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PART I: An Investigation of the Capacities of some

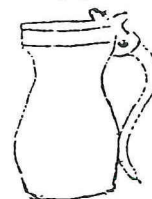
Pewter Wine Measures

by

DR. R. F. HOMER

STUDY
NO. 4

From about 1650, or perhaps a little earlier, until about 1780 the commonly used wine measure was a pewter vessel, usually lidded, of a characteristic baluster shape. These baluster measures survive in considerable numbers and can be dated fairly accurately, either by maker's touch marks or by variations in the style, particularly of the thumb-piece on the lid. In size they vary from half a gill to one gallon. Many fake measures of this type exist, but all those which have been measured have been subjected to expert scrutiny and are believed genuine.



The capacity of the measures was determined by filling them over-full, wiping off the meniscus with a straight-edge, and decanting the contents into standard laboratory measures calibrated in metric units. Repeated determinations on a number of measures indicated that the results obtained were unlikely to depart from the true capacity by more than $\pm \frac{1}{2}\%$. For convenience all the measurements have been multiplied or divided by the necessary factor to give the volume in millilitres of the quart corresponding to the measured capacity, e.g. the capacity of $\frac{1}{2}$ pint measures was multiplied by four, that of gallon measures divided by four. For those more conversant with English units, it should be noted that 1 cu. in. = 16.39 ml. In all, 160 measures have been examined.

During the period of currency of the baluster measure there were several gallons in use and it was hoped that the majority of the measures would fall into two categories, one conforming to the 'Customary' or 'Guildhall' gallon, and a second conforming to the Queen Anne gallon or its equivalent predecessors. It was also hoped that the measurements might throw some light on the significance of the crowned 'hR' mark which is found on a number of baluster measures. In fact, the capacities of the measures, with one or two exceptions which will be considered separately, varied from 880 ml. (53.7 cu. in.) to 1050 ml. (64.2 cu. in.) per equivalent quart, and no clear cut separation of the capacities into different groups was apparent at first sight, though in general there was a suggestion that early (i.e. before 1700) measures were larger than later ones.

In order to try and reveal some pattern in the results, they were plotted graphically (see Fig. 1), the horizontal axis being divided into steps of 10 ml., and the vertical axis indicating the number of measures falling in any given 10 ml. group. Fig. 1 shows a plot of all the measures examined, and also shows on the horizontal axis the values of the 'Guildhall' gallon (224 cu. in. = 918 ml/qt) and the 'Queen Anne' Wine Gallon (231 cu. in. = 946 ml/qt). If it is conceded that those measures falling within the groups marked 'A' and 'B' are intended to conform to these two gallons, there remains the large group of measures represented by 'C' which have a capacity considerably in excess of these standards, but much less than the contemporary Ale Gallon (282 cu. in. = 1155 ml/qt). The presence of this larger capacity group is also clearly revealed in Fig. 2, which is a plot of the capacities of all the measures which can confidently be dated before 1700. With some scattered exceptions, these fall into two groups, a small group between 940 and 990 ml. per qt., and a larger group of over 1000 ml. per qt.; the 'A' group is, however, missing entirely. Assuming that the two smaller capacity groups in Fig. 1 correspond to the 'Guildhall' and 1707 gallons respectively, an explanation must be sought for the group of larger capacity measures.

Mr. B. E. Moody has shown that due to a defective definition of the gallon in the surviving copies of 'Tractatus de Ponderibus et Mensuris' uncertainty resulted which led to the acceptance of a wine gallon based on the volume of 8 lb. of wine. (see pp. 31/33 sequa). The various pounds tabulated by Moody (The Origin of the 'Reputed Quart' and other Measures, Glass Technology, Vol. 1, p.55) make the existence of no less than seven different wine gallons possible. The Guildhall gallon is based

on the Elizabethan pound of 1588, or its avoirdupois predecessors; the Queen Anne Wine Gallon is based on the Hanseatic merchants' pound of 1527; and the 'Reputed Quart' appears to be based on the Troy pound.

