

INTRODUCTION*

Man invented glass—a contrivance of major significance in the life of the community—in the remote past, some five six thousand years back. Its place of invention is still uncertain. Some scientists give priority to Egypt, others to the other countries of the Near East. Flinders Petri, one of those advocating the latter view, assumed at the close of the past century that the fountainhead of glassware was Mesopotamia, presumably the Caucasus, where glassmaking centres are of an earlier date than those in other countries, including Egypt. He held that the glassware found in the Nile delta, relating to the epoch of the 1st Dynasty (the beginning of the 3rd millenium) or even to earlier times, had been brought from Asia. Although the hypothesis set forth by Flinders Petri is backed by a number of glass investigators, yet the paucity of finds of the 3rd—2nd milleniums B. C., disinterred in Mesopotamia and the Caucasus, cannot serve a basis of priority. Glass might have been invented independently by various peoples at various times.

The oldest glass objects are familiarly known to be beads and seals that are imitations of their stone-made counterparts. They were made in ordinary furnaces out of the matrix obtained at a low temperature. As to glass vessels they were manufactured as follows: hot and soft glass threads were poured over moulds of clay and sand until the latter were covered with a glass layer; next they were heated sever-

al times before rolling the substance over a ground plate of stone to secure a smooth surface for the vessel. After shaping the vessel it was cooled, whereupon the clay and sand mould-core was removed. Vessels made in this way were internally rough. In the centuries that followed the general evolution of technique and glassmaking resulted in new ways of glassworking. In Hellenistic times the manufacture of glass was improved by using high temperature and the ware assumed a shape similar to our own. The revolutionising invention was the method of blowing that was devised on the threshold of our era.

Opinions diverge as to the time and place of this invention. Some of the scientists attribute primacy to Alexandria, others trace its home to Syria. In any case both Alexandria and the Syrian city of Sidon were the fountainheads of advanced glasswork in those days. It is difficult, therefore, to assign priority to any of them. It is highly probable that the invention was made in the 1st century B. C. in Syria and Egypt simultaneously or with a slight difference in time. The important point in this case remains to be the fact that blowing gave birth to a host of new and original shapes whereby mass production of glassware was started which, in turn, reduced the cost-price of glass made objects and favoured their spread.

So far, beads (mid-second millenium B. C.) found in tombs at Lechashen are among the oldest glassware specimens in

* Translated into English by P. Mesropian.

Armenia. They are preserved in the State History Museum of Armenia. The most interesting early patterns of Armenian glassware include the upper part of a chalice with the figurine of a woman embossed on it and an alabaster neck, both found in Karnir Blour in 1953, their home being located as Rhodes. Both are made of polished nontransparent glass; the former in a clay mould, the latter with the help of a sand-core. Various shaped beads have also been unearthed at Karnir Blour. They display specimens that are made of high quality translucent glass, probably of Mesopotamian origin. Glass beads, seals and buckles have also been uncovered at a number of historic sites of early Armenian (6th—4th centuries B. C.) and Hellenistic (3rd—1st centuries B. C.) epochs; some of them are local makes.

Relying on archeological evidences, glass objects and articles were widespread in Armenia during the first centuries A. D.

Armenian glassware of those days is of great interest as far as the technique of manufacture and the diversity of colors and shapes are concerned. It is also of consequence in studying the manufacture of glass not only in Armenia but of the ancient world as a whole.

The present volume of ancient glass of the Armenian archeological atlas comprises about 150 objects; a great many of them are glass vessels. Along with fragments of flasks the investigator has likewise at his disposal about 120—130 unbroken or partly fractured glass vessels.

