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"An Appreciation Of Roman Applied Glassware

from 1st to 4th Century AD"

by

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INTRODUCTION



Introduction

In the last three years whilst studying as a glass-blower, one cannot help but ponder on the history and the development of this wondrous material. Something I often thought about was how this exciting and indeed precarious art form firstly came about many centuries ago. Who in their rightful state of sanity began working with a molten material, falling short of two thousand degrees Celsius, especially in the intimate manner we know is necessary, what were the initial steps, how did they develop and what indeed did they produce? These are just a few of the questions that I intend to answer within this thesis.

For me, at such an early stage of development within the world of glass, I feel I have the added advantage to truly appreciating the achievements of these master craftsmen and artisans of times gone by. By this, I mean that I actually have had the experience of attempting to gather a gob of molten glass on a blowing iron, blow a bubble into it and further attempt to fashion it into a desired form. For an experienced glassmaker this is a fairly easy task. This is what I thought until I firstly tried it for myself. From this experience I never looked at glass in the same manner again. This was the beginnings of my interest in glass and in particular glass of the ancient Roman era.

Man has now been making glass for over fifty centuries, and still, to the present day new discoveries are being made. Credit although must be given to the artists that preceded 1600BC for developing the initial forms of glass production. Personally, I have the greatest admiration for the inventors of the 'free-blowing' technique.



Developed in 50BC this technique was to change the face of glass for all time, opening new doors and creating new horizons for the malleability of the substance.

Within one hundred years it had become a highly developed art form and had spread into all of the Mediterranean centres. Considering how conservative and resistant to change the old civilisations were, it is remarkable that the possibilities of glass-blowing should have been so quickly exploited and used in such a way as to develop the new shapes styles that this technique permitted.

As the legions of Rome spread through-out Europe and the Roman way of life was introduced, so too was glass-blowing. It was not long before the conquered countries adopted Roman tastes for such things as table and storage-wares. Domestic markets were created around districts where glass furnaces were built, resulting in the immense exploitation of glass across the Roman empire and indeed the world. Production was increased to such an extent that glass no longer was considered the luxury it had been previously. Due to its popularity it not only filed the more mundane use as containers for oils and unguents, glass also became a means of displaying and transmitting important political messages throughout the entire empire.

In my thesis I will give an account of the development of glass-making. Moving through the initial techniques that were employed until free-blowing came about. My concentration by chapter three will be on the various forms of "free-blown applied glassware" where my greatest interest and appreciation lies.

Chapter one begins by looking at how the actual medium of glass is thought to have come about, then moving on to the first manufacturing techniques of vessels. There is an analysis of the period between the first to fourth centuries AD. with attention directed to glassblowing. References are made towards social aspects



occurring within the Roman Empire at particular notable dates and their impact, if any, towards the developing glass industry of that time.

In chapter two I investigate various theories that were put forward by the archaeologists and scholars known as Eisen, Schuler, Harden and Avigad. With particular reference to the discoveries by Avigad and a report written by Yael Israelis. I have included here a brief description on how and why I believe his discovery provides the most concise description on how glass was thought to have initially been inflated.

The actual method of free-blowing glass is contained within chapter three. Along with diagrams and relative information I have attempted to give an understanding to the reader of the technique mentioned. Included is a description of the decorative techniques that were employed by the Roman glassmakers for use on their vessels.

Chapter four finishes with a study of particular chosen pieces of applied Roman glassware. The pieces mentioned are a bottle known as the "Masterpiece", a flask and a selected pair of glass jugs. These particular pieces have been chosen because of the range of applied decoration they possess and the various working methods that were employed in order to achieve them. They give a scope of what style of work was produced within the first to fourth centuries AD. This chapter is aimed towards pin-pointing and stressing why I appreciate the glass described, through the exciting techniques used and the immense beauty of the resulting vessels.

My aim in writing this piece is not only to inform the reader of this era within glass development but to also create an appreciation of a subject that little or no thought is directed towards by people outside, or indeed inside of the glass world itself. In my conclusion I have basically summed up the information that I gained



throughout my research. By reading this I hope it will change the way people look at glass and actually appreciate where it came from and indeed, its creators.



CHAPTER ONE



Chapter One

A legend written as late as the seventh century AD in the writings of "Pliny the elder" supposedly gives a suitable explanation for the discovery of this elemental, yet truly wondrous material:

This was its origin: In a part of Syria which is called Phoenicia, there is a swamp close to Judaea, around the base of mount Carmel, from which the river Bellus arises...whose sands are purified from contamination by the torrents flow. The story is that here a ship of natron (sodium carbonate) merchants had been ship wrecked; when they were scattered about the shore preparing food and no stones were at hand for propping up their pots, they brought lumps of natron from the ship. The sand from the shore became mixed with the burning natron and translucent streams of a new liquid flowed fourth: and this was the origin of glass. (IBID. 191.)