In correspondence with Mr. Moody two or three years ago, he pointed out that a quart based on the Henry VII Merchants' pound would have a capacity of 1006 ml., shown as 'H' on Figs. 1 and 2, which is close to the mean value of this larger group. It is, therefore, at least possible that these measures are meant to comply with such a standard. If this is indeed so, then there is extant evidence for the use of gallons based on all the pounds listed by Moody, except those which went out of use in 1527.

Figure 1

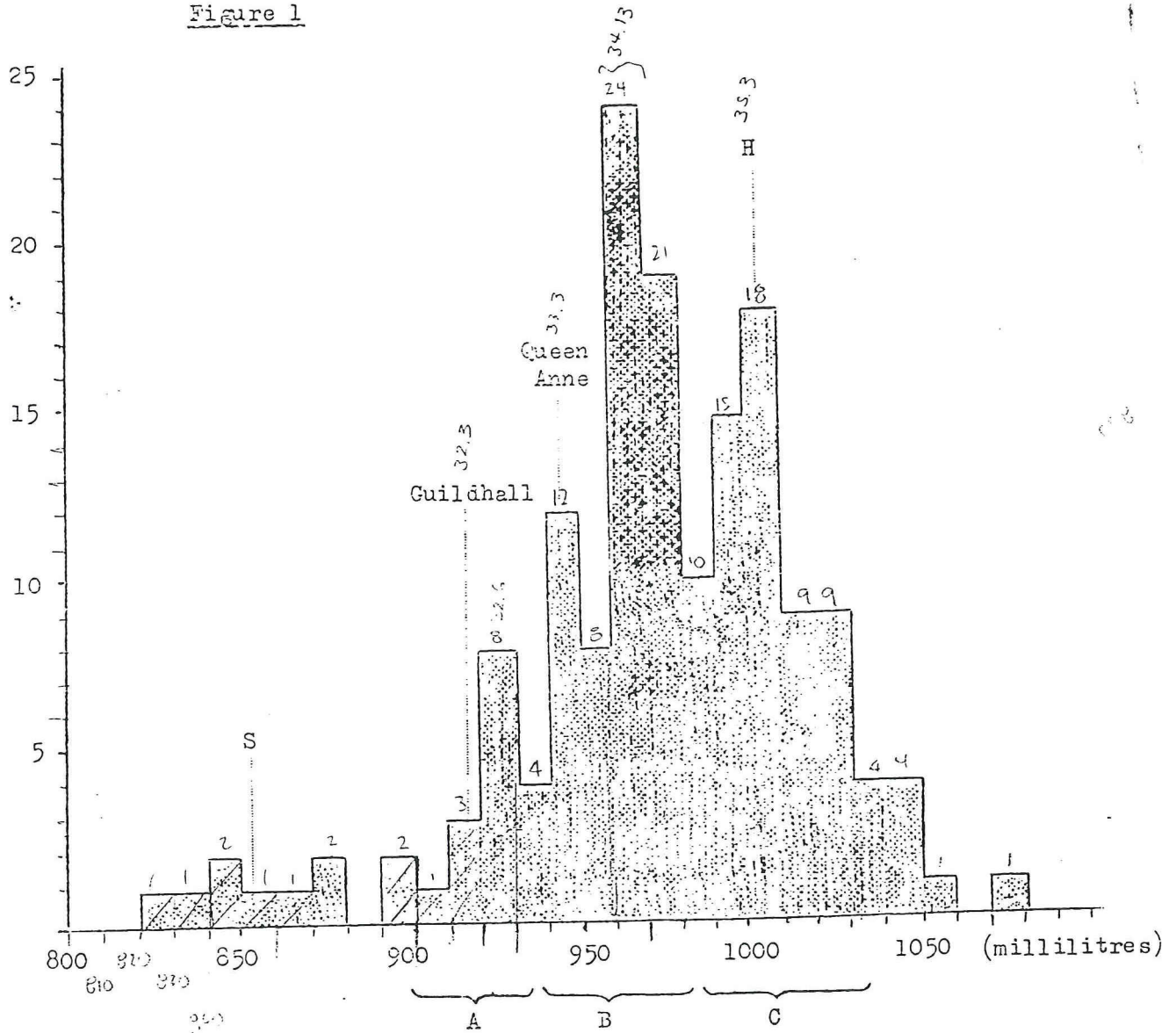
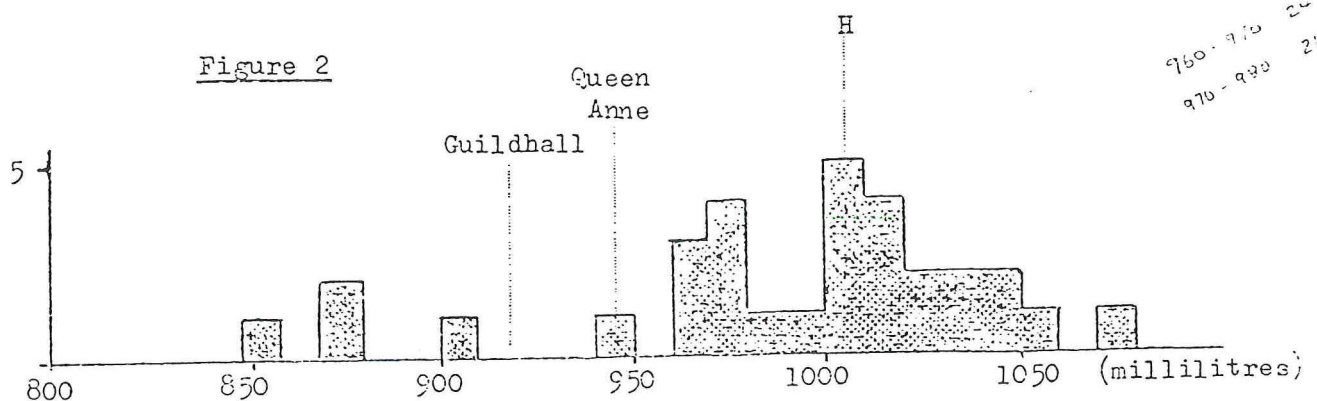


