CASAS GRANDES

A Fallen Trading Center of the Gran Chichimeca

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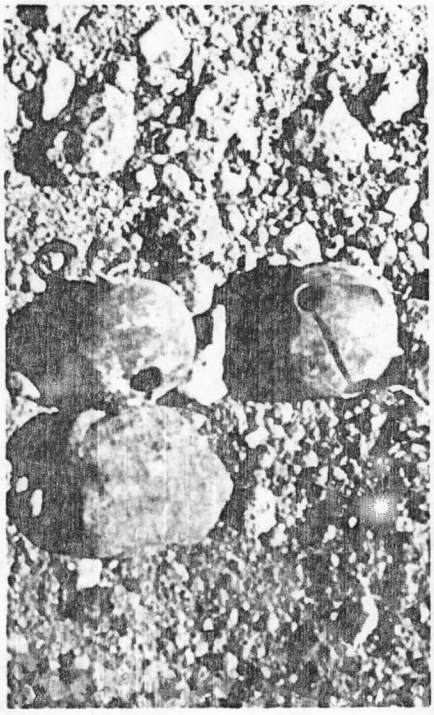
Fig. 104-3. *Trade ornaments included brass crotals and a pair of brass buttons.*
1-2. Crotals.
3. Buttons.

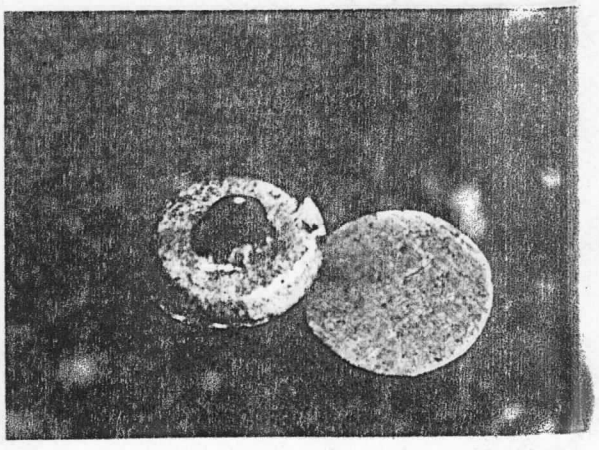


example, marine shell was transported into Casas Grandes, where it was made into locally manufactured jewelry, such as the pre-Hispanic Vermetid shell bead design.[8] However, a shell cross,[9] found as a pendant part of a Greater Dominican Rosary[10] buried with a 35-year-old male,[11] was construed to be a piece of donor trade goods because of its Christian design and association.

Dr. Woodward[12] identified 495 objects which were then categorized into the following use groups:[13] 10 per cent were thought to have been used as personal ornamentation, 2 per cent as builders' tools and hardware, 77 per cent as socio-religious paraphernalia, 5 per cent for food preparation and serving, 7 per cent for warfare and hunting, and less than 0.5 per cent in horse culture; the remaining 3 per cent were unidentified.[14] These groups were made up of 11 different raw materials, the bulk of which was glass.[15] A scrutiny of the element count, which gave an equal value to each bead or part of a rosary, necklace, or earring, or mano or metate, revealed that almost 90 per cent of the total material culture inventory of San Antonio de Casas Grandes was brought in by the donors.[16] However, this figure dropped to 58 per cent in the item count where, for example, all beads from a single strand were counted as one rather than by the number of their element parts.[17] In either case, the material culture total reflected the obvious domination of the Iberians at this site during the San Antonio Phase and was compatible with the architectural evidence. What should be of interest to those students who utilize ceramic statistics in recreating social constructs was the fact that, in this case, only 35 per cent of the pottery of this phase indicated donor presence and as such did not reflect the real pattern of Iberian social domination.[18]

PERSONAL ADORNMENT

The 10 per cent of the trade goods assigned to the personal ornamentation category consisted of a hand mirror, earrings, beads, buttons, crotals, and a bale clip.[19]



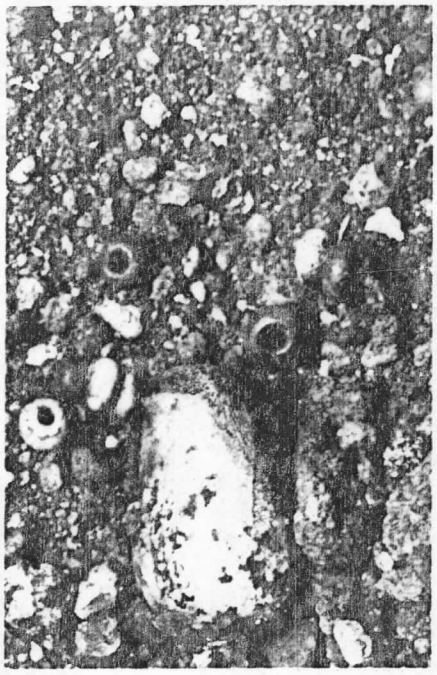
A small sliver of what appeared to have been a hand mirror was found in the fill of the church.[20] It may well have been part of one which was made in Spain of either crown or muff glass,[21] transported to the New World by way of the Spanish *Flota*, and to Casas Grandes in a mission caravan pack,[22] where it was used by the resident padre in the sacristy while preparing his toilet before mass.[23]

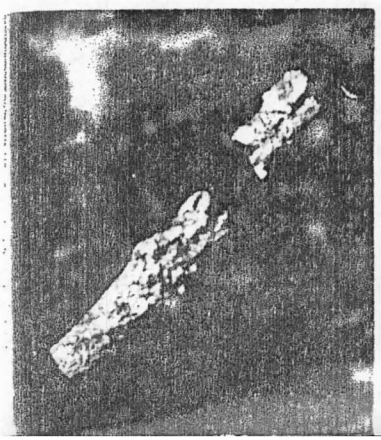
A very unusual set of composite earrings[24] was interred with an adult in the *campo santo*.[25] Each unit was composed of a wool or fur cordage ear loop[26] attached to a single strand of copper wire[27] on which were strung six seed beads of transparent red, opaque white, and translucent blue colors, along with one fancy, gold gilt, pear-shaped glass droplet.[28] These were loosely strung to expose the copper wire, the bottom of which was decorated by a tassel made of animal fiber cordage.

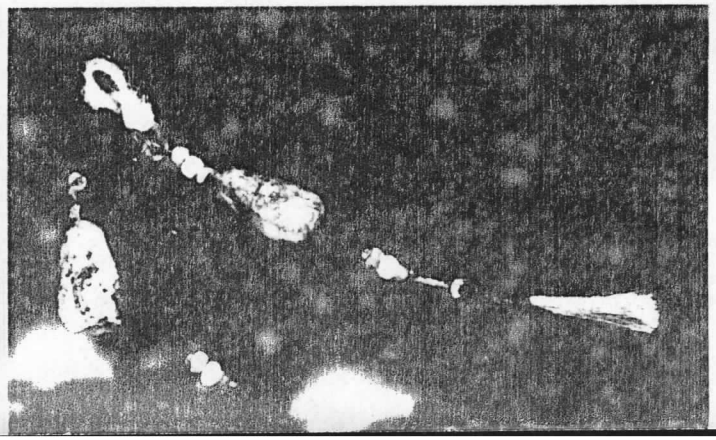
Twenty-one additional glass beads and one tubular copper bead were part of the personal ornamentation group.[29] One of these elements was a surface find which contained a translucent blue seed bead and a tubular copper bead.[30] A strand of opaque seed beads was found near the right elbow of an adult buried in the *campo santo*.[31] Two translucent blue seed beads were found in association with a church burial.[32] A single ornate, translucent red, white, and gold bead was found amidst the bone clutter of the mass burial in Church Room 1.[33] This was a 17th century descendent of a very early Mediterranean type from Syria or Egypt copied by the Venetians.

A total of eight imported buttons was found at San Antonio de Casas Grandes.[34] The two solid cast buttons, which were found separately in the trash areas, were of a popular sleeve link type used to decorate civilian and military costumes.[35] These European-made articles were shipped to many parts of the New World, as they have been reported from such widely separated but contemporary sites as Fort Ticonderoga in northern New York,[36] Green Spring Plantation[37] and nearby Jamestown, in Virginia.[38] The Casas Grandes examples were probably distributed by the royal warehouses to the Spanish colonists of New

Fig. 105-3. *A copper bead and a pair of earrings were also found.*
1. *Copper bead.*
2. *Earrings (cordage restored).*
3. *Earrings* in situ *with* campo santo *Burial 3.*







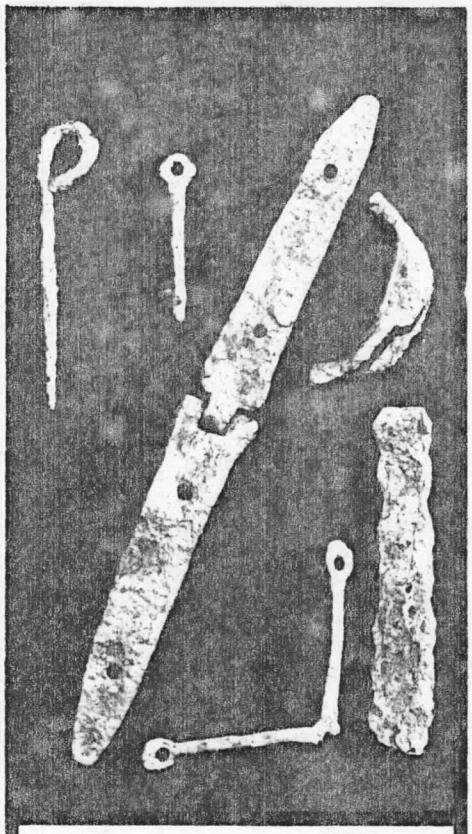


Fig. 106-3. *Builders' hardware included hook and eye and double strap hinges, a handle, and strap and tri-corner braces.*

