CHAPTER 15
Dating Stem Fragments of Seventeenth and Eighteenth Century Clay Tobacco Pipes*
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Studies carried on over the past decade have established certain fairly definite dating criteria for clay tobacco pipes, particularly those made in England during the seventeenth century, but almost without exception these criteria relate to the pipe bowl.1 The few definable differences in pipe stems, for which development sequences have been noted, such as increase in stem length, must be used with caution, even when it is feasible to use them at all.

It might be possible to work out a stem thickness sequence extending from the light stems of the very early (c. 1600) pipes, through a period of fatter stems, followed by a long period over which the stems became thinner and thinner. Even if such a sequence could be demonstrated, the dating of a small fragment by this means would necessitate knowing from what point along the tapering stem the fragment came; obviously impossible in most cases.

The length of the stem seems to bear a very definite relationship to the period of manufacture, and has always been recognized as a more reliable dating criteria than any other stem characteristic. Generally speaking, the stem increased from a relatively short length of possibly 6 to 8 inches during the early seventeenth century, up to the long "church warden" pipes of the early eighteenth century. There apparently was little change in pipe styles after that until the stems started to be shortened again toward the end of that century, and, with the short-stemmed nineteenth century types, we are finally back where we started.

However, the stem length is seldom applicable as a dating device, since whole stems, or even long sections, are rarely found in an excavation or when making a surface collection. In the Jamestown collection, for example, there are approximately 6,000 bowls or major portions of bowls, an estimated 50,000 stem fragments, but only three or four complete stems. Then, too, there are certain exceptions to this general rule that the stem length increased gradually throughout the seventeenth century. Although stems had become relatively long by 1700, short-stemmed pipes were also made during the last quarter of the century. In Ireland they were known as the "Dhudden", and in Scotland as a "cutty-pipe", or simply a "cutty".2

Once sufficient studies have been made, stem decoration will possibly be of value in dating stem fragments. At the present time, however, this is not of too much value, even though certain types of ornamentation appear to belong to given periods. The principal difficulty is that plain stems far outnumber decorated ones at any given time, and even a fairly large collection is likely to contain no decorated stems.

Even though it is now possible to date pipe bowls within relatively limited periods, whole, or nearly whole, bowls are usually required for dating purposes. Far too often, however, a site will yield nothing but short stem fragments, or pieces of bowls too small to date. Just recently I was shown a cigar box full of stem fragments from a site in Virginia in which there was not a single bowl or even a large bowl fragment. The usual comment when confronted with such a collection is something like this: "If there were only a few bowls, we could probably date the material, but there is not much you can do when you have nothing but stem fragments".

In working with the Jamestown pipe collection I had observed that the early pipes have relatively large holes through the stems, while the holes in later specimens are much smaller. If this represented a definite and consistent trend, then it might possibly be useful as a dating criterion. Presumably the stem hole was of constant diameter throughout, and this was determined to be the case, with one major exception, upon examining a number of relatively long fragments. The exception occurs at the mouth end of the stem, where the hole had been enlarged in the process of removing the wire which had been inserted in the clay when the pipe was moulded.

Following up this lead, stem hole diameters were secured for a series of datable pipes. In taking these measurements, only those specimens were used which could be dated within relatively limited time periods, and which had sufficient stems remaining to permit an accurate measurement to be made of the stem hole diameter. These limitations somewhat restricted the number of specimens available for measurement, particularly for the eighteenth century, since many of the characteristic bowl shapes of that period changed very little during much of the century. In all, some 330 specimens were measured, or an average of 68 for each of 6 periods. Those used for the seventeenth century periods were largely from the Jamestown collection, while the eighteenth century examples came from the collections at Colonial Williamsburg and Fort Frederica National Monument. To the statistically minded, this will probably seem like too small a sampling on which to base definite conclusions. I am quite confident, however, that the validity of the observations would not be altered through use of much larger sampling. Although it is

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1This is the second in a series of articles on clay pipes by Mr. Harrington. The first one appeared in the June, 1951, Vol. 5, No. 4 issue of this Bulletin, under the title "Tobacco Pipes from Jamestown."


3Quarterly Note, Belfast Municipal Art Gallery and Museum, September, 1914, p. 5.
quite possible that the percentages might differ slightly with a larger number of measurements, this is really of no concern, in view of the very marked "modal" distribution for each time period.

