

X.—ROMAN GLASS VESSELS IN THE
CORSTOPITUM MUSEUM, CORBRIDGE.

By WILLIAM BULMER.

ABBREVIATIONS.

- M.J.—Morin-Jean—*La Verrerie en Gaul sous l'Empire Romain*.
Paris. 1913.
K.—A. Kissa—*Das Glas im Altertume*. Leipzig. 1908.
B.H.-G.—E. Barrington Haynes—*Glass*. 1948.
F.-D.R.K.—F. Fremersdorf—*Die Denkmäler des Römischen
Köln*. Berlin. 1928.
F.-R.G.K.—F. Fremersdorf—*Römische Gläser aus Köln*.
Cologne. 1928.
H.-G.—W. B. Honey—*Glass*. Victoria & Albert Museum. 1946.
T.-E.G.—W. A. Thorpe—*English Glass*. 1949.
Richborough.—Society of Antiquaries of London. *Reports on
the Excavations of the Roman Fort at Rich-
borough*. 1926-1949.

NOTE.—The scale shown in the illustrations represents three inches. The figures in square brackets refer to the numbers of the text figures.

In the long series of reports published by our Society on the excavation of the Roman site at Corbridge the glassware discovered has received scanty comment. This may be due in part to the fragmentary condition of the finds, but it is a feature common to almost all excavation reports until very recent years; indeed little comment upon Roman glass is available except in one or two continental publications intended primarily for the specialist, and in the earlier chapters of some English books upon glass in general. However two of these, Thorpe's *English Glass* (1949) and, particularly, Honey's *Glass* (1946) give admirable, if, of necessity,

somewhat brief accounts of Roman glass and glassworkers. I have, therefore, endeavoured to combine a brief general account of Roman glassware with comments upon the examples found at Corbridge rather than to give only a detailed account of the actual specimens.

In order to fully appreciate the achievement of the glassworkers of Roman times we must first consider the progress previously made in glass manufacture and then the contribution they made to the art before it passed into other hands. Glazes were known and applied to stone beads in Egypt in predynastic times, but the first objects of glass not containing a core of other material seem to have been made during the 3rd millennium B.C. About 1500 B.C. a process was evolved for the manufacture of small glass



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vessels by winding glass threads around a core of sandy clay, which, after the consolidation of the threads by rolling, could be removed. These little vessels, [1] like the earlier glazed beads, were finished on the lapidary's wheel.¹

A further advance was made about the beginning of our era by making bowls from a slab of hot plastic glass with the aid of convex or concave moulds. When a convex mould was used the surplus glass, formed by the folding of the plate over the mould, was gathered by pincers into gadroons on the outside of the bowls, in imitation of contemporary silver bowls.² In some examples the gadroons are so regular and uniform as to suggest that the glass had been forced into a concave gadrooned mould, but in other examples the obvious evidence of pincering on the gadroons suggests that the bowls were made by folding the plastic plate of glass over a convex mould and that the surplus material had been gathered into gadroons by the use of hand tools. One at least of the Corbridge specimens shows clear evidence of this method of manufacture. These bowls, like their predecessors,

¹ Neuburg, *Glass in Antiquity* (1949), plates 3, 5, 6 and 7. B.H.-G., plate 1(g). H.-G., plate 1(a, d and f.).

² M.J., Type 68. T.-E.G., plate 1. B.H.-G., plate 2(d). Neuburg, *op. cit.*, plate 12. H.-G., plate 2(a).

were finished on the lapidary's wheel, although in their case the turning is confined to the rims and upper parts of the vessels.

About the same time, and perhaps in Egypt, although the exact time and place remain unknown, a revolutionary discovery was made and the first vessels manufactured by inflating a bubble of molten glass on the end of a tube. The immense potentialities of this discovery do not seem to have been immediately appreciated in Egypt, but the process was quickly developed, if indeed it was not discovered, in the adjoining Roman province of Syria; and here the method of blowing the glass bubble into the inside of a hollow removable mould was soon added to the original discovery. From Syria these processes passed quickly, probably by the migration of the workers themselves, to other provinces of the Empire. This dispersal was facilitated by the long standing trade connections between Syria, Alexandria and south Italy and between Syria and Marseilles via the north African coast. Thus it was not only rapid but widespread and within a short time glass was being made in Italy and Gaul as well as in the provinces of the eastern Mediterranean; and with this rapid expansion of the industry began the specifically Roman contribution to the art of glass-making.