It is not surprising that ancient authorities thought of Phoenicia as the birth place of glass, for the Syro-Palestine region did indeed become a major centre of glass production in antiquity, along with Egypt. However, glass seems to have been discovered not in Phoenicia but in Mesopotamia (plate 1). Archaeological research now places the first evidence of true glass there at around 2500BC. At first it was used for beads, seals and architectural decoration. Some 1000 years elapsed before glass vessels are known to have been produced. Vessels of glass quickly became widespread in the second half of the millennium BC. They were popular not only in Mesopotamia but also in Egypt and the Aegean.

Coreforming

The earliest vessels were achieved using a method called "core-forming" in about 1660BC. In this method a core consisting of sand, clay mud and other organic materials was formed into the required shape around a metal rod. This was then dipped





Plate 1: Map showing Roman Territorial Expansion and Mesopotamia where glass

was first discovered.



into molten glass which was wound around the core until the entire surface was covered. It then would be rolled, or marvered ,(that is, rolled on a smooth, flat surface to produce a level finish) decorated on the outer surface with different coloured spiral threads and marvered again. The rims, handles and bases were added and, finally the metal rod was removed and the core scraped out (plate 2). This technique required considerably more skill than had previously been necessary and it established glassmaking as a respected and valuable craft. The core-forming technique, which was to dominate glassmaking up until the Hellenistic Age, most likely originated in Mesopotamia. Examples have been found in the ancient sites of Assur, Niniveh and Nuzi.

After 1200BC glass production in the near east fell into decline. This decrease in productive creativity reflected the general state of chaos following the fall of the great Mesopotamian cities and the decline of Egyptian prosperity at the end of the new kingdom. However by 900BC glass production re-emerged with a new strength and vigour that continued for the next four hundred years gradually spreading into the Mediterranean regions.

Moulding

Somewhat later, the moulding technique was developed, whereby glass chips or molten glass were packed or forced into a mould and then fused. After a moulded vessel was annealed (cooled slowly in a special chamber of the glass furnace) it was often ground and polished in order to refine the rim and any other rough edges. One typical shape for moulded vessels of the late Hellenistic and early Roman periods





Plate 2: Coreforming Technique

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(150BC - 50BC) was the so-called pillar moulded bowl (plate 3). Here exterior ribs radiate up from the base stopping abruptly near the rim to allow a smooth margin around the circumference. This type is ubiquitous; and it attends to the free and rapid exchange of ideas in glass-making throughout the greater Mediterranean sphere. Fragmentary examples in the collections of the Kelsey museum range from Selecuia to Karanis to Puteole. The site of Tel Angle in Israel provided crucial information on the chronological limits of these bowls within the Roman period.

Approximately at Around 50BC a revolutionary development occurred in the history of glassmaking - the invention of "glass blowing". The exact location of the invention of glass blowing still remains obscure. Indeed, it could have been made simultaneously at several centres along the Syro-Palestine coast, one of the oldest glass producing regions of the world. There must have been a period of experimentation before glass blowing became understood and accepted by glass workers, but within twenty or thirty years of its invention, all the requisite tools and techniques for the new process had been developed. For the most part they have remained unaltered to the present day.

In 27BC, Octavian, at the age of thirty-six, became the emperor Caesar Augustus. He built up Rome to become a worthily centre for an empire that now extended across the entire Mediterranean and northward into central and Western Europe. The newly established peace and lack of frontiers enabled the movement of peoples across the empire, and the merging of people, their products and their technical skills resulted in a common culture. It also promoted the rapid development of manufacturing and commerce on a large scale as well as a great demand for luxury






goods. In particular the glass industry was transformed with important glassworks being established in Rome and elsewhere in Roman-Italy.

During the second century AD, the Roman empire reached its Zenith under the emperors Trojan, Hadrain and Marcus Aureleus. Materiel prosperity ensured the uninterrupted expansion of manufacturing and trade. Prevailing glass fashions of the late first century continued into the second and glass became ever more widely available to all levels of society. Ordinary everyday domestic table and storage wares were for the most part made in plain, undecorated glass, and a whole range of shapes was produced. Gradually new types of mould-blown vessels were introduced as well as new types of decoration on free blown glass.

