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The World of Beads Monograph Series: 1

THE STORY OF VENETIAN BEADS

PETER FRANCIS, JR.





PLATE I - DRAWN BEADS

- Row 1: 1) Paternoster bead. 2) A group of small seed beads. 3-4) Tubular cane beads.
- Row 2: 1-9) Various striped cane beads. 10-11) Tube and bead of the "gooseberry" type.
- Row 3: Cornaline d'Allepos: 1) Straw types of 17th century. 2-5) Color variations of cores. 6) Tubular. 7) Seed bead size 8) Very tiny "micro" size. 9) "Garden Roller" type. 10-11) Decorated styles.
- Row 4: 1-3) Ambassador beads. 4-5) Old 7-layered chevrons. 6) More recent chevron type. 7-8) Chevron tubes. 9-11) Chevron discs.
- Row 5: Millefiories. 1-2) Older types.
- Row 6: Millefiories. 8) One of current make.
- Row 7: Pieces of cane for decorating millefiories. Vertical: length of cane.
- Row 8: Plain canes for lamp beads.
- Row 9: Fancy cane for lamp bead decoration.
- Row 10: Recent beads: 1) Crumb bead. 2) Zone bead. 3-4) Milled zone bead. 5-6) Twisted beads with complex matrices. 7) A bead perhaps inspired by a Picasso designed Venetian vase made in 1954. (14: 50)

Photo Credits: Hal Scott & Elizabeth Hiser

Color Plate 1

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NOTE TO THE READER

Within the text the reader will encounter two different sets of numbers bracketed in parenthesis. In the case of two numbers only, the reference is to a bibliographical source. That is, (12: 184) refers to the book listed as number 12 in the bibliography, page 184. In the case of numbers preceded by the notation 'Pt' the reference is to a bead pictured on the color plates. (Pt II: 5: 1 - 5) refers the reader to Plate number II, row 5, beads 1 through 5.

The Story of Venetian Beads

With the possible exception of the Egyptian and Syrian bead makers of Roman times, no glass bead producers have had as much influence on their contemporaries as those of Venice. The beads of Venice have been sent all over the world, and have for the last several centuries dominated the trade and tastes in the commodity. These beautiful products of Venice come in a mind - boggling diversity of styles. It has been estimated that well over 100,000 different Venetian beads have been made (25: 31), and each year the numbers grow, for the makers are constantly turning out new kinds of beads for their customers.

No one interested in beads can avoid Venetian products. They are worn in every part of the globe, and have been major trade items for the last 500 years. It is not unusual to see Venetian beads on strands which are supposed to contain ancient Roman glass beads at auctions, in stores or even in museum collections. Venetian glass beads are so ubiquitous that Venice can truly be thought of as "the Mother of modern beads."

Unfortunately, the story of Venetian beads is somewhat obscure. The industry is quite secretive and not open to investigation. This secrecy is by no means a new phenomenon; it originated to protect the security of the art, but today it serves as a barrier to any historian trying to unravel the story of Venetian beads. Documents exist which tell us about the industry, but very little can be found out about the techniques of production, and even less about the beads themselves. This situation leads to differing accounts of bead production and a reliance on outside records for determining the kinds of beads actually made.

Ironically, it may well be that archaeological research in the Americas turning up Venetian beads in dated contexts will eventually prove the best way to date the different types of beads. This has already been true in the case of the 'chevron' bead, but caution must be exercised because many popular styles were made for long periods of time and, indeed, are in some cases still being produced.

The Early Glass Industry

Venice can justly claim to be one of the most beautiful cities in the world. It sits on an island surrounded by the waters of the Lagoon of Venice at the head of the Adriatic Sea. There are other islands in the lagoon—Murano, where the Venetian glass industry is actually located, the Lido with its famous hotels and casino and Torcello, now chiefly a picnic spot, among other islands. It is at Torcello that the first glass factory of the High Middle Ages has been identified. (15:1) The factory site has produced evidence of tableware glass and mosaic glass dating from the 6th and 7th centuries. Thus far, no evidence of bead production has been found there, but the site does prove the antiquity of glass production at Venice.

Several centuries later documents show that glass makers worked on the island of Venice itself. References from 982, 1082 and 1090 AD refer to 'phiolariii' (bottle makers) who were attached to the Benedictine monasteries. (13: 37) Their original tasks were largely confined to making simple bottles and tableware, and above all to producing 'smalto' or enamel for mosaics. At this time Italian religious art relied heavily on mosaics in churches, as can be attested from the many examples at Ravenna and at San Marco in Venice itself. Around the 11th century these glass makers were able to free themselves from church control and begin to make glass for secular, commercial customers as well.

