Stanislaus, Stockton campus (Figure 3). When human remains were encountered, all construction immediately stopped and the San Joaquin County Coroner was notified. Subsequently, it was determined that the remains were representative of a historic cemetery, not Native American or of a modern forensic nature. As such, a workgroup was formed involving all parties with an interest in the construction project and the newly identified historic cemetery. This group consisted of representatives from the California Department of Mental Health (DMH), California State University, Stanislaus (CSUS), and the City of Stockton Department of Developmental Services.

The three parties agreed to share the cost of exhuming the burials and subsequent reinterment at the Stockton Rural Cemetery, located about one mile north. Pacific Legacy, Inc., a cultural resource management firm, was contracted by the parties to conduct the excavation of the cemetery, analyze the remains, prepare the remains for reburial, and prepare a report summarizing the project activities and resulting preliminary data.

In the field, all heavy equipment operation was conducted by the Grupe Company, a Stockton-based construction and real estate development company. Logistical details of earth moving, such as determining the best approach for burial
Figure 3. Insane Asylum of California cemetery location map.

identification and exposure using heavy machinery, were developed in conjunction with Pacific Legacy.

The first phase of excavation fieldwork required locating individual graves. This was accomplished with the use of heavy equipment. The project area, at the end of Acacia Street and bordered to the east by the Southern Pacific railroad, was systematically graded by a backhoe affixed with a straight blade. Possible graveshafts were identified by darker, mixed soils surrounded by undisturbed native soils. Upon locating possible graveshafts, the heavy machinery carefully removed overburden soil a few inches in depth with each pass.

An archaeologist closely monitored this process at each suspected burial. When a clearly defined coffin outline, coffin nails, or wood fragments were identified, heavy equipment use halted and excavation continued using hand tools (Figure 4). Burials were marked with pin flags, assigned a number, and mapped with reference to the site datum as each potential gravesite was confirmed to be a burial (Figure 5). Excavation began on May 28, 2007, and was completed on June 21, 2007.

Initial manual excavation generally entailed the use of square-nosed shovels and pick axes to further expose the coffin perimeter. As excavation continued and overburden was removed, progressively smaller tools were utilized. Tools included hand trowels, small picks or rock hammers, ice picks, dental tools, clay sculpting tools, bamboo skewers, and various brushes and dustpans. Each burial was fully exposed, recorded on field burial record forms and photographed. Osteological data collected in the field included estimates of age at death, sex, identification of pathological conditions, and recordation of dentition present and dental disease. In addition to overview
photographs of all burials, notable anomalies or pathological conditions were photographed as well. Initially, each burial was sketched in addition to photographed. In the interest of time and cost, this procedure was ceased. Burials one through 17 were sketched; the remainder were not.

After exposure and complete recordation of a burial, the skeleton was carefully removed. Following the removal of a skeleton, all loose soils remaining in the grave pit were screened through one-eighth inch mesh. All elements were loosely wrapped in foil and placed in paper bags labeled with the element present, burial number, archaeologist’s name, and date. Burial associated artifacts were collected, bagged, and
Figure 5. Insane Asylum of California cemetery site map.

labeled as well. All skeletal remains and artifacts from a burial were then stored in a burial specific labeled archive box. Throughout the duration of the fieldwork, all archive boxes were stored in the kitchen building of the now defunct Stockton Developmental Center, being that this was the nearest secure building.

Upon completion of all archaeological fieldwork, the collection of burials, along with all burial associated artifacts was transferred the office of Pacific Legacy, Inc., located in Cameron Park, California. Soon after all human remains were transferred to the Physical Anthropology and Human Identification Laboratory (PAHIL) at California State University, Chico, for a complete osteological inventory. The results of the osteological laboratory analysis were recorded on forms developed by the Bioarchaeology Lab of the Arizona State Museum; they are derived largely from Standards for Data Collection from Human Skeletal Remains (Arizona State Museum 2007; Buikstra and Ubelaker 1994). The data recorded using these forms included a complete skeletal inventory; age at death; sex; pathologies; dental development, wear, and loss; and dental pathologies. For the skeletal inventory, presence and absence, along with portion present, was recorded for each skeletal element. For dental analysis; caries, abscesses, calculus, evidence of dental care or treatment, and use wear were all carefully assessed. A blank sample set of the laboratory forms used for the collection of the osteological data for this project is provided in Appendix D.

Appropriate versions of all forms were used for the single case of juvenile remains. During laboratory analysis, remains were cleaned as necessary to facilitate a complete inspection of all elements. Additional photographs were taken during this analysis process, including detailed photos of dentition and pathological conditions.
Measurements were recorded using the form published in *Data Collection Procedures for Forensic Skeletal Material* (Moore-Jansen et al. 1994, Appendix D). Metric data was gathered as available, with the condition of most burials allowing for the collection of numerous skeletal measurements. Unfortunately, many of the crania were highly fragmented, so data collection for cranial measurements was limited. For all metric data, as applicable, the side of the element used for measurements was recorded.

The laboratory analysis of the skeletal remains, with regards to the CRM project funded by Pacific Legacy, was conducted by me and Melanie Beasley. For the purposes of this research project, all burials initially analyzed by Beasley were double-checked for accuracy and, as necessary, re-analyzed by me. This was to ensure consistency in recording procedures, especially with regards to particular conditions or pathologies that are considered in this research project (e.g., antemortem tooth loss, abscesses, and healed fractures).

Following the completion of the laboratory analysis, I created a database containing all osteological data for the cemetery population. This database was used in the production of the excavation report written by Pacific Legacy. Subsequent to this, the database was used for this research project. This included the production of all tables presented in this thesis. All skeletal remains were promptly transferred from PAHIL back to Pacific Legacy’s office where they were prepared for reburial. Each set of remains, along with any associated artifacts, were transferred to custom-built redwood boxes measuring 8 x 12 x 22 inches. All remnants of original coffin wood and nails were also placed in the newly constructed burial containers. The burial number assigned to
each individual during fieldwork was recorded on the new reburial containers as well. The remains were then returned to the state for reburial in the Stockton Rural Cemetery.

**Mortuary Practice Analysis**

The analysis of mortuary practices observed at the Insane Asylum of California will incorporate four main avenues of investigation for material culture analysis. Each of these four aspects, when coupled together, form a complete interpretation of all observable aspects of the mortuary practices.

First, any elements of the burials external to the coffins are analyzed. In the majority of cemeteries, this aspect includes aboveground grave markers, such as headstones and footstones. However, the Insane Asylum of California burials did not have any above ground markers. A portion of the burials, mostly previously disturbed burials, did have concrete pillars in direct association or located nearby. These possible grave markers are discussed. Historical information regarding grave markers at the asylum cemetery and the two comparable cemeteries, the Sacramento County Hospital cemetery (SCH) and the Golden Gate Cemetery (GGC) are incorporated here as well.

Coffins, one of the primary sources of variability in mortuary practices, are afforded ample examination. Many aspects of the coffin—including shape, materials, construction, decoration, and stylistic features—all contribute to the information that can be garnered from these burials. For this section, the actual burial containers are analyzed separate from coffin furnishings. For example, the shape, material, and construction methods for a coffin are considered apart from the adornments, such as decorative lining or glass view plates, of the coffin. With a considerable amount of research previously
conducted concerning the archaeological analysis of coffin variation, the coffins from the Insane Asylum of California may elucidate aspects of the mortuary practices afforded to the patients of the asylum.

Next, burial associated artifacts recovered from the cemetery in Stockton will be analyzed and discussed. Both the coffin data and the burial associated artifacts from the Insane Asylum of California burials can be compared against similar data from the GGC and SCH. Finally, the actual interment patterns of the burials are presented. This information includes the cemetery layout, burial orientation, depth of burial, burial pit and grave shaft characteristics, and any other relevant details about the manner of burial. Post burial disturbances, as they may obscure elements of the original interment pattern, are discussed here as well.