By the third century AD Rome entered into an era of great political instability due to the establishment of several independent kingdoms within its empire. The glass produced, still mostly tableware's, displayed more regional variations. At the end of this period, stability was restored by Diocletion and maintained by Constantine the great and his sons before the empire finally divided. The major centres of glass production survived but the standard shapes, decoration and colours employed changed. Thinly blown table and storage wares in pale shades of yellow, green, olive and brown predominated. Finer luxury wares were also produced, including gold glass and intricate cage cups.



Developments Within The Glass Industry: First - Fourth Centuries AD.

Under the immediate successors of Augustus, the Roman industry flourished as never before. The trends of the previous decades continued, but glass blowing soon replaced the more laborious and costly casting and heat forming techniques. Mosaic production, in particular, had declined and probably all but ceased by the second quarter of the first century AD. Although cast monochrome vessels continued to be made they too were largely displaced by the mid-century by blown glass. The single important technical advance was the invention of mould blowing, a phenomenon that occurred around AD25 and led directly to the production of light coloured cups and beakers, some decorated with Greek and Latin drinking slogans, others with their makers names, and still others displaying lively scenes from the Roman race track and amphitheatre. In respect to colour, the fashion for polychromy or even garnish translucent and opaque hues waned steadily as naturally coloured bluish-green and light green glass captured the market for utilitarian table and storagewares, while fine colourless glass became prized for better quality vessels.

Colours

The colours of ancient glass depended both on the chemical composition of the batch and on the manufacturing process, in particular the oxidation or reduction state of the furnace and of the glass while hot. Most vessels fall into one of three main categories: naturally coloured, colourless (decolourized) or intentionally coloured. The bluish green, light green or greenish yellow colour of most ancient pieces is due to iron oxides and other impurities being present in the ingredients of the batch. Roman cinerary urns are typical examples of naturally coloured vessels (plate 4), while the shades of cast Hellenistic bowls, progressing from a distinct golden brown to dark







olive or greenish yellow, is the result of the oxidation or reduction conditions of the glass prior to and during manufacture. The addition of manganese or antimony neutralised the effects of the iron impurities, resulting in a clear colourless glass. Since such glass closely resembled rock crystal, a commodity, prized by most ancient cultures, colourless vessels with faceted and cut designs were especially popular throughout antiquity.

Among blown decorated wares of the first half of the first century the most popular were simple cups with bands of deeply cut grooves, 'splashed' vessels adorned with applied blobs of multicoloured glass, and vessels painted with floral and animal scenes. Undecorated glass often comprised of entire table settings such as a group of matched plates, bowls and cups recovered from the ruins of a shop destroyed in about 40AD at Cosa in Italy. Blown table wares similar to these were made throughout the empire from the first century until the end of the Roman epoch, with minimal stylistic change. Quite often glass supplemented ceramic and metal vessels whose shape and functions it copied.

In the second half of the first century, under the Flavian emperors, the finer grades of glass were all intentionally decolourized. Not only did colourless glass introduce the average Roman to the novelty of transparency, but it enabled the glass cutters to exploit the unique optical properties of glass by faceting and engraving the surfaces of vessels. Shortly after 50AD faceted beakers and bottles began to appear in the markets of Italy and the western provinces, and at the same time other factories introduced large circular and oval plates, dishes and small bowls, which were cast in colourless glass and polished. Such vessels had unusually broad rims with overhanging edges and were set on high base rings.



The most common mould blown wares of the first century were light coloured drinking vessels. These include cups, small bowls and conical beakers, which can be divided into half a dozen distinctive types forming allied groups. They first appeared in 25AD both in Italy and the Syro-Palestinian region, and continued to be produced until the end of the century or shortly afterwards, when the manufacture of figural mould-blown products declined significantly. By AD.40 artisans experimenting with various mould blowing methods had invented the Roman 'prismatic bottle' (plate 5), which stands as the procurer of all subsequent glass bottles. These utilitarian bottles, usually of bluish green or light green glass, proved highly successful because they were a more effective way of storing quantities of liquid than the traditional ceramic containers. They also fully exploited the qualities of blown glass, unlike other materials, it was impervious to oil and liquids, and could be easily cleaned and reused. Above all it was transparent permitting the owner to inspect the bottle's contents - this advantage made glass eminently suitable for the storage, preservation, display and merchandising of all kinds of commodities.

