A PRELIMINARY ANALYSIS OF BEADS

FROM

MISSION SANTA CLARA DE ASSIS 1777 - 1836

SANTA CLARA COUNTY

CALIFORNIA

SCI - 30

THE "THIRD MISSION SITE" 1784 - 1819

CORNER OF

FRANKLIN AND CAMPBELL STREETS

AND

THE "FIFTH MISSION SITE" - 1825 - [illegible]

PRESENT SITE OF THE MISSION CHURCH

PREPARED BY

KENNETH JOHN BONE

AUGUST 1975

UNPUBLISHED MANUSCRIPT ON FILE AT:

DE SAISSET ART GALLERY & MUSEUM, UNIVERSITY OF SANTA CLARA

THE U.C.L.A. SURVEY, LOS ANGELES

ACKNOWLEDGMENTS

This preliminary analysis is based on the unpublished research and bead typology manuscript completed earlier this year for Mission San Jose.

Original research done by Clement Meighan, James Bennyhoff, Chester King and Robert Gibson was also consulted.

A special thanks to Mrs. Lydia Modi Vitale, Director of the de Saisset Art Gallery and Museum and Susan Middleton, Curator of the de Saisset Mission and Early California Collection, for making the Santa Clara Mission Bead Collection material available for analysis.

A special note of appreciation to Austen Warburton, and to Father Arthur Dunning Spearman, S.J., past archivist for the de Saisset Museum , for their discussion and background data on the Mission Santa Clara Bead Collection. Father Spearman is as keenly interested in Mission Santa Clara and its history today as he has been over the past many years.

TABLE OF CONTENTS

PERMANENT MISSION SANTA CLARA BEAD COLLECTION

The permanent Mission Santa Clara bead typology collection is housed in the Mission/Early California collection of the de Saisset Museum at the University of Santa Clara, Santa Clara. The de Saisset Museum was founded at the University of Santa Clara in 1955.

THE FOUNDING AND BRIEF HISTORY OF MISSION SANTA CLARA DE ASSIS

The original Mission Santa Clara was to have been situated near what is now the town of Castaic in Los Angeles County. But Spain, eyeing Russian activity in North America, ordered that priority be given to two new missions and a fort on San Francisco Bay.

Thus Mission San Francisco was founded October 9, 1776. On January 12, 1777, Mission Santa Clara was established by Father Tomas de la Pena, using the name and supplies that had been destined for Castaic.

The site, crossed frequently by Spanish explorers since the days of Portola's expedition in 1769, was on a fertile plain - populated with many Indian villages - beside the Guadalupe River at the southern end of the bay.

The founding party heading for Mission Santa Clara left the Presidio of San Francisco on January 6, 1777 with six soldiers, their wives and children. Lt. Moraga, who was in command, and Father Tomas de la Pena reached Mission Dolores in modern San Francisco that night. They set out early the next morning and laboriously made their way down the Peninsula through swampland and areas which they named "Las Pulgas" for the painful swarms of fleas that attacked them.

They came, at length, to the bank of the Rio Guadalupe where a good surface stream which we call Mission Creek ran from the present Santa Clara area due north into the Rio Guadalupe. The area was surrounded by laurel trees and was called by the Indians "Socoistaca" or "Place of the Laurels."

Here on the evening of January 12, 1777, a large wooden cross was erected and a bower made of saplings and branches, in preparation for the first divine worship to be conducted in this valley the next morning.

Work was begun immediately on erection of the Mission compound buildings. First built was a church of upright saplings, chinked with adobe and roofed with thatch of brush. The next building was a residence for the padres and their lay helpers, and another was built for the soldiers and their families - both were built of upright saplings and thatch. Storehouses were also built and separate corrals for cattle, sheep and horses.

Two weeks later, Padre Jose Murguia with a party of helpers, arrived at Mission Santa Clara after a four day journey, driving the bank of Mission cattle - originally twelve in number, but by official delays increased to eighteen. There were also other animals.

The Mission fathers made an immediate policy that none of the stock was to be slaughtered for food until the herds of cattle and sheep had increased to the point that no ordinary catastrophe could wipe them out.

These herds were to increase over the years to a maximum number of 15,500 sheep and 14,500 cattle in 1827. As early as 1800, there were over twelve hundred Indian men, women and children aggregated to the Mission and their number was over 1,450 in the year 1827.

To provide food, clothing and training for so large a group meant much planning and effort. Artisans were brought from Mexico before 1794 to train the Indian men in iron forging, shoe making, saddlery, soap making and other domestic arts.

In the Mission's first year, fields between the present Southern Pacific Railroad track and the Rio Guadalupe were cleared and planted with two kinds of wheat, with maize, horsebeans, frijole beans and other lentils. These were irrigated with water channeled from El Pozo, a deep spring later known in American days as Cook's Pond.

Father Palou noted that within a reasonable distance of the newly founded Santa Clara Mission, there were some forty-five Indian villages which the Spanish called "rancherias." They were organized into groups of three or four villages which clung tenaciously to their land and fishing rights. There were frequent hostilities with the neighboring groups of villages if trespassing of any kind occurred.

Father Palou noted that the Indian's own name for themselves was the "Tares" in the Spanish pronunciation, which meant "The Real People."

At the end of the first year, the padres had built a dam and corresponding ditches to irrigate the fields. They planted and harvested corn and beans, and in the last month of the second year, wheat was sown.

At this time, thirteen converts were living at the mission. Of the thirteen, seven were adults. Later, other adults came under instruction and were prepared for baptism.

On November 7, 1777, Lt. Luis Joaquin Moraga, who had escorted the missionaries and soldiers to Santa Clara, returned from San Francisco with nine soldiers and five colonists and their families to found the pueblo of San Jose, the first town in California.

A disastrous flood demolished the mission on January 23, 1779. Father Pena and the neophytes moved to higher ground while Father Murguia remained in the mud and rain to guard the supplies. When the weather improved, a second temporary mission was built. The second Mission Santa Clara, which was built of upright logs, was built in 1779. The mission was moved in 1784 because of further floods.

"In 1781, Father Junipero Serra, assisted by Father Crespi Pena and Father Joseph Murguia, laid the cornerstone of the church at the third mission site."

In May, 1784, this adobe church, which was built by Father Murguia, was blessed and dedicated by Father Junipero Serra.

Father Murguia's church, which was located at Franklin and Campbell Streets where a mounted cross now marks the site, was the "largest and most pretentious church erected up to that time," according to records left by Father Serra.

The church was used until 1818 when it was so badly damaged by an earthquake, it was rendered inserviceable and was dismantled.

The cornerstone, which was always laid on the "gospel" side or east end of a church, was uncovered in 1911 while workmen were laying a gas main. Twenty-two years later, Father Spearman uncovered the only part of the third mission left: the foundation and two tiers of adobe and large creek stones from the inside walls of the easterly wing of the Indian workshops.

The fourth Mission Santa Clara was a temporary adobe church built in 1818-1819 on a site facing today's Jesuit residence and between the University's Kenna Hall and Delia Walsh Administration Building.