Figure 2



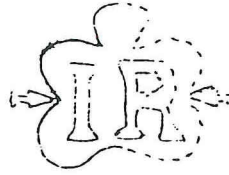
950-970 20
970-990 21

If there was such a gallon, it would not be unreasonable to surmise that the 'hR' verification stamp was meant to be used on vessels conforming to it. Unfortunately, only 26 of the baluster measures examined bear royal cypher verification stamps, as follows:-

Crowned 'hR'	9
Crowned 'HR'	4
Crowned 'RR'	10
Crowned 'AR'	2
Crowned 'IR'	1

(Fig. 3)

Figure 3



Mark on lid of half-pint 'bud' baluster measure of c.1680. Perhaps a verification stamp of James II

The 'RR' measures form a coherent group falling in the range 944 - 992 ml. with an average of 964 ml. per quart; the 'hR' measures have a large spread of capacity from 960 - 1056 ml. but six of the nine are over 1015 ml.; the average for this group is 1008 ml., very close to the calculated value for a quart based on the Henry VII Merchants' pound. The number of measures available is however small, and it may be that this result is fortuitous; the idea is, however, attractive.

While the crowned 'hR' measures are all early, the crowned 'HR' measures are all mid- to late 18th century and bear in addition, the coat of arms of London. The significance of this marking is not clear and the capacities of the four measures involved correspond to quarts of 936, 976, 1000, and 1002 ml.