How great this contribution was cannot be better expressed than in the words of an eminent English authority, Mr. W. B. Honey, of the Victoria and Albert Museum, who has written—"In command of colour, in the invention of austere and classical forms as well as of wild and fantastic improvisations . . . alike in objects of luxury and of use, the Roman glass worker was supreme . . . it is, in fact, tempting to say that Roman glass was the best ever produced."³ One may add to this that almost no important improvement took place after Roman times, either in the material until the introduction of the English glass-of-lead in the late seventeenth century, or in the methods of manipula-

³ Honey, *English Glass* (1946), p. 13.

tion until the mechanical blowing and pressing of glass was evolved in the mid nineteenth century.

In view of this it is perhaps curious that so little attention has been given in this country to the glass of the Roman period. It may be contended that this is due to lack of material, and it is true that the amount of Roman glass available for study is small compared, for example, with the amount of pottery. This is as might be expected in view of the fragile nature of the material and of the fact that broken glass is a valuable, even an essential, ingredient in glass manufacture; hundreds of broken glass vessels may have been re-melted in Britain in Roman times. Even so, the number of complete or restorable Roman glass vessels in our museums, particularly in the south of England, is far from negligible, and something may be learned even from fragments.

The discovery of glass blowing did not bring to an end the manufacture of glass bowls by the earlier method of pressing over or into a removable mould, and these so-called "pillar moulded" bowls of Egypt continued to be made. [2] They are of very sturdy construction and they, or their fragments, are widely distributed throughout the Roman Empire



and even beyond its limits. They are represented at Corbridge by fragments of five specimens. Three of these are of more or less transparent glass in shades of light blue and one is almost colourless, all are 7 to 9 inches in diameter inside the rim. The fifth is of particoloured mosaic glass consisting of dark green translucent metal incorporating rods of bright yellow opaque glass. These bowls of mosaic glass in bright contrasting colours, whose patterns are sometimes haphazard, as in the Corbridge example, but sometimes arranged with the utmost artistry,⁴ are a characteristic product of the Alexandrian glassworkers and carry on the tradition of the bright contrasting opaque colours of the

⁴ Neuburg, *op. cit.*, plate 10 (32 and 34).

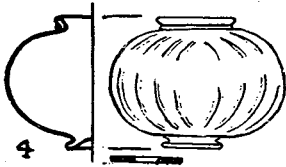
built-up phials [1] produced by earlier glass workers in Egypt.

Another type of Alexandrian bowl, [3] probably also produced by the same method, is represented in the Corbridge collection by portions of four specimens; these are rather shallow and have a low footstand⁵ and the surplus glass formed by folding over the convex mould seems, in these examples, to have been gathered downwards to form the projecting rim, the vessel being, of course, inverted during manufacture. The exact method used cannot be determined, as the vessels are turned inside as well as outside upon the lapidary's wheel.



There are also at Corbridge five fragments of Alexandrian glassware of similar type but belonging to taller, narrower vessels, cups with integral or applied footstands,⁶ all of which show evidence of turning both inside and outside after manufacture.

Although, as we have seen, the manufacture of glass vessels by press moulding continued, the greater opportunities afforded to the craftsman by the method of inflation was quickly realized by the Roman glassworkers; in an almost incredibly short time they produced glass vessels in which the unique potentialities of the method were exploited with great artistic ability and supreme technical skill. The globular, ribbed glass jars⁷ with tubular rims, [4] which were certainly evolved during the first century A.D., illustrate this admirably. They are represented in the Corbridge collection by fragments of twelve specimens, although some of these are only portions of the characteristic rims. These vessels, which could only have been conceived by craftsmen thinking in terms of blown glass, have two features of great interest. Firstly the rims



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⁵ D. B. Harden, *Roman Glass from Karanis*, plate 11 (166-169).

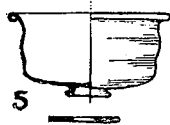
⁶ As M.J. base No. 19 and fig. 281.