The building was used as a church until 1825 when it became the dormitory for the Indian boys who helped in the mission religious services and studied in the Santa Clara Mission School under "lay" teachers. The "lay" teachers were predessors to the Jesuit fathers who took over in 1851 to bring higher education to the mission school.

Construction of the quadrangle, which became the living quarters for the padres and Indians, and building of the fifth Mission Santa Clara church began in 1822 with the erection of two rows of adobe buildings, each 85 "varas" or 225 feet in length.

The mission continued to flourish, numbering 1,462 Indian parishioners in 1827, and owning 14,500 head of cattle and 15,500 sheep in 1828.

The fifth and final mission was completed and dedicated in 1825. Included in the mission compound were the church, padres' residence and the dormitory room for the young Indian girls, the girls' workshop where they spun wool, and the vineyard in the southwestern area.

The L-shaped wing nearest the present-day rose garden cemetary, was once dwelt in by the American wives and children of General John C. Fremont's volunteers during the winter of 1846-47.

During the first three decades of the nineteenth century, the old mission enjoyed its most fruitful years under the aegis of the padres. A combination of factors terminated the decades of prosperity at Santa Clara and the other California Missions. The Mexican War of Independence brought turmoil from 1810 to 1821 with the resultant decrease of Franciscan personnel and donations in aid from benefactors. The new Mexican government took possession of the old Jesuit Pious Fund of the Californias that had been the main source of support for the Mission. Most of the Indians' lands, cattle and sheep became the object of spoliation by unscrupulous civil administrators.

In 1827 and again in 1829 governmental decrees ordered exile for all Spaniards who refused allegiance to the new regime. Since most of the Mission Padres were from Spain, many chose banishment. Some, however, remained until, in 1833, Mexican Franciscan replacements arrived from the missionary college of Zacatecas. Among them was Fry Francisco Garcia Diego y Moreno who was to become the first bishop of the Californias.

The Mission period grew to a close toward 1835 when the political rulers, who had long looked covetously on the well-kept mission lands and herds of cattle and sheep, at length

confiscated all the temporalities and left the mission padres only the church building and a few rooms beside it to sleep in.

Even their supplies of food were so diminished that at Mission La Soledad, Father Sarria dropped dead of malnutrition one Sunday at the mission altar.

At Santa Clara, secularization was carried out on December 27, 1837. From then on, the Indians were rapidly scattered and the herds of cattle and sheep were dispersed to various new owners.

The last Santa Clara Mission cattle, the milch cows which numbered seventeen in the mission corral (whose area is now occupied by the Santa Clara City Library), were confiscated by General Jose Castro. General Castro had quartered his soldiers in the mission and on departing, took even the blankets of the mission residences with him. The slaughter of the cows deprived the American women and children who were living at the mission of their last means of food. Padre Jose Real, the last Franciscan, was also hard put for a living.

By now, American immigrants were settling around the mission buildings, and Father Real asked William Campbell to survey the area of the present city of Santa Clara. Town lots were sold for $13 each.

It was not long until the incoming Americans took over the Valley politically, agriculturally and economically. With the forming of Santa Clara County, the town of Santa Clara was one of the five officially designated townships and local officials were elected by the townspeople.

Barricaded inside Mission Santa Clara de Assis, 175 American men, women and children prepared for battle. The big wooden gates in the wall were jammed shut with trunks of trees and as night fell, every man who could handle a weapon was posted at a strategic spot. In the crumbling belfry of the

old church, a lookout peered northward into the darkness, while in the adjacent field of mustard, thirty-two armed men huddled in wait for the advancing horsemen of Col. Jose Sanchez.

It was the winter of 1846; the war with Mexico was nearing its climax. Col. John C. Fremont and his volunteer batallion had marched off for Los Angeles, leaving their families at Mission Santa Clara. It was on this mission that Don Jose was descending, bent on revenge for the pillage of his ranch by the "Americanos."

After a tense and fearful night, the battle, when it came, was almost an anticlimax. There was much skirmishing, but the only fatality was an American killed when his field gun blew up. The British consul arranged a truce.

In the early 1840's a new people and new way of life came to Alta California. Most of the immigrants were Anglo-Americans, attracted by the rich lands of the Santa Clara Valley. In 1848, the Treaty of Guadalupe Hidalgo ceded California to the United States. Statehood was granted in 1850 by which time some 8,500 persons were baptized at Mission Santa Clara.

In 1839, rain water sliding off the slanted roof of the church cut into the adobe church tower and washed away the top portion of the tower and the catwalk, which was used as a fire and cattle watch. The tower was rebuilt in wood.

The thick adobe sidewalls of the fifth mission church were taken out in 1885 and replaced with wooden walls, thus enlarging the church.

Monday morning, October 25, 1926, a "great fire" destroyed the padres' quarters and damaged the mission church. The fire was believed to have been started by bat dung in the north tower of the mission church, damaging the insulation. Wires crossed by the wind ignited the tower, and within twenty minutes the church was a mass of flames.

The present structure, an enlarged replica of the original was completed in 1928 and consecrated by Archbishop John J. Mitty of San Francisco, October 9, 1936. It is roofed with the original mission tiles and contains many statues and paintings brought by the early Padres from old Mexico. Likewise, most of the interior decoration of the church, especially the sanctuary ceiling, is a careful reproduction of that of the original Mission.

THE SCIENTIFIC ARCHAEOLOGICAL PROBLEM AT MISSION SANTA CLARA

There are many interesting archaeological problems associated with the Mission Santa Clara bead collection. The beads that make up the collection were not part of an archaeological excavation; therefore, there is no date or documentation associated with the beads.

According to Father Spearman, a portion of the beads was collected in the spring of 1911. This apparently was during the same trenching that led to the discovery of the cornerstone of the third church. "On Thursday, June 8, 1911, the Town Board was laying a new gas main to give service down Campbell Avenue to the Pratt-Low Canning Company's works. A deep trench was being dug by John Andrado and John Vierra, working under the direction of J. Worthington, Superintendent of the Gas Works. The direction of the ditch brought them to the corner of the old mission-building foundation walls and the cornerstone was thus discovered." (Spearman 1963:88)

A second major collection was done after the October 25, 1926 fire of the church and student memorial chapel. Many of the burnt and fused beads came from this second collection. No one is sure if these heated beads had previously been collected and were damaged by the fire or if they were excavated during 1926 and 1927 when the present steel-framed enlarged replica of the fifth Franciscan Mission Santa Clara was built.

A possible source of the second collection was burials that were discovered in 1924 during the building of Kenna Hall business building. According to Father Spearman, Father Magin Catala's one room adobe which attached to the south church wall was used as a very small museum until the 1926 fire and may have housed beads from the Kenna burials. Another possible source of the beads was the burials that were discovered in 1927 when the new church foundation was being laid. According

her Spearman, these upright burials were moved to the side of the present church and were re-buried around nter cross of the rose garden. Father Spearman also 1792 diaries and later personal accounts of an early ry and living site at and to the north of Franklin and 11, and an (1800-1818) Indian cemetary under Franklin .

nterestingly, only the third mission site has had a archaeology designation, SCI-30 and the Society of rnia Archaeology clearing house 5 at Santa Cruz has little n the site.