These avenues of investigation, when interpreted within the framework of material culture analysis, provide a means to assess aspects of human behavior as evidenced by the burial practices afforded to some of the earliest patients of the Insane Asylum of California. Hopefully, a realistic depiction of this unique element of gold rush era California will emerge.

Osteological Analysis

The osteological data resulting from the laboratory assessment of the burials from the Insane Asylum of California are presented in the following chapter. Here, the manner in which this data are presented and why this methodology was selected is outlined. Details such as the specific data gathered and how it is interpreted, comparative
analysis, and discussions concerning the meaning and validity of the data are also addressed.

To begin, determinations of age at death and sex are presented. This information will be compared against existing data from two nearby cemeteries, SCH and GGC. The demographic data provided by the osteological analysis is also evaluated with reference to the historical data garnered from the asylum’s death ledgers. This provides a reference point for the validity of the osteological data and demonstrates the correlation to the historical data. As the journals of Dr. Reid provide significant information about some of the patients, the possibility arises that suggestions of individual identity may be a valid topic of discussion. In this project, no positive identifications were possible; however one burial emerges as a potential match to a patient described in Dr. Reid’s journals.

The presentation and discussion of pathological conditions observed comprise the remainder of the osteological data. This large subject matter is further broken down to address dental pathologies and skeletal pathological conditions separately. For dental pathologies, four of the most significant measures of dental health are presented and compared to the SCH and GGC data. The conditions under investigation here are caries, abscesses, antemortem tooth loss, and enamel hypoplasias. Each condition is discussed in detail, concerning the rate of prevalence with respect to sex and also compared to the observed rate of prevalence in the comparative samples. As these conditions are indicators of the overall health of an individual, this data reveals information about the general health of the earliest patients of the Insane Asylum of California. Additional dental pathologies observed are discussed, but not addressed as statistical or tabular data.
These conditions and observations will include evidence of dental work, wear patterns, and calculus.

Skeletal pathologies are presented next; this section includes a complete discussion of all observed pathological conditions. Infectious disease and trauma are presented as tabular data, in a similar fashion as the selected dental pathologies, and compared against the SCH and GGC data. Additional pathological conditions, including degenerative joint disease, porotic hyperostosis, and any other observed anomalies are dealt with in a textual format, with a full discussion; but without statistical analysis. When any data is presented which includes a percentage of individuals affected this will typically be followed by the numbers of individuals affected out of the total number analyzed. For example, if 25 percent of a sample size of four was affected by a given condition, immediately following “25 percent” would be “(1/4)”.

Due to the fragmentary nature of some of the burials, it is not possible to include demographic, dental pathology, and skeletal pathology data for every burial. The single child will also be excluded from the statistical portion of these analyses. For dental pathologies, 38 out of the total 42 individuals were included for the assessment. For skeletal pathologies, 39 individuals are sufficiently intact for thorough analysis. The sex of four individuals was indeterminate, however. One of these burials was the child, being only six to seven years old, this individual is too young to, based on morphological observations, determine sex. One burial contained only two elements, a rib and a phalanx, thus precluding most useful osteological data. The two remaining indeterminate sex burials were both previously damaged by the installation of a concrete water pipe some time ago. The pelvises of both burials were not present and cranial features alone, in both
cases, did not enable a valid determination of sex. Both of these individuals did provide
dental and pathological data, as well as tentative age estimates based primarily on
dentition.

All tables were created using Microsoft Excel. Similarly, all raw osteological
data, after initial recordation on paper forms, was entered into an Excel database initially
created for the CRM aspect of the cemetery excavation, and then modified for the needs
of this project.

Collectively, this osteological data and the analysis of the data will provide a
breadth of knowledge about the health of the first patients of the Insane Asylum of
California. On a broader scale, this data will represent some of the earliest osteological
data gathered from Gold Rush era settlers of California. It may reveal new information
concerning the general health status of this larger, more inclusive group as well.
Moreover, the resulting data of this research will contribute the body of osteological data
available for future research.
CHAPTER V

DATA, ANALYSIS, AND
INTERPRETATION

Osteological Data and Analysis

In all, 41 burials were excavated from the insane asylum cemetery in Stockton, California. These 41 burials represent a mostly likely number of individuals of 42; the difference is accounted for by the fact that one gravingdshoft contained two individuals. The 42 individuals, whose skeletal remains were mostly in moderate to good condition, are able to provide some details about the lives and health of some of the first people admitted to the Insane Asylum of California.

Demography

Sex was determined based on pelvic morphology and cranial characteristics. Pelvic morphology was considered to be the most reliable indicator of sex, with cranial characteristics considered less reliable, yet still very relevant. Additionally, observations such as overall skeletal robusticity and metric data were considered in the determination of sex only when neither pelvic morphology nor cranial characteristics were adequate. In such cases, if an estimate of sex was possible, the resulting determination would be categorized as “probable.” For example, skeletal remains that were too fragmentary to determine sex based on the pelvis or the cranium, but were very robust and had a maximum femoral head diameter of 53mm, would be classified as “probable male.”
Other possible indicators of sex, such as very robust muscle attachments and evidence of pipe smoking, while observed and noted, were considered anecdotal at best.

For estimations of age, a variety of indicators were considered. For subadult or young adults, epiphyseal union and dental development were considered the best indicators of age. For older adults, a more broad range of characteristics were considered. Due to differential preservation among the remains and instances of damaged or missing elements, it was necessary to consider a variety of indicators of age. When available, for adults, the pubic symphysis was considered the best single indicator of age. In addition, the auricular surface of the ilium, sternal rib ends, and dental attrition rates were considered, as applicable to each individual, were considered as well. In the case of the single child, age was determined based on dental development and eruption.

Age ranges are broken down into five categories. Adults are divided into three groups; young adult (17-34), middle adult (35-49), and old adult (50+). All subadults are placed into the juvenile category (under 17). As there is only one individual in this category, further separation (i.e. infant, child, etc.) was not deemed necessary. A final category of indeterminate contains individuals who are adult, but are too highly fragmented to assign to any of the three adult age categories (Figure 6).

Aside from the presence of the child, the resulting demographic profile of these individuals is clearly reflexive of Gold Rush era California. Just over 80 percent of the individuals are male, with 33 out of 41 categorized as “male” or “probable male.” In the determination of sex, the child is not included, bringing the total number of individuals assessed down to 41. This high ratio of males to females is expected for a Gold Rush era population, especially in the very early years of the Gold Rush. When the
Figure 6. Distribution of the sexes for IAC, SCH, and GGC burials.

data from the Insane Asylum of California (IAC) cemetery are compared to demographic
data from the Golden Gate Cemetery (GGC) and the Sacramento County Hospital (SCH)
cemetery, it is apparent that the sex profiles differ between IAC and the other two,
slightly later sites.

The age profile of the individuals buried at this cemetery is consistent with the
death ledgers of the Insane Asylum of California for these years and also with Dr. Reid’s
journal entries. Eighty six percent of the remains are categorized as young or middle
adult, with 18 individuals assigned to each category. Only two individuals fall into the
old adult category of greater than 50 years of age. Three individuals can only be
categorized as indeterminate adult due to damage (Figure 7). Like the resulting data for
sex, the data for age at death is also consistent with expectations for an early California Gold Rush era population.

As mentioned earlier, only one individual is in the juvenile category; this is a child of about six or seven years of age. While Dr. Reid’s journals and newspaper clippings make reference to children being admitted into the asylum along with their mothers, no mention can be found of any child that died in the insane asylum (Reid n.d.). It remains somewhat of a mystery as to why this child was buried in the asylum’s cemetery. While impossible to investigate further, the possibility exists that the child was that of an employee of the asylum. Possibly the burial of the child was permitted in the asylum’s cemetery because the parent did not have the financial means to bury their child.
elsewhere. There, of course, does remain the possibility that the child was actually admitted as a patient to the asylum but not recorded, upon admittance or death. It is unclear what, if any, protocol was for the admittance of children to the insane asylum. Given the demography of California at this time, this would have been a rare consideration.

