Many navigators made reference to position finding by crossing an astronomical position line with a position line obtained by other well-known methods such as Loran, Decca, Consol, radar, W/T bearing, and visual terrestrial bearings.

It is interesting to record that one observer claimed the occasional use of Equal Altitudes for obtaining a longitude at noon, and another listed Sumner's Method for a position line. Only three observers mentioned drawing position circles when the Sun was near the zenith.

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# The Vinland Map

THE discovery of the Vinland Map and the recent publication of its description* has been attended with considerable publicity on both sides of the Atlantic, in publications ranging from learned journals to glossies. Briefly, the map, provisionally dated about 1450, was discovered by an antiquarian bookseller of New Haven, Connecticut, in circumstances which so far have precluded a proper examination of its history. It has, as a recent reviewer put it, 'no ancestors, no close relations and no descendants'. Its importance to the student of the history of navigation and discovery, however, is that (assuming it is authentic) it is by far the earliest surviving example of a map portraying any part of the Americas, and it ostensibly provides the first evidence for an early school of Norse cartography, for Vinland can clearly be identified with that part of the American continent settled by the Norsemen in the latter part of the tenth century.

Professor E. G. R. Taylor, one of the leading authorities on ancient cartography and on the history of exploration and navigation, was shown, in confidence, a facsimile of the map some years before its publication and expressed misgivings about its authenticity. Her suspicions were first aroused in 1963 when she laid a tracing she happened to be making of the coasts of Newfoundland and Labrador over the coast of Vinland as delineated on the Vinland facsimile. The coincidence of outline was sufficiently remarkable to lead her to a close examination of the whole map. Her enquiry, which relied almost entirely upon measurements, led her to the view that in all probability the map is some kind of counterfeit and that she can identify many of the sources used. The detailed proofs of this contention involve a great deal of illustration which the short time available between publication of the map and going to press with the *Journal* does not allow. However, the map has received such prominence that it was thought important to give an outline of Professor Taylor's contentions as soon as possible and to suggest that, until a more thorough investigation of the map's history is made, students of ancient cartography and the history of navigation might wish to keep an open mind on the question of the map's authenticity. The principal points Professor Taylor makes are as follows:

1. The eliptical boundary of the map fits remarkably closely the boundaries of one of the plates in *The Elements of Map Projection* by Deetz & Adams, a

* *The Vinland Map and the Tartar Relation*, by R. A. Skelton, Thomas E. Marston and George D. Painter, for the Yale University Library, with a Foreword by Alexander O. Vietor; Yale University Press, New Haven and London; 1965.

U.S. Hydrographic Office publication. This might well be coincidence, but one of the Professor's points is that the formula for the ellipse was certainly not known in 1450.

2. The mutual positions of the Shetlands, Faroes and Iceland in the Vinland map correspond precisely to those of the Mercator World Map of 1569; again this might be coincidence, but Professor Taylor's measurements indicate that the source could have been a reduced facsimile of this map reproduced in Volume 12 of *Imago Mundi*, the international review of early cartography.

3. In the introduction it is suggested that the cartographer of the Vinland map drew on a late fourteenth-century map of the Old World for southern Europe and that this may also have been the source of the Andrea Bianco map of 1436. However, the Vinland map shows Crete seriously misplaced, whereas the running curve of islands from Crete to Rhodes had been remarked by seamen from the days of the Greeks. Certainly, it seems improbable that a fifteenth century cartographer familiar with Italian maps would have drawn the Aegean Sea so incorrectly, and omitted the Sea of Marmora altogether. Further, the map shows no site for Constantinople.

4. The map portrays the West African coastline well beyond the point that had been reached by Portuguese explorers in 1450 or thereabouts.

5. The most remarkable feature of the Vinland map is undoubtedly the outline of Greenland, which is complete and drawn in modern style. This great island extends to within 6° of the North Pole (i.e. to 84° N.); however, there is no evidence that the Greenland settlers ever went further north than 76°. Climatic conditions were milder, perhaps to the extent of 3–4°C, during the period of Viking colonization, but that members of a peasant community of farmer–fishermen should undertake exploration for its own sake seems highly improbable, even had their open-decked boats been capable of circumnavigating the island.

   As early as 1351 there was a realistic map of southern Greenland marking the western settlements and with the landmark of Cape Farewell correctly placed in latitude 59°–60° N.; but it is a far cry from this map and its derivatives to the complete outline found on the Vinland map.

   Nor, suggests the professor, is the small scale on which Greenland is drawn, as contrasted with the large scale of Vinland, and the general intermediate scale of the Continents, in accord with the practice of the period to which the map is assigned. Chart making had by then been a skilled profession for at least two centuries, and a chart always carried a scale, which by the fifteenth century could be converted from leagues to latitude without trouble.

This very brief account of Professor Taylor's examination of the Vinland map (which she has only seen in reproduction) suggests at least that judgment on its authenticity should be suspended until further information is available.

M. W. RICHEY