When this researcher received the beads from the de Saisset m, they were strung on five strands with the remainder in ge pile. I showed the strands of beads to Father Spearman. d not recall which bead type came from which location, nor e recall that they were previously strung. Evidently, they strung arbitrarily to enhance the bead display. However, ding to Bennyhoff's complex types, many of the beads strung in entirely the wrong sequence. Caution should be ised in restringing the beads. It may be a reflection of resent Museum curator's aesthetic values rather than the ive value the Indians associated with the beads.

BEAD - A MEDIUM OF PRESTIGE AND EXCHANGE

The collection of beads from Mission Santa Clara, although numbering only 1,020 to date, has been classified into thirty-eight distinct Mission Santa Clara types. Since these beads comprise basically a piece-meal collection, the research potential for bead collection and analysis at the various Mission Santa Clara sites is enormous.

The glass beads represent the interaction of two complex cultures, the local Indian of the South Bay Area and the colonizing Spanish from the Old World.

In February, 1697, two Spanish Jesuits asked for and received permission of the King of Spain to "attempt the spiritual conquest of the Californians." The country was to be taken in the name of the King and was not to be underwritten by the King. Therefore, the Jesuits established and maintained the "Pious Fund of the Californias" which was used to build thirteen missions in lower California until 1768 when all Jesuits were banished from all Spanish possessions by the King. The Viceroy of Mexico was ordered to pass the work of the Jesuit missionaries over to the Franciscans. In 1769, the mission building in Upper California started. Since the mission had few Spanish laborers, the Indians were "gathered in when necessary..." (Country Club of Washington Township:48)

During this time up to 1836 with the withdrawal of the Pious Fund and the appointment of the parish priests and administrators, the glass trade bead, apparently brought primarily from Venice, Italy by the Spanish in addition to other materials, was used as a medium of exchange for Indian friendship.

Beads and ornaments were very much a part of most Native Californian cultures prior to the "merciful uplift from degradation by their Franciscan teachers." (McCarthy:62) Beads were a basic economic element as well as a status marker of the political system.

The Spanish were quick to realize this in lower California and introduced glass trade beads as a medium of barter and as a means of securing native friendship. They followed this practice with the introduction of the trade beads in the Bay Area.

Bennyhoff states that beads were "...distributed freely by early European intruders to promote friendship and given more sparingly in return for furs and other trade items; to the Indians these were more valuable than any other wealth item." (Bennyhoff 1961:67)

The first record of trade beads given to Bay Area Indians was in December, 1770, when Pedro Fages succeeded military command of Alta California from retiring Don Gaspar Potola and was trying to find a land route to Point Reyes.

"We saw close to the lagoon many pleasant and affable heathen, to whom we presented some strings of glass beads." (McCarthy:21)

Later, explorers as Colonel Juan Bautista de Anza, 1776, recorded giving glass trade beads to the Bay Area Indians possibly in the area of Mission San Jose. With the establishment of the Santa Clara Mission, the infusion of glass trade beads was accelerated at a tremendous rate which continued until 1836, and then dwindled to a minimal level to the present time.

THE SCOPE OF THE PRELIMINARY ANALYSIS

The scope of this preliminary analysis is limited by two primary factors. The first is that the beads that form the permanent Mission collection are basically from piece-meal collections taken at Mission Santa Clara sites during 1911 and 1927. Since no provenience was maintained with the beads, the scope of analysis was limited to a series of hypotheses and the development of a bead typology.

The second limiting factor is that there is no standard typology for California shell and glass trade beads. Meighan's glass trade bead collection and shape typology was used as a basis for the working typology that evolved with Mission San Jose and Mission Santa Clara bead classification. However, the Meighan typological collection and his 1953 paper on the "Occurrence and Distribution of Glass Trade Beads in California" are now both incomplete and outdated. The Ventura Mission data included sixty-plus beads not included in the Meighan collection, and Mission Santa Clara types include eight types not in the Meighan collection.

Dr. J. Bennyhoff at Sonoma State has been maintaining the Meighan collection at Berkeley (at present in the P study locker in the basement of the Hearst Women's Gymnasium), but a complete revision and updating of both the type collection and a functional key to the types must be undertaken if the collection and its typology is to maintain any value in this growing archaeological specialization.

This author would like to suggest that for the benefit of the science of bead typology, the petty politics of separate typological collections at various institutions be sacrificed and that a standard California typological collection be established at U.C.L.A. and Berkeley with all new types immediately feeding into these type collections and their continually revised keys.

When attempting to type the beads from the written Meighan description only, it is not unusual to have a fifty percent

error in type accuracy. Therefore, the Mission San Jose bead typology was checked directly against the Meighan collection type beads; even at that, several types were questionable and are so identified with a question mark (?) preceding the Meighan type number.

The major emphasis of this preliminary analysis was in developing a system of Mission Santa Clara bead type identification cards for future identification and recordation, systematic bead measurement analysis, and a systematic typology for the Mission Santa Clara beads.

LOCATION OF THE MISSION SANTA CLARA CHURCH SITES

TheMission Santa Clara bead collection is thought to have come primarily from the Mission church site Numbers Three and Five, and possibly Mission church site Four.

Based on the research of Father James Colligan, S.J. and Father Arthur D. Spearman, S.J., five Franciscan Church sites have been located for Mission Santa Clara de Assis.

SITE I: Founded January 12, 1777. Temporary site was of saplings, upright, palisade style on the west bank of Mission Creek. "Today it is on the Northeast side of Kifer Road at the intersection of De La Cruz Boulevard within the area of the Southwest ramp of the Bayshore Freeway." (Spearman:1963:92)

SITE 2: November 11, 1779, also a temporary site of saplings, is marked by a cross at the Northeast corner of Martin Avenue at De La Cruz Boulevard. (Spearman 1963:92)

SITE 3: dedicated May 16, 1784 (SCI-30). This was the first permanent adobe church. This site was rediscovered June 8, 1911 with the uncovering of the Murguia church cornerstone. A cross commemorates the site at the corner of Campbell and Franklin Avenues.

SITE 4: 1818. Is on the University of Santa Clara grounds between Kenna Hall and the Administration Building - described as East of the present Alviso Street, opposite the South half of the Jesuit Fathers' residence (Spearman 1963:53). Except for the publication center, this area is open and planted

in trees and lawn.

SITE 5: The present site of the Church on the Mission grounds was dedicated August 11, 1825

ORGANIZATION OF THE MISSION SANTA CLARA BEAD TYPE CARD

Atypical beads have been purposefully selected to show the greatest variability in beads and size for that particular type bead. Ideally, the type card shows the maximum range of variability for that type bead.

The Santa Clara bead type cards have been modified to facilitate placing the Mission Santa Clara bead types on public display in the de Saisset Art Gallery and Museum's Mission collection. To provide for an aesthetically pleasing display, the data for each bead card may be covered by the following cards allowing only the beads and the Santa Clara bead nomenclature to be seen.

On the left side of each card is listed the Meighan, Malibu, Ventura and San Jose nomenclature for the same bead type so that it is cross referenced right on the type card.

In the upper center is the Meighan shape name, the specific color, and the degree of opaqueness.