During the second and third centuries the Roman Empire experienced dramatic alterations both politically and economically. At first, under the inspired leadership of such energetic rulers as Trojan, Hadrian and Marcus Aurelius, the empire achieved its greatest territorial growth and material prosperity. Stability fostered a brilliant civic life in Italy and throughout the provinces, while security ensured the uninterrupted expansion of manufacturing and trade. By contrast, the second half of this period witnessed a dramatic reversal of fortunes as interminable civil wars, foreign invasions, and a succession of over thirty, mostly ineffectual, emperors in a period of fifty years







led to almost total anarchy and the complete collapse of the state. For much of the third century, in fact, independent kingdoms were established in various sections of the Roman world. Precisely how these external factors affected the glass industry is now difficult to judge. From archaeological records however, it is evident that the fashions established late in the first century continued uninterrupted in succeeding decades. Most of the blown and mould-blown styles devised under the Flavians permitted well into the second century. On the other hand, the novelty of owning glass had disappeared as glassware now became affordable to all, and the proportion of handsomely decorated wares of the period seems to have declined substantially in relation to the vast quantity of ordinary, unembellished table and storagewares.

Although there was continuity in glass types throughout the first half of the second century, new forms of decorated vessels began to emerge at this time. Imperial glassmakers introduced a lively group of distinctive mould blown head flasks (plate 6), which were flasks with the bowl in the form of a human head and a neck rising from its centre. Some of these represented images of the gods, others depicted Negroes or grotesques. More common was a varied array of fans, jugs, bottles and sprinkler-flasks blown into patterned moulds with imparted intricate geometric designs. Many of these objects were further inflated once the vessel was removed from the mould. Such vessels have been found everywhere within the Roman World, but are especially numerous in the Eastern Mediterranean.

Two new decorative styles of free-blown glass emerged in the second century, both at approximately the same time in the eastern and western parts of the empire, thereby confirming the continuing interdependency of glass-makers throughout the Roman World. Factories at Cologne and elsewhere in the West, and others operating







in the near east, all choose to adorn colourless or lightly coloured vessels with applied glass threads or coils, loosely resembling birds, flowers, or more frequently, snakes or serpents. These so called 'snake thread' wares made some use of opaque white, yellow and blue threads, but more frequently employed colourless threads on a vessel. Shapes were often highly unorthodox and include saucepans and tall goblets; and many had flared base-rings with pronounced beaded stems.

In the final decades of the third century the Roman state was rescued from disaster by the strong-willed leadership of Diocletian and then by that of Constantine the Great and his immediate heirs. For about a hundred years the devastation wrought by internal rebellion and external attack was stemmed and relative stability was again restored to the empire and its government. These successes, however, did not signal a return to the social and economic conditions prevalent in earlier generations, but instead reflected a gradual yet thorough transformation of the Roman Society. Not only did late imperial political institutions undergo fundamental change, but so too did the sociological climate of the empire. Nothing reflects this situation better than the acceptance of Christianity as the principal religion of the Romans. Even the official capital of the state was transferred from Rome to Constantinople - Constantine's newly founded metropolis. As would be expected, the Arts and crafts of the fourth century also experienced tremendous change, and for glass and glass making a new age was inaugurate. Although the major centres of production survived the political and economic turmoil of the third century and continued to manufacture glass in abundance there was a dramatic shift away from the decorative styles, basic shapes and preferred colours of the early empire. Among the new shapes to appear at this time were small, stemmed cups and hanging glass lamps, both hallmarks of this and succeeding



centuries. The same is true of an assortment of tall flasks, fans and jugs with exceedingly long necks and pronounced funnel or bowl-shaped rims. Decoration on these household items was rare and usually limited to spiralling threads or random blobs, either in the same colour as the vessel or in contrasting royal-blue or turquoiseblue glass. Domestic wares such as these are well documented from sites in Italy, North Africa and the eastern Mediterranean demonstrating that important trends still widely disseminated in and around the Mediterranean Basin. Farther north, in central and western Europe, the absence of these styles partends the increasing isolation of that region from the ancient world. Despite the marked international flavour of ordinary glass in the fourth century, there also emerged disparate regional styles of design and ornamentation, and the finer, decorated wares offer concrete evidence that some workshops were manufacturing articles of extraordinary quality and beauty. Several factories of the late empire were responsible for some of the most sophisticated examples of the ancient glass-maker's art.

Without doubt the most spectacular masterpieces of this age are a series of vessels, mostly deep bowls, called 'cage-cups' or 'diatreta' (plate 7). Although they are often associated with the factories of Roman Germany, their respected mention in the 'Corpus furis Civilis' (the great sixth century compendium of Roman civil law), suggests that they may well have been made in several places. The technique of making them called for the casting or blowing of a thick walled blank, usually in colourless glass or bands of several colours. The blanks are then laboriously cut away to create







on open work pattern attached to a background wall with the minimum number of bridges. Most cage-cups such as those found in and around Cologne, have a network of interlocking circles around the body and a Greek or Latin inscription at the rim. Others, more brilliantly conceived, display deeply figural scenes such as the legend of Lycurgus, the ill-fated King of Thracian Elone who was strangled by vines after taunting the God Dionysius and his followers. The use of a dichoric glass in this particular diatretum only enhances the almost magical skill implicit in the cutting. Both in conception and execution, this cutting marks the apogee of glass making in the ancient world.