⁷ T.-E.G., plate 3(b). F.-R.G.K., abb. 15. F.-D.R.K., taf. 21.

are made by folding the edge of the vessel outwards, forming a double, or sometimes a triple, walled tube, producing a rim, not only artistic, and a technical triumph, but eminently practical, strengthening the vessel at one of the likeliest points of fracture and adding to its convenience in use. The second feature is the footstand, formed by double inflation; when the body had been blown a secondary bulb was blown from the base by local re-heating and this, while still plastic, was flattened and pushed in at the centre forming an integral footstand, stronger and more stable than any type of foot made separately and affixed to the base.

The metal used in the Corbridge specimens is of the highest quality, and the vessels are very thin blown, many specimens being less than a millimetre thick; the most frequent colour is pale sea green, probably the natural colour of the glass, although some removal of the blue-green tint may have been attempted; others are olive yellow in colour, all are very uniform in tint and show complete command of the colouring processes used.

Another type of tubular rimmed vessel,⁸ sparsely represented in Britain, and, indeed, uncommon anywhere, was



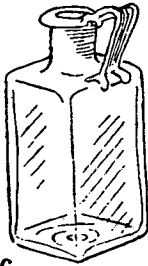
much larger in diameter at the rim and had undecorated, undulating sides. [5] Only two fragments of rim survive at Corbridge to prove that they were once in use there.

These must have been very delicate vessels judging from their large diameter (seven or eight inches across the rim) and the thinness of their walls, and it is quite understandable that few have survived. In any case, their very delicacy marks them as vessels of luxury rather than of use and probably they were relatively uncommon even in Roman times.

The process of forming a glass vessel by inflating a bubble of glass into the interior of a hollow removable mould was,

⁸ *Richborough*, iii, plate 15 (No. 63). *Richborough*, iv, plate 68 (nos. 369 and 372); another specimen seems to be referred to in Curle. *A Roman Frontier Post*, p. 272, unillustrated.

as stated above, apparently brought into use almost as soon as glass blowing itself was discovered. This process was used in the manufacture of one of the commonest type of Roman glass vessel—the thick walled rectangular bottle⁹ with a reeded handle. [6] These are usually referred to as “square bottles” or “common squares”; sometimes even dismissed in an excavation report as “quantities of the usual blue-green glass bottles”. It seems probable that their very ubiquity has led to their neglect. There are at least 150 specimens now identifiable at Corbridge and many fragments, no doubt, have been thrown away.



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They are obviously mass produced utility articles, strong, serviceable and inartistic—yet they are not without interest. The reeded handles, each one made separately and not mould blown, show evidence of considerable skill and, indeed, of some artistry. Again, although commonly dismissed as “blue-green”, when a quantity, such as exists at Corbridge, is examined, the colour range is seen to be quite extensive. Corbridge specimens range in colour from deep Prussian blue through every shade of blue and blue-green to emerald and apple green on the one hand and to pure pale cobalt blue on the other. Nor is their colour confined to this range, as pale olive yellow and almost colourless specimens exist among the Corbridge fragments.

A design of simple concentric circles is usually moulded in relief upon the bases of these bottles, but occasionally the inner circles are replaced by simple curvilinear patterns. These designs, except in so far as they provide some reinforcement to the base of the vessel, seem to be purely decorative.

These rectangular mould blown bottles, first made in the early days of glass blowing in Egypt or Syria, were produced

⁹ M.J., Type 14. *Brit. Mus. Guide to Roman Antiquities* (1922), fig. 122 (right).

in great quantities in Italy and Gaul during the first century, but their production declined during the second century and seems to have completely ceased before its end. Why this was so, and what vessels replaced them, are matters of conjecture; but of this we can be sure, that no type of glass vessel was produced in greater quantity during the Roman era, except, perhaps, the small scent bottles (*unguentaria*) resembling a modern test tube which were made in varying but considerable quantities throughout the whole Roman period.

In spite of the large numbers of the square bottles discovered throughout the Roman Empire, we have no sure knowledge of their makers. The multiplicity and mobility of the glass houses and the absence, so far as we know, of large stationary factories, may perhaps prevent us from ever recognizing the methods and products of individual glass workers as we have been able to identify the work of individual potters of Roman times. Nevertheless an industry, whose products reached the comparatively remote provinces of Britain in such profusion that they confound by their very abundance, seems to be worthy of more consideration than it has hitherto received.