For those types that have a great variability, the exact measurements in mm is stated for the smallest and largest example of that type, if possible the beads are sewn on the card. The standard notation usually to the nearest half millimeter is for bead diameter followed by bead length and finally by bead perforation; example for C1b, range: 3.5/2.0/1.0-4.0/4.0/2.0. For those types that are of little variability, the measurements of the card bead are placed just under the shape, color and opaque designation in about the center of the card.

The total number of type samples collected is noted as <u>total #</u> printed just under the beads.

The Mission Santa Clara designation is printed in the upper left corner for easy identification while thumbing through the type cards.

For those types that have been typed in the Meighan collection, all known sites for that bead type are listed on the lower left

and if necessary, continued on to the back of the card.

This information will be used in future research to establish dating, trade and trade routes, and possibly cultural systems.

The SCI-30 has also been added to all Meighan type cards in an effort to update the Meighan type collection for all other researchers.

GLASS BEAD TECHNOLOGY

The first category is Cane Bead notated with a capital"C". Cane beads account for approximately 94.4% of the glass beads analyzed at Mission Santa Clara. A lump of molten glass is taken out of the furnace with an iron bar and a pocket of air is formed by either blowing into the lump with a tube or by folding the lump of glass. Then a second iron bar is attached to the lump, and a worker will run "drawing" the lump into a long slender glass tube. This long tube is then broken into one meter lengths and packed into bundles. The diameter of the glass tubes will depend entirely on the extent to which the bubble has been elongated (drawn); it may vary from 1.5 mm to over 25mm. These tubes are then snapped or chopped into beads of desired length (thickness). The beads can be sold as is, or they may be tumbled in a heated drum with ground charcoal and fine sand. Tumbling reduces the snapped tubes to oval or rounded beads. Different colors may be added to the molten lump before it is drawn, thus creating a wide variety of color types.

The second category is Wirewound Bead notated with a capital "W". Wirewound beads account for 2.6% of the glass beads analyzed at Mission Santa Clara. The lump of hot glass is drawn as above, but without putting an air bubble in it. This results in a glass rod. Workers then melt one end of a glass rod with a glass-blowing lamp and fold or wrap it around a copper or iron wire. When the glass ring is closed around the wire, the rest of the rod is cut off, and the wire with the glass ring is turned and heated until the ring is round or oval. When 3-5 rings have been turned, the wire is set aside to cool. In cooling, the metal contracts and the beads can be slid off (van der Sleen, 1973:23; Hammesfahr & Strong, 1968:64). Beads in this category can be distinguished from the Cane category by observing swirling patterns in the glass that are generally

obliquely perpendicular (heliacal) to the perforation; often, this must be observed under a microscope. Near the perforation on either side there may be a small lump which was where the glass rod first touched the wire or where the rod was cut after the bead was large enough.

The third category is Pressed Bead notated with a capital "P". Pressed beads account for approximately 2.3% of the glass beads analyzed at Mission Santa Clara. Pressed beads can be subdivided on the basis of glass being pressed or porcelain being baked. Glass beads of all forms (ie: cane, wirewound, blown etc.) while still hot can be pressed with metal objects or by using small moulds into a variety of shapes including hexagonal or square beads, bicones or barrels with flattened ends, cylinders, prisms, melon forms etc. (van der Sleen, 1973:23,26).
The other variety of pressed bead uses more clay or better felspar which results in a porcelain rather than glass. The beads are opaque with a glossy luster that distinguishes them from glass beads. In addition, there is an equatorial band, sometimes barely visible to the naked eye resulting from the mould (van der Sleen, 1973:114).

The fourth category is Faceted Bead notated with a capital "F". Faceted beads account for approximately 0.8% of the analyzed glass beads at Mission Santa Clara. Faceted beads can be subdivided on the basis of hand-held ground beads or machine "automatic" faceted beads. Indirect evidence from the Industrial Revolution in America and Britain indicates a date of around 1850 as the period when hand cutting of glass was being replaced by milling machines and grinding machines (Singer, et al. 1958 vol. 4:376, vol. 5:652-654). The earlier type of facets are irregular and probably are used on wirewound beads.

The machine faceted types are quite regular and usually occur on cane beads.

The fifth category is Blown Bead notated with a capital "B". Blown beads account for approximately 0.0% of the glass beads analyzed at Mission Santa Clara, since no blown beads have been

collected to date. A glass tube is heated and blown into a spheroid or ellipsoid bead. When looking inside the perforation the center of the bead is hollow and at each end of the perforation is a tip of glass.

MISSION SANTA CLARA GLASS BEAD TYPOLOGY

The working typology is a continually evolving system which will be changing on a continuum as more data is available.

A great deal of effort has gone into trying to standardize the bead nomenclature for Mission Santa Clara with the Mission beads from Ventura and San Jose.

The Meighan type collection, imperfect as it is, is used to standardize the general shape and general name of the bead which is written in the middle of the type card with the color and degree of opaqueness.

The manufacture type is the first major characteristic considered. Mission Santa Clara's five basic manufacture types are:

A. Cane - Prefix C
B. Wirewound - Prefix W
C. Faceted - Prefix F
D. Pressed - Prefix P
E. Blown - Prefix B

The second major characteristic considered is the color. This is a difficult variable to standardize. Bennyhoff contends that color variability is of insignificant importance if the variants are found in the same burial lot. Therefore, Meighan's type 102 red or pink centers should be classed with Meighan's type 99, red or white centers.

The pinkness probably being a technological error in processing, according to Bennyhoff should not be separated. This argument sounds most logical, but it assumes that the Mission Indians had no preference. This researcher is very uncomfortable with that assumption; therefore, the Mission Santa Clara beads have been separated according to gross color differences as viewed in direct sunlight, in the same manner as the Mission San Jose beads were typed.

In general, if one compares the bead data of early Californian sites, it progresses from the earliest cobalt blue type down to the most recent types. (See Site Comparison by Percentage of Colors -- Appendix.)

The color numbered sequence in general is designed to present a possible temporal sequence of some importance. Just as the bead type preference at a particular site most probably was not at random, but a reflection of the values of that particular culture group, the selection of the color sequence is a hypothesized reflection of the selective value of antiquity: the smaller number being of the greatest hypothesized antiquity.

The Mission Santa Clara color numeral sequence has been closely correlated with the Ventura and San Jose Mission data to attempt to standardize the typology in California sites.

The following temporal numerals have been assigned to the Mission Santa Clara bead colors.

1. Cobalt blue	8. Black	15. Purple
2. Copper blue	9. Brown	16.
3. Green	10. Amber	17.
4. Opaque white	11. Opaque yellow	18.
5. Clear - transparent	12. Yellow	19.
6. Red	13. Orange	20.
7. Opaque	14. Gray	21.

An example of a wirewound white bead, then, would be given the designation of W4. By examining the type sheet in the Appendix, one will observe that it is rather easy to distinguish which color types and how many are represented for each manufacture type.

To distinguish the variety of white wirewound bead types, an alphabetical designation in order of future collection should be employed. Therefore, the first wirewound white type was assigned a Mission Santa Clara nomenclature of W4a; the second, W4b, etc.

