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CLAY PIPE DATING

by J.B. Palmer

This note draws attention to a method of dating kaolin pipe stems in the United States. Since work is being done on clay pipes by Wellington and Otago members, it might be of interest to note published work in that field. There may be significant differences between clay pipes of American and English origin as it would appear that until the American Revolution, all pipes in the American colonies came from abroad, principally from England.¹ This factor is perhaps important when one considers the presence of American whalers in New Zealand, particularly in the north, and no doubt some of the northern pipes will prove to be of American provenance.

Instead of concentrating on the bowl, which some might consider the most promising diagnostic feature, some American research workers have evolved their dating method by measuring the diameter of the stem hole. They found that the hole, formed by drawing a knobbed wire through the clay, was large in the early pipes but gradually decreased, "apparently levelling off at a size approximately one half of that of the earliest diameter."²

Harrington was said to be the first to note this and work out a table of stem bore versus time span.³ This was improved upon by Binford who substituted a mathematical formula which provided the calculation that the year 1931 would be the year in which the hole in the pipe stem would have ceased to exist.⁴ The Binford formula, as it is known, is said to supply a mean date of sites with a reasonable margin of error. What this margin is, and whether it is constant is not clear from the example quoted in the paper from which these notes are taken.⁵ The method appears to be worth considering where one can test its validity against clay pipe material recovered archaeologically from historically dated sites. In dating his sample from South Carolina, Eaton solemnly worked out the decimal point to give the ultimate in refinement of dates - "8.24 in the morning of December 27th, 1743".

The method consists of cleaning the stems and measuring them by using bits of various sizes, all however, in sixty-fourths of an inch. The diameter of a piece was the largest size over which the stems easily fitted. The mean hole diameter was then computed for all samples by multiplying the number of stems of one size by the numerator of the diameter, adding the products of the various sizes and dividing this total by the total number of samples. An example follows:

Diameter of piece	<u>Silver Bluff Samples</u>	
	No. of samples	Mean hole diameter
$\frac{4}{64}$	29	$\frac{(4 \times 29) (5 \times 235) (6 \times 4)}{268} = 4.91$
$\frac{5}{64}$	235	
$\frac{6}{64}$	4	
	Total	268

The Binford formula was then applied: $Y = 1931.85 - 38.26X$, where Y is the date required and X is the mean hole diameter. This gave a date of 1733.99 for Silver Bluff or as Eaton puts it "more prosaically", 1744. What factor 38.26 represents is not stated, but presumably it is made clear in Binford's original paper.⁶

While the time span is shorter in New Zealand there may be some possibility of applying dating of clay pipes, either by a refinement of the above method or on typological grounds. As few bowls or upper stems with makers' names seem to be present on Wellington sites at least, the Binford formula may enable us to follow a new line of approach. If some progress can be made in this direction then it will open up a more efficient way of evaluating the influence of European contact and changes taking place in the transition period.

1. Eaton, John. 1962. p.57. "Pipe Stem Dating and the Date for Silver Bluff, S.C." The Florida Anthropologist: Vol.15 no.2 (June 1962) pp.57-62.
 2. Ibid p.57
 3. Harrington, J.C. 1954. "Dating Stem Fragments of seventeenth century clay tobacco pipes". Quarterly of the Archaeological Society of Virginia: Vol.9 no.1.
 4. Eaton p.58.
 5. Ibid
 6. Binford, Lewis R. 1961. "A New Method of Calculating Dates from Kaolin Pipe Stem Samples". A paper before the Second Annual Conference on Historic Site Archaeology, Macon, Ga. See also two other papers on this form of dating:
- Chalkley, John F. 1955. "A Critique and a rebuttal of the paper 'Dating Stem fragments' by J.C. Harrington". Quarterly Bulletin of the Archaeological Society of Virginia Vol.9 no.4.
- Ouwake, H.G. 1958. "Kaolin pipes from the Schurz Site". Bulletin of the Archaeological Society of Connecticut No.29.