The study of this valuable collection sheds light on glassmaking in Old Armenia and the ancient world as well as on the commercial relations of Armenia with other countries. All the glassware under consideration, with the exception of two specimens that come from Maku and the highlands of Gharabagh, have been found out over the territory of Soviet Armenia. They were unearthed mostly during the diggings of Garny, started in 1949, in the

necropolis, in the ancient fortress and at the construction sites. Another large group comes from tombs in Vagharshapat during the expeditions of 1926—30 and through specially designed excavations aimed at ascertaining the location of the ancient city of Vagharshapat. The vessels dug out in the basin of lake Sevan by Yervand Lalayan are also among the artifacts brought to light by excavations. Another group of vessels and flasks was found out accidentally at a construction site, in the basin of lake Sevan, viz. the town of Sevan and the villages of Karadzi, Verin Guetashen, Tsovinar, Lechashen, the village of Ashnak in the district of Talin, the district of Goghb, the villages of Gheghadir and Kyulluja in the district of Abovian and the village of Guetashen and Verin Artashat in the district of Artashat.

The glass vessels come overwhelmingly from tombs. This fact bespeaks fairly well the nature of the glassware. The flasks found in tombs are basically containers of oils, perfumes and ointments, buried with the deceased to serve them in the other world. The flask-shaped big vessel and some others (foursided in form) could be excluded from the list since the carafe and the glass bottle were used in everyday life.

The collection of Armenia's ancient glass exhibits a great variety of form, size and proportion. In this assemblage we come across flask- and ball-shaped, ovoid, cylindrical, manysided vessels and their numerous variants. The distinctive forms are amphorous, pear-shaped, date-like, vessels bearing human faces. They are mostly without handles; some of them possess one or two handles.

The bottom of the vessel found in a tomb of Garny is incised with the name «Germanos» in Greek letters. The occurrence of proper names on the base and walls of glass vessels was common in the ancient world and indicated the name of the glass

maker, the workshop or the owner of the vessel.

A striking diversity in colours and tinges is similarly to be noted among the vessels. Frequently the tinge of greenish, sky blue flasks is to be accounted for by the raw material, i. e. the natural mixtures of the sand. The other colours are imparted artificially, by the addition of some metal oxide to the bulk of the glass.

The pretty violet colour of vessels is due to the addition of manganese oxide, the white, milky colour is due to lead oxide while the dark blue results from the addition of cobalt. Various shades of greenish, bluish, yellowish, chestnut coloured and violet glass occurs in Armenia. Uncoloured (white) glass is also met with.

The flasks are eminently greenish and sky blue; others, especially those made with the help of moulds, are chestnut coloured or violet.

Armenian glassware displays also a great degree of variety in the technique of manufacturing.

A study of this glassware shows that all the basic forms of technology were applied in glassmaking—rolling, free blowing, mould-blowing as well as the various forms of hot and cold working.

The bulky, thick-walled flasks, shaped roughly, were produced not by blowing but were hand made. While hot, the glass bulk was mounted on special rod which was rolled to impart the vessel the shape of a flask.

Ancient glassware of Armenia was made largely by blowing. With the tip of the blowpipe the glassmaker would take the proper amount of glass and give it the desired form by blowing, changing the position of the pipe and rolling over the stone plate.

The vessels were often submitted to hot and cold processing too. The particular handle, at times achieving the integrity of the vessel, was attached to the latter while still hot. The same process held good when

fixing the round foot to the base or the lip to the upper part. The passage between the body and the neck was drawn out by means of pincers which is particularly noticeable on flask-shaped vessels. The feet were drawn out of the glass amassed at the base, while it was hot. Decorating with marvered bands is typical of subsequent periods. Hot thread or ribbon like glass bands were dragged over the surface of the vessel in spiral, wavy, grill work and other designs. The best specimen with similar patterns is offered by bowl no. 87 parallels of which are to be found in west-European glassware. A characteristic example of similarly prepared vessels with spiral motifs is flask no. 89 which must have been brought from Syria. Frequently the bands and the marvered vessels are of the same colour; yet differently stained bands are also met with. The latter is exemplified by flask no. 86 with a ball-shaped body. It is made of uncoloured glass of medium thickness, criss crossed with chestnut threads that impart the vessel a nice display of two colours. Snake-shaped parallel lines run on either side of the bands. Ornaments reminiscent of snake heads were also dragged on vessels embellished with similar bands. Hence the name «snake-ribbed glassware» conventionally adopted for analogously designed vessels. A typical representative of this group is flask no. 85 which, together with similar flasks found in Cairo and Bori (Georgia), makes us reconsider the question of the production centres of snake-band marvered flasks.