This system is realistic in that it will allow for continual expansion of the Mission Santa Clara type nomenclature as new types are recorded.

An attempt should be made to continue this type of notation with the nonglass beads. The small sample of nonglass beads

makes it difficult to assess the feasibility of continuing this type of notation.

Additional research is needed to better understand variations in color of glass beads and its significance to those who valued the beads. Turquoise blue was obtained by adding copper to the glass formula; darker (navy) blue was obtained by adding cobalt to the glass formula; adding charcoal produced yellow-brown glass; manganese dioxide, when added, produced a violet glass (Hammesfahr and Strong, 1968:4). Red wine-colored beads were produced by adding gold. Van der Sleen suggests that after 1930 selenium was used instead of gold to produce bright red transparent beads (1973:113).

In addition to recording color, characteristic of light transmission is recorded. It has been noted if a bead is opaque (3), translucent (2) (the perforation can be seen from the side of the bead), or transparent (1) crystal. (Meighan, 1953).

Because of the problems of oxidation and mineral deposits on some bead samples, all opaque and color tests were done on wet beads held up to direct sun light. This provided a gross standard of color and light transmission which may approximate that of the bead when first manufactured. This method may also approximate the method of inspection used by the early traders and recipients of the glass beads. However, a sophisticated scientific method of classification should be developed based on the physical make-up of each bead type.

MISSION SANTA CLARA SHELL BEAD TYPES

One shell bead has been collected. The shell bead has been typed by four attributes which include species, shape of the shell bead, manufacture technology, and bead dimensions.

Clam Discs - Cld

One specimen; both sides of the shell are ground flat, and the periphery is ground circular. There is a central perforation in the bead; the species is probably Tresus.
16.0/8.0/5.0 - white

MISSION SANTA CLARA GLASS BEAD TYPES

Because there are thirty-seven different glass bead classified types to date at Mission Santa Clara, the researcher has constructed one-page summary tables for each of the four major types: cane, wirewound, faceted and pressed beads, rather than write out pages of nonfunctional descriptions.

See APPENDIX for the major type tables.

PRELIMINARY COMPARATIVE CALIFORNIAN GLASS BEAD ANALYSIS

Although glass beads occur through the world, systematic studies are rare (van der Sleen: 1973; Kidd and Kidd: 1970). Previously, only a few have been done on glass beads found in California. Recent salvage projects have allowed some understanding of types of beads used during the Mission Period (1780-1834). These studies may be comparable to the Mission Santa Clara beads.

Medea Creek (LAn-243), (Thousand Oaks), an inland Chumash site was occupied after 1500 A.D. and abandoned about 1785 A.D. The site contains some of the first glass beads used by the Indians. Of the beads dated between 1770 and 1780, 100% of them were cobalt and copper blue. (L. King: 1969)

The historic site of Humaliwu (LAn-264) near the coastal town of Malibu was occupied from 1785 to 1816 (based on Mission baptismal data). Its sample of over 15,600 glass and 27,000 shell beads can be seriated into early, middle, late bead complexes based on bead diameters of Olivella Saucers. Of the glass beads dated 1782 to 1816, 95% were cobalt, copper blue, and green; 4% were white, clear and red; and less than 10% were amber and others. (C. King and R. Gibson:1973).

It is interesting to note that while over 9,000 money beads (lipped and cups) occurred at Medea Creek (1500-1785 A.D.), none of those money types occurred at Humaliwu (1785-1816 A.D.) It may be assumed that the economic base changed from aboriginal shell to Venetian glass. The source of money apparently changed from the Channel Islands to the Spanish Missions. This change may have resulted in many other changes in Chumash cultural systems.

The historic site of Mission San Buenaventura (Ven-87) was an early occupied site (3,000+ B.C.), but was occupied by the Mission from 1782 until 1840, approximately a comparable

date with that of Mission Santa Clara of 1777-1836. Ninety-nine percent of the beads excavated at Ventura were shell beads. Of the glass beads, 65% were blue-green, 13.5% white, clear, and reds, and 21% were yellow, amber and others. The last group is hypothesized to be post 1816. (R. Gibson:1975).

The historic site of Mission San Jose (ALa-1) was occupied by the Mission from 1797-1836, also approximately comparable with Mission Santa Clara.

Nine percent of the beads thus far excavated at Mission San Jose were shell beads. Of the glass beads, approximately 7% were blue-greens, 90% white, clear and reds, and 3% were yellow amber and others (Bone:1975).

At Mission Santa Clara SCI-30 and present church site (1784-1836) only one clam shell disc bead has been collected. Of the glass beads, approximately 29% were blue-greens, 71% white, clear and reds, and 0.5% yellow amber and others.

FUTURE ANALYTICAL AND TYPOLOGY PROBLEMS AT MISSION SANTA CLARA

A considerable amount of building is going on or is scheduled in the near future on the Santa Clara campus. The Student Activities Center and Cowell Student Health Center will soon be completed. The Seifert Gymnasium and Donohoe Infirmary are scheduled for demolition in the near future. The Santa Clara County Archaeological Society has expressed an interest in conducting surface surveys during construction to perhaps enlarge the Mission Santa Clara bead collection. Close cooperation between the Campus Facility Project superintendant, the de Saisset Art Gallery and Museum, and the Society could certainly benefit the Mission Santa Clara bead type collection.

The Mission Santa Clara bead typology collection can be used to classify new additions to the bead collection. If the provenience is maintained with the newly collected beads, the bead types and Bennyhoff's bead complex classification may be used to test the dating and perhaps specific locations of the five Mission Santa Clara Church sites.

This certainly is a fertile area for future investigation.

An area of concern which needs to be standardized is the classification of faceted beads. Prior to 1850, apparently faceted beads were hand filed producing irregular facets. After 1850, the faceted beads were milled and ground, producing uniform facets. This could easily lend itself to early versus late faceted beads as used by Gibson in the Ventura analysis. However, Bennyhoff suggests that secondary faceting of the edges may be used as a third criteria for classifying faceted beads. In this analysis, since there were so few faceted beads, the faceted beads were treated as a single group. However, further analysis and additional communication on the subject hopefully will lead to a classification standardization and a reclassification of Mission Santa Clara's faceted beads.

SUMMARY OF THE PRELIMINARY MISSION SANTA CLARA BEAD ANALYSIS

Based on the limited sample thus far taken, there apparently was a tremendous selective pressure away from shell beads and toward glass trade beads, especially for the expensive white, white on white, and various reds.

Based on the percentages, there was a selection away from the older blue towards the whites and reds. This is tremendously complicated since no data was recorded on which bead type came from the third church site of 1784, and which type came from the present church site of 1825, and which, if any, came from the fourth church site of 1819 between Kenna Hall and the Administration Building.

Using Bennyhoff's glass bead complexes for the miwok may provide insights to the beads from each Santa Clara Church site which hopefully would be tested by future excavations at each site.

The Third Mission Church site (1784-1819) crosses Bennyhoff's Early Mission period of 1769-1816. The characteristic discription of this time period beads is that they are uniformly small, varied in color and shape. Analyzing the Humaliwa and Ventura data would indicate that well over 50% of the Third Mission Santa Clara site should have been the blue-greens.

