RESEARCH BULLETIN

No. 193 June 1983

STONE SUNDIAL FROM FORT PRINCE OF WALES

Lester A. Ross

In 1966 Douglas Leechman published a brief two-page article in The Beaver (Outfit 296, Spring, pp. 38-39), entitled "A Primitive Computer," in which he described an octagonal stone found amidst the rubble in the southeast bastion of Hudson's Bay Company Fort Prince of Wales (1731-82). Leechman believed the stone to be a computer, possibly having "... something to do with the passing of time or with calculations of some sort" (Leechman 1966: 38). He contacted staff at the National Maritime Museum in Greenwich, who in turn consulted a specialist on sundials at the Science Museum in London. One conclusion arrived at upon the basis of photographs was that without the presence of gnomons on the stone it could not possibly have served as a sundial. Leechman also suggested the stone may have been used by two Royal Society astronomers, William Wales and Joseph Dymond, who arrived at the fort in 1768 to observe the transit of Venus across the face of the sun on 3 June 1769.

Most of Leechman's conclusions appear to be correct, yet since his article the stone has yet to be identified either as to its function, cultural origin or temporal period of use. However, a few promising suggestions have been offered and more detailed illustrations prepared.

In 1980, resident curators of the navigation and astronomical collections at the National Maritime Museum were again queried as to their views regarding the stone. None could identify the object, although a few new thoughts were suggested:

1. The stone appears to represent an unfinished sundial, probably discarded prior to being completed, i.e., prior to having gnomons attached. The stone has eight sides corresponding to the eight major compass directions, and was designed for use as a sundial in the higher northern latitudes where summer sunlight could strike all eight sides (Figs. 1-2).
2. It is not of continental European design, but rather suggestive of mid-18th-century Scottish styles.
3. Compared with other historical instruments, the form of Arabic numerals 2, 3, 4 and 5 are similar to early 18th-century Scottish styles (Fig. 3).

Leechman noted that the stone from which the sundial was chiselled was not of local origin, and it now seems possible that a Scottish origin should be considered. The type of stone has yet to be identified positively, although based upon an examination with a 10-power hand lens, it appears to be a sandstone bordering on a metaquartzite. Individual faces on each side retain scored marks caused by toothed masonry chisels, while the incised lines and numerals provide evidence of a single-pointed, V-shaped chisel. The top face has two sets of incised Roman numerals: one set with numerals I through IX, the second set with numerals III through XII. Each numeral is separated by four quarter-hour tick marks. Each side has five faces, with only one face totally obliterated by shattering (i.e., the uppermost face on the south side). Of the 40 side faces, there were a total of 24 faces (possibly 25 counting the

obliterated face) with temporal markings, two each on the northwest and northeast sides, three each on the four cardinal sides (possibly four faces for the south side), and four each on the southwest and southeast sides (Fig. 2). Based upon the symmetry of the number of faces per side, it could be argued that the missing face on the south side did not have temporal markings, although since all other southern-facing sides had top faces, it could also be argued that markings did exist.

Leechman's observation regarding the lack of gnomons is confirmed by the lack of evidence for attachments of brass or iron fittings. Neither holes, discoloured areas nor modified areas were found on any face. If the sundial was ever to be used, 25 to 26 gnomons would have to have been present.

At least three possibly significant anomalies should receive additional attention by future researchers:

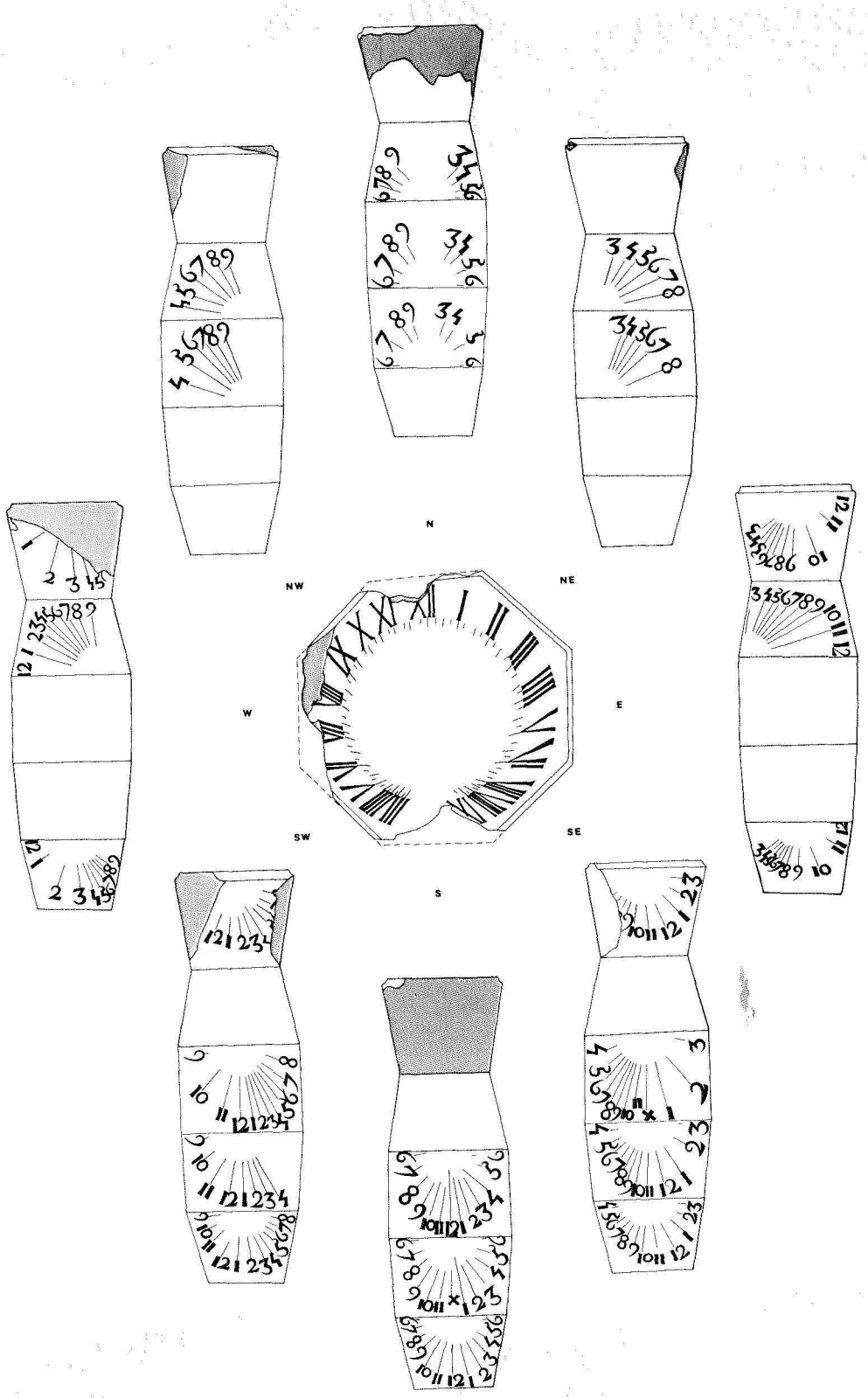
1. On the top face, the southern portion of the dial never had numerals X, XI, XII, I and II. This may be useful for identifying the latitude of intended use.
2. Roman numeral "four" was written as IIII rather than IV, possibly indicating a cultural preference.
3. On two side faces (the middle face of the southeast side and the second lowest face of the south side) the mason used an "X" to signify the Arabic numeral twelve. Use of an "X" in situations where normal spacing becomes crowded may prove to be culturally significant.

Leechman called attention to the connection with the transit of Venus expedition sponsored by the Royal Society in 1769. He quoted an article written in that year by William Wales in which a reference was made to the use of a large stone as a clock base in the southeast bastion of the fort. Curators at the National Maritime Museum believe this reference may document a functional use of the stone, but they are quick to discount any suggestion that the stone was used for astronomical calculations. The two Royal Society astronomers who viewed the transit of Venus possessed very precise instruments including at least one mechanical clock which would have been far more accurate than a sundial. Further, there is no evidence that the stone accompanied these astronomers during their trip to Fort Prince of Wales.