A popular story about the introduction of Venetian beads is that Marco Polo brought glass beads with him from China in 1295 and that Christoforo Briani and Domenico Miotto began making beads in Venice after Marco Polo had introduced them. As plausible as this story may seem, it is apparently another case of mistaken credit to Marco Polo to join the annals of fiction along with his introduction of playing cards and pasta to Europe. The story cannot be traced back any further than 1811 when it was first related, or rather, invented by Carlo Neijmann Rizzi, a pseudo-historian who never allowed the lack of evidence to get in his way when constructing the history of Venetian glass. (12: 182; 38: 5 - 17)

At least by 1224 a guild of Venetian glass makers existed, for in that year 29 of them were fined for various infractions of the guild's rules. (29: 10 - 11) The glass industry grew in importance in the 13th century. Martino da Canale wrote in 1268 that the glass guild participated in the procession during the celebration of the election of Doge Loenzo Tiepolo on 23 June of that year, carrying water bottles, scent flasks and other glass objects. Da Canale is also the first writer to mention beads in Venetian records. He wrote that in the same procession a Venetian glass maker wore a 'garland' of glass beads. However, da Canale did not tell us the origin of these beads and thus we cannot be sure if the glass maker actually made them in Venice or if they were imported. (12: 182) It is possible, then, that this is the first reference to Venetian glass beads, but we cannot prove that.

By 1275 the glass industry was of sufficient importance for an edict to be issued forbidding the export of potash, broken glass or sand. This was the first of many laws designed to protect the industry and to prevent other cities from becoming rivals to Venice as glass makers. German merchants were allowed to export only ten Venetian Lira of glass or whatever they could carry out on their backs, whichever was less. (29: 11)

In 1286 the Grand Council of Venice drew up a code for the glass makers stating minimum working conditions and prohibiting the operation of the furnaces whenever the weather was hot. (29: 11) The following year the vital supply of wood to the glass makers was put under direct control of the senior judges, thus assuring the industry of enough fuel to meet its needs. (29: 11)

The Move to Murano

Glass making was becoming an industry of increasing importance to the Republic of Venice, but also caused concern in several ways. The Venetians worried about the danger of the glass furnaces causing fire in the city, as the edict of 1286 shows, and were also alarmed at the prospect of the skills of the industry being exported and potential rivals setting up glass houses in other countries. A step to solve these two problems was taken by a decree of the Senate to move the whole of the glass industry to an island north of Venice about a kilometer. This island, Murano, thus became the home of the Venetian glass industry. The decree of 8 November 1291 was amended a year later to allow some small parts of the industry to remain on the island of Venice, but the majority of glass makers went to Murano. (29: 11)

Murano, anciently called Amurias or Amurium, had been inhabited since late Roman times and had, by the end of the 12th century, become a flourishing community with its wealth based largely on fishing and trade. (37: 9 - 11) The glass industry having been set up there, the danger of fire to the chief island of Venice was reduced, but also Murano was an easier place to police, being smaller and having less traffic than the larger island, so that a closer watch could be put on glass masters who might try to sell their know-how to other commercial centers.

Already by the 13th century trends in major legislation concerning glass workers can be discerned. The Senate of Venice was anxious to protect and please the industry and through the centuries steps were taken to do just that. We have mentioned that wood (and other raw materials) were made available to glass makers and the protection of the industry was periodically renewed by decrees such as that of 1308. (26: 9) In an effort to insure the quality of Murano glass it was forbidden to import alum (1306 and 1330) which had been brought from Alexandria as early as the 11th century. Alum was prohibited because it could only produce an inferior grade of glass. (29:11) In place of alum, an alkali made

from the ashes of barilla or roquette plants brought from Spain or the Near East, was used. Wood was brought from the Dalmatian Coast, and a high grade of quartz from the Ticino River. (29: 11; 37: 36)

Glass makers were encouraged to remain loyal to Venice by being given more and more status in the Republic. In 1376 it was decreed that if a glass maker's daughter married a nobleman the couple could pass on titles of nobility to their children. (29: 21) In 1490 the glass maker's guild was placed under direct control of the Council of Ten, Venice's highest governing body, and thus had an improved lobbying position. (29: 21) A wealthy glass maker could even in time gain for himself a title of nobility, as a certain Morelli, an important exporter, did in 1686 upon payment of 100,000 ducats. (12: 189)

Along with the rise of status of the glass makers grew fears of workers and masters selling themselves and their secrets to other European powers. A great deal of effort was expended to try to prevent this, and was perhaps partially successful, but never entirely workable. We have already noted the decree of 1275 forbidding export of raw materials. This was followed by many similar edicts. In 1295 the fine of an expatriate glass maker who wanted to return to Venice was increased. Other decrees followed: in 1510 (18: 185), 1547 (29: 21), 1738, 1746 and 1761 (6:44) more and more stern measures, even the death penalty, were threatened for divulging the secrets of the art.

Not only were glass makers forbidden to leave Venice and take their secrets with them, but they were expected to forbid visitors into their factories at home. A case is recorded in 1791 when Giorgio Barbaria accused Sig. Collendani before the inquisition of allowing two English visitors, Lady Wrigt (sic) and Mr. Freland to see his furnaces in operation. The glass maker suffered a penalty as a result. (26: 19) This attitude continues; even today it is impossible for the casual, curious visitor to watch the makings of beads in Murano.