Fig. 107-3. *A tri-corner brace was found on the floor of Church Room 4.*

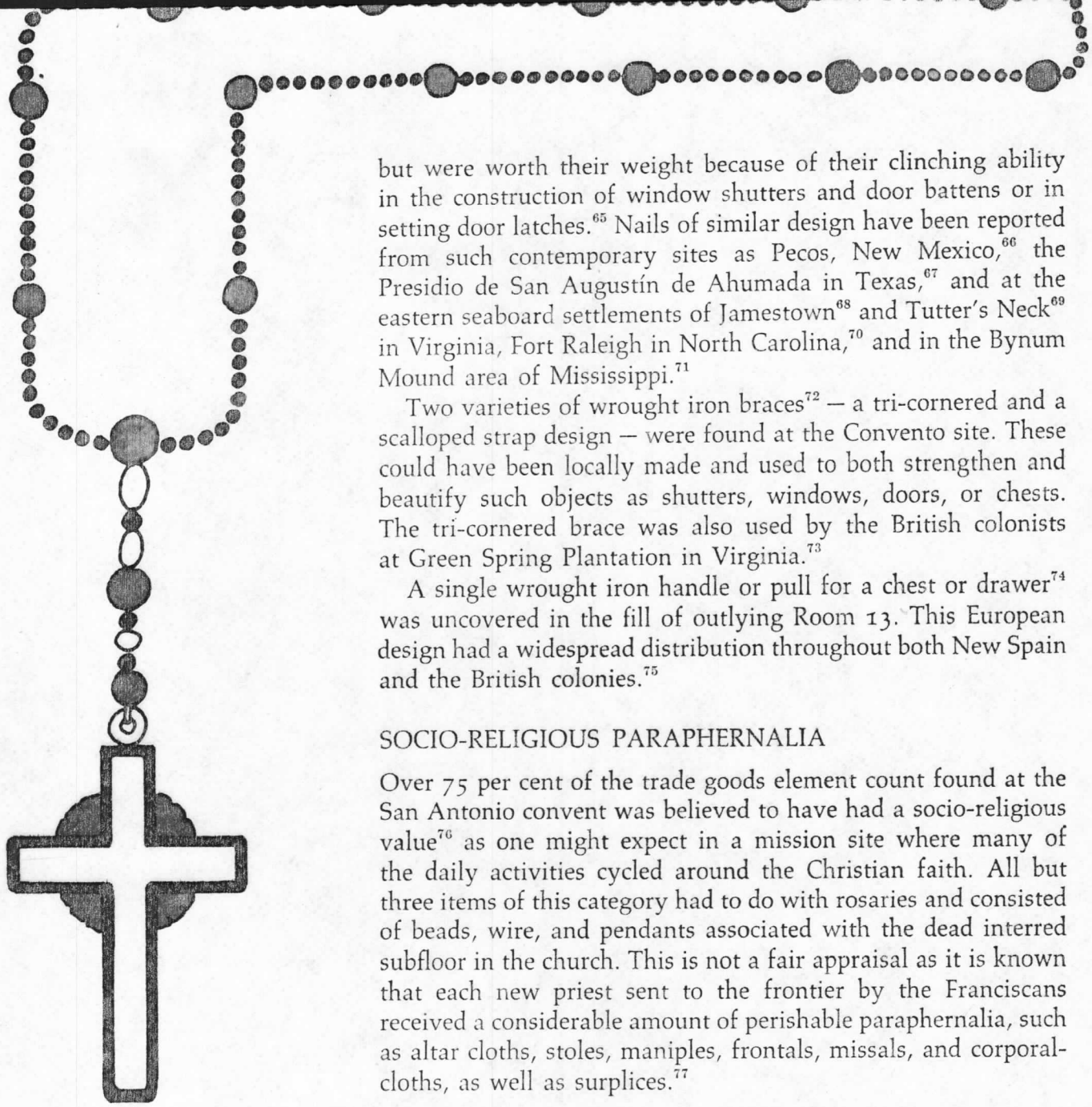
Spain as part of the cargoes of the *Flota*. The six "shell" buttons, which had been used to enhance a wooden rosary cross, were of a three-piece European design which became popular as military buttons after A.D. 1680.[39] Only the button backing remained on the San Antonio Phase specimens, embedded in the body of the cross.

Two small brass crotals,[40] more commonly known as "hawks' bells,"[41] were found in a vandalized portion of the *campo santo* and suggested that they were once part of a disturbed grave plot. Woodward[42] felt that although they could have been made in New Spain, they were probably European, and more likely of German manufacture. Whether they were used in ornamentation as buttons, pendants, portions of a necklace, or earrings, or simply sewn onto a costume, is not known.

A single bale clip[43] was listed with the adornment category, though it was not thought to have been used as an ornament, but rather a seal, and had arrived at Casas Grandes attached to a bolt of cloth. During the occupation period of the San Antonio mission, it was customary for cloth makers to seal their product with a bit of lead which was embellished with the maker's mark to guarantee the length and breadth of the enclosed material. Such seals, once inspected by the royal aulnager, were impressed again for further protection.[44] Similar seals were reported from the contemporary British settlement of Jamestown[45] and another was uncovered at the frontier presidio of Terrenate,[46] occupied at a later time. The Franciscan mission supply carried a considerable amount of yard goods to the frontier for the use of each friar-priest.[47]

BUILDERS' TOOLS AND HARDWARE

Roughly 2 per cent of the trade artifacts fell into this general category,[48] including four woodworkers' tools — two iron axes, a drawknife, and a brad-awl—and eight pieces of hardware—three iron hinges, two nails, two braces, and a pull handle. Three-fourths of these were found in outlying House-clusters 1 and 5, and the remainder in the northeast corner of the *convento* in Church Room 12,[49] suggesting that many of the woodworkers' tools and hardware were kept by the indigenous neophytes rather than by the padre. The mother church, of course, was held responsible for the building needs of the individual missionary and, leastwise among the Franciscans, it supplied these men with ten axes (bought or made along the Calle de Tacuba in



but were worth their weight because of their clinching ability in the construction of window shutters and door battens or in setting door latches.[65] Nails of similar design have been reported from such contemporary sites as Pecos, New Mexico,[66] the Presidio de San Augustín de Ahumada in Texas,[67] and at the eastern seaboard settlements of Jamestown[68] and Tutter's Neck[69] in Virginia, Fort Raleigh in North Carolina,[70] and in the Bynum Mound area of Mississippi.[71]

Two varieties of wrought iron braces[72] — a tri-cornered and a scalloped strap design — were found at the Convento site. These could have been locally made and used to both strengthen and beautify such objects as shutters, windows, doors, or chests. The tri-cornered brace was also used by the British colonists at Green Spring Plantation in Virginia.[73]

A single wrought iron handle or pull for a chest or drawer[74] was uncovered in the fill of outlying Room 13. This European design had a widespread distribution throughout both New Spain and the British colonies.[75]

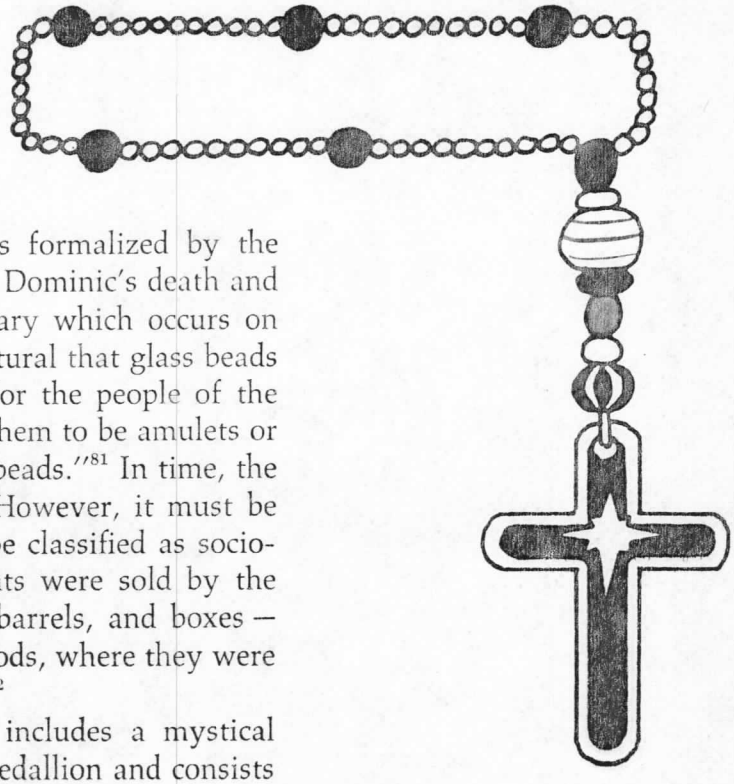
SOCIO-RELIGIOUS PARAPHERNALIA

Over 75 per cent of the trade goods element count found at the San Antonio convent was believed to have had a socio-religious value[76] as one might expect in a mission site where many of the daily activities cycled around the Christian faith. All but three items of this category had to do with rosaries and consisted of beads, wire, and pendants associated with the dead interred subfloor in the church. This is not a fair appraisal as it is known that each new priest sent to the frontier by the Franciscans received a considerable amount of perishable paraphernalia, such as altar cloths, stoles, maniples, frontals, missals, and corporal-cloths, as well as surplices.[77]

MAGIC AND CURING ROSARIES AND PENDANTS

Better than 90 per cent of the beads[78] found at Casas Grandes are known to have been parts of Roman Catholic Greater or Lesser Dominican rosaries (*rosarii*),[79] the design of which came into vogue in western Europe during the 13th century when St. Dominic introduced the use of the "garland of roses" from the east, where the mnemonic prayer devices were utilized for many centuries by certain religious sects in India, China,

Lesser Dominican Rosary



and Japan.[80] The Cult of the Rosary was formalized by the Roman Catholic Church sometime after St. Dominic's death and is commemorated at the Feast of the Rosary which occurs on the first Sunday of October. It was only natural that glass beads came to be used as counters in rosaries, for the people of the Mediterranean world had long considered them to be amulets or talismans, as in the case of Egyptian "eye beads."[81] In time, the very term "bede" came to mean prayer. However, it must be emphasized that beads *per se* should not be classified as socio-religious because millions of these elements were sold by the Venetian suppliers in loose bulk – casks, barrels, and boxes – to be shipped to the New World as trade goods, where they were sold to the indigenes as personal trinkets.[82]

The Greater Dominican rosary design includes a mystical wreath of spiritual roses embossed on its medallion and consists of 150 ave beads strung into groups of ten, separated by 15 larger elements known as paternosters. From this circlet, there is suspended a strand of one large pendant and three smaller beads to connect to the chaplet a larger pendant piece, such as a cross or medallion.[83] The Lesser Dominican rosary is of the same form except for the circlet which has only 50 aves separated by five paternosters and in effect is one-third the mnemonic value of the full rosary. There can be little doubt that the rosary as such is a socio-religious object used to help one to pray one's way through purgatory and to cleanse oneself of sin.[84] Aside from the symbolism of Roman Catholicism, rosaries can be considered as part of the magic and curing paraphernalia of the San Antonio Phase inventory.