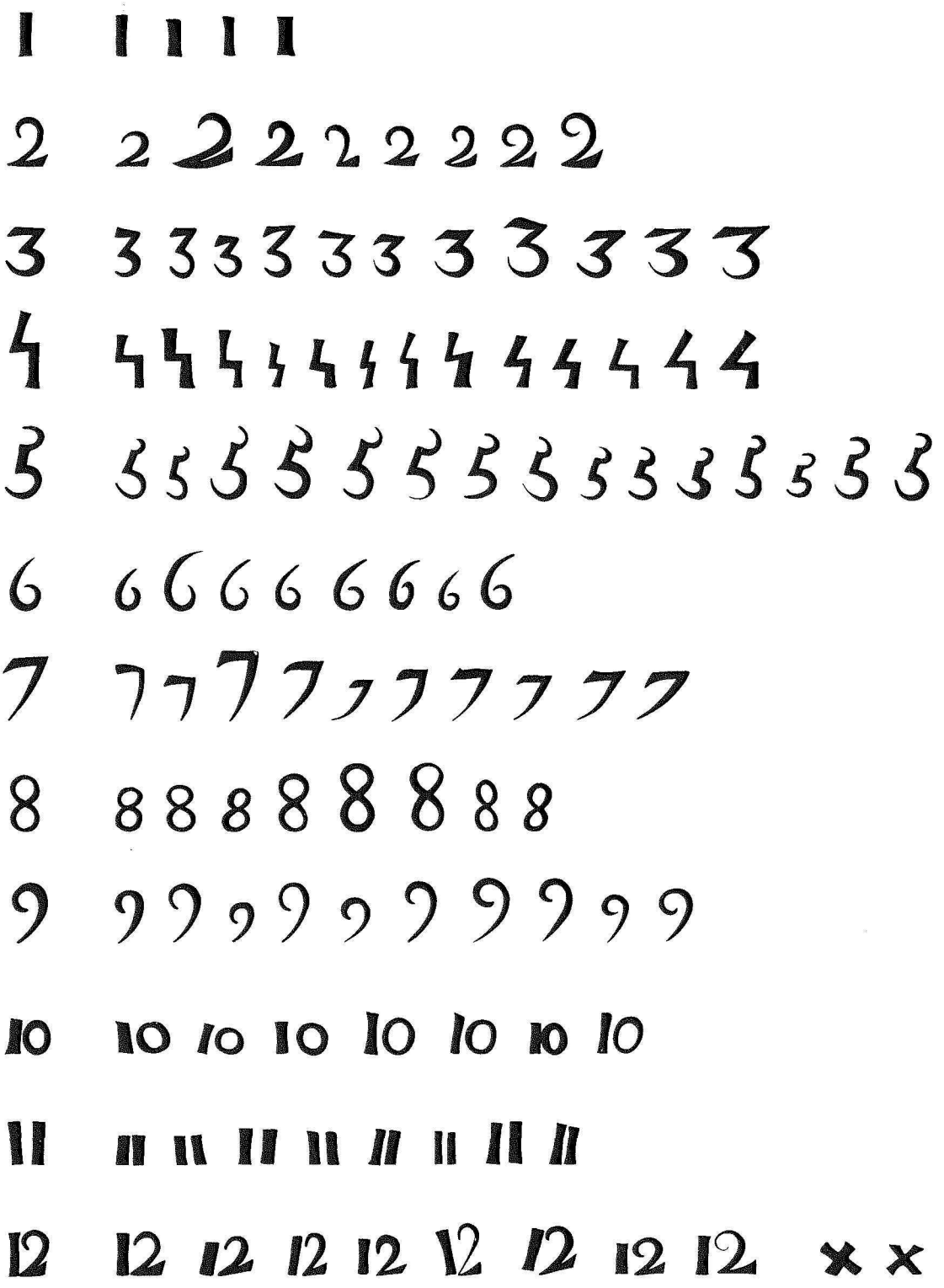
In conclusion, it is now suggested that the primitive computer from Fort Prince of Wales reported by Douglas Leechman in 1966 could have been an early to mid-18th-century Scottish sundial, broken during its construction. No evidence yet exists to explain how or why the stone arrived at the fort, or even if it arrived unmodified or completely finished. One historic reference suggests that it functioned as a clock base in the southeast bastion in 1769. Other interpretations as to its origin, date of construction or other possible uses remain unknown.

Any suggestions or references to similar sundials would be greatly appreciated, and may be sent to: Head, Material Culture Reseach, Parks Canada, 1600 Liverpool Court, Ottawa, Ontario K1A 1G2.

1 Broken stone sundial (2K1A10-14) recovered from the southeast bastion of Fort Prince of Wales. (Photo by G. Vandervlugt, Parks Canada.)



2 Compositional view of the eight sides of the Fort Prince of Wales sundial depicting the location of each side to the edges of the top face. (Drawing by D. Kappler, Parks Canada.)



3 Examples of the stylistic variations of numeral forms for Arabic numbers one through twelve found on the surviving 24 side faces of the Fort Prince of Wales sundial. (Drawing by D. Kappler, Parks Canada.)