The efforts at secrecy were not altogether successful. For one thing, the Venetians had rivals in the small city of Altare, Italy, which had a glass making tradition of its own. Through the 15th century the workers at Altare developed a co-operative organization, the University of Vitreous Arts, which drew up a constitution in final form in 1495. These Articles differed markedly from the Statutes of Venice in that they actually encouraged the emigration of the Altare glass makers, who were regularly authorized to set up small colonies in foreign states and maintain contact with the governing council of the University, to whom they paid tribute. In this way the art of glass making was spread over much of Europe. (18: 9)

Another major source of information for non-Venetian glass makers was the publication in 1612 of *The Art of Glassmaking* by Antonio Neri in Florence. Neri's book became the standard work on the subject and was soon translated from the Italian into English, French, German and Latin and was utilized by many of Venice's European rivals to build their own glass industries. There was little Venice

could do to prevent the circulation of the work and the building of competitive industries. (18: 9)

The 17th and 18th centuries saw a growing number of glass masters leaving Venice for the lure of greater pay by setting up glass works, and especially bead works, in other European cities. A petition of 1613 written by Jan Heinrixson Soop to the Mayor of Amsterdam states that he had succeeded in bringing some of Venice's finest glass masters to Amsterdam along with their tools, at great cost to himself. (34: 261 - 3) The increased demand, especially for beads to be sold to colonies, coupled with lower pay in Venice and lower quality there as well, caused a veritable exodus of Venetian bead makers in the 18th century. Work shops were set up in Paris, Prague, Nurnberg, Graz and even in Rome. One such master, Gaetano Acquabono went first to Innsbruck in 1766, then to Lisbon, where he intended to meet up with Francesco Pontigliosi so that they could sell their skills together either to England or Spain, but his plans were thwarted by Giovanni Querini, the Venetian ambassador to Madrid, who had Acquabono repatriated in 1770. (12: 193)

The Growth of the Bead Industry

It is obvious from the foregoing that the Muranese glass industry prospered from its inception in 1291, but we are here interested in a particular glass product: the beads. There is no real proof that beads were being made before the industry moved to Murano, but it was not long after the move that we begin to get evidence of the bead industry.

The first indisputable reference to Venetian beads is found in a report of 20 March 1327 of a ship flying the banner of San Marco (the patron saint of Venice) which was robbed by pirates from Reggio (at the tip of the Italian boot). The ship was carrying, among other things, 1200 strands of glass crystal rosary beads made in Murano. (12: 184; 6: 43)

That beads had been made some time before in Murano seems evident from a law passed by the Mariogola of the Cristalleri (the council of a glass guild) in 1326 which forbade the making of imitation precious stones. The Cristalleri was to develop into the guild of the glass bead makers and the reference to imitation stones certainly suggests bead manufacture. (12: 184) The problem of producing false gems was not solved by this one decree alone. It remained an issue for centuries and concerned not only the industry's representatives. The Venetian Senate passed a similar law in 1445 and imposed a fine of a thousand ducats and imprisonment of two years for imitating jewels. (12: 184) Subsequent laws were made in 1733 and again in 1735 when garnets, rubies, turquoise and agates were all mentioned as being imitated and misrepresented in glass. (6: 46-47)

Beads became one of the several products of the Muranese glass makers and for the next 165 years or so was an acceptable, though not notable aspect of the

industry. In the last decade of the 15th century, however, two things changed the state of bead making and a 'boom' in glass beads began.

The first change that led to an improvement in the importance of beads was an internal invention. Around 1490 the invention of making drawn cane beads was introduced. We have no record of the inventor of the process, or even of the exact year of its introduction, except that a law of 1510 states that drawn beads had been made for about twenty years and that the Republic wanted to protect the process. (6: 44; 12: 185) The drawing of beads is a process which significantly speeds up the work of bead making and soon became the primary technique in Murano, replacing the slower winding method. (see next section) The invention allowed the Venetians to mass-produce many more beads than they had before and put the Republic in a position to exploit new markets.

The other event which led to an increase in the bead business was the beginning of the Age of Exploration. The Spanish and Portuguese, followed by the Dutch, French, English and Russians, as well as other European powers, suddenly awoke to the realization that there were tremendous tracts of land, great natural resources and, sadly, millions of potential slaves, that could be explored, exploited and conquered by superior European armaments. In the space of a few decades the European conception of the world was greatly altered and a globe with vast, unexplored territory was perceived. The role that beads played in this story was not insignificant. Columbus took beads to America in 1492, Vasco da Gama took them to Calcutta in 1497, and Cortez to Mexico in 1519. The beads were all Venetian in origin. (12: 185) Glass beads were unknown wonders to the Americans and in demand in Asia and Africa; Venetian beads made the cheapest, most sought-after gift the Europeans could take.