Once the Roman Catholic world came to adopt this mnemonic device, various assembling centers for their manufacture came into being, such as Paternoster Lane in London and the equally famous Via del Coronari in Rome. These two manufactories alone required tons of glass beads each year, in addition to various other elements which were strung in accordance to a number of accepted patterns. These were then traded throughout the Catholic world, even to the isolated mission of San Antonio de Casas Grandes.[85]

Five fragmentary rosaries were recovered with three adult church burials.[86] In this particular group there were 16 variations of glass beads, as well as four types of bone beads and one of dough, the latter perhaps being of local manufacture. Of the total number of 375, 342 were used as aves, 32 as paternosters,

and only one was assuredly found as a special pendant bead.[87] These, then, along with their corresponding pendants, represented some 99 per cent of the total socio-religious inventory.[88]

One example[89] was found with a 60-year-old woman[90] laid to rest under the eastern portion of the nave floor interred with a Lesser Dominican form over her right shoulder and fragments of a locally made one of a dough bead and a wooden cross[91] near her left hand. The first, a European-design, consisted of a group of 52 translucent ruby red aves which were separated by

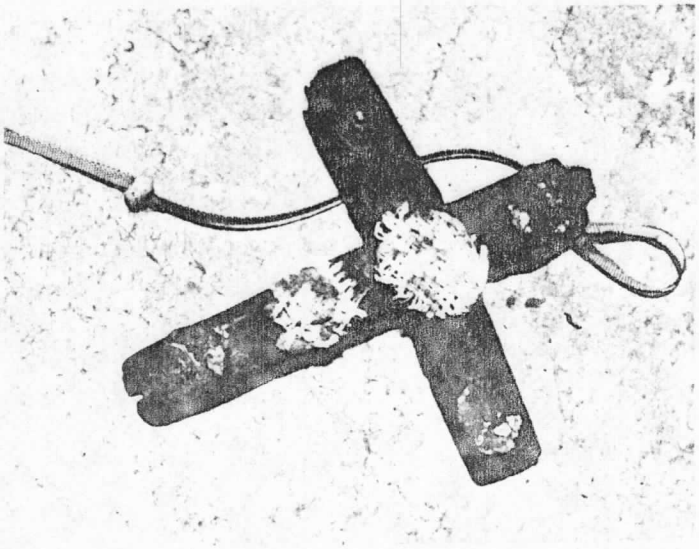
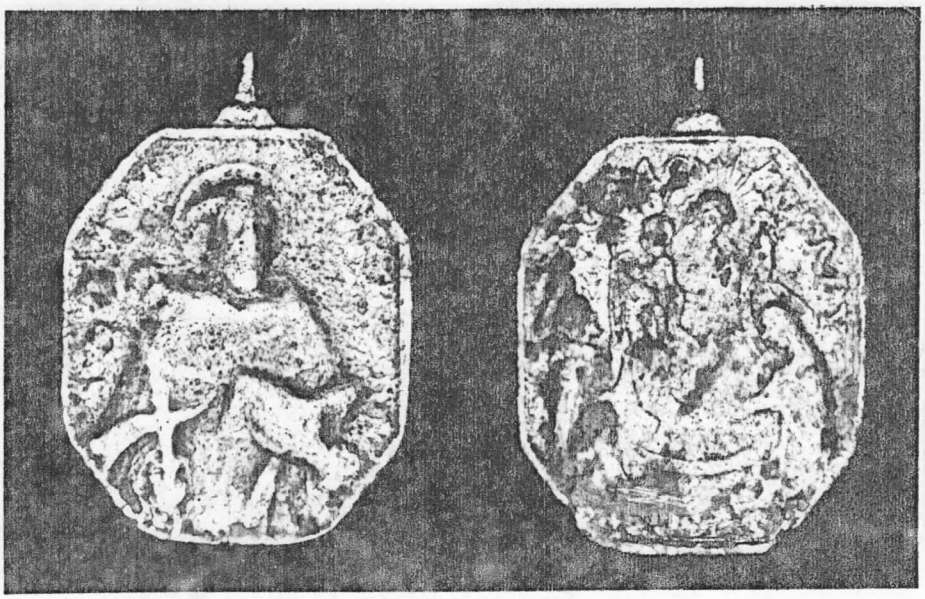


Fig. 110-3. *A wooden c decorated with brass but (upper) was also found in same burial (lower right).*

Fig. 109-3. *A Lesser Dominican rosary of red and white glass beads (upper left) with a brass medallion (below) was found with Church Burial 1 (lower left).*



five larger transparent, colorless paternosters. The pendant was strung on a copper wire[92] with two more aves and a translucent blue-green teardrop pendant bead, while the pendant piece was a brass medallion. Struck in Rome to commemorate the "Cult of the Rosary," on one side there was depicted a bust of St. Dominic holding the symbol of chastity – the lily – in his right hand and in his left hand an open book, symbolic of the founder of an order. The other side was embossed with an elaborate group of four – the Holy Mother holding the Christ Child, who is in the act of giving a rosary to St. Dominic, who kneels on Mary's right, while the kneeling St. Catherine of Siena observes this scene of gift-giving from the opposite side of the Mother.[93] There was very little left of what may have been a second rosary, which the woman held in her left hand, only a homemade baked dough bead and a simple wooden cross embellished with parts of six "shell" buttons.[94]

Finally, a small lead cross of Calvary design was found in the northeast corner of the *convento* trash area.[95] This may have been a pendant piece, although this was pure assumption.

ALTAR PIECES

Three objects, representing less than 1 per cent of the socio-religious paraphernalia, may have been used as altar pieces. These included fragments of two glass goblets and a bit of gilt cloth, none of which were found in the sanctuary area.[96]

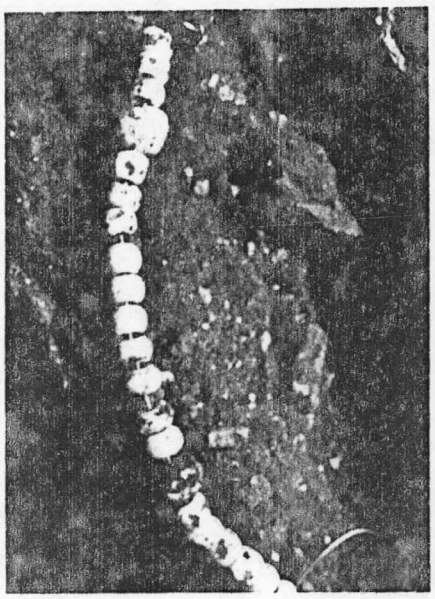


Fig. 112-3. *A Greater Dominican rosary of glass beads* in situ *with Church Burial 2.*

Fig. 111-3. *A Greater Dominican rosary of black and green glass beads and a shell cross (center) was found with Church Burial 18 (lower left).*