CHAPTER TWO



Chapter Two

The Invention of Glass Blowing

As the information available is still quite fragmentary on the subject of the beginning of free blowing shcolars are often forced to rely on conjecture. The basic questions of how, when and where have not yet been fully answered though it is generally agreed that glass-blowing began around the middle of the first century BC somewhere in the eastern littoral of the Mediterranean.

On looking at the evolution of the blowing technique, I found it was advisable to investigate it following these two basic routes:

- i. How man became aware of the wondrous property in glass that makes blowing possible.
- ii. How man originally applied this newly acquired knowledge while working with the material.

Discoveries that took place in the areas such as that of glass blowing, more than likely were the results, as was previously mentioned, of continuous experimentation. Although we cannot come up with definite right and wrong answers, Scholars such as Gustavus Eisen, Frederick Schuler, Professor Nahaman Avigad and Dr Donald Harden all came up with basic theories due to various excavation finds. The most convincing I found was that of Professor Nahman Avigad.

Eisen based his theories on observations of banded glass vessels which 'were not given their pattern after they had been shaped, but before the body had been blown'. Certain vessels he suggested were made by blowing out a bead or tube intended for a bead after the farther end of the tube had been closed and he assumed



that 'the discovery of glass-blowing was the result of the effort of the artisan to make flasks out of the same kind of mosaic glass from which he made his beads.

Schuler described the technique of glass blowing in relation to banded and ribbon-glass. He commented that the nose of the iron can be sealed to an already-shaped vessel (probably made in ancient times by moulding or fusing) in such a way that when the seal is complete a hollow vessel is formed. With some reheating this vessel is ready for further inflation? It can be seen that Eisen's and Schuler's theories are similar, namely the blowing of ribbon glass, free blowing and mould blowing.

Harden considered that the first technique in blowing glass was mould-blowing. His opinion was that it was a natural development from the method of casting bowls in moulds which was a leading technique used in the Hellenistic period in the century preceding the discovery of blowing.

In 1971, Professor Nahman Avigad shed additional light on the subject. After an excavation in the Jewish Quarter of Jerusalem's old city he concluded that the earliest glass-blowing was done using glass tubes. These were perhaps the very first stages of experimentation in blowing, followed later by the introduction of the blow pipe. The following will describe briefly Avigad's excavation finds and the conclusions that were made from them. I find Avigad's suggestions provided the most convincing and explanatory results on the questions today regarding the developments of the glass-blowing technique we are familiar with.

Among the various remains that were discovered, the most significant artefacts were glass rods of various thicknesses and lengths, most of them round in section and



in different stages of formation. Also fragments of glass tubes, particularly blown bulbs and parts of unfinished vessels (plate 8). These remains enable us to reconstruct the manner in which glass was blown before the introduction of a blowing iron or a pontil iron. The following is based upon an investigation written by Yael Israeli of the find by Professor Nahman Avigad. It will concentrate on the glass tubes and the other remains of blowing which is of importance for this particular piece of writing:-

Here is a possible reconstruction of how, step by step, small glass bottles were blown. It was deduced from the character of pieces that seem to have been thrown out by the glass markers due to small defects etc. These clearly can be separated into groups based upon shape which, therefore, must be interpreted as resulting from a certain procedure rather than from merely accidental occurrences. To sum up the main stages of production according to Yael Israeli I have listed them as follows:-

- i. The tube was made by folding a flat piece of glass then it was drawn and had its rough edges trimmed. If a polychrome vessel was being prepared trails of glass of contrasting colours were attached to the tube lengthways.
- ii. One end of the tube was closed and after additional heating was inflated.

The rim was then shaped by spreading out the end of the neck

iii. The inflated bulb was cut off the tube, leaving the desired length of the bottle neck.

Judging by the writings made by Yael Israeli on the excavation in Jerusalem, I agree that indeed glass tube blowing set the way for future metal blowing irons within the glass industry. It is at this stage the artisan became aware of the inflation property molten glass possessed.







CHAPTER THREE


Chapter Three

The Method of Free Blowing a Glass Vessel

Since glass blowing originated, it should be noted in principle at least that the manner in which a piece is blown and finished has never really been altered to the present day. The method used, although it demands great skill is, in essence, quite simple.