The juxtaposition of the two events was fortuitous for the Venetian bead makers. With the increased capacity the drawn production method made possible, the Venetians were able to take advantage of the augmented demand for their products that European exploration generated. So great was the demand in the early 1500's that Murano couldn't actually find enough workers to do all the necessary labor and deemed it profitable to concentrate on drawing tubes and canes and shipping them to the cheaper labor market of Bohemia. In Bohemia beads were made from the tubes, and then shipped back to Venice, which sent them out to the whole world. (12: 185) The increased emphasis on beads can also be noted by observing the requirements of the council of the Cristellari for a worker to become a master. In 1486 he had to be able to make beads, but that was just one of several other glass products he had to know how to produce. By 1505 the emphasis on the masters' skill was shifted heavily to the making of beads, for that was the major product in demand. (12: 184)

The Production of Venetian Beads

For the first nearly 200 years of bead production at Murano, the beads must have been made by the simplest technique, that of winding. A ribbon of molten glass is drawn from the furnace and wound around an iron rod, the mandrel, until it assumes the proper size. It can then be further shaped by the use of metal tools or decorated with other colors of glass. (For more detailed information on the winding technique of bead making see World of Beads Series 3: *Third World Bead Makers*.) We have no real information about these early Venetian beads, but they must have looked much like beads produced in the same way by numerous bead making centers which use this technique.

It was, however, the drawn method of making beads that revolutionized the Venetian bead industry. The drawing of hollow tubes for beads was known in late Roman times, (17: 336) and was a technique practiced in India, roughly contemporaneously. (24: 87) However, it is fairly certain that the Venetians had to re-invent the technique when it came to be introduced around 1490. The drawing of beads speeds up the process of making them, but adds a number of steps involved in the work. Winding beads around a mandrel can be done by a single worker, but he can make no more than a few each minute.

The production of drawn glass beads has been described by several authors with slight differences. The following account is taken from the work of Abbot Zanetti, the director of the glass museum in Murano and a recognized authority in the subject in his lifetime. The account was written in 1869 and describes nearly all of the operations as being done by the traditional manual method. (37: 37-52)

The first step in the process is to take a blob of glass from the furnace on a rod. The master then perforates the gathering with another iron rod and then rolls it on a heat-resistant surface, the marver, until it assumes a cylindrical shape. After reheating it is ready to be drawn. In the drawing operation the master is assisted by a boy who holds another iron rod with a small plate of glass attached to the end. The boy's rod is attached to the cylinder of glass at a point opposite the master's rod and the boy then runs down the length of an especially long corridor, stretching the glass out into a tube. The length he runs and the amount of glass used is determined by the thickness of beads desired, but the usual length for the finished tube is 120 meters.

After the tube has been pulled out and allowed to cool while resting on boards set along the floor, another operator cuts the tubes into lengths of about a meter. These tubes are then sent out of the furnace room to other sections of the factory or even to other factories. Women separate the tubes by diameter, then they are cut up into small lengths by an operator who sits in front of a bench, the *zocco*, with a blade fixed in it. The worker chops the tubes into pieces between the fixed blade on the bench and a second blade held in his hand.

Once the broken pieces are separated from the mass of short tubes the unbroken beads are placed in a large metal drum together with a mixture of lime, carbonate, sand, carbon and bit of water. This mixture acts as a soft abrasive and when the beads are turned in the drum and heat is added externally, the sharp edges resulting from cutting are smoothed out. In the case of very short tubes the tumbling will form them into oblates. Care must be taken not to apply too much heat or the beads will remelt and fuse. After sufficient tumbling, the mixture is removed and shaken by hand in sacks in order to remove the chemicals. The abrasives must be removed from the perforations of the beads; their presence in the perforations during turning prevents the beads from collapsing.

The beads must then be separated from each other according to size and shape, whether rounded or tubular. The next operation is to polish the beads, which is done by placing them in a sack with some fermented bran and shaking the sack vigorously. The last step of the work is performed by women whose job it is to string the beads. They sit with a large basket full of beads in front of them and hold three needles in their right hands. Running the needles through the beads, they string them quickly, using their left hands to help push the beads onto the needles.

It should be noted that in the various descriptions of the drawn bead process there is disagreement as far as details are concerned. For example, Angus Butterworth says that the hole in the tube is produced by blowing (1: 250); van der Sleen contends it is made by manipulating the glass into a funnel and then closing the funnel (35: 25); Abbot Zanetti states that an iron rod is stuck in the middle of the gathered glass to produce the hold. (37: 38-39) Angus-Butterworth also mentions a third man during the drawing operation who measures the width of the tube with calipers and fans it to cool the section which has reached the desired diameter. These various accounts may appear confusing, but they are most likely the result of differing methods used at different times or by different masters. It can safely be assumed that there are many variations in detail while the principles of the operation remain the same.

The drawn beads of Venice are divided into two distinct types. The Paternoster beads are large and were originally used, as their name suggests, for the large beads of a rosary on which the Lord's Prayer was recited. The smaller beads, which we have come to call "pound beads" since they are often sold by weight, "seed beads" or "beadwork beads" (from their main function,) are called by the Venetians "margarite," the Latin word for pearl or bead.

The working of the Paternoster and margaritieri differed. Only the smaller margarites went through the complete process as described above. The Paternoster were, on the other hand, drawn as beads, cut into the correct sizes, and then individually put on wires and reheated to gain a finished shape and polish. In that state they could also be further decorated by hand.