The particular periods used in the study were chosen, not to produce attractive distributions, but because these were the periods for which I was able to select an adequate sampling of datable specimens. It is quite true that many bowls could be dated more closely than the time spans used for the study. For example, several of those in the first group (1620–1650) are quite definitely earlier than 1640, and some can be placed without much hesitation at around 1620. But the majority of the specimens could not be dated within such narrow limits, so the only practical approach was to use the longer periods.

It will also be noted that the time spans are not of equal length. This is due solely to my inability to date the pipes from those longer periods within narrower limits. This is particularly true of certain bowl shapes which remained relatively unchanged over most of the eighteenth century.

In taking the measurements, I used the most practical and inexpensive equipment I could find—a set of steel drills. A set suitable for this purpose, containing 6 drills in 1/64th steps, from 1/16 to 9/64 of an inch, can be purchased at most "dime stores" for 39 cents. Results of the measurements of the 330 specimens are shown in the accompanying chart (Figure 1).

I want to make it quite clear that this study is not in the same class with a statistical analysis of a million army inductees, or a study of ten thousand college entrance candidates. Nor is it in a class, statistically or otherwise, with certain well-known sexual behavior studies. In my opinion, it would be quite ridiculous in the present instance to employ the customary statistical procedures, such as standard deviation, coefficient of correlation, &c.

USE OF THE CHART

In making use of this dating device, the first requirement is a 38-cent set of drills; the second is common sense.

Before discussing the application of the chart, I should warn that it is based entirely upon pipes of English make. Although I have not had an opportunity to study a large number of Dutch pipes, it would seem that for comparable periods, many of the Dutch pipes had smaller stems and smaller stem holes than English pipes. The bowls of these Dutch pipes are usually quite easily recognized, but if stem fragments only are available, they are not so readily identifiable.

As mentioned earlier, the finished end of the stem presents a problem, in that the hole at the very end was usually enlarged when the wire was withdrawn from the freshly moulded clay. However, such a fragment will usually be long enough to provide a normal hole measurement at the broken end.

It would be unwise, on the whole, as well as statistically unthinkable, to apply the date to the chart to a single stem fragment. Even so, it will be seen that a single specimen can be assigned to a period of not over 100 years, although this is too long a period to be of much use in most instances. For example, a specimen with a 7/64 hole could be assigned with considerable certainty to the period of 1620 to 1710. However, there is a very good chance that it would date from 1650 to 1680, and, even though one would not date a site on such meager evidence, it would serve as a clue, or as corroborative dating evidence. On the other hand, if one were considering a collection of 10 stem fragments, one with a hole diameter of 8/64, but 9 with a diameter of 7/64, a date of 1650 to 1680 would certainly not be statistically offensive.

We might take an actual situation in which a few stem fragments, but no bowls, were found. In the excavations at Fort Necessity in western Pennsylvania, 9 stem fragments were recovered. From the strata in which they were found, and from the very definite historical information available, these specimens could only have been deposited there in 1754. Of the 9 specimens, 5 have a hole size of 4/64 and 4 are 5/64. If one did not know the date of the site, and had to go to the chart for a dating clue, the resulting estimate would probably be 1730 to 1780.

A second example will serve to illustrate the soundness and the limitations of this method of dating. A deposit of material of European origin was recently uncovered in a military reservation on the James River a few miles down stream from Jamestown. The material, much of which can be dated within relatively narrow limits, all falls within the period of 1620 to 1640, or possibly as late as 1650 in some instances. I am under the impression that there were additional small pipe fragments in the deposit, but apparently only the longer stem pieces were saved. A tabulation of the

![Figure 1](image-url)
hole diameters of the stem fragments, numbering 17, is shown below, including a comparison with the distribution of hole sizes from the 1620–1650 period as shown on the chart.

<table>
<thead>
<tr>
<th>Hole Diameter</th>
<th>James River Bits</th>
<th>Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/64</td>
<td>11%</td>
<td>21%</td>
</tr>
<tr>
<td>8/64</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>9/64</td>
<td>29</td>
<td>20</td>
</tr>
</tbody>
</table>

This quite definitely places the collection in the 1620–1650 zone. The sample is too small to permit a more limited estimate, but if a larger sampling were to present the same percentages, one would be justified in advancing the dates somewhat. In any event, the dating determined from the chart coincides very satisfactorily with the evidence from other artifacts.

As stated before, common sense will always have to be used in applying this dating device to a series of stem fragments. It has its limitations, but it does appear to be useful in those all-too-frequent instances when the only clay pipe fragments available from a site are short pieces of stems.

\[ y = 19.31 - 3.26x \]