

The Mariner's Astrolabe was used to determine the latitude of a ship at sea by measuring the noon altitude of the Sun or the meridian altitude of a star of known declination (*photo courtesy Adler Planetarium and Astronomy Museum*).

It was not possible to determine longitude at sea in the early days of transoceanic navigation, but it was quite easy to determine latitude. To go to a place of known latitude, the ship was sailed to that latitude and then sailed east or west along the latitude line until the place was reached. To find the latitude of the ship at sea, the noon altitude of the Sun was measured during the day or the altitude of a star of known declination was measured when it was on the meridian (due north or south) at night. The Sun's or star's declination for the date was looked up in an almanac. The latitude is then **90° - measured altitude + declination** .

A number of devices were used to measure the Sun's noon altitude. Among them were the quadrant, cross staff and, later, the back staff and the mariner's astrolabe. All these devices had a single use: to measure the altitude of a celestial body above the horizon. The Mariner's Astrolabe, which was popular in the late 15th and early 16th centuries, was a simple brass ring, graduated in degrees with a rotating alidade for sighting the Sun or a star. The ring was cast brass, quite heavy and cut away to keep it from blowing around in the wind. It was not a very good instrument and errors of four or five degrees were common. It should be noted that *any* instrument used to measure altitudes above the horizon can be called an astrolabe. The term *astrolabe* is often used in a context that is not the same as the classic planispheric astrolabe. A Portuguese mariner's astrolabe was found in Newfoundland in 1981, by Wayne Mushrow .

You can download a template for making your own Mariner's Astrolabe. The template consists of a Word for Windows 6.0 document with basic instructions and a PostScript file that can be printed containing the outline of an instrument. The astrolabe in the template is eight inches in diameter. Click here to [download](#) the template as a self extracting zip file (mariner.exe 51K). To expand the downloaded file into the instructions (mariner.doc) and the template (mariner.ps) simply execute the downloaded file (mariner.exe).

The mariner's astrolabe in the template is shown below:

An example of a mariner's astrolabe made from this template is shown on the page of [astrolabes made by individuals](#).

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