The work of the Paternoster and margarites was sufficiently different to eventually cause a split in the old Cristalleri guild. By 1604 two separate groups of workers were named and given individual status, though they continued to operate together. As an example of the co-operation between the two, they set up a bead

makers' school in the church of San Francisco della Vigna and chose Saint Antonio Abate as their patron saint. (12: 186-7) At this time there were 251 members of the two guilds.

A quarter of a century after the division was made between the Paternosteri and the Margaritieri a third bead-making group demanded their recognition as well. These were the "Suppialume", the makers of "lamp beads." Lamp beads are so named because they are formed by hand in the process of melting a solid, drawn cane over the iron wire with the heat of an oil or tallow lamp. The canes were furnished by the same workers who made the drawn beads, only they lacked perforations. They were then given to women to work on at home or in small shops where each bead would be wound by hand and further decorated with other canes of different colors. Lamp beads are thus much more individualistic than the drawn beads, as each one can be made differently from the others.

At first the Paternosteri and the Margaritieri resisted the special status for the Suppialume, but by 1647 they succeeded in forming an autonomous guild of their own. Thus, where there had been only one Cristalleri guild there were now three; they all shared the same school, the same patron saint and governing board (the *mariegola*) and they divided commissions up among themselves, but they were distinct industries and had their own rules as well as separate banks. (12: 188)

It was the lamp beads that were the first to be called "conterie" outside Venice. The term "conterie" signified fancy glass products and was proudly adapted by the lamp bead makers, though it was not applied by the Margaritieri until the early 1800's. (12: 188) The term is now synonymous with Venetian beads.

In sum, there were four distinct ways of making beads practiced at different times in Venice. From the beginning of the 14th to the end of the 15th centuries beads were made by the simplest method of winding glass on a mandrel from the furnace. From about 1490 drawn canes were made and have accounted for the vast majority of Venetian beads ever since. If the canes were made in the shape of large tubes they could be cut and made into individually finished and decorated Paternosters. If the tubes were small they were finished in a mass - production method and were known as margarites. Solid canes without perforations were used to make lamp beads in small shops by remelting the canes around a mandrel and hand decorating them. The first lamp beads were apparently produced around 1615 or so. Each of the latter three methods of bead making survived in Venice and each had its own guild, though they were associated with one another.

Competition and New Inventions

By the opening of the 18th century Venice had a near - monopoly on the world bead market and Venetian bead makers were a conservative lot, resisting change and innovation. But if Venice stood still, all her competitors did not. The new Bohemian bead factories began making beads cheaper than Venice could, due to

lower wages and greater efficiency, especially through the use of water power that drove the grinding machines, used for polishing and faceting. In the political sphere Venice was retreating as a world power. The Peace of Passarovitz (1718) caused Venice to lose her possessions in the Eastern Mediterranean and eventually cut off the city's trade routes with Ethiopia, North Africa and the Red Sea. (12: 188) This loss, along with competition from Bohemia, cut Venice's industry, and it was during this period that the many European centers we have already mentioned induced Venetian glass makers to set up shop. Toward the end of the century Venice lost even more than her Mediterranean possessions, when Napoleon took the city and handed it to the Austrian Empire in exchange for Venetian - controlled Aegean islands and the fleet. The census of 1787 - 97 showed a noticeable drop in the population of glass bead makers. (12: 194) The Peace of Campo Formio marked Napoleon's destruction of the Venetian Republic in 1797.

The 18th century was largely a time of retreat for the Venetian glass industry, but it did not die. New life was breathed into the fabrication of beads due to the foresight, dedication and sometimes just plain luck of the glass makers. All through the 19th century the industry was made more powerful and productive by the introduction of machines that eventually took over most of the laborious steps of bead manufacturing.

The first and most important of the new machines was invented in 1817 by Luigi Pusinich. It was the rotary drum used for polishing the cut pieces of glass tube we have already described. Before the introduction of the drum each bead piece had to be finished off by hand, and this was the most laborious step in the whole process of bead making. The drum was further refined in 1864 by Antonio Frigo. (12: 198)

Other inventions followed the introduction of the drum. Captain Longo made an automatic cutting machine, replacing the *zocco*, in 1822, but it was not widely used for practical reasons until further improvements were made by Carlo Romiti in 1867. (12: 198, fnt. 48) In the same year as the improved cutting machine, an apparatus for mechanically sorting the beads was produced by Giuseppi Zecchin and Austino Ceresa. (12: 198) In 1843 Dominico Bussolin patented a gas lamp for use in making lamp beads. (12: 195) Each of these machines improved the long process of making beads and Venice was able to compete again against the rather technically minded Bohemians.