The worker first gathers from a pot in the furnace a gob of molten glass on an iron tube about 3-5ft. long called a 'blowpipe'. After slightly inflating the gob, he manipulates it into the shape he wishes by swinging it, rolling or 'marvering' it on a flat surface, or shaping it with tools in a mould. The gob is then blown and tooled if necessary, into the final shape of the vessel, after which it must be removed from the blowpipe so that its neck and rim can be finished by further tooling. For this purpose a solid iron rod about 2.5-3.5ft long, called the pontil of the punty, is affixed to the bottom of the vessel with a seal of glass called a pontil wad. The vessel can then be broken off the blowpipe and held on the pontil while the upper end is being finished, after which the pontil, too, is removed and the finished vessel, no longer viscous, but still very hot is placed in an annealing oven or Lehr to be cooled very gradually (plate 9). Very slow cooling is essential to enable the temperature to be reduced evenly throughout the thickness of the walls of the vessel and so prevent the glass being subject to different strains. This form of annealing would take at least a day, and probably longer, to carry out the process properly. Where the shape of the vessel is simple, the whole process of making it would take no more than two or three minutes. Where the shape is more complicated the longer time is needed, occasional reheating of the unfinished vessel in the furnace would be necessary to keep the glass at a





Plate 9: Free Blowing A Glass Vessel

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temperature that renders it sufficiently viscous for manipulation. Normally, the work would have been done by a team of four with a master blower ('gaffer') in charge, who performs the main blowing and fashioning, assisted by the others as the need arises. This team is nowadays called a 'chair', since the gaffer sits on a wooden chair with projecting arms on which he balances the blow-pipe or the pontil-iron while fashioning a vessel.

Decorative Techniques of Roman Glass

The first century AD was a good period of invention, innovation and experimentation in the decorative techniques of glass. It must always be remembered, however, that the majority of Roman glass produced was naturally coloured and undecorated. Decoration could be applied when the vessel was hot, or it could be executed once the piece was cold. In this chapter I am going to direct my study to the hot work - or as it is known today, "the applied decoration" that is pieces decorated while the vessel is hot.

When a glass vessel is being blown, and thus is still in its heated state, its surface form as well as its shape can be manipulated in many ways. In roman times glassmakers took full advantage of the decorative potentials of their medium. A major bi-product of the invention of blowing was the invention of mould blowing (plate 10). Here, a molten gather of glass was blown directly into a mould of two or more sides. Using this technique, thin walled vessels with complex figural or geometric patterns (sometimes including inscriptions) could be created repeatedly and quickly. The logo of the glass-maker Ennion frequently appears as part of the decorative scheme of his mould-blown vessels - "Ennion made me. Let the buyer remember him!".



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			R S S
	<u>[//<,-,-</u> }//]		
(a)	GLATHER BLOW	Ν ΙΝΤΟ ΜΟΙ	JLĎ.
(ط)	Mould Opened	AND PIECE	REMOUED ON BLOWPIPE
		Plate 10: Mould	Blowing
			Page 4



Decoration in Free Blown Glass

Although free blowing did not offer the advantages of the marls-produced uniformity that mould blowing allowed, the decorative potentials of the technique were seemingly limitless. While the vessel was still in a heated state and ductile, decoration could be dropped on the vessel from a gob on the pontil. A variety of surface effects could be achieved by drawing the glass out in "fin" or "thorn" like projections, by punching it, or by indenting it at regular intervals. The vessels may also be decorated with thick or thin threads of molten glass - 'snake threads'. These were trailed on the surface to produce simple coil accents, zigzag patterns, undulating whisker threads or complex sculptural effect. Similarly, blobs of molten glass could be fixed onto the vessel surface either in simple chains on in complex geometric arrangements. Decorative glass attachments of contrasting colours could be fixed to the warm glass vessel also. These would be moulded elements such as rosettes, lion heads, theatre masks and the like or they could be free-blown attachments. Applied elements were often set at the base of the vessels handle and sometimes they were spread all over the vessel's surface.







CHAPTER FOUR



Chapter Four

Due to the variety of Roman applied glassware that there is available to study, I feel it important that a good cross-section of this style of work be shown. This will help show the skill the Roman glassmakers had.