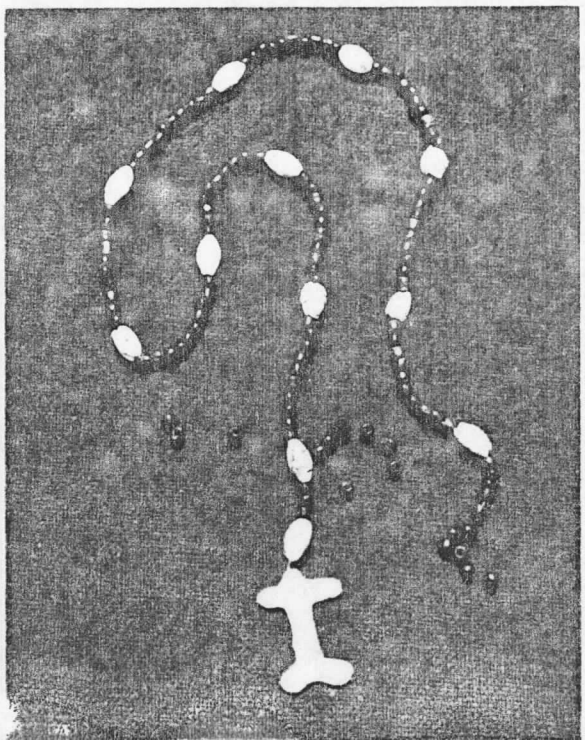


Fig. 113-3. *Lead cross of Calvary form.*

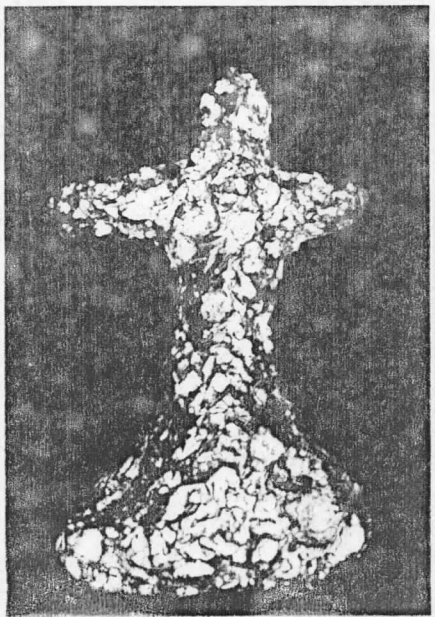
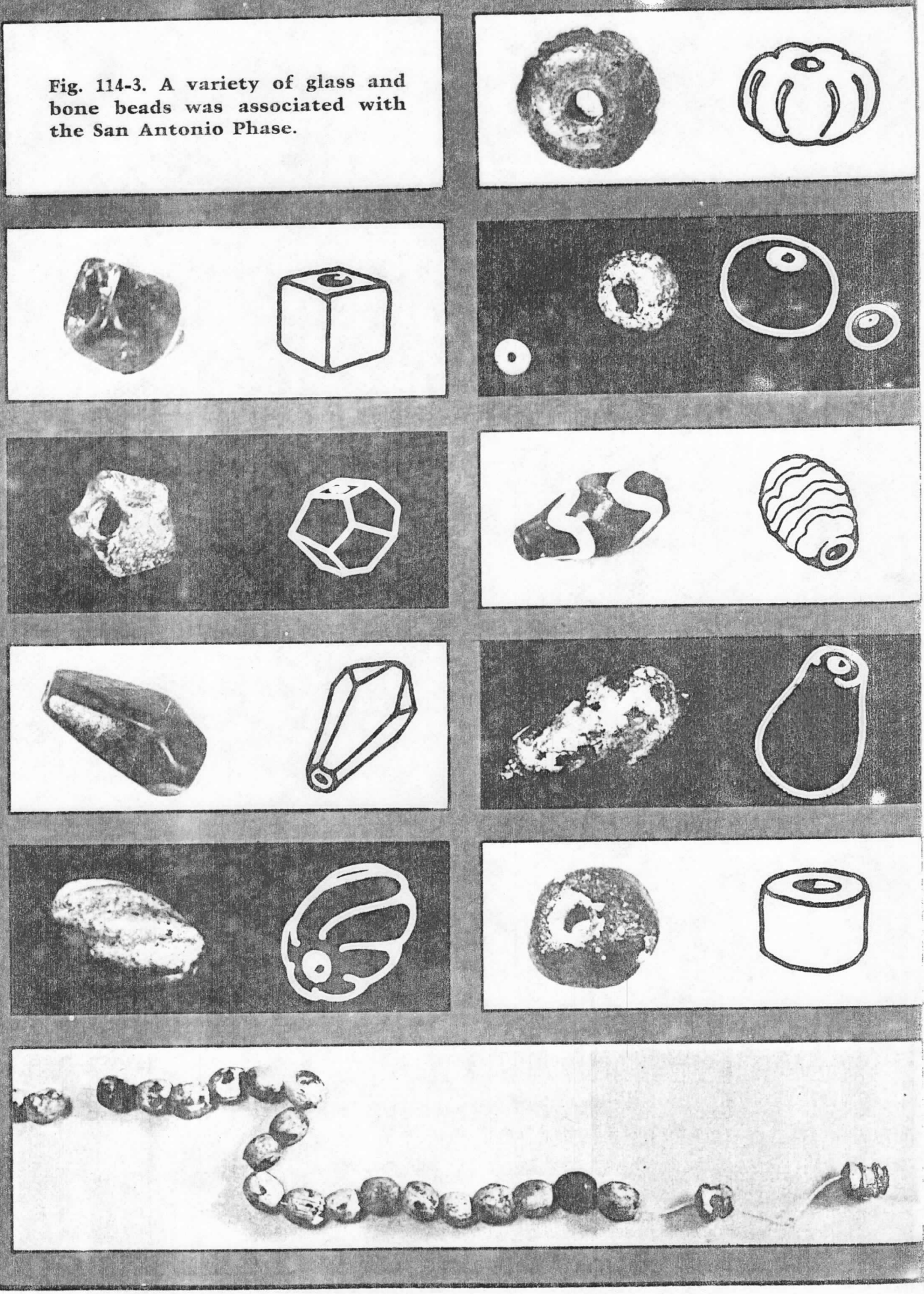


Fig. 114-3. A variety of glass and bone beads was associated with the San Antonio Phase.



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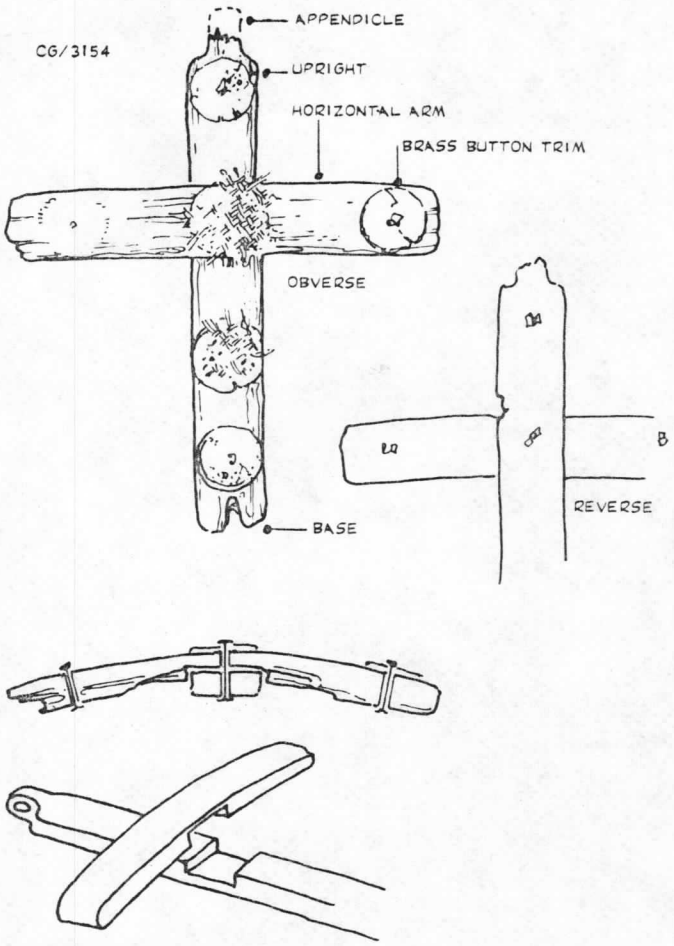
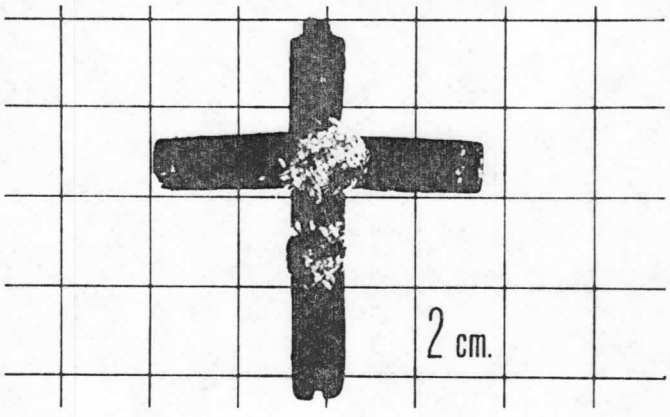


Fig. 279-8. Wood Rosary Cross.

Catholic crosses (Casanowicz, 1909, pp. 355-359; 1929, pp. 51-55). This specimen was made by setting the cross arm to the upright by means of a dovetail and then bradding it with one of the six "shell" button bases. The eyes of all these embellishments were pinched together and then forced through the wood of the cross by means of a punched hole. The portions that protruded through the reverse side were turned over and clinched. The upright had a notch at its base which measured 0.2 cm. in width and 1.8 cm. in depth. This may have been used to append a dangling object; however, there was no wear mark suggesting this. The horizontal beam was set into the upright at a point 4.7 cm. above the base, and a dovetail was cut into the horizontal to a depth of 0.4 cm. to hold this member in position. The appendicle was equally as thick as the upright, but was shouldered to a depth of 0.2 cm. at a point 8.1 cm. above the base. The suspension hole itself was broken and the perforation could not be measured.

Classification

This simple cross was over 8.5 cm. long and was 7.4 cm. wide.



(1.4.2) – CROSS. 1 SPECIMEN. FIG. 280-8.

No.	Special Number	Wt. (gr.)	-- Upright -- L.	W.	Th.	- Horizontal - Beam L.	W.	Th.	Provenience
			cm.						
CG/3154A	C-314	8.7+	8.5+	1.3	0.6	7.4	1.3	0.6	Church Bur. 1

Distribution

No data.

Dough

Introduction

The preservation of a simple bead of baked brown dough—choice rodent food—in a vandalized grave was amazing.

Artifact Classification

Bead

Use

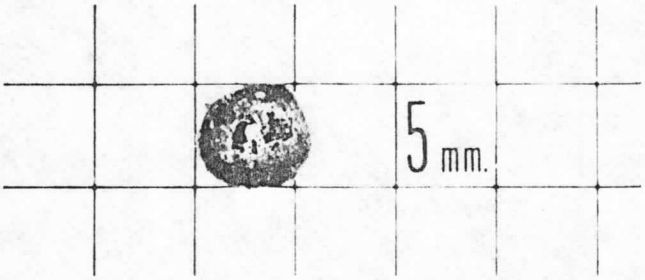
A single ave bead was found near the left hand of adult Church Burial 1 in close association with the wooden cross (CG/3154). This was all that remained of what may have been a rosary.

Manufacture

This bead was probably of local manufacture, perhaps made as a part of the burial furniture upon the demise of the individual of Church Burial 1. The process consisted of baking bits of rolled dough which were then strung as beads to form the chaplet and perhaps the pendant of the rosary.

Classification

No typology was established for this unique specimen.



BEAD. 1 SPECIMEN. FIG. 281-8.

No.	Special Number	Weight (gr.)	Diameter	Th.	Perf. Diam.	Provenience
			cm.			
CG/3153	C-313	0.1	0.6	0.4	0.1	Church Bur. 1

Distribution

No data.

GLASS

Introduction

The origin of glass found in New World colonial associations has long been an involved and contradictory subject. Most students now look to Venice as the main source of such objects, particularly beads (Woodward *in* Di Peso *et al.*, 1953, p. 207). It is felt that this Adriatic seaport held a monopoly on the glass formulae. Through austere secrecy, the glassmakers confined their knowledge within the walls of their factories, located primarily on the island of Murano. The city council decreed in 1673 that no workman, under pain of death to him and his family, could leave the environs of Venice to ply his trade elsewhere (Woodward, 1965, pp. 5-6). As one might expect, other

European countries tried in various ways to draw segments of this lucrative industry within their borders. Even some of the New World colonies tried to make glassblowing part of their own economic sphere. The settlers of Jamestown, Virginia, in 1621, made an effort to sponsor four "Itallyans" in their village to start a glasshouse (Bushnell, 1937, pp. 28-29, taken from *The Records of the Virginia Company of London*, 1906, Vol. 1, p. 484; 1933, Vol. 3, p. 477). However, it appears that they were unsuccessful (Hudson, 1964, p. 99). It is known that the British warehouses placed large orders with Venice during this century and acted only as middlemen in the industry (*ibid.*, pp. 100-103), as they did not become producers until *ca.* 1680 when George Ravenscraft enticed some workmen to produce "flint" glass.