Instances of hot processing are also furnished by glassware with pinched decorations: globular ornaments mipped on the walls of the bodies as well as the glazing of the sides.

Cold working was effected after the vessel was complete as the surface was decorated by mechanical way. Engraving and grinding were also forms of cold working. The former was done by

means of a scraper while the latter was executed against a special pulley or wheel. The technique of glass engraving and grinding, common to the Hellenistic period, began to be used extensively in glassmaking especially in the 2nd—4th centuries A. D. Ground-out decorations of simpler pattern on earlier vessels, become more elaborate and diverse as time goes on.

Specimens of such vessels, particularly fragments, were encountered in Armenia, the best illustration of this set being afforded by flask no. 76, made of milky, thick glass, the polished and engraved embellishments of which underlie its significance.

The location of a particular group of glass manufacture involves a great many difficulties, and a final adequate solution to the problem is unattainable in all the cases. The same difficulties arise as we set our mind on determining the production locus of vessels with polished and engraved embellishments. Anyhow the aforesaid vessels have parallels in form and in ornaments in west-European glassware and are akin to the glassmakes of the Rhineland.

Glassmaking developed further with the introduction of special moulds into which the vessels were blown. A study of mould-blown vessels found in Armenia indicates that undivided, double-fold and even three-fold moulds were used for their preparation. The undivided moulds were probably wooden, wide in the upper part and narrow in the lower, so as to bring out the ready vessel with ease.

Most of the vessels are cast in two-leaved moulds. This can be identified by the vertical mould-seam on the surface dividing the vessel roughly into two halves. The three seams traceable on one vessel point to a three-fold mould in which the glass was blown.

The glassware found in Armenia is noted not only for the various forms of particular vessels but likewise for the

walls embossed with diverse mould-designs. This shows that moulds with vari-form motifs were used; aside from moulds with internally smooth walls, others with relief decorations were also in practice. The latter comprised internally engraved or glazed motifs and horizontal grooves, twisted or rhomboid horizontal bands, comical relief decorations on various vessels and circles. Female faces are oppositely in relief on the globular body of a vessel.

We have seen that most glassware was found in tombs. In all cases when archaeological rules of tomb excavation are aided by, glass vessels are readily dated. The concurrent objects, such as seals, clay vessels, metallic articles often prove instrumental in determining the date of the glass. In this respect coins are of great significance, though it should be noted that coins found conjointly with glass vessels are not in quantity. Still, Roman (Emperor Augustus, Lucius Verus) and Sassanian (Artashir I) coins permit us to determine with certainty the date of glass vessels as pertaining to the 1st, 2nd and 3rd centuries A. D.¹

Nevertheless, most of the glassware of sepulchral origin unearthed from the fortress of Garny and the fragments disinterred from the ancient layer are dated only approximately, omitting at that casual discoveries. Therefore, a more reliable dating is to be derived from a study of the vessels themselves, bringing them into comparison with fanuliar objects whose dates are well established. In this way we are able to divide the ancient glassware of Armenia into specific periods (1st-4th centuries A. D.). Thus, for instance, a number of free blown flasks, most of the

¹ True, the coins of Emperor Augustus continue in use in certain cases up to the 3rd--4th centuries A. D., yet a study, for instance, of tombs in Garny with coins of Augustus, and the parallels of vessels which are in, indicates that they are traceable back to the 1st or, at most, the 2nd centuries A. D.

small-sized flasks and some of the ball-shaped vessels can be put down to the 1st century A. D. Some mould-blown flasks, vessels with relief decorations, all types of oval vessels with two handles (amphorisks), part of the grooved ball-shaped vessels, the amphorous, vertically grooved vessels, also the eightsided flasks with two handles are likewise to be ascribed, in all probability, to the 1st century A. D. The ball-shaped vessels made by free blowing, the amorphous vessels with low, two knob handles and the fragments of bowls relate to the 2nd century A. D. To the mould-blown type pertain the date like vessels, also those with female figurines and the rectangle shaped with one handle.