In considering the 'spread' in the capacities of baluster measures it is of interest that two one pint measures from the same mould, by the same maker, differ in capacity by 10 ml. (about 5%) solely because the base of one is set higher than the other. Clearly, manufacturing tolerances were wide! Reverting now to Fig. 1, it will be seen that there is a small group of very small capacity measures of around 850 ml. per qt. which do not appear to conform to any English standard. The Scottish pint however, as defined by the Stirling Jug, was 104.3 cu. in. (1709 ml.); half of this is 854.5 ml., marked 'S' on Fig. 1, the mid-value of this small group. It is suggested that these measures (though there is no evidence that they were made in Scotland) were made to conform to Scottish standards. Three of these small measures have been subjected to close examination and have been found to have a peculiar squat shape. This results from the fact that the lower half of the body, below the join round the middle of the drum, is much shorter than usual, though the upper half of the body is normal in shape. It appears therefore, that these measures were made using a specially shortened lower half to deliberately produce a smaller than usual capacity, a device which would be quite convenient for the manufacture of small numbers of special sized measures. It is curious that there is no evidence at all for a 'reputed quart' measure in pewter.

Since the above investigation was made, a number of Imperial Standard measures, of the period 1825 to c.1860, all verified, have been measured. The capacities vary from 1120 ml. to 1184 ml. per equivalent quart, i.e. a 'spread' of about 5%. The Imperial quart of 69.3 cu. in. should measure 1136.5 ml. so that even under a uniform and imposed verification system considerable variation was possible, at least in the early days. If the variation from standard of these early Imperial measures, which lies between $-1\frac{1}{2}\%$ and $+4\%$ on the true value, is taken as representing the normal working tolerance on hand finished pewter measures and these tolerances are applied to baluster measures, there should not be any measures meant to conform to the Queen Anne Wine Gallon which have a capacity exceeding 984 ml. (i.e. $946 + 4\%$). This is perhaps additional support for the idea that a larger standard was used during the currency of these measures.

I would like to thank the authorities of the Victoria and Albert Museum, the London Museum, and the Guildhall Museum, for allowing me to determine the capacities of their measures, and acknowledge the co-operation of my fellow members of the Society of Pewter Collectors who provided the majority of the baluster measures examined.

Discussion of the gallon definition in 'Tractatus de

Ponderibus et Mensuris'

by

B. E. MOODY, M.A., F Inst.P.

(Reprinted from Glass Technology, Volume 1, No. 2, pp 65/67)

The whole evolution of the gallon rests on the definition given in the Tractatus, and it is important to try to establish what was the exact original text. In addition to uncertainty about the text, it is not clear when it became law, and also whether it was issued as a law complete in itself or just as an appendix to the 'Assize of Bread and Ale'.

The oldest of the manuscript versions is in Liber Horn, a book compiled not later than 1311 by Andrew Horn, the Chamberlain of the City of London, and presumably intended as a reference book for administrative purposes. The relevant part of the text states: 'et viij libre faciunt galonem vini' (Fig. 4) (and eight pounds make a galon of wine). No date is given, and the Tractatus is presented as a law complete in itself.

The other important manuscript is among those collected by Sir Robert Cotton in the sixteenth century, and now at the British Museum. The section concerned is headed (in translation) 'Roll of the Statutes from Henry III to the 21st year of Edward III, transcribed and examined from the Great Roll in the archives of the Tower of London'. The 21st year of Edward III's reign is 1348, and presumably the transcription was made at about that date, but the Roll from which it was copied would in parts be earlier. This text states: 'et octo libre frumenti faciunt galonem' (Fig. 5) (and eight pounds of wheat make a galon). Again no date is given, and the Tractatus is presented as a separate law.

The Cotton ^{version} seems more authoritative, not only because its source is quoted, but also because of the very careful way in which it was written. The Horn version on the other hand was apparently written rather carelessly; several words were erased and altered, and one whole phrase had to be inserted over an omission mark. Some of the other sentences in the Horn text were worded slightly differently or placed in a different order from the Cotton version, and the general impression is that the Horn version was written rather hurriedly, perhaps partly from memory.

