

Jerry Mac Mullen
382 Glorietta Blvd
Coronado CA 92118

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IT'S A WONDER THAT THEY EVER GOT HOME

The sea is so full of unanswered questions that has come to be known as our last frontier. There are the mysteries of the migration of sea life, of what lies in its vast depths, and of fine, seaworthy ships which sailed from one port for another -- and were never seen again. But to me, one of the greatest mysteries of the sea is how those old explorers ever got back home, when you consider the wretched tools ~~with~~ which they had to use for navigation.

Now, there are two kinds of navigation: You can find where you are by measuring the distance and direction you have sailed from a known point, or you can get it by taking the altitude of the sun or of stars -- or from directional radio signals. Either way, you should have something fairly accurate with which to do your measuring. And back in Cabrillo's time, the accuracy of nautical instruments left much to be desired. They had crude instruments and crude charts, and thanks to Prince Henry the Navigator they had tables of the declination of the sun -- without which a sun sight is useless.

What did Cabrillo have in the way of instruments? Unfortunately we can only guess. It is certain that he had a compass and, for warning himself of rocks and shoals, a lead-line -- for the lead-line was in use at the time of St. Paul's voyages, and the compass began to show up in Europe in the 12th Century. For taking the altitude of the sun or of the North Star he had to depend upon either the cross-staff or the astrolabe. And he had some crude means of estimating his speed, probably what was called a Dutchman's log, which worked like this: A sailor chucked a hunk of wood off of the bow and another sailor at the stern, began counting out loud what he