One must not ignore the mother country, Spain, as a source of glass beads and other items during this period, for she, too, had a number of glass factories and some of these, such as those in Barcelona, were in competition with Venice in the Roman market (Bushnell, 1937, p. 35). Further, it is a well known fact that Spain's economic policies during this period included strong colonial trade barriers against any products other than her own. Frothingham (1941, p. 83) noted that during the time San Antonio de Padua was occupied, "Like gypsy campfires, the furnaces of the glass blowers burned among the Guadarrama and Cuenca mountains. Spanning the breadth of both Castillas to León, fires blazed steadily for centuries or, flickering briefly, died while others flared." Dependent on the dwindling supplies of firewood, the right kind of sand, and other required raw materials, a depressed economy discouraged many Iberian glassmen. There were, in spite of local laws, a number of Venetian gaffers, such as Antonio Pellizari, who had been enticed to Spain (*ibid.*, p. 117). From Flanders had come the master craftsman Louis Verné of Antwerp. Both of these men were finally forced to operate out of Portugal because of royal disfavor.

Furthermore, in the whole of the Spanish New World, only New Spain could boast the presence of a glass factory, for in 1535, when the first viceroy, Antonio de Mendoza, was selected to come to the New World, he brought with him a number of master craftsmen including a gaffer, Señor Espinosa. He built the first factory in Puebla de los Angeles in 1542 on the Street of the Glass Furnace (*ibid.*, p. 121; also see Montgomery *et al.*, 1949, p. 147, who quotes Padre Gage's description of this activity in Puebla). Here, "Three kinds of glass are blown and fashioned, crystalline white, green, and blue, which are supplied to Spaniards and natives of these regions as far as Guatemala and beyond" (Frothingham, 1941, p. 121, translation from Romero de Terreros y Vinent, 1923, pp. 175-176). During the life-span of the convento, it has been said that this center was still producing glasses which resembled "those of Venice, although not so fine" (*ibid.*, p. 123, translation of Vetancurt, 1697). Its production could not begin to meet the colonial demands and New Spain was forced to supplement its needs from Iberian sources and the latter, because of their own internal production problems, often had to act as middlemen by importing such items as mirrors from France and Flanders, crystal from England, bottles from Bohemia, and beads from Venice (*ibid.*, pp. 123-125).

The glassblowing industry was not only intricate, but obscured its production methods by being most secretive. The mysteries of glass mixtures varied from master to master and the wizardry of manufacture from one generation to the next (Davidson, 1967, p. 346). A general inventory of production tools was reported by Frothingham (1941, p. 46) for the glass furnace in Vallbona, Spain, in 1664. These included "iron implements for stirring, pincers for cutting, pontils, blowpipes, moulds, and crucibles." (See Davidson, 1967, pp. 346-347, for details on colonial glassmaking.)

Artifact Classification

Beads

Use

Eisen (1916, pp. 1-3), in his study of "eye" beads, noted that they were used by the Egyptians of the 18th and 19th dynasties as talismans and amulets, rather than as personal ornaments. Yet, in the New World, they were used by the European donor primarily as trade items when dealing with the recipient indigenes, who used them as personal trinkets (Bushnell, 1937, pp. 27-29; Woodward, 1965, pp. 4-17). As objects of trade, they were in great demand, and Venice sold millions in loose bulk, packaged in casks, barrels, or boxes (*ibid.*, p. 9). Still another New World use for beads was brought to light by the San Antonio de Padua excavations, where 91.7% of the recovered beads were parts of Roman Catholic rosaries and hence socio-religious objects. It is true that the dead interred under the church floor wore these objects, but they symbolized a faith, as they were mnemonic devices to aid in saying one's prayers.

The very origin of the word *bead* refers to prayer, and from the time St. Dominic introduced his cult to the Catholic world, the production of this contrivance became an important European industry. The makers of rosaries (paternosters) represented an important market for

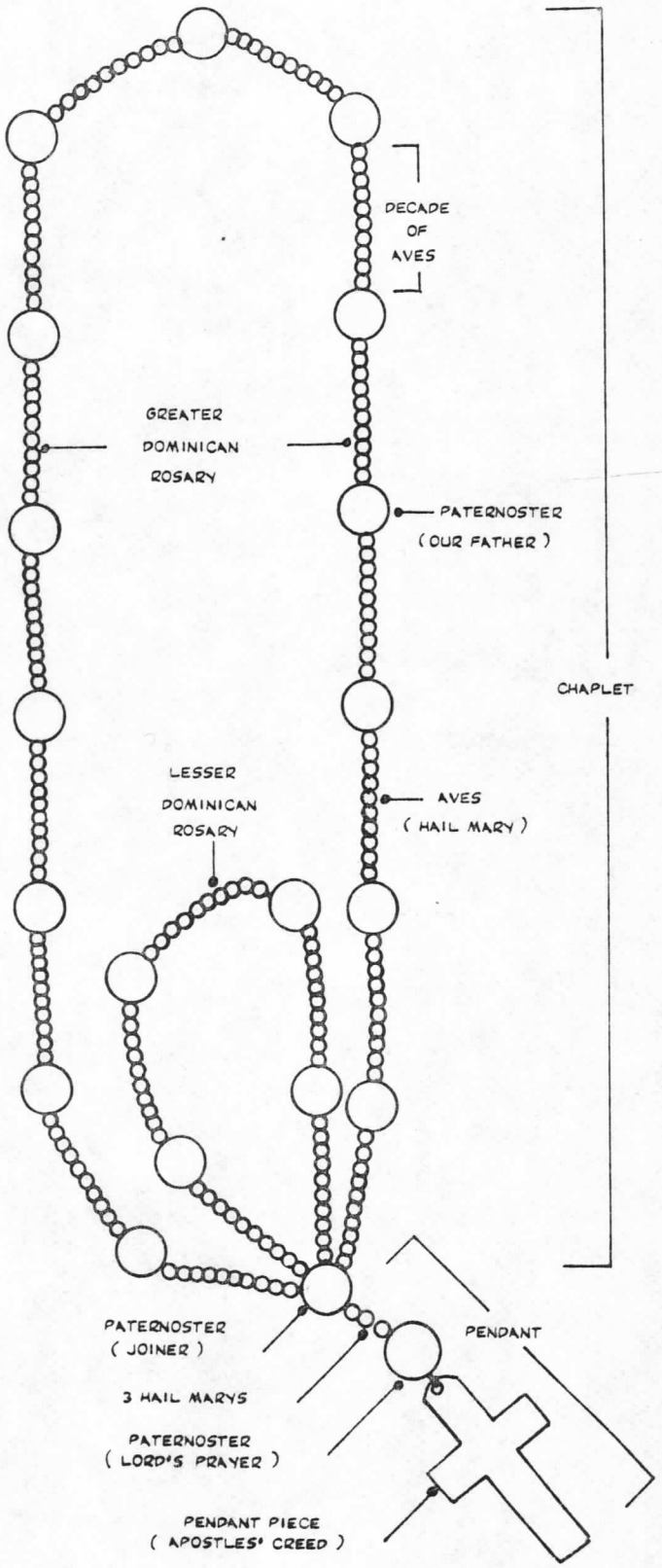


Fig. 282-8. Rosary Terminology.

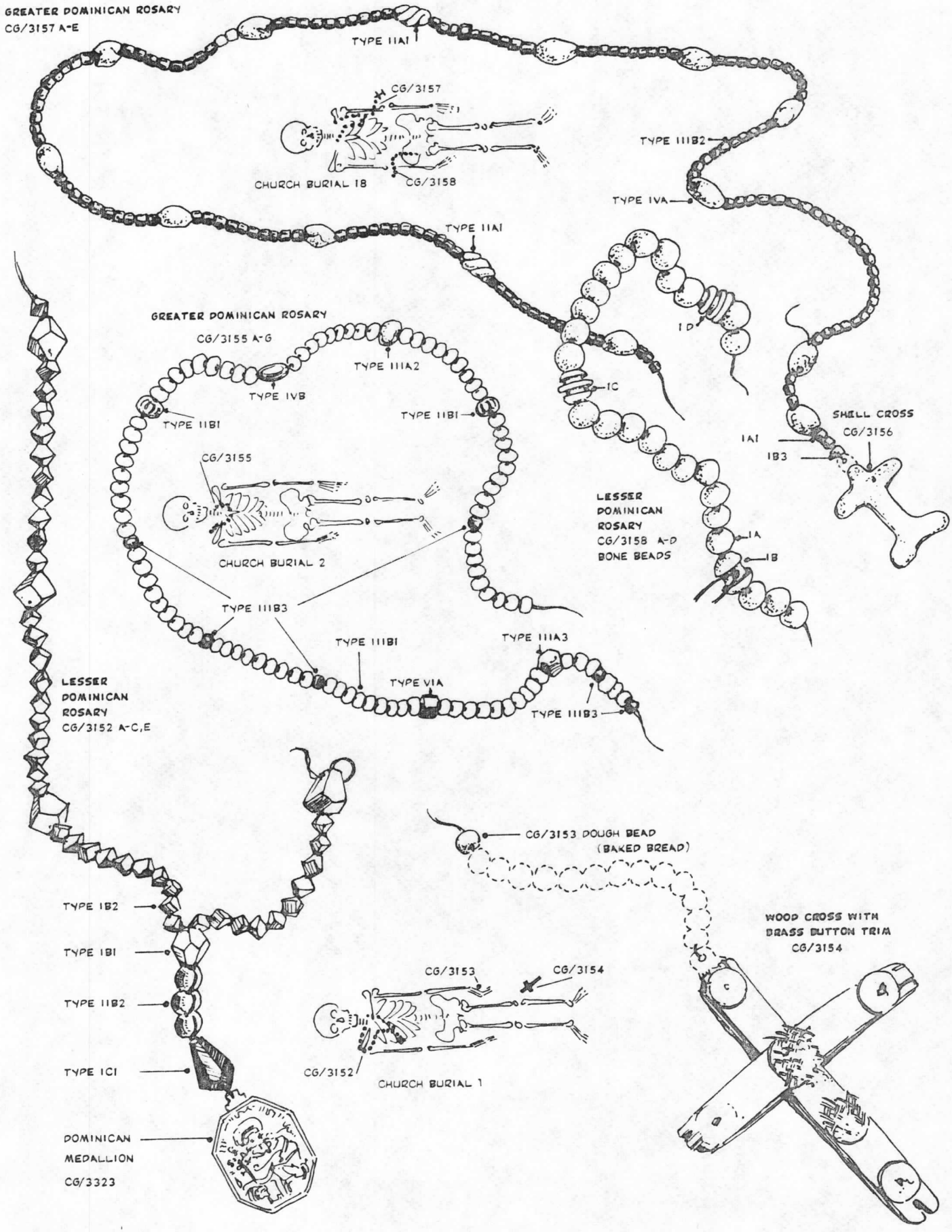


Fig. 283-8. San Antonio Phase Rosaries.

the bead suppliers. The London center on Paternoster Lane and the one in Rome on the Via Dei Coronari called for tons of beads each year. Here, the rosaries were strung and then traded out to the whole of the Catholic world.