The fourth Mission Church site (1819-1825) includes Bennyhoff's Late Mission period (1816-1839) again with the glass beads being uniformly small, simple and rounded shape. The typical types of this period according to Bennyhoff's description, would be the whites, greens, blues, reds or greens, and blacks. No blacks have been collected to this date.

The fifth or present Mission Church site (1825 to present) crosses the Late Mission period (1816-1839) and includes the Sutter Period (1839-1845). The general bead type of the Sutter period includes medium size beads with emphasis on the whites and red on light greens.

The number of faceted beads indicates that the fifth Church continued in glass bead exchanges up through the American Period (1845-1881). The American Period included a great variety of beads including larger beads and the faceted beads.

The nurber and varied types of trade beads thus far recorded indicates the presence and value of the beads at Mission Santa Clara.

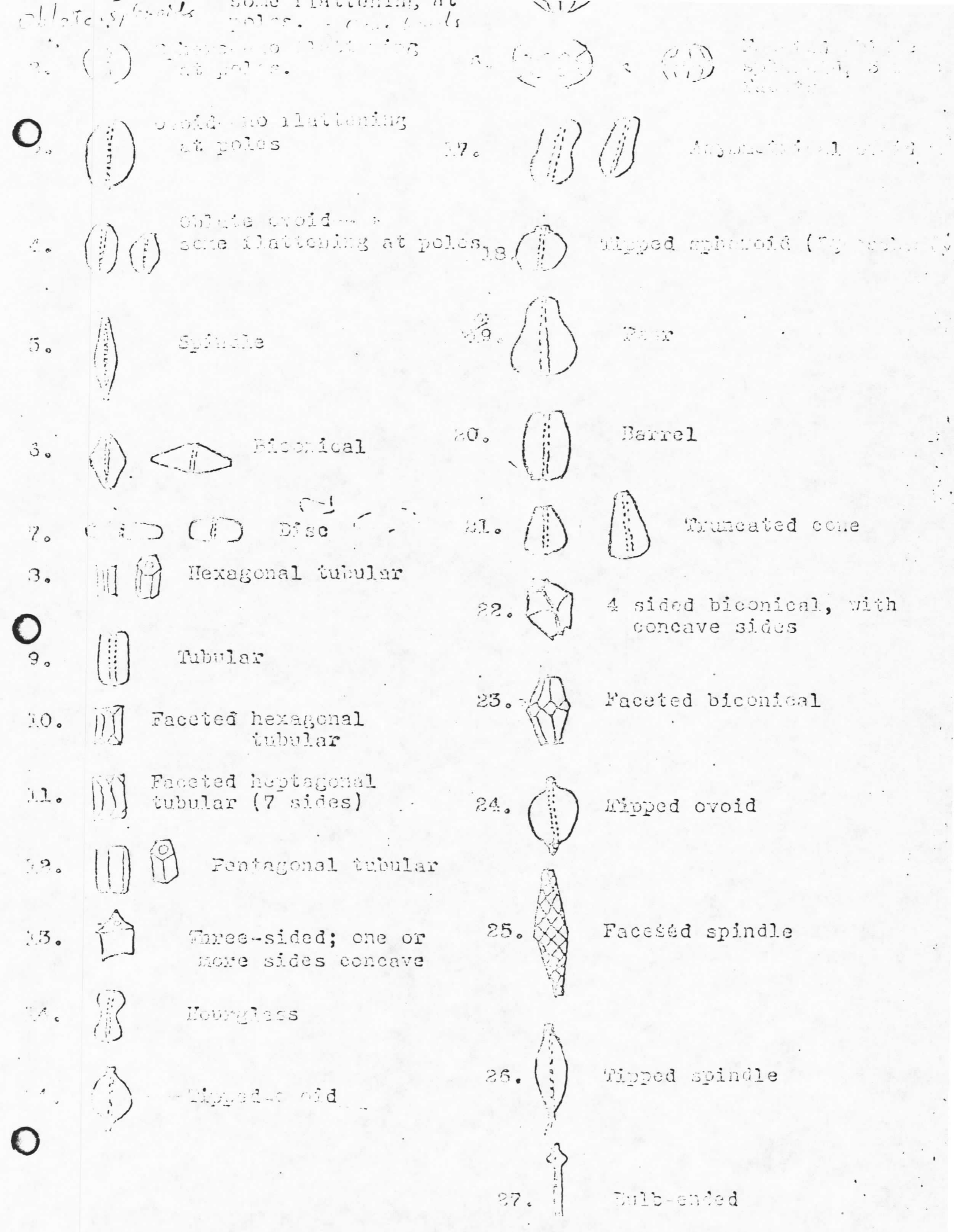
This preliminary research has posed many questions and answered none. The very small bead sample size and the non-existance of scientific excavations have certainly hampered an indepth analysis and skewed the data.

However, an important outcome has been a working glass bead typology which is cross-referenced to other Californian bead sites. Historic archaeology has taken a back seat in California for a considerable period, but perhaps with the problems posed in this paper, more anthropologists will give it a second look and find that it is not only interesting, but very challenging.

The typology can be used as a springboard to look much further into the complex cultural structural and systems of the local Indians.

I would very much appreciate receiving all data, comments, and/or suggestions related to the Mission Santa Clara bead complex or the Mission Santa Clara bead typology.

Kenneth J. Bone
1011 Mt. Carmel Drive
San Jose, California 95120
(408) 268-5943



Oblate spheroids
some flattening at
poles.
2. at poles.
3. ovoid no flattening
at poles
17.
Oblate ovoid
4. some flattening at poles
18. Tipped spheroid
5. Spindle
19. Pear
6. Biconical
20. Barrel
7. Disc
21. Truncated cone
8. Hexagonal tubular
22. 4 sided biconical, with
concave sides
9. Tubular
23. Faceted biconical
10. Faceted hexagonal
tubular
11. Faceted heptagonal
tubular (7 sides)
24. Tipped ovoid
12. Pentagonal tubular
13. Three-sided; one or
more sides concave
25. Faceted spindle
14. Hourglass
26. Tipped spindle
27. Bulb-ended