Dental Pathology

The dental pathologies observed among the skeletal remains from the insane asylum cemetery provide interesting evidence of dental and general health (Figure 8). Overall, the dental health of the population buried in the asylum cemetery was poor. Occurrences of caries, abscesses, antemortem tooth loss, and severe calculus were all

![Dental Pathology](image)

**Figure 8.** Comparison of selected dental pathologies observed among IAC, SCH, and GGC burials.
quite high. On the contrary, evidence of physiological stress, as indicated by enamel hypoplasias, was negligible.

In dental pathology, carious lesions are an excellent and easily observed indicator of general health. Caries are symptomatic of the focalized demineralization of enamel and dentine. Visually, the appearance of caries can vary widely, ranging from opaque areas on the tooth surface to large, open holes in the crown of the tooth. The size of carious lesions is affected by a number of variables; time since the formation of the lesion, diet of the individual affected, quality of dental care, and genetic factors.

Regardless, the immediate cause of all carious lesions is bacterial fermentation of dietary carbohydrates (Larsen 1987). These carbohydrates build up, most often on the convoluted surfaces of molars or in the interstitial space between opposing teeth, and form plaque. Plaque harbors and feeds the bacterial colonies, leading to the formation of carious lesions. With carbohydrates key in the formation of caries, the diet of an individual or population has the potential to greatly affect the incidence of caries.

During the nineteenth century, roughly between 1830 and 1869, annual consumption of processed sugars in the United States doubled (Sledzik and Moore-Jansen 1991). With the dietary changes that the industrial revolution brought, caries rates increased dramatically. Dentistry of the time was often not able to effectively treat these caries. If a person was fortunate enough to receive treatment, it most often entailed the extraction of the tooth.

Carious lesions were ubiquitous among the cemetery population; of the 38 burials included in the dental analysis, 29 had at least one caries. This makes the total percentage of individuals affected with carious lesions 76.3 percent. This data shows
markedly high rates of caries among the Insane Asylum of California cemetery population as compared to the GGC and SCH data. A total of 138 individual carious lesions were recorded, with numerous teeth exhibiting multiple lesions. Of the individuals affected with caries, the average number of lesions per individual is 4.8. All caries are included in this count, with no differential recordation method for various size or severity of caries. While some of the lesions were small or pinpoint in size, many were large, often with the majority of a tooth’s crown obliterated (Figure 9).

**Figure 9.** Carious lesions on four anterior most teeth, Burial 9. This individual is a female of approximately 23 years of age. Photograph by Erika Collins.
Closely correlated to carious lesions is dental work. Dental work such as fillings, bridges, or crowns, were less common during the mid-nineteenth century than they are today. They were generally available only to the middle and upper classes. As the primary material for fillings was gold, the cost of dental work was prohibitive to many. The population of the IAC cemetery is no exception. Only one individual shows evidence of dental work, a single gold filling. This filling was on the left central maxillary incisor of an approximately 35-year-old female. She exhibited a total of nine carious lesions, including the caries with the gold foil filling, had one abscess, and had lost five teeth antemortem. In all, this individual had poor dental health. However, at some point in her life, she must have had the means to afford dental care. With only one out of 38 individuals, or 2.6 percent of the assessed burials, having evidence of dental work this rate is much lower than that observed at the SCH cemetery, where 19.2 percent of the burial population showed evidence of dental work. For the GGC, this data is not available for comparison.

The etiology of abscesses is often linked to that of caries, but can also be brought on by extreme attrition. Abscesses are, in life, pus-filled infections originating in a tooth, which extend into the alveolar bone. In skeletal remains, they generally appear as areas of focal alveolar bone loss, with rounded, smooth edges. Abscesses are often found in relation to carious teeth and are commonly periapical, located near the apex of the tooth root.

Of the burials in this study, abscesses were common, with 39.5 percent (15/38) exhibiting at least one abscess. Most of these burials had only one or two abscesses, with a maximum count of one burial with four abscesses. The occurrence of
abscesses in this burial population is greater than that of both comparable cemeteries. The SCH cemetery has only a 1.3 percent incidence of abscesses (1/78). The occurrence of abscesses among the GGC population, at 33.8 percent (27/80), is slightly lower than that of the IAC cemetery.

Antemortem tooth loss is often linked to both conditions discussed above. With the limitations in dentistry during the mid-nineteenth century, one of the more common treatments of badly diseased teeth was to simply remove them. Though these teeth may be affected with other conditions, such as being impacted or having suffered physical damage, by far the most common reason for pulling teeth was abscesses and/or carious lesions. However, what is observed in skeletal remains as antemortem tooth loss cannot be definitely assigned to the act of a dentist versus a tooth that fell out naturally. Regardless, the etiology behind either cause would likely be similar.

Antemortem tooth loss appears as an alveolus, which is, instead of containing a tooth root, is filled with bone. Often, if a tooth was lost shortly before death, the alveolus is only partially resorbed. Of the burial population, 71.1 percent (27/38) of individuals at IAC experienced antemortem tooth loss. Among these 27 individuals, the number of teeth lost antemortem varied widely. In all, 100 teeth were recorded as having been lost before death. While some individuals had lost only one tooth, most had lost more, with an average of 3.7 teeth lost antemortem among those affected. A single individual, a male approximately 50 years old, had lost 14 teeth. The mandible retained only two teeth, both third molars. This symmetrical tooth loss may indicate the individual would have worn dentures in life; however, none were recovered from the burial.
When compared to GGC and SCH, the percent of individuals with antemortem tooth loss at IAC falls in the middle. At SCH the lowest percent of individuals were affected, with only 33.3 percent of the analyzed burials (26/78) having lost at least one tooth antemortem. Those of the GGC showed the highest rates of antemortem tooth loss, with 80.3 percent of analyzed burials (61/76) affected. The incidence of antemortem tooth loss is very high for both the GGC and IAC populations. Likely, this is reflective of the quality of dental care of the era in combination with the lack of dental care available to these marginalized populations.

Enamel hypoplasias are another indicator of health as evidenced via dental remains, they mark periods of dietary stress or infectious disease. Enamel hypoplasias are recognized by transverse lines or pits in the enamel surface caused by interruption during enamel formation. Since enamel hypoplasias, by nature, must form during active dental development, the age at which they formed can often be deduced from the stage of development of the tooth (White 2000:402-403).

It is common to observe comparatively high rates of enamel hypoplasias in marginalized groups, as these populations tend to experience greater dietary stress and less medical care than middle-class populations. Interestingly, the occurrence of enamel hypoplasias at the IAC is low, with only 2.6 percent of the population, or two individuals, affected. SCH exhibited a similar rate, with 3.8 percent affected. The GGC burial population however, presented a much higher rate. Of the 58 burials examined, 50 percent were affected with the condition.

The dramatic difference between the rate of enamel hypoplasias at the IAC and SCH, as compared to the rate at the GGC presents for interesting discussion. What
could account for the differences observed? One possibility is differential preservation. For the IAC burials preservation was good enough to permit the examination of 39 out of the total 42 burials, with the juvenile burial not included in the analysis of dental pathologies, a total of 38 burials were examined. Preservation at the GGC allowed for only 58 out of the total 90 burials examined in the study to be analyzed for evidence of enamel hypoplasias.

The difference in preservation, and resulting ratio of burials analyzed, to some extent, may skew the rate of enamel hypoplasias observed and account for a portion of the difference. Many sources indicate that Gold Rush era California was not a place full of wealth and plenty, as was once portrayed (Baur 1949, Shirley 1949). Instead, disease and want of food were not rare occurrences. Though the populations of all three cemeteries contained a large portion of people not born in California, none contained more non-native born individuals than the IAC.

The individuals buried in the IAC cemetery, while they undoubtedly experienced such hardships during their time in California, would have, in almost every case, arrived with fully formed dentition. Documentary evidence indicates that some of the individual who were buried at the Stockton cemetery had once been middle class or even well off; these individuals would have been at a somewhat lower risk for nutrition-related enamel hypoplasias.