The Greater, or Full, Dominican rosary (*rosarium*) came into vogue in the Roman Catholic world in the 13th century as a device to count one's prayers. Long before this, peoples from such countries as India, Japan, and other portions of the Far Eastern world used similar aids for this purpose. In the west, it is symbolic of a wreath or chaplet of spiritual roses from which a pendant is suspended. The chaplet consists of 150 small beads (aves) strung in groups of ten and separated by 15 larger elements (paternosters). The pendant itself consists of one large and three smaller beads which connect a cross or medallion to the circlet (Casanowicz, 1909, p. 350). (See Fig. 282-8.)

With this string in hand, one begins one's prayers with the invocation, "In the name of the Father, and of the Son, and of the Holy Ghost." Then, starting at the pendant piece, the cross or medallion, one repeats the Apostles' Creed. The fingers then move up to the first large bead on the pendant just above the cross and the Lord's Prayer (Pater Noster) is recited. Then, at each small pendant bead a Hail May (Ave) is offered, followed by the Gloria as one's fingers move up to the first bead on the chaplet. As the fingers circle this part of the rosary, one says ten more Hail Marys; as the fingers move on to contact with the first larger paternoster, the Lord's Prayer is again recited. With each decade of beads strung on the chaplet, this sequence is again repeated until the full circle has been made. The 150 Aves correspond to the number of Mysteries in the life of Christ and Mary—five joyful, five sorrowful, and finally, five glorious (*ibid.*, pp. 350-351; 1929, pp. 51-52, gives details and variations on this ritual). The cycle is repeated as often as is believed necessary.

Three possible examples of this Full or Greater Dominican rosary (CG/3155, CG/3157, and possibly CG/3158) were found with Church Burials 2 and 18. Burial 2 had been vandalized, but was found to contain the *in situ* remains of CG/3155, which consisted of some 97 white "seed" beads (Type IIIB1) strung in decades which were used for aves and separated by 12 remaining paternosters which were made up of five different larger beads of different colors (Types IIIA2, IIA3, IIB3, IVB, and VIA). The average decade spanned 2.2 cm. in length. Unfortunately, it was not possible to note the separation between the decades, if there was any. It can be surmised that one other Greater Dominican rosary, CG/3157, was buried over the left shoulder of adult Church Burial 18. It consisted of a shell Calvary cross (CG/3156) suspended from a chaplet of remaining aves of 142 opaque black "seed" beads (Type IIIB2), separated by some 14 paternosters made from green paste (Type IIA, 2; Type IVA, 12) and two opaque black faceted beads (Types IA1, IB1).

The pendant of the Lesser Dominican rosary is strung the same as the Full rosary, but the chaplet consists of only five decades (50) of aves, rather than 15, and five larger paternosters. When relying on this device, the worshipper in prayer merely circles the necklace three times, which is the equivalent of a single count of the full chaplet. A number of variations of the Lesser rosary theme are known. The St. Bridget of Sweden rosary consists of 63 aves to mark the years of Mary's age, in groupings of three aves of 13 and two of 12 each, and the Crown of Our Lady, which is strung with 72 aves and is thought by the order of Franciscan monks to be the true age of Mary. This strand is also separated by five paternosters.

Several Lesser rosaries were encountered in burials associated with the convento church. One (CG/3152), found around the neck of adult Church Burial 1, was strung on a twisted strand of copper wire and had as its pendant a brass medallion (CG/3323) venerating the cult of the rosary (see p. 218). The large pendant bead (Type IC1) was a faceted translucent green teardrop, while the other three pendant beads included a single fluted ruby red (Type IIB2) and several other aves (Type IB2). The chaplet, which consisted of five decades of ruby red faceted beads (Type IB2) separated by five large clear faceted beads (Type IB1), formed a most attractive rosary (see Fig. 283-8). Like Church Burial 18, this person was also interred with a second rosary held in the left hand. The wooden crucifix (CG/3154) was studded with six "shell" buttons and near this cross there remained a single dough bead (CG/3153), which suggested that this was a locally made rosary utilizing brown baked bread beads.

A single remnant of what appeared to have been a rosary was found in the debris of the vandalized Campo Santo Burial 21. A group of four clear faceted beads (Type IB1) of the same type as found with Church Burial 1 and a fifth clear round bead of the same size (Type IIIA1) suggested that these were the paternosters for a Lesser Dominican chaplet.

Altogether there was evidence of six rosaries, one of which was made of bone beads (see this volume, Ch. 7), and all but one of which were found in association with church burials. This may be used as evidence of privileged socio-economic structuring of the San Antonio society, for it is well known that only the well-to-do were buried under the church floor and their heirs had to pay extra for this honor (Montgomery *et al.*, 1949, pp. 178-181; Domínguez *in* Adams and Chavez, 1956, p. 148). Only those Christians who could afford the luxury of rosaries could obtain special interment. Furthermore, it should be noted that four of the six rosaries were associated with but two individuals which further emphasized the economic connotations at this frontier convent.

Glass beads were also found used as part of composite ear pendants (*arracadas*). A pair of these (CG/3161) was found *in situ* on either side of the skull of the adult female Campo Santo Burial 3. These ornaments were designed by taking a piece of single strand copper wire and tying a knot at one end. Then a small translucent blue "seed" bead (Type IIB3) was strung. This was followed by an opaque white "seed" bead (Type IIIB1), a transparent red "seed" bead (Type IIIB4), a large gold gilt teardrop bead (Type VA), and above it, in reverse color order from the lower "seed" bead strand, three other beads were added. The copper strand was longer than the required total of the bead bores and would have given some freedom of movement to the individual eye-catching beads. It was suspended by and further decorated with animal fiber cordage (see this volume, Ch. 7).

Of the total of 368 glass beads recovered from San Antonio de Padua, all but two, or 99.5%, were found in burial associations, and all but 34, or 90.8%, were found in rosary strands. One might suppose that this would be the distributional pattern at a mission site where the socio-religious aspects of adornment would prevail over secular personal jewelry.

Manufacture

Eisen (1916, p. 2) commented on the definition of bead parts, such as the bore (hole) and the matrix (body) of the bead. He also discussed the use of the term "glass paste," which many identify with the opaque quality of glass and which he discarded in glass terminology. In this vein, Woodward (1965, pp. 4-5) noted that many opaque beads have been referred to as enamel silicates or porcelain. Frothingham (1941, p. 46) referred to the glass batch as "paste" and noted that each gaffer had his own secret formula for cooking the clear paste which would include various herbs, silica soda, lime ash, sediment from wine bottles, and

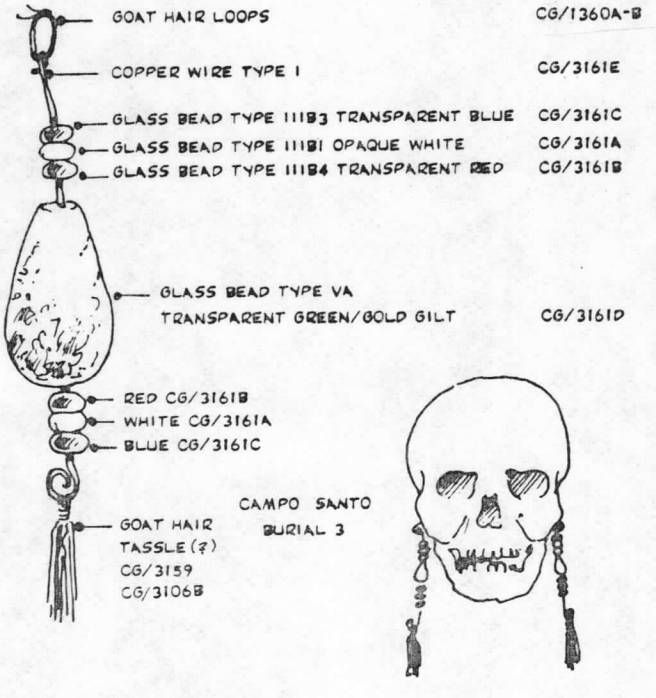
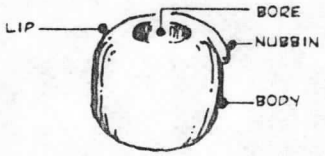


Fig. 284-8. Composite Earring.



TYPE I FACETED
- IA OBLATE SPHEROIDAL, QUADRATE SECTION
- IA1 OPAQUE BLACK
- IB OBLATE SPHEROIDAL, OCTAGONAL SECTION
- IB1 TRANSPARENT COLORLESS
- IB2 TRANSPARENT RUBY RED
- IB3 OPAQUE BLACK
- IC TEARDROP, DECAGONAL SECTION
- IC1 TRANSLUCENT BLUE-GREEN

TYPE II FLUTED
- IIA ELONGATED SPHEROIDAL, TWISTED FLUTES
- IIA1 OPAQUE GREEN
- IIB OBLATE SPHEROIDAL, STRAIGHT FLUTES
- IIB1 TRANSPARENT AMBER GILT
- IIB2 TRANSPARENT RUBY RED

TYPE III PLAIN OBLATE SPHEROIDAL DOUGHNUTS
- IIIA LARGE
- IIIA1 TRANSPARENT COLORLESS
- IIIA2 TRANSPARENT AMBER
- IIIA3 TRANSLUCENT BLUE/SILVERED
- IIIA4 OPAQUE BLUE
- IIIB SMALL ("SEED" BEADS)
- IIIB1 OPAQUE WHITE
- IIIB2 OPAQUE BLACK
- IIIB3 TRANSLUCENT BLUE
- IIIB4 TRANSPARENT RED

TYPE IV PLAIN WIRE-WOUND ELONGATED SPHEROIDAL
- IVA OPAQUE GREEN
- IVB TRANSLUCENT GREEN
- IVC TRANSLUCENT RED/WHITE/GOLD

TYPE V PLAIN TEARDROP
- VA TRANSPARENT GREEN GILT

TYPE VI PLAIN BARREL
- VIA TRANSLUCENT BLUE/SILVERED

Fig. 285-8. Glass Bead Typology.

other ingredients. The glassmaker would color the batch with different minerals, such as lead, tin, and other metals.