New machines were not the only things invented in the Venetian bead industry during this time. There were also numerous advances in making new types of beads. Of the new beads none is more famous than a process which was apparently discovered by accident. Aventurine or goldstone is first recorded in 1788 by Don Matteo Fanello who related the story of the wonderful glass made by Alvise Miotti, a scion of one of Venice's most important glass making families. (35: 47) Aventurine is a glass with innumerable tiny copper bits suspended in it so as to present a golden sheen. The very name aventurine suggests that the process was

discovered by chance ("per avventura" is Italian for "by accident".) The glass was to become exceedingly popular, especially in Murano, for goldstone was a cheaper and longer - lasting substitute for real gold. Though discovered at the end of the 18th century and used for beads from that time, it was not mass produced for another hundred years, until about 1875. (26: 57) The secret process of making aventurine was jealously guarded in Murano, but it soon either leaked out or was duplicated by experiment; by the end of the 19th century it was being produced in Bohemia (33: 16), Japan (2: 206) and presumably China (Chinese aventurine bangles in Jablonec Museum, cat. no. BS 657).

Giobatta Franchini was particularly inventive as a bead maker, producing a crystal covering for lamp beads in 1822, imitation coral in 1826 and foil beads in 1827. (12: 194) The latter beads were covered in gold or silver foil and then slightly reheated so as to allow the clear glass of the bead to run and cover the foil. In 1830 Sig. Peruzzi of the Mezzanotte firm learned to draw out glass into fine filaments which were used to decorate lamp beads, especially those made by Carlo Olivi, Peruzzi's pupil, who was active with this work between 1833 and 1840. (12: 195) Giovanni Giacomuzzi, a widely regarded artist in his day, created yellow - gold glass in 1866 and golden mother - of - pearl in 1867. (12: 194)

The better production methods and the more interesting types of beads being made paved the way for a general revival of the Muranese industry. In the years between 1861 and 1871 Venice exported an average of 20,000 pounds of beads each day! (8: 460) Exports included especially ruby glass for Izmir, Turkey, green glass to Constantinople, amber and agate imitations to Alexandria and Aleppo, and dark blue beads and aventurine to Spain and Portugal, destined for their colonies, as well as all kinds of beads sent to Romania and Germany. (6: 49)

Despite the revival, the industry was in for another severe setback. In 1866 Venice was joined to a newly united Italy and emphasis on glass making fell as the new nation looked to other industries as being more vital. 1866 was also an important year for Venice's chief rival, Bohemia, for in that year Gablonz (modern Jablonec, Czechoslovakia), center of the Bohemian bead industry, was incorporated as a city and linked to the world by a railroad. (See World of Beads Series 2: *The Czech Bead Story*) The Venetian industry declined sharply. In 1867 there were 42 glass makers in Murano; two years later the number was reduced to 20, only seven of whom were making beads. This figure does not include the 100 or so small firms making lamp beads, but most of them only employed a very few people. (37: 32) The industry was disunited and unable to compete successfully with the Bohemians. It was in this period following the unification of Italy that Bohemian bead production successfully outstripped Venetian.

At its low point much of Murano's bead industry was united into a single large firm, the Societa Veneziana per l'Industria della Conterie, in 1898 under the leadership of Luciano Barbon. (12: 201) The Conterie, as it is called, was able to compete with more success than had the smaller firms against the Bohemians, and today survives as the major force in the Venetian industry.

The present century has seen dramatic changes in the lives of all of us, and those in the bead industries have not been exempt. The bead makers of Venice had been hurt by each of the three great crises of the 20th century-- the two world wars and the depression--but their Bohemian rivals were similarly injured, and on balance the Venetians have done well for themselves. Except for the lamp beads, which must still be done by hand, the industry today is nearly all mechanized, but the pressures of time and wages on skill has meant a falling off of quality of any hand-made products. Old markets have disappeared. Italy lost her own colonies (Eritrea was the fifth largest importer in 1938) and former colonies have revitalized their own bead industries, as, for example, India, which was the largest importer in 1938. (18: 161) But new markets can open up; in 1938 the U.S. and Canada bought less than 700 metric tons of beads from Italy, by 1954 they imported 38,000 tons. In the same period exports to Britain were up 9 - fold, to Belgium up 18 - fold and to Australia up 45 - fold. (18: 161) Total exports had more than doubled from 42,830 tons to 88,553.

The Beads of Venice

As has already been noted, Venetian beads are difficult to date and classify because of their long period of production, their great variety and especially the scanty records. Until more work is done, including investigations in Murano itself, all that can be offered at this point is an outline of beads and some probable dates for them.

Drawn Beads

The Venetians began making drawn beads about 1490 and continue to make them today. As many of these beads are simple monochromes, a number of types being produced at present do not differ markedly from those made 500 years ago. Of the simple styles, only the very tiny (less than 1 mm. in diameter) seed bead, often called a "micro bead" in the U.S., is no longer being produced, its production having ceased toward the beginning of this century.