Correspondingly, they may have had greater access to highly cariogenic foods, such as refined sugars and flours, accounting for the higher rate of caries observed among the IAC burial population. In the case of the GGC and SCH, both with dates of
use into the 20th century, may have interred individuals who had experienced the hardships of Gold Rush era California while their dentition was still forming.

In addition to the conditions discussed above, the burials from the IAC revealed other information about the lives of the hospital’s patients. Three burials exhibited a circular wear pattern associated with pipe smoking, consistent with the era of the cemetery (Figure 10). Numerous burials had calculus build up, ranging from slight to severe, with a maximum thickness of 1.44 millimeters. Calculus, also known as tartar, is calcified dental plaque; it forms as the result of poor dental hygiene, allowing the

Figure 10. Circular wear pattern associated with pipe smoking, Burial 3. Male aged approximately 24 years. Photograph by Erika Collins.
accumulation and mineralization of plaque. The occurrence and degree of calculus observed among the IAC burials is not unexpected, given the era of the cemetery and the likelihood for extraordinarily poor dental self-care among a mentally ill population. Collectively, the people buried in the IAC cemetery endured poor dental health. While poor dental health is not unusual for mid-nineteenth century populations, on average dental health at IAC was worse than that of two comparable cemeteries. Only in the low rate of enamel hypoplasias did the population of IAC fare significantly better than the comparable cemeteries.

**Skeletal Pathology**

Four major classes of skeletal pathology suitable for comparison were analyzed from the IAC burials: trauma, degenerative joint disease (DJD), osteoperiostitis, and cribra orbitalia/porotic hyperostosis (Figure 11). Additional conditions will be discussed individually, but not compared against the GGC and SCH data. As with the analysis of dental pathologies, the juvenile skeleton was not included in this analysis. In all, 39 out of the total 42 individuals were included in the assessment of skeletal pathologies.

Trauma, as evidenced by healed fractures, while significant, was lower than expected. Trauma among the IAC population was expected to be higher, in line with observations from GGC or greater. It was hypothesized that an incarcerated, mentally ill population would have a higher than average rate of interpersonal violence than the general population of Gold Rush California, which was already notoriously high. Reports of violent patients among the IAC population reported in Dr. Reid’s journals further supported the expectation of a high incidence of violence (Reid 1851-1854).
Figure 11. Comparison of selected skeletal pathologies observed among IAC, SCH, and GGC burials.

Seven out of the 39 (17.9 percent) assessed burials exhibited evidence of healed, traumatic injury (Figure 12). These cases include healed fractures of a radius, humerus, clavicles, ribs, and multiple cases of compression fractures to vertebrae. Compared to the GGC and SCH, the incidence of trauma among the IAC burials was intermediate. The GGC exhibited a higher rate of trauma, with 37.8 percent of burials (34/90) showing signs of trauma. The SCH population, however, had a lower rate, at 11.5 percent (9/78). The findings of a lower than expected rate of violence indicate that the population of the IAC was not as violent as expected, that the actual level of violence is
Figure 12. Healed fracture on right radius (bottom), Burial 12. Probable male, approximately 18 years of age. Photograph by Erika Collins.

not observable via the skeletal remains, or that the burial population is too small to facilitate a statistically significant assessment of the actual rate of trauma.

Degenerative joint disease (DJD), or osteoarthritis, is a common form of arthritis easily observed is skeletal remains. In any joint of the body, the condition is characterized by the destruction of cartilage and the growth of adjacent bone. However, DJD is most commonly observed in the vertebral column, especially the lower thoracic and lumbar vertebrae. Bony growths present as spurs (osteophytes) or lipping. Occasionally, lipping grows to the extent that adjacent vertebrae fused together. While DJD can be found in nearly every individual older than 60 years, its presence in younger
individuals is common and results from a combination of many factors; genetic predisposition, physical stressors, sex, and trauma among them. Physical stressors related to occupation, such as heavy lifting or repetitive motions, are often considered a catalyst for osteoarthritis.

Nineteen out of 39 of the IAC burials, 48.7 percent, exhibited DJD in at least one bone. This is significantly higher than the rate of DJD observed at SCH, at 20.5 percent (16/78). Comparative data is not available from GGC. The high rate of DJD observed among the IAC burials is consistent with expectations for the population. Many of the people who immigrated to California for the Gold Rush held prior jobs involving hard physical labor. Most continued with physically demanding work until their admittance to the Insane Asylum of California. Among the careers listed in Dr. Reid’s medical journals of patients are stone masons, laborers, a blacksmith, painters, a solider, a slave, and of course many miners: all very physically demanding jobs.

Periostitis, a condition of inflammation of the periosteum brought on by infection or trauma, was observed in 46.2 percent (18/39) of the burials from IAC. The periosteum reacts to the source of irritation by forming woven bone between the surface of the periosteum facing the external surface of the underlying cortical bone; this bone is often referred to as “reactive” bone. The condition can present in various forms; it can be acute or chronic, diffuse or affect a single site on one element (White 2000:392-393; Ortner and Putschar 1981:129-138).

The majority of the cases from the IAC burials are chronic and diffuse, affecting multiple elements and covering significant portions of each element. For example, Burial 30, a male of approximately 31 years of age, exhibited extensive reactive
bone growth on the femora (Figure 13). This woven bone extended approximately 20 cm distally from near the neck/ greater trochanter of each femur. At the maximum thickness

![Figure 13. Right femur exhibiting extensive reactive bone growth entirely covering the femoral shaft, Burial 30. This individual is a male of approximately 31 years of age. Photograph by Erika Collins.](image)

the reactive bone is nearly 5 mm thick. Similar reactive bone growth is also present on both clavicles of the same burial. Other burials exhibits similar patterns of bilateral involvement of multiple elements, with the most common elements affected being tibia, fibula, ribs, and clavicles.

Neither of the comparable cemeteries exhibited rates of periostitis as high as those observed at IAC. The GGC recorded 21.0 percent of analyzed individuals as having
at least one affected element (19/90). The SCH recorded the lowest incidence, with only 2.6 percent (2/78) affected. While it is clear that the high rate of periostitis among the IAC burials indicates that the population likely experienced chronic stressors, trauma, and infectious disease, it is not possible to attribute any of these cases of periostitis to a specific underlying disease.

Cribra orbitalia, observed as porosity in the orbital roof, is the result of anemia related hypertrophy. The exact etiology is unclear. It was once assumed that an iron deficient diet was directly correlated to cribra orbitalia. However, populations known to have very iron rich diets have been observed to have high rates of cribra orbitalia (Walker 1986). Further research has suggested that infectious disease may be an underlying cause of anemias resulting in cribra orbitalia, as clinical evidence has shown iron sequestering to be a natural response of the body in reaction to infectious disease (Stuart-Macadam 2006).

Only two individuals from the IAC cemetery were affected with cribra orbitalia. At 5.1 percent (2/39), this is lower that the rate observed at GGC, where 8.4 percent (6/71) were affected. Neither of these rates varies greatly from frequencies observed in other North American samples (Buzon et al. 2005:9). No cases of cribra orbitalia were recorded from SCH.

In addition to the skeletal pathologies subject to comparison above, two conditions were observed which are somewhat uncommon. As such, no comparable data is available for consideration. The first condition, a cortical defect in the humerus at the insertion point for the pectoralis major muscle, was observed in two individuals. The condition was bilateral in one case, a female about 19 years of age (Figure 14). In the
Figure 14. Humerii exhibiting bilateral cortical defect, Burial 16. This individual is a female of approximately 19 years of age. Photograph by Erika Collins.

other individual, a male, aged about 50 years, the condition occurred only in the right humerus. According to Mann, the condition is common in children and young adults, but rare in adults. It is more likely to occur in individuals who are extremely physically active (Mann and Hunt 2005:144-145). In the case of the older male, the fact that the cortical defect is only present on the right side, may be indicative that the individual was right-handed (Stirland 1998:358-359).