Woodward (1965, pp. 7-8) reviewed one method of bead manufacture as it was used at one of the Murano factories. In this case, the master craftsman heated his glass in a small furnace and added coloring after the silica mass was properly fused. He then mixed this with the batch as it cooked. When ready, the gaffer, using the tip of the blowpipe, gathered the proper amount of glass from its melting pot, deftly rolled it on the polished surface of an iron or stone slab (marver), and, after giving the proper shape to the gather in the form of a bottomless bottle, he plunged it into a tub of cold water. Then, just at the right moment, he reheated it in the furnace until it again reached the melting point. He, along with a second master who did the same thing at the same time, removed their partially formed gathers and the two men joined them together, after which they gave their rods to a couple of young men who ran away from one another, in opposite directions, and like toffee, stretched the gather of glass, now some four pounds-worth, into a long slender rod or tube of glass. When the predetermined distance was run, which actually limited the diameter of the tube, the boys placed the hot glass on the ground until it cooled. After this, it was broken into three foot lengths and these were then further cut and sized to produce various types of beads.

This was done by taking groups of 15 or 20 tubes to a bundle and inserting them into a preset iron length gauge with one hand and chopping the segments into the desired lengths with a hatchet-like tool held in the other. These pieces were then variously manipulated to form different shaped beads. Some were placed in a hot, rotating barrel partially filled with sand and wood ashes to smooth the rough edges and were then placed into cloth bags and shaken until polished. When so finished, they were called cane or drawn beads. Evidence of the glass drawing process can be detected under a microscope (Fairbanks, 1967, p. 6; also see Bushnell, 1937, p. 32, Fn. 36, taken from Beck, 1928, p. 60). The plain oblate spheriod (Type III) and barrel (Type VI) beads may have been made by this method.

Straight-sided tube beads (Type IA1) were made in much the same fashion by forming the gather into the appropriate shape on the marver before lengthening the tube (Fairbanks, 1967, p. 6).

In some cases, the long glass tube was reheated and twisted around a wire and then drawn a second time before being segmented. Such beads (Types II, IV) were called wire-wound (Bushnell, 1937, p. 33, Fn. 37; Eisen, 1916, pp. 3-4). On occasion, some bead segments were faceted (Type IB3) by either being held against an abrasive wheel or reheated and hand-molded with the help of a small metal spatula, as many of the 17th century faceted beads (Types IB1, IB2) in the San Antonio collection were. One clue to this mode of manufacturing is the presence of a small glass nubbin on the tip of the bore, left as a result of breaking the twisted segments apart after reheating (Woodward, 1965, p. 9).

The selection of sizes for all beads was done by glass factory laborers who used light wooden sizing trays which they sifted back and forth like winnowing baskets. Rejects were thrown back into the cullet pile for reuse (*ibid.*, p. 7).

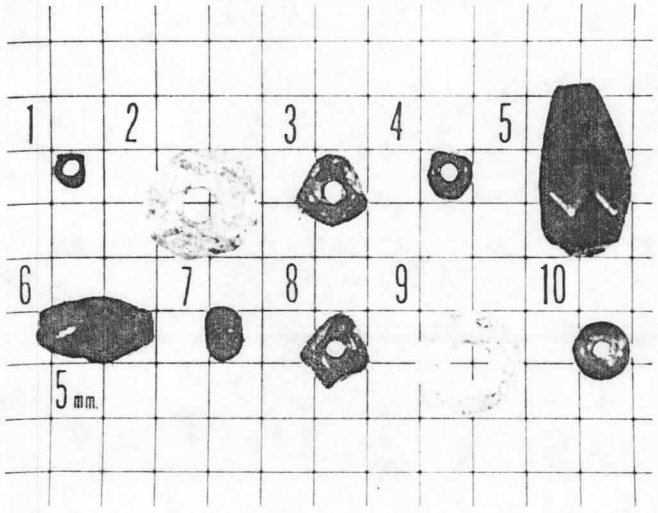
The teardrops (Type V), because of their size and delicacy, may have been individually blown on small blowpipes.

Classification

The primary criterion for the classification of the San Antonio glass beads was their general shape. Further subdivisions were based on additional shape data, cross section, and color. (See Fig. 285-8.) Type I included 65 faceted beads, of which two were oblate spheroids with quadrate transverse cross sections and of opaque black color (Type IA1). They were 0.4 cm. long and 0.3 cm. and 0.4 cm. in diameter. Type IB included 62 oblate spheroids with octagonal cross sections. Nine of these were transparent, colorless beads, Type IB1. They were 0.6 cm. to 0.7 cm. in length and 1.1 cm. in diameter. Woodward (Personal communication, 1965) commented that these beads were common in the latter half of the 17th century and perhaps the early 18th century; that they originated in Italy; were hand-molded; and were made in amber, green, blue, and clear colors. Transparent ruby red beads were placed in Type IB2. These 52 beads were 0.7 cm. long and 0.8 cm. in diameter. Type IB3 was a single opaque black bead 0.4 cm. long and 0.6 cm. in diameter. A translucent blue-green teardrop bead with a decagonal cross section was classified as Type IC1. It was 1.7 cm. long and 0.8 cm. in diameter. Woodward (Personal communication, 1965) identified it as a hand-molded 17th century bead.

There were five fluted beads in Type II. Two opaque green, elongated spheroidal beads with twisted flutes were separated as Type IIA1. They were 0.2 cm. long and 0.5 cm. in diameter. Woodward (Personal communication, 1965) identified them as glass paste beads which were used into the 18th century and were made in white, yellow, red, and black. Three Type IIB1 beads were oblate spheroids with straight flutes, gold gilt over transparent amber glass. They were 0.4 cm. long and 0.6 cm. in diameter. A bead of similar shape but of transparent ruby red glass was placed in Type IIB2. It was 0.6 cm. long and 0.7 cm. in diameter.

Type III included 281 plain oblate spheroids, of which 22 were large (Type IIIA) and 259 were small "seed" beads (Type IIIB). There was one transparent, colorless bead in Type IIIA1; it was 0.7 cm. in length and 1.0 cm. in diameter. A transparent amber bead was classified as Type IIIA2 and was 0.4 cm. long and 0.6 cm. in diameter.



BEADS. 368 SPECIMENS.
TYPE I – FACETED BEADS. 65 SPECIMENS.
TYPE IA – OBLATE SPHEROIDAL, QUADRATE CROSS SECTION. 2 SPECIMENS.
TYPE IA1 (1.1.2.1.3.8.1) – OPAQUE BLACK BEADS. 2 SPECIMENS. FIG. 286-8/1.

No.	Wt. (gr.)	L.	Diam.	Perf. Diam.	Provenience	Remarks
		---	cm.	---		
CG/3157D	-0.1	0.4	0.4	0.2	Church Bur. 18	Ave.
CG/3162C	-0.1	0.4	0.3	0.2	Campo Santo Bur. 21	

TYPE IB – OBLATE SPHEROIDAL, OCTAGONAL CROSS SECTION. 62 SPECIMENS.
TYPE IB1 (1.1.3.1.1.1.1) – TRANSPARENT COLORLESS BEADS. 9 SPECIMENS. FIG. 286-8/2.

CG/3152A	0.8	0.6	1.1	0.4	Church Bur. 1	5 Paternosters.
CG/3162A	1.1	0.7	1.1	0.4	Campo Santo Bur. 21	4 Paternosters.

TYPE IB2 (1.1.3.1.1.4.1) – TRANSPARENT RUBY RED BEADS. 52 SPECIMENS. FIG. 286-8/3.

CG/3152B	0.2	0.7	0.8	0.2	Church Bur. 1	Aves.

TYPE IB3 (1.1.3.1.3.8.1) – OPAQUE BLACK BEAD. 1 SPECIMEN. FIG. 286-8/4.

CG/3157E	0.1	0.4	0.6	0.2	Church Bur. 18	Ave.

TYPE IC – TEARDROP, DECAGONAL CROSS SECTION. 1 SPECIMEN.
TYPE IC1 (1.3.4.1.2.6.1) – TRANSLUCENT BLUE-GREEN. 1 SPECIMEN. FIG. 286-8/5.

CG/3152C	1.6	1.7	0.8	0.3	Church Bur. 1	Rosary pendant.

TYPE II – FLUTED BEADS. 5 SPECIMENS.
TYPE IIA – ELONGATED SPHEROIDAL, TWISTED FLUTES. 2 SPECIMENS.
TYPE IIA1 (2.2.1.1.3.5.1) – OPAQUE GREEN BEADS. 2 SPECIMENS. FIG. 286-8/6.

No.	Wt. (gr.)	L.	Diam.	Perf. Diam.	Provenience	Remarks
		---	cm.	---		
CG/3157C	0.6	0.2	0.5	0.2	Church Bur. 18	Paternosters.

TYPE IIB – OBLATE SPHEROIDAL, STRAIGHT FLUTES. 3 SPECIMENS.
TYPE IIB1 (3.1.1.1.1.3.3) – TRANSPARENT AMBER BEADS WITH GILT. 2 SPECIMENS. FIG. 286-8/7.

CG/3155G	0.2	0.4	0.6	0.1	Church Bur. 2	Paternosters.

TYPE IIB2 (3.1.1.1.1.4.1) – TRANSPARENT RUBY RED BEAD. 1 SPECIMEN. FIG. 286-8/8.

CG/3152E	0.2	0.6	0.7	0.2	Church Bur. 1	Ave.

TYPE III – PLAIN OBLATE SPHEROIDAL DOUGHNUTS. 281 SPECIMENS.
TYPE IIIA – LARGE BEADS. 22 SPECIMENS.
TYPE IIIA1 (4.1.1.2.1.1.1) – TRANSPARENT COLORLESS BEAD. 1 SPECIMEN. FIG. 286-8/9.

CG/3162B	0.9	0.7	1.0	0.4	Campo Santo Bur. 21	Paternoster.