I will restrict the pieces shown by including only free blown glass with applied decoration and excluding mould blown glass with the same form of decoration made at that time. The pieces shown are an attempt to give the reader an insight into the craftsmanship of the makers of this era. It shows how technically advanced they were when it came to enhancing their work with decoration even at this early stage. It will become evident from the decoration types that their inspiration was limitless along with their skill. Even today their pieces certainly would be regarded a masterpieces within contemporary glass works. The pieces I will look at will be:

a) Jug	:	Jug with Bacchant Mask	- 1st Century AD	Plate 12
b) Flask	:	With applied decor.	- 2nd century AD	Plate 13
c) Bottle	:	Known as the 'Masterpiece'	- 3rd Century AD	Plate 14
d) Flask	:	Two Handled globular flask	- 4th Century AD	Plate 15



Piece 1: Jug With Bacchant Mask (Plate 12)

This piece has been dated to the third quarter of the first century AD. The main body is a blown oval shape which is a yellowish blown colour. On top of the body there is a cylindrical neck. The top of the neck has an outsplayed and folded rim. On the outer edge of the rim we see an opaque blue tail which has been pinched to create two wrinkles on either side of the later administered handle. The handle has a matching opaque blue trail. This trail creates a rib which travels the full length of the handle. Below the handle at the bottom end, in the blue again we see a small imitation mask of a Bascchant which is in relief.

In order to make such a jug it would have taken at least two or maybe three workers, two assistants along with the head Gaffer.

This jug shows the elegance that the Roman glassmakers were capable of achieving in their pieces. The main body of the jug is extremely well shaped and in proportion, with a nearly perfect line of symmetry down it. The applied rim and handle tell us of the detail they could obtain and how fluently they worked as a team. This jug was completed while hot with the base in some cases being polished to grind of the pointil mark. In some cases this may have been left of.

The following is a simplified description of the steps taken order to make this jug.

1. A gob of molten glass is gathered from the pot.

2. It is marvered for the initial shape.

3. A small bubble is blown into it.

4. Gathered over to obtain more glass.



5. Again marvered and blown.

6. 'Necked' or 'Cut In' whilst being stretched.

7. Again cut in to form a rim.

8. Pontil added and knocked of blowing iron.

9. Blue trail added to rim and pinched.

10.Heated, opened and outsplayed.

11.Clear handle attached to rim.

12.Blue trail added then the mask.

13.Placed in cooling part of oven.







Piece 2: Flask With Applied Decoration (Plate 13)

This flask is an excellent example of a blown piece with a very simple body shape. In this case it is the applied decoration where the majority of the skill was required. The decoration enhances the piece and adds immensely to its aesthetics.

This is quite a tall flask with an oval body with tooled sides creating indents on its surfaces. This creates four sections on its body which are almost square between four adjoining corner ribs. The neck has been stretched out and given an outsplayed rim. At the top of the neck first below the outsplay we can see a very thin snake thread wrapped six times round it.

It may taken two or three people to make such a piece - the gaffer along with two assistants. The assistants would have brought the bails, both the ones on the faces which are curved and winding with what looks like tooled hatching, and also the trails which are pinched into multiple protuberances on each corner rib.

As well as the main body the applied decoration has a greenish colourless hue. Any other colours that can be seen are the results of tiny weathering and earth on the piece.







Piece 3: Bottle - "The Masterpiece" (plate 14)

I have included this particular bottle because I feel it is one of the greatest examples of Roman applied glassware that I have discovered. The title "The Masterpiece" says all that has to be said about it.

It may have taken three or four people to make this piece due to the number of 'bits' or applied decoration. We can see from this piece the capabilities of the Gaffers in how skilled they were with the molten glass. The 'Masterpiece' contains everything - colour, plain trails, toothed trails, various pieces of intricate detail such as leaves and spirals, small loops, a stem with a foot and an outsplayed rim with a blue trail.

Flat bodied bottles such as this one were rare but not unknown. The body is ingeniously decorated with applied glass threads to form leaf motifs in gold, white, blue and red festoons. This was purely a luxury object and a superb specimen of applied glassware

On the opposite page I have shown how some of the decoration was achieved. The initial stage are basically the same as the Jug shown previously, although the shape is obviously different.. Below is listed the main details of the piece in order to show how much work went into the making of it.

1. Main body with neck blown.

2. A greenish colourless hue to the body.

3. Trails - opaque while/blue/red/guided trails.

4. Stem and a concave foot.

5. Rim outsplayed and blue trail.

6. Main body circular and flat.



7. Two blue toothed trails on the edges of the flat body.

8. Handles applied over trails at the base of the neck.

9. Toothed trails on handles changing to a loop at the top of the handles.

10.On the flat body surface:-

- a) Cross shaped motif between two white trails.
- b) Four leaves on the legs of the cross.
- c) Anti-clockwise spiral in centre of cross.
- d) Four garlands with zigzagged red/blue trails with two white bows at the edge of each.





Plate 14: The "MasterPiece"

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Piece 4: Two Handled Globular Flask (Plate 15)

Dated to the fourth century AD this, in my opinion, is a beautiful example of a piece of applied glassware from the Roman Era. In Italy and the western provinces some Conical vessels with dark blue blobs have been found, but they usually had broader bottoms, and even base rings. The more common blue blob pieces were produced in the Syro-Palestrian regions. These were usually bowls and cups but occasionally they produced pieces with a quite different shape such as this flask.