There are two other types of Roman mould blown bottles, the fragments of which must often have been dismissed as remains of "common squares"; one of these is similar to the



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usual square bottle except that it is somewhat smaller and is oblong,¹⁰ instead of square in section, and usually has two handles instead of one [7]. The bases of these oblong bottles are usually decorated in relief with a rectangle containing a circle or similar device, but sometimes crosses, conventional palm leaves or initials occur, the significance of which is unknown. They

are not common, but portions of eleven examples remain at Corbridge.

¹⁰ M.J., Type 16. T.-E.G., plate 11(a).

The second type of hexagonal in section¹¹ and is often much larger than the "common square", the bases being often six or seven inches across and occasionally even larger. These larger specimens are notable examples of glass blowing, and are rare in this country, but one complete and five broken bases, decorated, like so much of the square bottles, with concentric circles, have been found at Corbridge.

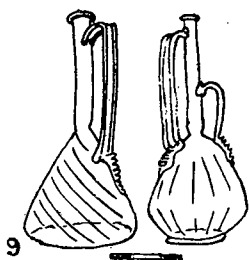
Yet another type of mould blown bottle is found throughout the Western Empire, the small square bottle with a long thin neck,¹² which dates from the second century [8]. The bodies of these are thick walled and poorly made, often of very indifferent metal of deep, but very irregular and streaky colour, although examples of better metal of clearer colour and some almost colourless examples do exist. Their necks are very long and, being disproportionately thin walled, seldom survive. They are not uncommon on the continent and the decorations on their bases have been studied there. These sometimes include initials and human figures, indeed the occurrence of the figure of Mercury is frequent enough for the whole class to be known in Germany as *Merkurflaschen*, but, beyond the conclusion that the devices refer to the contents of the bottles and not to their makers, not much has been learned from them. There are portions or fragments of twenty-seven of these bottles in the Corbridge collection.



The development of free blown glass continued, while the mould blown glass workers sacrificed progress for production and, even if the technical achievement of the tubular rimmed bowls was not surpassed, there was no falling off in the skill of the craftsmen or in their artistic ability. For during, and after the period of mass production

¹¹ M.J., Type 17. K., Types 269-70. H.-G., plate 6(c).

¹² M.J., Type 19. K., Types 105 and 106.



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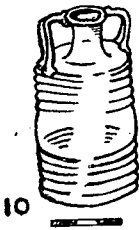
of mould blown bottles, the free blown flagon¹³ was evolved [9], not in any way inferior in technical accomplishment to the tubular rimmed bowls, they are perhaps artistically superior; indeed they combine a dignity and elegance never found in later Roman glass. In the later elaborately decorated vessels the glass worker displays his increased virtuosity but in so doing demonstrates his artistic decadence.

The free blown flask has a globular, oblate, or conical body, surmounted by a long thin neck; the thinness of the neck is compensated by the provision of a handle, also of considerable length, which is continued for some distance down the body of the vessel. Some globular examples have two short handles, in some of these one handle is made shorter than the other, but all admirably preserve an artistic unity of design. The bodies of these vessels are decorated by restrained ribbing, which may be vertical, horizontal or writhen. Their bases are usually flat or with a slight "kick", but at times the folded re-inflated bases of the tubular rimmed bowls appear also on these flasks. The base of the handle, where it joins the body of the flask, is usually pincerd, often into fantastic shapes, and it is also occasionally decorated by an applied glass medallion showing a face, frequently that of Medusa. The vessels are thin blown from metal of the highest quality and are of a considerable range of colour. Corbridge specimens, of which eight have been identified, include deep brownish black, intensely deep blue, olive yellow and pale sea green, all of which colours are of great individual purity and uniformity. These flacons and the tubular rimmed jars mark the highest development of Roman glass blowing; later Roman glass-ware shows a

¹³ M.J., Type 58 and others similar. K., Type 255 and others. T.-E.G., plates 3 and 4. Richmond, *Roman Britain* (1947), plate p. 17 (right). [H.-G., plate 6(b). B.H.-G., plate 4(a and b) illustrate variant types.]

falling off both in design and quality, except in so far as technical virtuosity and fantastically elaborate decoration can compensate for inartistic outline and poorer quality of material. This elaboration of technique and decoration is in itself evidence of a declining art.