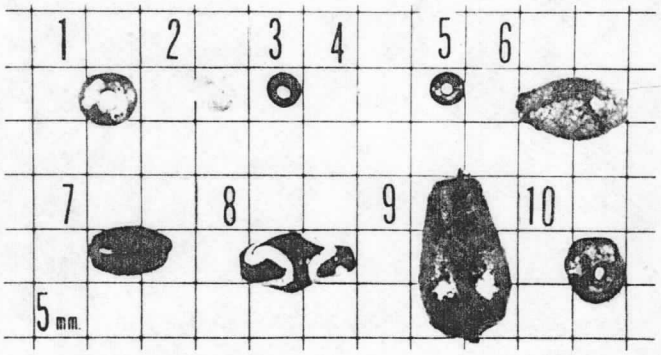
TYPE IIIA2 (4.1.1.2.1.3.1) – TRANSPARENT AMBER BEAD. 1 SPECIMEN. FIG. 286-8/10.

CG/3155C	0.2	0.4	0.6	0.2	Church Bur. 2	Paternoster.

Type IIIA3 included a single translucent blue and silver gilt bead 0.5 cm. long and 0.6 cm. in diameter. Nineteen opaque blue beads missing in the field were classified as Type IIIA4. No measurements were available for them. Type IIIB1 included 100 opaque white "seed" beads that were 0.2 cm. to 0.3 cm. long and 0.3 cm. to 0.4 cm. in diameter, while 142 opaque black specimens were placed in Type IIIB2. The latter were 0.4 cm. in length and diameter. Thirteen translucent blue "seed" beads were placed in Type IIIB3. They were 0.2 cm. to 0.3 cm. long and 0.3 cm. to 0.4 cm. in diameter. Type IIIB4 included four transparent red "seed" beads 0.2 cm. long and 0.4 cm. in diameter.

Type IV consisted of 14 plain, wire-wound, elongated spheroidal beads. Twelve were opaque green, Type IVA. They were 1.0 cm. long and 0.7 cm. in diameter. Woodward (Personal communication, 1965) said that this type of glass paste bead was a 17th century bead that ranged into the 18th century and was made in white, yellow, red, and black. A translucent green specimen was classified as Type IVB. It was 0.8 cm. in length and 0.5 cm. in diameter. Type IVC included a single translucent multicolored red, white, and gold bead that was 1.2 cm. long and 0.7 cm. in diameter. Woodward (Personal communication, 1965) described it as being made of clear reddish glass with opaque white glass paste and clear gold colored inlay stripes, a 17th century descendant of very early Egyptian and Syrian beads copied by the Venetians.

Two transparent green teardrop beads with gold gilt were placed in Type VA. They were 0.2 cm. long and 0.6 cm. in diameter.



TYPE IIIA3 (4.1.1.2.2.7.2) – TRANSLUCENT BLUE BEAD, SILVERED. 1 SPECIMEN. FIG. 287-8/1.

No.	Wt. (gr.)	L.	Diam.	Perf. Diam.	Provenience	Remarks
		---	cm.	---		
CG/3155E	0.2	0.5	0.6	0.2	Church Bur. 2	Paternoster.

TYPE IIIA4 (4.1.1.2.3.7.1) – OPAQUE BLUE BEADS. 19 SPECIMENS.

Uc/1016	–	–	–	–	Campo Santo Bur. 25	Missing in field; associated with shell beads Uc/1026.

TYPE IIIB – SMALL "SEED" BEADS. 259 SPECIMENS.
TYPE IIIB1 (4.1.1.3.3.2.1) – OPAQUE WHITE BEADS. 100 SPECIMENS. FIG. 287-8/2.

CG/3155A	0.1	0.3	0.4	0.2	Church Bur. 2	97 Aves.
CG/3161A	-0.1	0.2	0.3	0.1	Campo Santo Bur. 3	Part of earrings; 3 beads.

TYPE IIIB2 (4.1.1.3.3.8.1) – OPAQUE BLACK BEADS. 142 SPECIMENS. FIG. 287-8/3.

CG/3157A	-0.1	0.4	0.4	0.1	Church Bur. 18	Aves.

TYPE IIIB3 (4.1.1.3.2.7.1) – TRANSLUCENT BLUE BEADS. 13 SPECIMENS. FIG. 287-8/4.

CG/2842B	-0.1	0.2	0.3	0.1	Surface, 35.50 m. E, 1.00 m. N of D.P.	
CG/3152D	0.1	0.2	0.4	0.1	Church Bur. 1	2 Beads.
CG/3155B	0.1	0.3	0.4	0.2	Church Bur. 2	6 Paternosters.
CG/3161C	0.1	0.2	0.3	0.1	Campo Santo Bur. 3	4 Beads; part of earrings.
Average:	0.1	0.2	0.4	0.1		

TYPE IIIB4 (4.1.1.3.1.4.1) – TRANSPARENT RED BEADS. 4 SPECIMENS. FIG. 287-8/5.

CG/3161B	-0.1	0.2	0.4	0.1	Campo Santo Bur. 3	Part of earrings.

TYPE IV – PLAIN WIRE-WOUND, ELONGATED SPHEROIDAL. 14 SPECIMENS.
TYPE IVA (4.2.1.1.3.5.1) – OPAQUE GREEN BEADS. 12 SPECIMENS. FIG. 287-8/6.

CG/3157B	0.4	1.0	0.7	0.1	Church Bur. 18	Paternosters.

TYPE IVB (4.2.1.1.2.5.1) – TRANSLUCENT GREEN BEAD. 1 SPECIMEN. FIG. 287-8/7.

CG/3155D	0.2	0.8	0.5	0.2	Church Bur. 2	Paternoster.

TYPE IVC (4.2.1.1.2.9.1) – TRANSLUCENT MULTICOLORED RED, WHITE, AND GOLD BEAD. 1 SPECIMEN. FIG. 287-8/8.

CG/2891	0.3	1.2	0.7	0.2	Church Rm 1, Fill	

TYPE V – PLAIN TEARDROP BEADS. 2 SPECIMENS.
TYPE VA (4.3.1.1.1.5.3) – TRANSPARENT GREEN BEADS WITH GILT. 2 SPECIMENS. FIG. 287-8/9.

CG/3161D	0.1	0.2	0.8	0.2	Campo Santo Bur. 3	Part of earrings.

TYPE VI – PLAIN BARREL BEAD. 1 SPECIMEN.
TYPE VIA (4.4.1.1.2.7.2) – TRANSLUCENT BLUE BEAD, SILVERED. 1 SPECIMEN. FIG. 287-8/10.

CG/3155F	0.2	0.5	0.6	0.8	Church Bur. 2	Paternoster.

Distribution

Type IB1, according to Woodward (Personal communication, 1965), has been found at Pecos, New Mexico (Kidder, 1932, p. 308). In form, these clear faceted beads resembled the "rock crystal" beads found at Rappahannock, Virginia (Bushnell, 1937, pp. 33-35, frontispiece, lower two rows), Maximo Point, and other places in Florida (*ibid.*; also see Stirling, 1935, p. 379; Fairbanks, 1967, pp. 13-16).

Type IIIB "seed" beads were widely used throughout the New World and thousands of Type IIIB1 have been uncovered in trade associations in Florida (Gregory and Webb, 1965, pp. 41-42).

Type IVA beads have also been reported from Leedstown, Florida (Bushnell, 1937, p. 33, frontispiece, Row 10), as well as in Tennessee, Georgia, Alabama, Mississippi, Louisiana, and Virginia (*ibid.*).

Goblets

Use

The fragmented remains of a finely wrought goblet (Fig. 288-8) were uncovered in association with the NE convento trash area. The scalloped shell brim was a popular design (*bernegale*) produced in both Venice and in Cataluña, Spain, during the 17th century (Frothingham, 1941, p. 38). This goblet, with its conical bowl shape, should not be confused with the typical chalice or cruet (*cetrill*) of this time, which was produced in Venice and in Barcelona and Valencia, Spain. The altar serving pieces were generally hourglass in shape and had a carved spout and handles of twisted or pinched glass. They were designed to hold the wine and water and when so used in the mass were called *canadelles* (*ibid.*, pp. 40, 42, Figs. 26, 28). The San Antonio specimen appeared to have been a simple drinking goblet, but because of its delicate thinness and color may have been cherished by the padres of this frontier convento and used as a serving piece during Holy Communion.

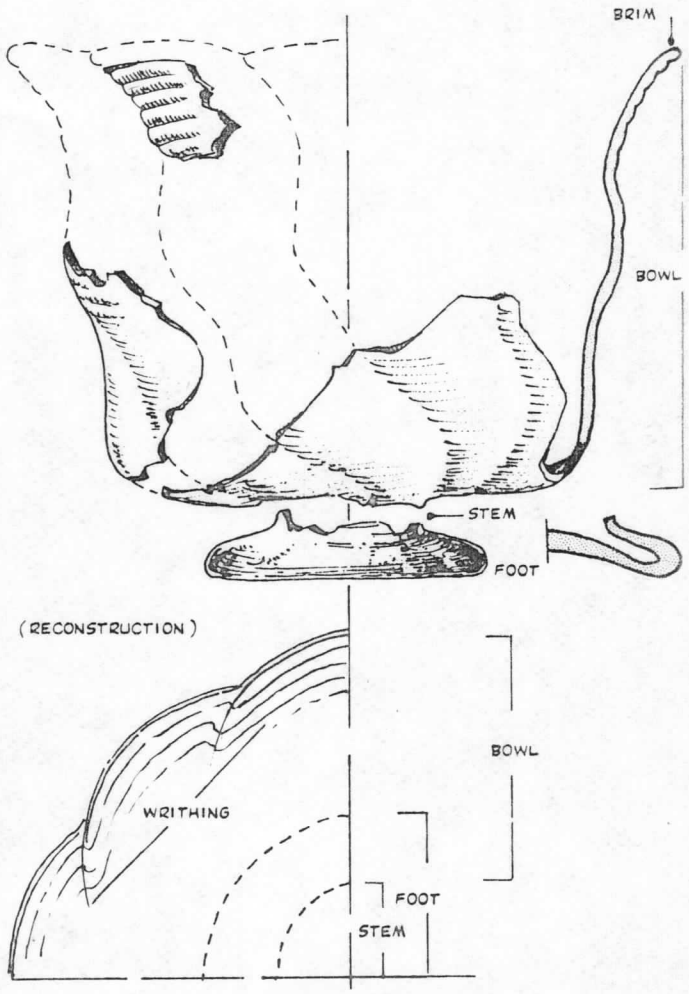


Fig. 288-8. Blue-green Glass Goblet.