A similar type of defect was identified in the clavicles of numerous individuals. This condition, the rhomboid fossa, appears as an enlarged depression, groove, or roughened excavation on the inferior surface of the sternal end of the clavicle
at the site of the attachment of the costoclavicular ligament. Alternately, it can less commonly appear as an eminence, crest, or ridge. Numerous studies have attempted to discern an average rate of occurrence and etiology of this trait (Shauffer and Collins 1966; Rogers et al. 2000). It seems to be, among most populations, a fairly uncommon trait. Parsons observed the rhomboid fossa on 10 percent of 183 clavicles examined; Shauffer and Collins observed it trait on 5 percent of a sample of 10,000 (Parsons 1916, Shauffer and Collins 1966). Rhomboid fossae are typically larger in males than in females, seem to peak in severity and size in males between 20 and 30 years of age (Rodgers et al. 2000). The exact etiology of the rhomboid fossa is unclear, but it appears to be exacerbated by strenuous physical activity. The defect is often bilateral but not symmetrical, an indication that greater physical demands placed upon an individual’s dominant hand, and consequently arm, has the potential to amplify the condition.

Rhomboid fossae were observed, on at least one clavicle, in 30.8 percent (12/39) of the burials from IAC (Figure 15). The majority of the affected individuals were identified as male (N=7) or probable male (N=4). The remaining burial was classified as indeterminate, due to fragmentation of the cranium and the fact that the pelvis was not present. There is no comparable data available from either GGC or SCH. Considering the published research on the condition, it seems that the individuals at IAC experienced significantly higher rates of the condition than is average. However, when it is taken into consideration the common occupations listed for patients of the asylum, coupled with the fact that many had come to California to become miners, the presence of the rhomboid fossa in such high numbers is not so unexpected. Collectively, the
Figure 15. Left and right clavicles exhibiting bilateral rhomboid fossae on the inferior aspect of the sternal (medial) end of the element, Burial 13. This individual is a male aged approximately 47 years. Photograph by Erika Collins.

population of the asylum partook in physically demanding, laborious careers prior to their commitment to the IAC.

Mortuary Practice Data and Analysis

With the exception of one burial, Burial 1, all of the burials recovered from the IAC cemetery in Stockton were primary inhumations. As such, many aspects of the mortuary practices afforded to these individuals were observable through the archaeological remains. In total, 39 out of the total 41 burials will be included in the following analysis. Burial 31, where it appears that the individual buried in the grave had
been exhumed, leaving only disturbed coffin remnants and two skeletal elements behind, will be discussed separately.

Four categories of material remains will be presented and interpreted in this chapter; coffins, coffin furnishings, gravestones, and burial associated artifacts. Each of these categories will be analyzed with reference to the temporal trends of the time. The IAC cemetery dates from the mid-nineteenth century, with dates of use from 1851 to 1854. At this time the beatification of death movement was at its height. The beatification of death movement began in the late eighteenth century, peaked near the mid-nineteenth century, and eventually declined as the Arts and Crafts movement gained momentum, in the 1890s (Pike 1980:644, 649-650).

Additionally, the interment patterns of the cemetery will be given consideration. While patterns of interment generally vary little among historic cemeteries, some anomalies observed at the IAC cemetery may provide additional evidence regarding the overall mortuary care afforded to the individuals buried in this cemetery.

**Coffins and Coffin Furnishings**

Coffin styles and types have undergone many changes through time; shape, construction methods, materials, and adornment have all been subject to variation. Often, this variation can be associated with cultural movements and stylistic trends of an era. During the beautification of death movement, there was a transition away from the hexagonal “toe-pincher” common during the colonial years in America. Rectangular coffins gained popularity near the mid-nineteenth century; they have yet to fall out of favor. It was thought that this shape was less restrictive to the body; it represented a more naturalistic and comfortable presentation of the dead (Pike 1980). The basic construction
of the rectangular coffin was simpler than that of the hexagonal type, which required more time and skill to craft the angular shape. It was necessary to kerf, or carefully groove, the boards to form the bent sides making the lateral edges of the container. This is not to say that the rectangular coffins associated with the beautification of death movement were coarse or unrefined; on the contrary these coffins were carefully crafted and more highly decorated than their predecessors (Bell 1987:50-51). It was during this era that glass viewing plates, ornate metal decoration, split coffin lids, and nameplates became popular. It was also with this movement that fulltime coffin making became a profession and the mass marketing of coffins began. Prior to the mid-nineteenth century, coffins were built as needed by carpenters, cabinetmakers, or family members (Bell 1987:52-53).

Overall, the coffin remains recovered from the burials at the IAC do not reflect the stylistic changes associated with the beautification of death movement. All coffins were made of plain redwood and nails. The nails used in the construction of the coffins were exclusively machine-headed cut nails. This nail was perfected around 1835 and remained the most prevalent nail in construction until the early 1890s, when wire nails surpassed them (Adams 2002). No other coffin hardware was recovered; no hinges, glass viewing plates, white metal screws, tacks, handles, lining fragments, or other expected adornments were found. The preservation of the coffins was poor, of the 42 coffins shape could not be identified for 22 coffins. Of the remaining 20 coffins, 17 were hexagonal and only three were rectangular or possibly rectangular. This is the only aspect of the coffins from the Stockton cemetery that does fit the trend of the beautification of
death movement. Many of the hexagonal coffins clearly showed the characteristic angular, kerfed shoulders (Figure 16).

Figure 16. Hexagonal coffin before and after excavation, Burial 17. Photographs by Lisa Shapiro. Reproduced with permission.

However, Burial 21, with a relatively well preserved coffin for this site, appears to have an overall hexagonal shape, but without the sharp, angular shoulders associated with the normal construction of such a coffin (Figure 17). Instead, it appears that the lateral boards of the container were simply curved to connect with the boards at the head and feet, there are no discernable angles as would be expected in normal hexagonal coffin. Perhaps this reflects a combination of a desire to produce a coffin of a certain style, coupled with an improvised construction manner to achieve the goal with
Figure 17. Hexagonal, but unkerfed, coffin during excavation, Burial 21. Photographs by Lisa Shapiro. Reproduce with permission.

limited resources. The wood used to produce such a coffin, to allow the wood to bend without snapping, would have been very thin.

Despite the fact that one would not assume an ostentatious display of the stylistic trends of the era at an insane asylum cemetery, there is evidence that many of these institutional cemeteries do follow, to the degree permitted financially, such trends (Bell 1987:147-149). The SCH cemetery reports that “most of the caskets were of simple design, a few burials contained evidence of aesthetic accoutrements” (Edwards et. al. 2005:60). White metal escutcheons, white metal thumbscrews, upholstery tacks (for affixing a coffin lining), and shipping handles were all recovered from the burials at
The coffins were made of redwood (*Sequoia sempervirens*), with five wood samples tested by a paleoethnobotanist and positively identified to the species.

As a comparison to both the IAC and SCH cemeteries, Bell’s (1987) research of the Uxbridge Almshouse in Massachusetts revealed more elaborate coffins and furnishings than either of the California cemeteries. There, coffins had glass viewing plates, split lids, hinges, hook and eye fasteners, coffin lining tacks, and decorative (exterior) coffin tacks. The majority of the metal furnishings were made of white metal, an alloy made of tin, copper, antimony, and lead (Bell 1987:55). White metal gained great popularity in the first half of the nineteenth century, directly associated with the commercialization of death and the beautification of death movement. Smaller quantities of more expensive brass furnishings were also found.

Temporally, this cemetery is the closest to IAC, though both the GGC and SCH cemeteries are slightly later than the IAC cemetery. Since the coffin type and furnishing of the contemporaneous Uxbridge cemetery is in the greatest contrast to the IAC, it may be the case that this difference is explained by a combination of the location and financial means of each institution. The Uxbridge cemetery was located in a well established urban area. The institution was much closer in proximity to the manufacturing centers producing the newly popular coffin furnishings. More importantly though, the Uxbridge Almshouse had a more stable financial footing, funded by the town of Uxbridge and surrounding communities.