Another type of mould blown bottle, represented by a single specimen at Corbridge, is the thin walled barrel shaped vessel¹⁴ associated with the name of Frontinus [10], one of the few instances in which the name of a Roman glass worker can be associated with his products. The Corbridge specimen was found in a very shattered condition and although reconstructed as far as possible, is still very fragile, it



does not bear any maker's name and has not the usual corrugations at top and bottom, but it is clearly of the type associated with Frontinus, who appears to have worked in Northern Gaul during the late third or early fourth century.

In striking contrast to these types of delicate and somewhat fragile vessels are the glass cinerary urns;¹⁵ thick walled, free blown, robust vessels often of large size [11]. Many of them are among the supreme examples of the glass worker's art.

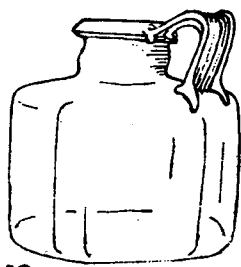


They are sparsely represented in the Corbridge collection, no Roman burials having yet been discovered there, but sporadic finds of fragments, mostly of the characteristic rims or handles, enables us to identify four specimens of the large type, two of smaller vessels, and two of a somewhat unusual pattern resembling very large squat cylindrical bottles [12], a com-

¹⁴ T.-E.G., plate 2(b). Neuburg, *op. cit.*, plate 29 (No. 96). B.H.-G., plate 4(c). H.-G., plate 6(d).

¹⁵ M.J., Types 1 to 4. K., Types 167-172. H.-G., plate 6(a). F.-R.G.K., abb. 13 and 14. F.-D.R.K., taf. 18 and 19.

plete specimen of which is in the Yorkshire Museum at York, and another is also recorded from Kent.¹⁶



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All of these are of good quality glass in shades of blue or green ranging from deep prussian blue to pale sea green.

It should be remarked that the finding of no less than eight identifiable specimens in an area which has not yet yielded a single Roman burial suggests that they were not used exclusively as cinerary urns but sometimes

at least, were put to other uses.

Glass cups, often of a very utilitarian type, were produced throughout the Roman period—their dating can only be based on typological evidence and is, therefore, somewhat tentative, but the conical beakers with integral or applied footstands,¹⁷ in dull honey coloured glass, of which there are fragments of five specimens at Corbridge, can be placed, by finds of similar cups in Egypt, as the products of the early Alexandrian glass houses. The similarly shaped beakers¹⁸ with indented sides [13] made from poor viscous metal clouded by innumerable bubbles are the very latest “Roman” vessels represented in the Corbridge collection, or indeed, elsewhere.



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They are the forerunners of the bell-beakers and tumblers of the Frankish Rhineland and of the beautiful cone-beakers and the fantastic but superb claw-beakers which found their way from the Rhineland to the graves of Anglo-Saxon England.

Between these extremes are many vessels of varying date and quality; ranging from tall beakers of absolutely colour-

¹⁶ From Broughton near Canterbury, Ward, *Roman Era in Britain*. Fig. 52(a).

¹⁷ As M.J., Types 109-11. K., Types 307, 310.

¹⁸ M.J., Type 109. K., Type 307. H.-G., plate 8(c). F.-D.R.K., taf. 16. F.-R.G.K., abb. 17.

less metal of a quality even yet unsurpassed to small straight sided cups¹⁹ with rudimentary foot-stands made by trailing thick glass threads upon their bases [14]. The metal of these varies much in quality but little in colour, being either colourless or in some pale shade of blue. Between thirty and forty of these small cups are represented by fragments or, more often, only by their thick circular bases, in the Corbridge collection. Some of the colourless conical cups are decorated with elaborate cut patterns and parts of two of these have survived at Corbridge.²⁰



Another type of vessel represented not only by fragments but also by the only complete glass vessel in the collection is the *balsamarium* [15]. These are free blown thick walled little bottles,²¹ intended to contain the unguents used during or after bathing, having rather elaborate eyelets on either side of their short necks, intended to receive rings for the attachment of metal handles. These eyelets often resemble fantastic fish and from this the vessels are often referred to as *dolphin flasks*. The free blown examples are sturdy and by no means inartistic; in the complete Corbridge example the maker has taken the trouble to fit pale green eyelets to the blue vessel with pleasing effect.