Cane Beads - SCl-30 Mission Santa Clara

Manufacture Type	Number in Sample	Meighan slope	Measurement range	"wet" Color	"wet" Transparent 1 / Translucent 2 / Opaque 3	Meighan Type	Malibu Type	Ventura Type	San Jose Type
C1a	3	9	3.5/5.0/1.0	cobalt blue	1	249	S1a	C1a	C1a
C1b	127	1	3.5/2.0/1.0- 4.0/4.0/2.0	cobalt blue	1	215	S1a	C1a	C1b
C1c	1	4-1	7.5/3.0/2.0	cobalt blue	1	? [illegible], 270	None	None	None
C1d	1	1	5.0/2.5/2.0	cobalt blue	2	? similar to 203	None	None	None
C1e	13	1	7.0/6.0/1.0	Light cobalt blue	2	? 432	None	None	None
C2a	76	1	3.0/2.0/1.0- 5.5/4.0/1.5	copper blue	1	201, 210	S2a	C2a	None
C2b	42	1	3.0/2.0/1.0- 4.0/3.5/1.5	copper blue	2	None	None	None	None
C3a	21	1	3.0/2.0/1.0 5.0/3.0/2.0	Green	1-2	? 228	S3a	C3a	None
C4a	73	1	3.0/3.0/1.0- 4.0/7.0/3.0	white on bright white	3	180b	S4	C4a	C4a
C4b	310	1-9	4.0/3.0/1.0- 9.5/11.0/1.5	white	3	? 363 ([illegible]?)	None	None	None
C4c	1	9	10.0/18.0/3.0	white	3	363	None	None	None
C4d	21	1	2.5/2.0/1.0- 6.5/5.0/3.0	white	3	368	None	None	None
C4e	1	9	7.0/7.0/3.0	white	2	None	None	None	None
C4f	35	1	3.0/2.0/1.0- 11.0/10.0/4.0	white on cream	3	None	None	None	None
C6a	198	1	3.0/2.5/1.0- 10.0/8.0/4.5	red opaque on Light green Translucent	3/2	103 104 105	S6	C6a	C6a
C6b	6	1	5.0/4.5/1.0- 7.5/6.0/1.5	red opaque over Light green opaque	3	None	None	None	None
C6c	17	1	[illegible]/3.0/2.0- 9.0/[illegible]/3.0	Translucent red on opaque white	2/3	79	None	C6b?	None
C6D	6	1	4.0/[illegible]/1.0- 7.0/5.5/2.0	Translucent red on opaque pink	2/3	102	None	None	None
C6e	1	9	9.0/14.0/2.0	Translucent red on opaque white	2/3	286	None	None	None
C6f	6	1	3.0/2.0/1.0- 6.0/3.5/2.0	dark ruby red "black"	2	None	None	None	None
C8a	1	1	6.0/5.0/3.0	Black (wet)	3	None	None	None	None
C12a	2	1	4.0/3.0/1.0	yellow	2	? 195	None	None	None

Wire wound Glass Beads - SCl-30 Mission Santa Clara

Manufacture Type	Number in sample	Meighan Shape	Measurement Range	"Wet" Color	Transparent 1 Translucent 2 Opaque 3	Meighan Type	[illegible] Type	Ventura Type	[illegible] Type
W2a	1	1	9.5/6.5/3.5	Robin's Egg blue	3	?267	None	None	None
W2b	3	6	3.0/6.0/1.5	greenish blue	3	?345	None	None	None
W2c	2	6	3.5/6.0/1.5	Light blue	?	None	None	None	none
W4a	8	6	3.5/5.5/1.5	shiny white	3	None	None	[illegible]	White[?]
W4b	2	9	11.5/17.5/2.5	mottled white	3	20	None	None	None
W6a	6	1	9.5/10.0/3.0	Transparent red on Translucent white	1/2	60	None	None	None
W6b	4	9	10.5/16.0/3.5- 10.5/25.0/3.5	Transparent red on Opaque yellow	1/3	19	None	None	None

Faceted Glass Beads - SCI-30 Mission Santa Clara

Manufacture Type	Number in Sample	Weight shape	Measurement range	"wet" color	Translucent 1 Translucent 2 Opaque 3	Weight Type	Matrix Type	Venture Type	Sand Type
F2a	1	8	3.0/5.5/3.0	greenish blue	1	? 434	None?	None	None
F2b	1	10	7.5/6.5/3.5	greenish blue	1	? 163	None?	None	None
F2C	2	10	5.5/5.0/2.0	Color Lite EN white	2	373	None	None	None
F5a	1	10	9.0/6.0/3.0	clear	1	? 159	None	? FLT	None
F6a	1	25	6.5/3.0/1.0	Red	1	133	None	None	None
F10a	1	10	4.0/7.0/3.5	Amber	2	321	None	None	None
F15a	1	10	6.0/5.0/3.0	wine purple	2	170	None	None	None

Pressed Glass Beads - SCI-30 Mission Santa Clara

manufacture Type	Number in sample	Maylon shape	measurement range	"Lot" color	Treatment 1 Treatment 2 Treatment 3	Design Type	Matte Type	Surface Type	Type
P6a	23	6-21	3.0/2.5/1.5 4.0/5.0/2.0	Red	1	128	None	None	

Shell Beads - SCI-30 Mission Santa Clara

manufacture Type	Number in sample	measurement range	color
C1d4a	1	11.0/8.0/5.0	white

B.A.I Collection - SCL-30 Mission Santa Clara

Total number of beads collected by July 1975 1,020

1,019 Glass . 99.901 %
1 Shell .098 %

Percent of Glass beads based on Technology

		Percent of Glass beads
962	Cane beads	94.405 %
8	faceted beads	0.785 %
26	wire wound beads	2.551 %
23	Pressed beads	2.257 %
0	blown beads	0.0 %

Percent of Glass beads by color

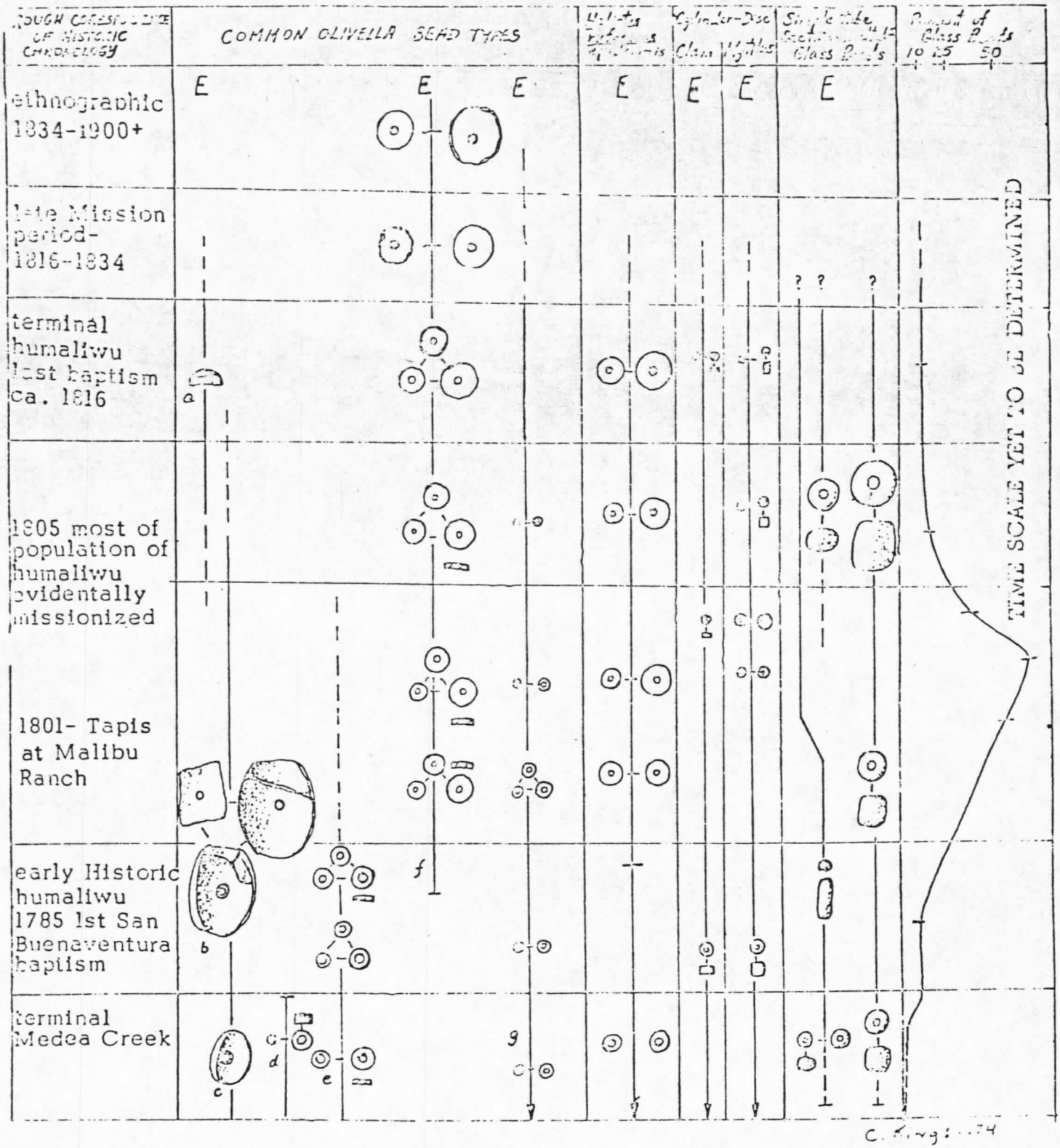
145	Cobalt blue	14.224 %
128	Copper blue	12.561 %
21	Green	2.060 %
451	white	44.259 %
1	Clear	.098 %
268	Red	26.300
0	Opaque	0.0
1	Black	.098
0	Brown	0.0
1	Amber	.098
0	opaque yellow	0.0
2	yellow	.196
0	orange	0.0
0	Grey	0.0
1	Purple	.098