The austere coffins found at the IAC likely reflect a combination of conditions. At the time of the interment of these burials, the location of the institution was very far from any manufacturing centers, and transportation of goods carried a high
price. The Insane Asylum of California, as indicated in biennial reports, was forced to operate to the best of its ability on limited funds. With many of the patients of the asylum having no relatives in California, the coffins afforded to these individuals reflected the meager means provided by the young state.

Gravestones

Gravestones are the norm in most cemeteries, except in cemeteries like that of the IAC. In general, potters’ fields and institutional cemeteries are the most common cemeteries to lack gravestones or gravemarkers of any kind. Such cemeteries have been documented as originally having wooden gravemarkers. These markers were often only inscribed with number assigned to the burial, not a name of the individual buried there. Of course, over time, wooden markers decompose, eventually leaving a cemetery of unmarked graves. This is likely the scenario of the IAC cemetery. Other materials used for gravemarkers, such as stone or concrete, last much longer; rarely resulting in an entirely unmarked cemetery. Stone markers, which were commonly used during the mid-nineteenth century, were likely too costly for the IAC to afford. Concrete marker did not become common until the twentieth century.

Upon the initial rediscovery of the cemetery in 2005, no gravemarkers of any kind were identified. Similarly, during fieldwork and excavations in 2007, no above ground grave markers were located. Below the then current ground surface, however, 26 concrete pillars were identified. Most of the pillars were located three to six feet below the ground surface, and were up to about four feet in total length. Many had been broken on the end nearest to the ground surface, some as a result of previous ground disturbing activities since their installation and some broken during the burial location process of
this project. All pillars were about six inches in diameter, and were uniform in material as well, made of a concrete aggregate.

Six of these pillars were in direct association with a single grave. Sixteen others were near a grave, suggesting an association but not definitive of such. These concrete pillars were installed significantly later than the interment of the burials. The pillars were poured in place and some of the pillars intruded into the burials, imbedding fragments of bone into the concrete as it cured (Figures 18 and 19).

The exact date that these pillars were installed is unknown, and none of them have any identifying marks or text. However, the technology to place these pillars,
especially noting the uniform nature of the pillars, would likely not have available until the mid-twentieth century, when portable augers became available. Many of the burials in the easternmost row of the cemetery had been previously disturbed by the installation of a large concrete pipeline; most of these burials were also marked with a concrete pillar (Figure 20). It is likely that as burials were encountered while digging the trench for the water pipe, they were marked with the concrete pillars. However, this would not explain the burials marked with pillars that were not disturbed by the water pipe.
Burial Associated Artifacts

For many sites, cemeteries or otherwise, much of the information learned from the site comes from the interpretation of artifacts. At the IAC cemetery, burial associated artifacts were extraordinarily sparse. With nails included among the coffin furnishings, this leaves only buttons and two coins constituting the burial associated artifacts. A total of 169 buttons were recovered from the site, all burial associated. Two coins, one French and one American, were recovered from a single burial.
The single most common type of button, comprising over half of the buttons, were Prosser buttons (Figure 21). Prosser buttons, also called china buttons, were introduced in 1840, with a patent date of June 17, 1840. This definitive date is recounted by Sprague (2002:111) as providing “an excellent terminus post quem of 1840.” These buttons, often mistaken for milk glass, are made of porcelain. They can be distinguished by an orange-peel or pebbled surface on one side, with the other being very smooth and glossy. The outer edge will reveal a well-defined seam. The most common and earliest

Figure 21. Sample of burial associated Prosser buttons. Photograph by Erika Collins.
versions of the buttons were plain in design and only the natural, white color of the porcelain. A total of 97 Prosser buttons were recovered from the IAC burials.

Ninety two out of the 97 Prosser buttons from the Stockton cemetery were plain white buttons. Two were white Prosser buttons with a scalloped edge. Later, about 1848 in the United States, colored and patterned calico versions of the buttons were produced. Only one calico was found at IAC, a smooth white button with a black design, it was found with Burial 28, a male of approximately 30 years of age. Two colored, but undecorated, buttons were also found at the cemetery, both were blue. One was associated with Burial 23, a probable male of about 50 years of age. The other blue Prosser button was found with Burial 27, identified as a male of about 18 years of age.

This individual was a bit of an anomaly: although the only burial associated artifacts found with this burial were buttons, unlike the other burials, these buttons seemed to be deliberately arranged near the right shoulder of the individual (Figure 22). The 18 buttons, the most of any burial at this site, were not found in a pattern or association that would suggest an ordinary article of clothing, as was the case with all other burials of the site. Two possible explanations are offered. Possibly the individual had, in life, crafted a customized shirt, with this extensive collection of buttons prominently displayed near the shoulder. Alternately, maybe the individual simply had a button collection which the hospital staff chose to bury with him. Ordinarily, both such suggestions may seem a bit extreme, but it must be remembered that this site is an insane asylum.

Unfortunately, there is no definitive end date for Prosser buttons as there is for their inception, although there some very roughly estimated dates for Prosser buttons
falling out of favor. The first drop in their popularity of the Prosser button came around 1910, with shell buttons rising in popularity (Psota 2002). It wasn’t until the 1950s or 1960s, when plastic buttons flooded the markets, that the manufacture of Prosser buttons ceased. Around that time the popularity of plastic buttons overtook the older technology of the Prosser button (Sprague 2002:115).

**Figure 22.** Buttons at right shoulder of Burial 27. Photograph by Erika Collins.
Other types of buttons found at the site include polished bone (47/169), metal (18/169), shell (5/169), and one textile-covered metal button. Additionally, one button fragment was not assigned to any specific type. The polished bone buttons had the most variability in size; many larger examples were likely part of outer garments (Figure 23).

Figure 23. Large bone buttons associated with Burial 13. Photograph by Erika Collins.

Very few shell buttons were recovered. Most were in a higher state of deterioration than the other types of buttons. It is thought that the relatively low number of shell buttons may be, in part, due to differential preservation. Similar to the bone buttons, the metal buttons tended to be larger and have more variability than did the
Prosser buttons. The metal buttons would have also probably been associated with outer garments. One metal button retained a textile covering; this button was found with Burial 27; the individual with an array of buttons near the right shoulder (Figure 24).

Figure 24. All buttons associated with Burial 27. Photograph by Erika Collins.

With Burial 38, a probable male about 40 year of age, two coins were found. The coins were located at the right hip, consistent with the expected location had the coins been in a pants pocket. One of the coins is a One Franc piece dated 1851; the other is a United States Seated Liberty dime. Unfortunately, the date is illegible on the dime. Other characteristics of the dime place the date somewhere between 1840 and 1853.
However, with in this range, the coin is probably earlier than 1853. In 1853, three versions of the “Seated Liberty” dime were minted. The most popular version had arrows on either side of the date; the coin from Burial 38 does not have this characteristic. In all 13,178,010 of these coins with arrows were minted, with 1,100,000 of those minted in New Orleans and further marked with an ‘O’ under the word ‘DIME’. Only 95,000 of the version without arrows were minted (Coinfacts 2009). The coin recovered from Burial 38 lacked the arrow motif.

Though no burials could be positively identified to any of the individuals listed on death ledgers or in Dr. Reid’s journals, the combination of this burial and the coins offers a suggestion of identity. On November 25, 1854, Dr. Reid made an entry in the journal admitting a Charles Francis Dupree, age 42, into the asylum. He notes that Mr. Dupree had come from France and was sent to the asylum, by order of the city Marshall, from the station house in San Francisco where he had attempted to hang himself. He was held in the station house for 10 days and then transferred to the asylum in Stockton. Dr. Reid describes the man as “noisy, troublesome and filthy, has attacks of epilepsy. {illegible} Throat badly cut. and bleeding, commiserable.” On the following line Dr. Reid (1854-1855:91) continues with “Died. next day Nov. 26, 1854.”