In addition to this complete example there are necks with their attached eyelets belonging to six other examples at Corbridge, two of which are very thin walled and have thin and somewhat delicate eyelets, differing notably from the robust "dolphin" eyelet. It is evident that these belong to the rarer mould blown type of *balsamarium* such as is illustrated in Honey's *Glass* (1946), plate 5(d), cf. also plate 5(c)

¹⁹ M.J., Types 71 and 72. K., Types 369 and 372. T.-E.G., plate 6(b). H.-G., plate 8(b) and 9(f). B.H.-G., plate 2(e) and 4(d).

²⁰ Richmond, *Roman Britain* (1947), plate p. 17 (centre). F.-D.R.K., taf. 38(1).

²¹ M.J., Types 33-36. K., Types 130 and 161, 164 and 166. T.-E.G., plate 7(a). H.-G., plate 8(d) and 9(d). F.-D.R.K., taf. 32-35. F.-R.G.K., abb. 28-29 and 30.

and (g), and in Haynes' *Glass* (1948), plate 2(g).²² The neck and eyelets of a similar specimen found at Housesteads are in the Black Gate Museum. *Balsamaria* of either type are rare in Britain, apart from Continental examples in the National Museums, and the finding of six specimens on a single site must be quite exceptional.

As mentioned earlier, the two most abundant types of Roman glass vessels are the square mould blown bottles and unguentarium. The latter are small vessels generally resembling a modern test tube in size and shape, except that they usually have a flattened bulbous base, and sometimes a rather bulbous body which narrows at top and bottom.²³ They were used to contain "the oil and scent which took precedence over soap in Mediterranean lands when a hardier North disdained both". The fact that the remains of only six specimens have survived at Corbridge lends force to this quotation, but it is possible that many fragments have been thrown away as unworthy of preservation. These little phials were produced in very considerable quantity in many places throughout the Roman period, and it is impossible to assign a date or place or origin to the fragmentary specimens in the Corbridge collection.

Included among the glass at Corbridge are, as one might expect, a number of fragments belonging to vessels whose exact type and origin it is difficult or impossible to determine; for example, three fragments of the flagons with double lipped rims [16] produced by Syrian glassblowers in the second, third, and fourth centuries;²⁴ these can be with equal confidence attributed to glass flagons produced in the Rhineland in the middle and late years of the fourth century.²⁵ This adds a point to the



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²² Neuburg, *op. cit.*, plate 16 (No. 54).

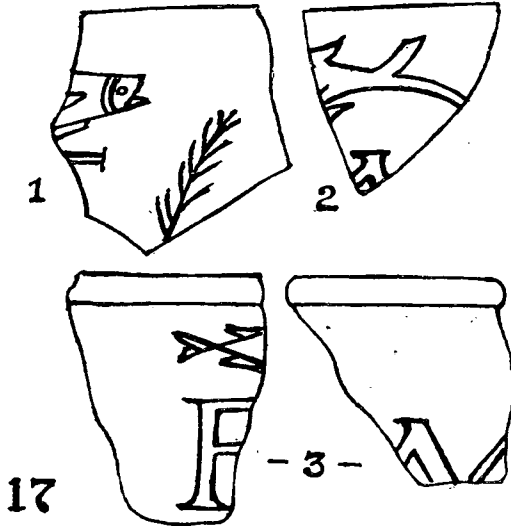
²³ M.J., Types 27, 28 and 30-32. K., Type 2.

²⁴ As M.J., Types 49 and 50. K., Types 186, 187 and 199, 200. Richmond, *Rom. Brit.* (1947), plate p. 17(left). H.-G., plate 8(g).

²⁵ Haberey. Spärtike Gläser aus Gräbern von Mayen. *Bonner Jahrbucher*. Heft 147.

words of W. A. Thorpe, which, although used in a different context, apply equally in this case, when he says—"they were made . . . by a Rhineish glass house which had Alexandrian experience in its colour department and Syrian gaffers at the chairs". This pregnant remark epitomizes at once the difficulty and the fascination of the study of Roman glass.