Glass Trade Bead Comparison by Percent of Selected Colors

	Lan-243 Media Creek		Lan-264 Malibu		Ven-57 Ventura		Ala-1 San Jose		SCl-30 Santa Clara	
	no.	%	no.	%	no.	%	no.	%	no.	%
cobalt blue	164	37.2	6,206	38.7%	493	24.2%	17	5.2%	145	14.2%
copper blue	254	57.7%	4,457	27.8%	602	29.6%	5	1.5%	128	12.5%
green	0	0	4,616	28.8%	205	10%	1	.3%	21	2.1%
white	5	1.1%	212	1.3%	109	5.3%	244	75.2%	451	44.3%
Clear	0	0	18	.1%	79	3.9%	5	1.5%	1	.09%
Red	1	.2%	420	2.9%	98	4.8%	45	13.8%	268	26.3%
Yellow	0	0	1	.1%	105	5.1%	1	.3%	2	.19%
Amber	0	0	0	0	111	5.4%	2	.6%	1	.09%
Other	16?	3.6%?	54	.3%	230	11.3%	5	1.5%	2	.19%
Total	440	99.8%	16,034	100%	2032	99.5%	325	99.5%	1019	99.7%
Red Green	1	.2%	89	26.4%	37	23%	27	8.3%	204	20.01%
Red white	0	0	0	0	14	8.7%	3	.9%	23	2.25%
Red cane	0	0	35	10.4%	0	0	3	.9%	6	0.59%

SOUTHERN CALIFORNIA HISTORIC BEAD SEQUENCE

Scale 1X



Groups of lots with similar Olivella
at averages of shell and glass

BIBLIOGRAPHY

Arkell, A. J.
1936 Cambay and the Trade Beads. Antiquity X:292.

Beck, H. C.
1928 Classification and Nomenclature of Beads and Pendants. Archaeology LXXVII. pp. 1-76.

Pennyhoff, James Allen
1961 The Ethnogeography of the Plains Miwok. Ph.D. Dissertation, University of California, Berkeley.

Pone, Kenneth J.
1975 A Preliminary Analysis of Beads from Mission San Jose, Unpublished. U.C.L.A. Survey, Los Angeles.

Colligan, James A., S.J.
1916 The Three Churches of Santa Clara Mission, A.M.D.G. Saint Clare's Church Calendar - June.

Davidson, Claire Crawford
1972 Glass Beads in African Archaeology: Results of Neutron Activation Analysis, Supplemented by Results of X-ray Florescence Analysis, Ph.D. Dissertation, University of California, Berkeley.

Gibson, Robert O.
1973 On the Nature of Beads. Unpublished. U.C.L.A. Survey, Los Angeles
1975 The Beads of Humaliwu. California Journal of Anthropology, June, 1975.
1975 The Beads of Mission San Buenaventura. Unpublished, U.C.L.A. Survey.

James, George Wharton
1905 In and Out of the Old Missions of California: A Historical and Pictorial Account of the Franciscan Missions, Boston, Little, Brown and Company.

Johnson, Paul C., ed.
1964 A Sunset Book: The California Missions, A Pictorial History, Menlo Park, Lane Book Company.

Kidd, Kenneth E. and Martha Ann Kidd
1970 A Classification System for Glass Beads for the Use of Field Archaeologists, Canadian Historic Sites. Occasional papers in Archaeology and History No. 1, reprinted. Maracle Press. Limited, 1974.

King, Chester
1974 The Explanation of Differences and Similarities among Beads Used in Prehistoric and Early Historic California. In ?ANTAP, L.J. Bean and T.F. King, Ed., Ballena Press.
Ph.D. Dissertation in Progress, Evolution of Chumash Society: A Comparitive Study of Artifacts used in Social System Maintenance in the Santa Barbara Channel Region, U.C. Davis.

King, Chester and Robert Gibson
1972 Malibu Trade Bead. Unpublished, U.C.L.A. Survey, Los Angeles

King, Linda
1969 The Medea Creek Cemetery (4-LAN-243) An Investigation of Social Organization from Mortuary Practices. U.C.L.A. Archaeological Survey Annual Reports, Vol. II. Los Angeles; University of California Press.

King, Thomas and Patricia Hickman
1973 Archaeological Impact Evaluation, Treganza Anthropological Museum, San Francisco State University.

Meighan, Clement
1953 Occurance and Distribution of Glass Trade Beads in California. Unpublished, U.C.L.A. Survey, Los Angeles.

Pratt, Peter P.
1961 Oneida Iroquois--Glass Trade Beads Sequence 1585-1745. The Fort Stanwix Museum, Tome, New York.

Roy, J.
1958 Ancient Glass Beads from East and Central Africa and the Indian Ocean. Anthropology Inst. LXXXVIII pt. 11.

Spearman, Arthur Dunning, S.J.
1963 The Five Franciscan Churches of Mission Santa Clara 1777-1825, Palo Alto, The National Press.
1956 Trade Wind Beads. Man. No. 27.

Vander Sleen, W.G.N.
1973 A Handbook on Beads. York, Pennsylvania: Liberty Cap Books.

Webb, Edith Buckland
1952 Indian Life at the Old Missions, Los Angeles, Warren F. Lewis.