The age and sex of Burial 38, identified as a probable male about 40 years of age, match Charles Dupree. Dr. Reid notes that Mr. Dupree was ‘filthy’ when he arrived, and that he died the following day. With the hospital’s limited resources, Mr. Dupree may have been buried wearing the clothes which he arrived in, potentially explaining the two coins found near the hip (Figure 25). Both of the coins date earlier than the date of death. The presence of the One Franc coin is particularly suggestive, given that Mr.
Dupree was recorded as a native of France. With a clear date of 1851 on the coin, that would have allowed ample time for Mr. Dupree, with the coin in his possession to travel to the United States, eventually finding himself in the Insane Asylum of California. It
would seem unlikely that any individual who had been a resident of the asylum for any length of time would be carrying coins. Money would have likely been confiscated shortly after admittance, especially considering the finances of the institution. Regardless, money would probably be of no use to the patients during their stay at the asylum.

To exemplify the paucity of the burial associated artifacts from IAC, a comparison of the artifacts from SCH is revealing. At the SCH cemetery, the artifacts revealed a wide variety of clothing, footwear, and jewelry. Among clothing, some very formal styles could be identified. Examples include an individual wearing wool trousers, a wool vest, a dress shirt with brass buttons. This individual also wore cufflinks made from two gold 1907 Liberty Head Quarter Eagle two and a half dollar coins. Fabric covered buttons were found in association with a female burial, in a pattern suggesting a dress or formal jacket. Belt buckles, suspenders, work boots, dress boots, woolen garments, brass collar buttons, gold rings, a pocket watch, and a pocket knife complete the array of personal effects recovered from the SCH burials. Bear in mind that this cemetery is later than the IAC cemetery, with many of these artifacts dating between the 1880s and 1900s. Still, the SCH cemetery represents indigent burials, those who were admitted to the Sacramento County Hospital and, upon their death, buried at the cost of the county.

Interment Patterns

Overall, the interment pattern of the burials at IAC are normal, burials are oriented either west headed (29/42) or east headed (11/42). The orientation of two burials, Burial 1 and Burial 31, are not discernable. Burial 31 contained only two skeletal elements, a phalanx and a rib. Coffin remnants and coffin nails were exactly like those
associated with the other burials. It seems that this individual was exhumed, but no record of this could be found on the hospital’s death ledger. Exhumations were indicated on the death ledger for much later burials.

The cemetery is organized in three rows, running roughly north-south (see Figure 5). A few burials are not clearly assignable to a given row; Burial 36, 12, 1, 2, and most notably 10. Burial 10 is, except for Burial 1 which is a secondary deposit, located the furthest north and furthest away from other burials. Interestingly, this burial is the only one with a clearly rectangular shaped coffin. It may be that this burial was one of the latest burials of the cemetery, when rectangular coffins were gaining in popularity and possibly the location of earlier burials was in question. This coffin still reveals the same redwood and machine headed cut nails present throughout the cemetery. Burial 12, may also fit this categorization; the coffin is likely rectangular but not as clearly defined as the coffin of Burial 10. Burial 2 is the burial of the child; perhaps knowing that there was ample space between rows for a burial of this size, they elected to not use an adult sized plot in of the three main rows.

Three graves indicate that burials in the cemetery may have been hasty. The cranium of Burial 3 was fourteen inches deeper than the feet. The soil of the cemetery is a very hard clay; settling to this degree would be unexpected and was not observed to any extent among other burials. This indicates that the grave was initially dug too short, making it impossible to place the coffin flat at the bottom of the graveshaft. Instead, the coffin had to be placed in the grave on an angle.

Two other burials, Burial 19a and 19b, were stacked in a single graveshaft. The underlying Burial, 19b, was identified when the skeletal remains of Burial 19a were
in the process of being removed from the grave. The coffins, and ultimately the skeletal remains, were stacked directly upon one another. No margin of soil or any type of barrier separate the two. The most likely scenario here would be that both individuals, in their respective coffins, were buried at the same time, in a single grave. Stacked burials such as this are easily interpreted as a means to save time, as it takes significant effort to dig a grave.

The short cuts taken in the interment of these three burials are, even for institutional cemeteries, not the norm (Bell 1987; Edwards et. al 2005; Chattan et. al. 1997). No such practices were observed at either the GGC or at the SCH cemetery. I would suggest that the IAC, with financial stress, crowding, and understaffing, could not justify additional expenditures to remedy these interments. Also, since very few of the patients had family in the area and there is no indication that the IAC held viewings or formal funerals, essentially no one was observing the manner in which the patients of the IAC were buried.

Discussion and Summary of Results

The findings of this research effort support some of the initial hypotheses, but certainly not all. The skeletal data did reveal generally poor health. The demographic profile confirmed that males far out numbered females within the asylum as well as on the outside. Rates of trauma, though, were not remarkably high. With regard to mortuary practices, the burial treatment afforded to these individuals were definitely on the low end of the spectrum. More than that, they were significantly lower than expected.
It was expected that similar patterns would be observed at the comparable cemeteries, with SCH and the Uxbridge almshouse cemetery in Massachusetts providing this data. The SCH cemetery revealed greater care in preparation of the body, with some individuals dressed in formal attire. Both cemeteries had more elaborate coffins and coffin furnishings than the IAC cemetery; indicating a greater financial cost afforded to each burial.

Together, the osteological and mortuary data from the Insane Asylum of California paints a bleak picture of the final days of the individuals interred here. Moreover, the osteological data indicates that for many individuals it was not just their final days that were difficult. Overall, more so than the comparable cemeteries, the IAC burials exhibited poor dental health, evidence of extensive infectious disease, and high rates of degenerative joint disease. Only for evidence of trauma and enamel hypoplasias did the population of the IAC cemetery fare better than the comparable Golden Gate Cemetery and Sacramento County Hospital cemetery. The population buried in the IAC cemetery did not enjoy long lives. The average age at death, calculated excluding the juvenile and the three adults of indeterminate age, is twenty-five and a half years old.

After that early death, a meager burial, without exception, followed. Every individual was buried in a plain, unadorned redwood coffin. These coffins were assembled with nails. No embellishments, glass viewing plates, decorative metal screws or escutcheons, hinges, or coffin lining tacks of any kind were afforded to these burials. When the cemetery was excavated, no original grave markers were present. No items of any value were buried with these individuals, nor did it appear that any special efforts were taken dress to them for burial. No shroud pins were found, indicating that burial
shrouds or winding clothes were not used. No shoes were found either, possibly shoes were too costly to bury with the dead and instead were given to another patient. Only if these people had not been buried in coffins at all could the mortuary treatment be considered more minimal.

When considering the findings of this research within the theoretical framework presented by Bell (1987), the cemetery can be considered on a broader scale as well. When the Insane Asylum of California cemetery is examined with relation to the Uxbridge Almshouse cemetery that Bell studied, it can be seen that the IAC burials were afforded much less care than the relatively contemporaneous Uxbridge Almshouse burials. In a similar vein, the IAC burials received much less elaborate mortuary practices than did the individuals buried at either the Sacramento County Hospital cemetery or the Golden Gate Cemetery. Bell’s theoretical orientation allows for this inter-site analysis of mortuary patterns among these cemeteries. Just as importantly, the IAC mortuary data may, in the future, used in similar research. If the IAC mortuary data is someday compared to additional—or newly excavated—relevant cemeteries there is the potential to learn significantly more about the variation in burial practices during the Gold Rush in California.
CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

At the simplest level, most of the hypotheses of this research project were supported, while a few were refuted. Overall, the data clearly supported two primary ideas; that the individuals who died at the Insane Asylum of California between 1851 and 1854 lead hard lives and that they received minimal mortuary treatment. The osteological data reveals some surprising differences when compared against two comparable California cemeteries, yet at the same time shows the need for more osteological research of early historic California cemeteries. The data and the historical research together help to piece together why the Insane Asylum of California was so different from those is the eastern United States, and ultimately suggested why these people received the minimal care that the archaeological record indicates.