We may mention, but only in the hope that a fuller account may be given of them at some future time, two



1. Silchester. *Archaeologia* 58/1, page 35.
2. Chesters Museum. *Unpublished*.
3. Corbridge.

portions of the rare Roman glass cups, decorated, usually with scenes from the Circus, in coloured enamel. Very few of these have been found within the Roman Empire. There are only four other such fragments from Britain,²⁶ but a number of complete or restorable examples of the cups have been found elsewhere, particularly in Denmark,²⁷ and simi-

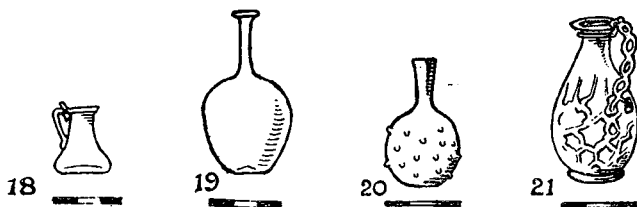
²⁶ From Chesters, Housesteads, Traprain Law and Colchester.

²⁷ S. Müller, *Ordning of Denmark's Oldsager*, i, p. 313. Wheeler, *Rome beyond the Imperial Frontiers*, 1954, plate 14(a).

larly decorated glass vessels of the Roman period as far afield as Algeria, Russia,²⁸ and Afghanistan.²⁹ The larger Corbridge fragment has been published by W. A. Thorpe in his *English Glass* (1949), p. 40, but the smaller fragment is, as yet, unpublished.

We may mention also, and for the same reason, two portions of a cup in clear colourless metal engraved with part of a fish and parts of two letters [17]. This can be paralleled by others in England and on the Continent³⁰ but they too, unfortunately, are also only fragmentary.

There are other uncommon types of Roman glass vessels represented in the Corbridge collection, sometimes only by a single but identifiable fragment, such as the very small conical flask³¹ with the single handle [18], of which three



specimens have been found. The more common larger flask with a long neck [19] and no handle³² is represented by portions of two specimens, while the much rarer similar flask whose body is decorated all over with small projections³³ is represented by a single fragment [20]. There is also a small piece of the comparatively rare third century single handled jug,³⁴ decorated with a lattice pattern in relief [21] (“nipped

²⁸ From Khamissa and Kertch. E. Michon, *Bulletin de Soc. Nat. des Antiq. de France*. 1913/14, p. 381.

²⁹ Hacken, *Recherches archéologiques à Begram*. Paris 1939. I have to thank Dr. Norling-Christensen of the National Museum, Copenhagen, for this important reference. See also Wheeler, *Rome beyond the Imperial Frontiers*, 1954, p. 162 ff., published since these notes were written.

³⁰ From Osterbuchen and Deutsch-Altenburg. *Der Römische limes in Osterreich*, vol. 1 (1900). Taf. 9 (No. 30) and Taf. 19 (No. 30). From the Saalburg. *Saalburg Jahrbuch*, vol. 9. Taf. 11 (Nos. 8 and 9).

³¹ F.-D.R.K., taf. 11. F.-R.G.K., abb. 11.

³² T.-E.G., plate 6(c).

³³ F.-R.G.K., abb. 31.

³⁴ T.-E.G., plate 6(d).

diamond wise"—Thorpe) but no specimens have survived of the "chain" handle which is a usual feature of the type.



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It might have been expected that the obviously useful wide mouthed square bottle³⁵ would have been well represented [22], but it is impossible to distinguish some portions of these from similar portions of "common squares" and only a portion of one of the characteristic wide mouthed rims survives in the collection. A beautiful but somewhat rare example of Roman glass craftsmanship in the glass plate [23], a type³⁶ one would not expect to find in a comparative outpost such as Corbridge, but nevertheless portions of the rims of two specimens have survived to prove that they were once in use there.

Many portions or fragments of Roman glass preserved in the collection are too small or too nondescript for proper identification and these have, of necessity, been excluded from these notes, but, apart from these, consideration has been given in them to over 300 identifiable examples of Roman glassware found at Corbridge; illustrating both the richness of the site and, one hopes, the remark previously made that "something may be learned even from fragments".

References have been given throughout to the type classifications of Kissa and Morin-Jean as these two works, although published so long ago, remain the standard works of reference on the subject; but as so few copies of them are available, references have also been given, whenever possible, to illustrations in later works which are more readily accessible.

³⁵ T.-E.G., plate 11(c).

³⁶ M.J., Types 90 and 91. K., Types 402, 403 and 412. Maidstone Museum, No. 169 (*Arch. Cant.*, vol. 15, p. 86).

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