Drawn beads can be most easily decorated by laying rods of glass along the original gathering from the furnace and stretching the rods out when the glass tubes are being pulled. We do not know when striped drawn beads were first produced, but they turn up at Amerindian sites as early as 1550 (8: 5-6) and are found in quantity in the U.S. and Africa from that date onward. (7: 178; 9: 30:7 - 13) Many of these striped canes have different colored glasses for the core and the coating of the bead, and many of them have more than one color of stripe. A twist given to the cane while it is being drawn will result in a spiral stripe on the finished bead. Unfortunately, there is of yet too little work that has been done on these beads to even attempt to fit them into a chronology. (Pt. I: 2)

PATERNOSTERS: The Paternoster beads, which are described as drawn beads that are individually decorated and finished, appear to be a rather rare group of Venetian products. Very few beads meeting this description are found in archaeological contexts or on the open market. They would seem easily spotted from their description. (Pt I: 1: 1) However, it appears likely that Paternoster work got crowded out by the demands for faster speed imposed by drawn beads and the hand decoration available from lamp beads, and thus it is likely that it comprises a very small segment of total Venetian output.

MULTI-LAYERED BEADS: The most common form of Venetian multi-layered beads are known by the trade name of "cornaline d'Allepò" (Allepò carnelians.) These are beads with red exteriors and different colored cores. The earliest of these to appear in the U.S. are the "straw" beads with dark green (appearing black) centers and a thin clear glass layer over the red. These are found in 17th century Indian sites. (16: 121) It is possible, of course, that they and other forms of Allepos were made before this date. (Pt I: 3: 1)

In the 18th century the Allepos were continued with the green centers, but were no longer made as thin tubes, but tumbled into more oblate forms, some of which were small seed bead sizes of 1 mm. or so in diameter. (16: 121 - 2) By the beginning of the 19th century white had replaced the green for cores, and Allepos were made in a large variety of styles, including large cylinders and forms with eye or other decoration on the surface. (16: 122 - 3; 5: 19 - 21) Occasionally yellow or other centers are found. (28: 100) Eye forms of Allepos were still being made as late as 1939 (dated sample card seen in Scarpa collection, Venice) and the beads are still being produced today. (Pt I: 3: 2 - 11)

Another favorite multi - layered bead was made in hexagonal tube form with light blue over white, though occasionally other colors were employed. The corners of the short cylinders cut from the tubes were ground off to produce facets. These beads were called "Russian blues" when used in the North American fur trade, and in East Africa were known as "Ambassador" beads. (34: 85) Their period of greatest use is around the middle of the 19th century, though when they were first made is not known. (19: 33) They were imitated at about the same time by the Bohemians. (Pt I: 4: 1 - 3)

The most famous of all Venetian beads are the chevrons or rosettas. These beads have several layers, each of which is corrugated to produce a star pattern on the end and often results in stripes on the outside. These beads are quite difficult to make and rather early were produced in a cheaper form to meet demand. The oldest and rarest of chevrons have seven layers of glass, generally a translucent green, white, another translucent green, white, red, white and blue, from the perforation out. These chevrons were faceted by hand on the ends to reveal the characteristic chevron patterns when strung. Chevrons were popular the world over, and in order to satisfy demand were made in a simpler version with only four

or five layers from about 1580. (32: 15 - 17) No one knows when the early seven-layered rosettas were first produced, but from 1580 they are found only with white cores and are rarely faceted, but instead tumbled to reveal the ends. A later development, perhaps of the last century, is to make these beads in various combinations of colors and to leave them disc shaped. These were popular in Africa, but almost never found in Amerindian sites. (Pt I: 4: 4 - 11)

Lamp Beads

Since lamp beads are made and decorated by hand they have not nearly the limited designs that are imposed upon the drawn beads. Lamp beads were apparently first made around 1615 and their variety and individuality has made them favorites with many people.

MILLEFIORIES: The best-known of the hand made beads of Murano are the Millefiores ("a thousand flowers" in Italian) so-called because the black or cobalt blue cores are decorated all over with small plaques which are cross-sections of complex pictorial canes. Millefiores have been traded especially to West Africa for a very long time, but no one knows for sure just when the trade began. Older and scarcer millefiores can be found in oval and tabular shapes, but most of them are cylinders or discs. Over the years the quality of canes and of hand-work have deteriorated and older beads are generally better made than newer ones and have less garish colors. There are no specific clues for the dating of the many patterns of these beads and only further research will help. Millefiores with much less charm than the old ones are still being produced in Murano today. (Pt I: 5 - 6)

EYE BEADS: The most common style for eye beads is a black matrix with white spots containing blue, green or pink centers. Venetian eye beads have, however, been made in a great variety of colors. Though found as early as the 17th century (23: 308 - 9) with plain white spots, and could still be made today due to their simplicity, the vast majority of the Muranese eye beads date from the 19th century. (23: 308 - 9; 27: 52; 31: 37) (Pt II: 1)

FLORAL SPRAYS: "Arabesque" is an alternate term used to describe polychrome beads made by spacing dots of colors on the surface and drawing a stick through the dots, causing them to connect and form a spray pattern. These can be found as early as the 17th century (23: 308-9) in Africa, but most were probably made in the 19th century. These, like many Venetian polychromes, were not especially popular among American Indians, the exception being in the northwest. (11: 1-2; 28: 102-3) There is a great variety in these polychrome beads, which can take on many floral and geometric patterns. Today only hastily made poor copies are being produced, due to the pressure of economics and the dying of traditional skills. (Pt II: 3)