Unlike the trend in most regions where a town grew slowly, eventually reaching a point to justify, and fund, the establishment of an insane asylum, California’s cities practically sprang up overnight. California did not have the infrastructure to support any such endeavor; there was no money to spare and hardly any government to speak of. Yet, an insane asylum was badly needed. The asylum that opened in Stockton was better than nothing, but by all indications, it fell far short of the doctors’ expectations. By the 1850s, most newly established asylums followed the Kirkbride Plan, the detailed
guidelines for the layout of an asylum, so doctors could practice the new “moral treatment”.

These new asylums probably all had more money that the Insane Asylum of California. The IAC was at a disadvantage in caring for their patients from the start; the institution was overcrowded before construction was complete, chronically understaffed, and according to some, built on an exceedingly poor site. With all of these problems, the mortuary patterns observed at the asylum’s cemetery make more sense. It could hardly be expected that the cemetery of the Insane Asylum of California would follow the trends of the beautification of death movement if the asylum itself couldn’t even practice moral treatment or build a proper asylum.

On a more broad scale this project raises some major questions: What is the relationship between the Gold Rush and extraordinarily high rates of insanity? How are trends of American deathways, well recorded in the eastern United States, to be interpreted in mid-nineteenth century California?

This project explored the earliest cemetery of the Insane Asylum of California, it is one of just a few Gold Rush era cemeteries excavated and further researched. These cemeteries mark an important time in California’s history, above ground and below they warrant ample research. While the above ground research can be done essentially anytime, opportunities to investigate these burials are uncommon, yet decreasingly so. As forgotten historic cemeteries are increasingly rediscovered in the course of development, some will inevitably be excavated; it is key is for archaeologists to be prepared to deal with them appropriately.
This project was successful, but could have been more so with increased prefield research. More likely than not, the majority of future historic-era cemetery excavations in California will be cultural resource management projects. With cost as a key consideration, prefield research is often overlooked or cursory. Prefield research, even a single visit to a state’s archives or a local historical society, has the potential to guide the research effort, to prompt the archaeologist to ask the most applicable and revealing questions of the site. In the long run, this foresight could potentially save money. More importantly, similar excavations could greatly contribute to the body of historic cemetery data available from California. Both osteological and mortuary data for historic cemeteries from the western United States are very scarce compared to the data available from the east.

For mortuary data, the categories outlined by Bell and adopted for my own research are a great starting place for most cemeteries. Coffin type and furnishings, grave markers, and burial associated artifacts should be fully inventoried. Interment patterns, which for this research were included in the analysis of mortuary practices, are easily recorded in the field as a part of standard mapping. Larger or more elaborate cemeteries may warrant an expansion of these categories. For example, instead of a cemetery just having individual grave markers, some large cemeteries may reveal fences or remnants of historic landscaping plants.

At a minimum, standard osteological data should be recorded, with time set aside for laboratory analysis. If destructive analysis is allowed and funded, the possibilities expand exponentially. Any destructive analysis would probably require a good deal of pre-and post-field research, inquiring into what analyses would be
potentially useful for a given cemetery. This raises one very specific suggestion for further research, one that would have been ideal for the Insane Asylum of California cemetery, had only adequate prefield research been conducted prior to excavations.

The known use of mercury in the extraction of gold ore and the link between mercury poisoning and mental instability, coupled with the extraordinarily high rate of insanity in Gold Rush era California creates a tantalizing idea for trace element analysis of Gold Rush era cemeteries. Unfortunately, in the two years between the initial relocation of the IAC cemetery and the excavation in 2007, little research was conducted. Only after the excavations were complete and the human remains reburied, when archival research was conducted for this study, were these elements linked together. If this idea would have been presented to the involved parties in 2005, there may have been a chance that funding could have been secured and permission granted over the course of those two years before the cemetery was actually excavated. So, while unfortunately this research was not an option for the IAC burials, it is without a doubt that other Gold Rush era California cemeteries will be excavated in the future. Hopefully, this type of research will be conducted in the future.
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O’Shea, John M.
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Parsons, F.G.  

Pearson, Michael Parker  

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Radcliffe-Brown  

Rainville, Lynn  

Rathbun, Ted A.  
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Reid, Robert K.  

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Shapiro, Lisa  
Shauffer, Irving A., and Walter V. Collins  

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Yanni, Carla
## OSTELOGICAL DATA

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<td>DJD/Osteoarthritis (Y/N)</td>
<td>Osteoperiostitis (Y/N)</td>
<td>Trauma (Y/N)</td>
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<td>Concrete Marker</td>
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APPENDIX C
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APPENDIX D
OSTEOLOGICAL LABORATORY

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</tr>
</tbody>
</table>

Codes:

C = > = 75% present
p = 25% - 75% present
f = 25% present

NOTES

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**ADULT AGE/SEX RECORDING FORM**

**Age Criteria**

<table>
<thead>
<tr>
<th>Pubic Symphysis</th>
<th>Left</th>
<th>Right</th>
<th>Auricular Surface</th>
<th>Left</th>
<th>Right</th>
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</thead>
<tbody>
<tr>
<td>Todd (1-10)</td>
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<tr>
<td>Suchey-Brooks (1-8)</td>
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</tbody>
</table>

**Suture Closure & Epiphyseal Union:** blank = unobservable, 0 = open, 1 = minimal, 2 = significant, 3 = complete

| External       | 1. Midlambdoid | Palatine 11. Incisive Suture |   |
| Cranial        | 2. Lambda | 12. Anterior Median |   |
| Vault          | 3. Obelion | Palatine 13. Posterior Median |   |
|                | 4. Anterior Sagittal | Palatine |   |
|                | 5. Bregma | 14. Transverse Palatine |   |
|                | 6. Midcoronal | Internal 15. Sagittal |   |
|                | 7. Pterion | Cranial 16. Left Lamboid |   |
|                | 8. Sphenofrontal | Vault 17. Left Coronal |   |
|                | 9. Inferior | Sphenotemporal |   |
|                | 10. Superior | Sphenotemporal |   |
| Clavicle       | Sternal epiphysis | Vertebal Cervical | superior |   |
| Sacrum         | S1/S2 fusion | Annular | inferior |   |
| Innominate     | Iliac crest | Epiphyses Thoracic | superior |   |

**Estimated Age:**
- Subadult (12-18 years)
- Young Adult (18-35 years)
- Middle Adult (35-50 years)
- Old Adult (50+ years)

**Comments:**

---

**Sex**

<table>
<thead>
<tr>
<th>Pelvis</th>
<th>Left</th>
<th>Right</th>
<th>Skull</th>
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</thead>
<tbody>
<tr>
<td>Ventral Arc (1-3)</td>
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<td></td>
<td>Nuchal Crest (1-5)</td>
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<tr>
<td>Subpubic Concavity (1-3)</td>
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<td>Mastoid Process (1-5)</td>
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<td>Ischiopubic Ramus ridge (1-3)</td>
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<td>Supraorbital Margin (1-5)</td>
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<tr>
<td>Greater Sciatic notch (1-5)</td>
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<td>Glabella (1-5)</td>
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<tr>
<td>Preauricular sulcus (0-4)</td>
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<td>Mental Eminence (1-5)</td>
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</tbody>
</table>

**Estimated Sex, Pelvis (1-5) =**

**Estimated Sex, Skull (1-5) =**

**Comments:**

---

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PERMANENT TEETH RECORDING FORM
Wear, Development, Loss

Loss Categories
A = antemortem
P = postmortem
U = unknown

Wear Stages
0 = not in occlusion
1-10 = per Standards
X = unknown due to caries or breakage

Development Stages
0 = unobservable
1-14 = per Standards

MAXILLA

MANDIBLE

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PERMANENT TEETH RECORDING FORM

Note: Indicate dental pathologies on the drawings above. Use codes per Standards.

Checklist:

- Caries
- Abscesses
- Hypoplasia
- Calculus
- Periodontal Disease
- Hypocalcification

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