Several flasks are of a more general date, 1st-2nd centuries A. D. They include the majority of flask-shaped vessels, some ball-shaped small-sized flasks and part of the flasks with intorted sides. Of this class the oval-bodied vessels with two handles, the milky bowl with horizontal grooves and widening rim, lips etc. go back to the 1st-2nd century A. D.

Among those that are made by free-blowing one pear-shaped vessel with ornaments ground on the pulley and a bowl marvered with grill work pertain to the 3rd century A. D. Treating of mould-blown vessels particular mention should be made of the six-sided vessel.

It is impossible to impart a more general date to a greater amount of vessels, i. e. 2nd—3rd centuries A. D. This kind includes the tall neck flasks, the ball-shaped vessels with two handles and incised patterns, vessels with one handle and intorted sides and a number of others with marvered decorations. The ball-shaped comical flasks with relief motifs and the cylindrical flask, pertaining to the same period, are also mould-blown.

The ball-shaped large vessel dragged with engraved bands, flasks with intorted sides, the one handle flask with marvered motifs, the vessels with pinched relief or-

naments and the pear-shaped, low neck flask are traceable to the 3rd—4th centuries A. D. Here also belong the fragments of conical pear-shaped vessels with bosses, the ball-shaped vertically grooved vessels with no handles, all of them mould-blown. Lastly, the fragments of vessels with ground out decorations and the ball-shaped flasks with necks widening upwards are dated back to the 4th or the onset of the 5th centuries A. D. Again, mould-blown is the pear-shaped bodied, vertically grooved vessel which is likewise of the same period.

The analysis of ancient glass discovered in Armenia shows that it is largely imported. Its centres are also revealed. At the same time it enables us to speak of the initial specimens of local glassmaking. In this case, too, the cardinal method of studying is comparison with parallels.

No glass workshop relating to ancient times has hitherto been discovered in Armenia although the objects considered in the present volume bespeak indirectly their existence. Armenia, that had achieved a comparatively high standard of socio-economic and political development under the ancient or Hellenistic period, had, no doubt, all the material and technical means at her disposal for organising the local manufacture of glass at a time when the country's political life, crafts and commerce were in the ascendant. Glassmaking was also promoted by the occurrence of quartz sand in different parts of Armenia which, as is well known, constitutes the basic raw material of glass. But before the establishment of glassmaking factories or workshops, typological observations are one of the principal evidences testifying to the local manufacture of glass. A comparative study of a number of flasks discovered in Armenia manifests their distinction from analogous vessels of the ancient world. The peculiar features of some vessels found in Armenia give good reason to look upon them as locally

made. This is equally true of flasks made by free-blowing and with the help of moulds (flask-shaped oval-bodied vessels, a number of vessels with intorted sides, vertically grooved, ballshaped, low neck vessels and so on).

The octogonal flask which, as a matter of fact, is a waster, could have hardly been imported. In Armemia and partly in the Transcaucasus ovoid amphorisks have been encountered, the horizontal band encircling the middle of the body, adorned with rhomboids. Those amphorisks are imitations of similar vessels widespread in Syria and also in use in Armemia.

Only one such vessel with rhomboids has been found outside Armemia and the Transcaucasus (in Syria). Therefore this fact does not rule out the possibility of similar vessels being produced in Armemia.