The next quotation available is in Richard II's Patent Rolls (Rot. Pat. 2, Ric. II) and this surprisingly agrees with the Horn definition. It differs from both Horn and the Cotton text, however, in that it includes the whole Tractatus as part of the Assize of Bread and Ale. (This Assize, fixed the prices of bread and ale according to the price of wheat, and it referred several times to pounds, gallons, and bushels.)

From the fifteenth century onward, several statute books were published which attempted to collect the laws together in some sort of order, and to give dates to them. In the earliest of these books which were examined, the Assize and the Tractatus are given as separate articles, but are allotted the same year, the 51st of Henry III's reign, i.e. 1266. The next two books omit the Assize completely, but after this the Tractatus always appears twice, by itself and also as part of the Assize. A summary of all the variations is given below; the brief quotations given show which of the two versions was followed and which language.

Pynson was probably right in giving the same year for both laws, as the Assize text would have been almost meaningless if a proper definition of the weights and measures had not been available. It is not clear, however, why he put the year as 51 Henry III; he may have been quoting some other source not now in existence. It seems, however, that 51 Henry III is too early a date, because an earlier law, the 'Statute for wine and bushels' was almost certainly the work of Edward I. This is shown by the fact that Edward III referred to it (in 14 Edward III, cap. 12) as being the work of his grandfather. In this case, the Assize and the Tractatus could not have been earlier than the reign of

Edward I. (1272-1307)

Author & date of publication	Assize of Bread & Ale	Tractatus de Ponderibus et Mensuris
Pynson, 1497	51 Henry III Tractatus not included	51 Henry III 'Galonem Vini'
Pottell, 1556	-----	51 Edward I 'Galonem Vini'
Rastall, 1579	-----	51 Edward I 'Gallon of wine'
Pulton, 1670	51 Henry III 'Gallon of wine'	31 Edward I 'Gallon of wine'
Cay, 1758	51 Henry III 'Gallon of wine'	31 Edward I 'Librae frumenti'
Pickering, 1762	51 Henry III 'Gallon of wine'	31 Edward I 'Librae frumenti'

It is interesting to see how the date given for the Tractatus varied in different editions. 51 Edward I is an impossible date, as this reign lasted only thirty-four years. One possible explanation is that this mistake occurred in an earlier document and that Pynson altered the name of the king to Henry III, who reigned fifty-seven years, while Pulton and others left the king's name as Edward I, but altered the year to 31 instead of 51. Summing up, it appears that the Assize and the Tractatus were either parts of a single statute, or else were issued at about the same time, during the reign of Edward I. The exact date cannot be verified, but 31 Edward I, i.e. 1303, is quite likely to be the correct one.

With regard to the wording of the gallon definition, it is clear that 'eight pounds make a gallon of wine' was the version current in the fifteenth, sixteenth, and seventeenth centuries. It was not until Cay consulted the Cotton manuscripts for his 'Statutes at Large' of 1758 that the alternative wording of the definition appeared again. It seems, however, that the Cotton version is likely to be the original version of the law, although there can be no certainty about this. Indeed, it is quite likely that even the original document had mistakes in it; this is suggested by the presence of an interesting mistake in the Cotton text. In this the pound is wrongly defined as eleven ('undecim') ounces instead of twelve ('duodecim'), and this must almost certainly have been a writer's error. The interesting point is that the Horn version gives the correct 'duodecim' but the 'duo-' has been written over an erasion of something else, possibly 'un-'. This suggests that both versions were based on the same earlier document, and that the mistake occurred in the earlier one.

If the Cotton definition of the gallon was the correct one, the question remains as to why it failed to become more widely used. One possibility is that the definitions may have been worked out by the City of London authorities before they were adopted as law, in which case Horn may have been quoting the correct 'London' version, although the legal version was worded differently. If Horn did this, then other writers in London may have done the same, and so it could easily have become generally believed that the London version was in fact the law.