This piece comes from Cologne. It is a two handled globular flask with the handles dropped onto the shoulder of the body and drawn up in widely splayed arcs to meet a horizontal coil low down on the neck. On this piece the blue blobs are fashioned more carefully and more symmetrically compared to their eastern counterparts and are also thicker and more convex. The blobs are spread out in what appears to be a regular quincunx pattern on the body in seven horizontal rows, but this apparent symmetry is to some extent illusionary as may be seen on careful inspection.

The neck of this piece has been drawn out and the rim knocked off, a technique known today as "yarding". The applied areas of this flask are:

a) the ring in the middle of the neck.

b) the two handles.

c) the blue trails on the body.

d) the blue blobs on the body.

e) the base ring.

The main piece is colourless, but from the image it gives a whitish hue - this is due to weathering.






CONCLUSION



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Research has shown that in the first four centuries AD, the Roman glass industry spread remarkably quickly all over the ancient world. It has also given us a brief insight into the incredibly skilled workmanship of these early glass blowers along with the great economic and social importance of the products they produced.

Roman society deserves, in my opinion, the greatest amounts of recognition. Due to their willingness to learn and adopt they encouraged and supported the glassmakers of their time. In turn this resulted in the discovery of the "blowing" technique as we know it today. A turning point created by them which personally raises them to the highest pinnacle of importance for me within the world of glass history.

The craft of glassmaking still has many hidden secrets. What we know of it today is really a matter of inspired guesswork based upon fragments of information. No matter what we may find buried deep in the earth, or find out within the confines of our workshop experiments, it is safe to say that Roman Glass is and will always be the greatest heritage of contemporary glass as we know it today.



APPENDIX



APPENDIX

Technical Information - terms used to describe glass and glass making.

Annealing - Process through which all glass vessels pass, wherein the finished hot object is cooled very slowly and evenly in an annealing oven or in Roman times, a special part of the furnace. The aim is to reduce internal stresses that have built up during its manufacture that would otherwise cause it to crack once cold.

- Blowing Technique of shaping a molten mass of glass by blowing air into it through a blowpipe, either freehand or into a mould of two or more parts.
- Blowpipe Hollow metal tube, about 1.5m long and 2cm in diameter with a mouthpiece at one end and a thin ring fitted to the other that helps to retain the gather of molten glass from the pot. Air is blown through the mouthpiece to deflate and form the glass.

Cage-cup - Type of walled late Roman glass that was undercut with an intricate open work or figural pattern attached to the main body of the vessel by small hidden bridges.



- Cinerary Urn Large container, sometimes lidded with a spherical or avoid body and a broad rim, used at first for storage purposes and later, from the 1st to mid 3rd centuries AD, as burial urns for ashes.
- Core Formed Glass Type of glass dating from 1500 BC (before the invention of blowing), whose method of manufacture involves shaping trails of molten glass over a core of mud or clay and fusing them together in the furnace. After annealing the core was scraped out.

Diatretum - See cage cup

Gaffer - The head glass maker, sometimes called a master blower, who does the most skilled work.

Gather - Blob or mass of molten glass attached to the end of a blow pipe or pontil before an object is formed from it.

Glass - Homogeneous material which has a random, liquid like (noncrystalline) molecular structure.

Lycurgus Cup - A cage cup of dichroic glass (opaque pea green in reflected light and red in transmitted) made in the 4th century AD. Cut with figures from the myth of King Lycurgus.



Marver - Flat Iron (probably originally marble) table upon which the gather is rolled into an evenly shaped mass.

Marvering - Technique of rolling hot glass over a flat surface (a marver) in order to smooth out the vessel, to consolidate trailed decoration applied to the vessel or to pick up decoration in the form of blobs or fragments of glass.

Mould-Blowing- Technique of blowing a gather of glass, while attached to a blowpipe into a wooden or iron mould in two or more parts: the decoration on the inside can be further inflated to reduce the sharpness of the design.

Pontil or Punty- Solid iron rod to which the object from the blowpipe is transferred so the rim may be finished, handle applied or any other final shaping carried out. Once the glass is cooled it is knocked off the rod, leaving a rough mark, the "pontil mark", which beginning in the 19th century, is usually ground away.

Snake Thread - Applied trailed decoration in an irregular, sometimes ridged, winding pattern resembling snakes; found on 3rd century Roman glass from Cologne and the near east.



Trail

- Strand of glass, roughly circular in cross-section, which has been drawn out from a small gather of glass and applied to the surface of a vessel.



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