A number of flasks with intorted sides, certain types of flasks, oval-bodied flask-shaped vessels, vertically grooved ball-shaped vessels etc. can likewise be ranked among local glassware. The oval-bodied, singularly shaped flasks (nos. 43—56) found in various areas of Armemia, are of small capacity; they differ but slightly from each other in shape and size; they are basically greenish. Those flasks are met with in the Transcaucasus, yet those discovered in Armemia display distinctive features of their own that mark them off from analogous vessels found in Georgla or Soviet Azerbaijan. Slight greenish is characteristic of ball-shape-bodied, vertically grooved mould-blown small flasks, the majority of which have been uncovered in Vagharshapat (nos. 136—145). Despite some variations in shape, neck and rim, they are on the whole similar and form a peculiar collection of presumably local origin.

The production of glass in Armemia is not excluded and it must have been linked with that of Syria if we realise, in particular, the fact that Armemia was in

close contact with that country since the days of Tigranes the Great.

There were strolling glassmakers in the ancient world who organised the manufacture of glass in various countries where conditions for its production were available. It is known that Enmion had branches of his factory, and in his declining years he grouped all the workshops into the capital of the empire. It is highly probable that some of the glassmakers of Armemia were Syrian strolling artisans.

At the start of our era Armemia was a powerful and advanced state of the Middle East. She could not consequently fail to possess such an important branch of production as glassmaking. In the first century B. C. under Tigranes the Great in addition to some Hellenistic states Syria and Phoenicia, the two fountainheads of glassmaking, came also under Armenian sway.

For a short while Tigranes moved his residence to the important Syrian commercial hub, Antioch, the capital of the Seleucids. Furthermore, Tigranes and his successor Artavazd II moved a great many people to Armemia for the settlement of the latter in the large cities. In old days tradesmen and artisans were at a premium. It is commonly known that those resettled immigrants played a key role in Armemia as qualified tradesmen and skilled artisans. They must have also enjoyed special rights and privilegees as was the case in Pontus, Cappadocia and the Parthian kingdom.

Finally, it is very essential to recall the testimony of Agathangelus, an early mediaeval historian, according to which a glassmaking factory was in existence in Vagharshapat at the close of the 3rd century A. D.

Notwithstanding all those evidences, it can be asserted that most of the ancient glass of Armemia is introduced from other areas. An analysis of this glass shows with unquestionable certainty that Syria

and her glassmaking centres have been the supplier of Armenia with glass. This circumstance should not be attributed to mere accident since Syria and Phoenicia were the most outstanding centres of glassmaking in the ancient world. In all probability it was in that country, and presumably in Egypt too, that two revolutionising inventions in the production of glass were made—free-blowing and mould-blowing. Those two factors account for the mass production of glass. Syrian glass began to inundate the world markets. The identity of general form and design of some glass specimens found in Armenia with vessels made in Sidon, Dura-Europos and other Syrian centres dispels any doubt as to their Syrian origin.

The more prominent specimens of Syrian glass in Armenia: typical mould-blown Sidon flasks, amphorisks popular in the ancient world, vertically grooved ball-shaped vessels with one handle can be considered the best patterns of ancient glass in number and execution.

Syrian glassmaking set the pattern in establishing a number of new centres in other areas. In addition to Egyptian factories, others were set up in Cyprus, Italy, Gaul and the Rhineland.

It is noteworthy that certain types of Armenian ancient glass point to parallels in Egypt and Cyprus as their locus, though they must have been doubtlessly brought to Armenia along with Syrian glass. Two high-quality vessels display features peculiar to glassmaking in the Rhineland; yet the circumstances under which they had been brought to Armenia require additional elucidation.

The discovery of Syrian glass in profusion in the ancient fortresses of Armenia, even in rural areas and presumably in the near future in urban regions as well, is as typical as striking for it reflects Armeno-Syrian economic, commercial and cultural bonds which were close enough not only in the old or ancient times but also in the early Middle Ages.