COMBING: The process of combing is done when a stick or rod is trailed along still hot applied decoration on the surface of the bead so that the added lines run into each other. The Arabesques described above are decorated in this way, but the combed beads are generally ellipsoid in shape and have feather patterns on their surfaces, due to many spiral lines being drawn together. Combed beads were made up until 1939 (sample card, Scarpa collection) but are no longer being produced. They appear to have been most popular around the end of the last century. (Pt II: 5: 1 - 5)

Another bead made by drawing a rod over an applied decoration has been named a "squiggle" by some American collectors. These beads are usually small, translucent oblates that have a leaf pattern around their middles caused by the drawing of several tiny circles applied to the surface. From all appearances they were products of the 19th century. (21: 38; 22:4-8; 27: 52) (Pt II:5: 7-10)

Many other polychrome decorations have been applied to lamp beads. Most of these decorations originate in the production of special canes. Canes with two or more colors can be twisted to form candy stripe effects. Twisted lattice glass embedded in clear cane will produce chains on the surface of a bead. Bi-colored canes can form little rosses when applied end-on with an added twist; the possibilities are endless. (Pt II: 6)

GOLD COATING: The decoration of beads with gold was considered very desirable. In the early days gold foil was added to the surface of the beads, but it often wore off quickly and was not entirely satisfactory. (Pt II: 7: 1) In 1827 a technique was developed whereby a gold foil (or foil of other metal) could be secured by the slight running of the surface of the glass over the foil. Aventurine was invented in the late 18th century and beads with this decoration appeared early, though the mass-producing of the special glass did not begin until about 1875. Beads can be made whole from aventurine (goldstone), but it was more common to decorate lamp beads from canes made of the material. (Pt II: 7: 2-6)

PRESSED BEADS: A number of beads, presumably produced in Venice in the 18th century, were made of translucent glass and pressed into special shapes. These beads include the so-called "mulberries" with many exterior bumps, "twisted cubes" with crude facets, and "cable beads" with thick spiral lines along the surface. The twisted cubes and mulberries are types of beads that were produced in Holland in the 17th century. (34: 108-111; 35) However, most of the beads of both of these types date from the 18th century, and Dutch bead factories appear not to have been in operation at that time. Therefore, it would seem that most of the twisted cubes and mulberries are Venetian in origin, (18: 106; 27: 52), though at least one mulberry has been reported from as early as the late 16th century. (8: 7) As for the cable beads, they are much rarer (4: 10) but probably are also from the 18th century. (23: 308 - 9) (Pt II: 8)

Another group of beads made at the beginning of the 20th century share some characteristics with those just described of the 18th century. That is, they, too, are made of translucent glass and are distinguished by their shapes. These beads, however, are all related to one another in that they were made to fit the Art Nouveau fashion, called "Liberty" in Italy, after the London store. These beads, of coiled glass, drop shapes and sensuous bicones were made in attractive pastel glass shades. (pers. comm. Francesca Scarpa) (Pt II: 9)

The foregoing is by no means an exhaustive list of Venetian beads. It is, rather, a sampling of the types that have been made over the last several centuries.

The Identification of Venetian Products

Since nearly all modern glass beads are either Italian or Czech in origin the identification of one or the other producer is an important task for the student of beads. Fortunately, the task is made relatively simple by the differing emphasis each center puts on the manufacturing of beads. Venetian beads are nearly all made by one of two methods: drawn beads or wound lamp beads. Drawn beads come in a much smaller variety of form and decoration. Forms are restricted to tubes, twisted tubes, discs and near-oblates. Decoration consists of multiple layers or longitudinal stripes. Lamp beads, on the other hand, are made in a great variety of shapes and an even larger number of designs.

The difference between a bead that has been drawn or one that has been wound can usually be told by careful examination, especially with the help of a glass. If the bead is made of translucent glass, tiny trapped air bubbles can usually be seen. If the bubbles are elongated and/or lie parallel to the perforation, the bead has been drawn. If the bubbles encircle the perforation and have spherical shapes, the bead is a wound type. Wound beads can often be distinguished by wind marks, trails of the glass, especially around the perforation opening. This is true even though an attempt is usually made to reheat the bead and eliminate these marks.

The drawn or wound beads of Venice stand out in contrast to the beads of Bohemia - Czechoslovakia. There beads are usually pressed or made by one of several other special process developed in that center.

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Color Plate 2

PLATE II - LAMP BEADS

- Row 1: **Eye beads** of various colors.
- Row 2: Fancy eye beads, some with lines.
- Row 3: Arabesque or floral sprays of various types.
- Row 4: Various floral designs.
- Row 5: 1-5) Combed beads. 6) Another combed type. 7-10) Squiggles.
- Row 6: Various cane decorations: candy stripes, chains and roses.
- Row 7: 1) Bead decorated with gold foil. 2-6) Various aventurine decorations.
- Row 8: Special shapes of the 18th century: 1-4) Twisted cubes. 5-7) Mulberries 8) Cable bead.
- Row 9: Special shapes for the Art Nouveau period.

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