

## CHART PROJECTION

By Richard Sorokin

Mercator projections are used on all our charts. All longitudes and latitudes meet at 90 degrees. The further North or South you go from the Equator the more distorted are the distances. Canada, Alaska, Antarctica become huge.

On land we can use reference points such as hills, mountains, rivers, etc. to locate where we are. At sea, no such help. Men invented lines of latitude and longitude to locate where they are at sea.

The first meridian was probably the easiest the equator. It is a "great circle" which passes through the center of the earth and cuts the earth into two equal parts. From the equator to the North Pole is 90 degrees, 1/4 of 360 degrees (our special number for circle work).

The lines of latitude are drawn parallel to the Equator and are marked in degrees. North of the Equator or south of the equator. Degrees are broken down to 60 minutes and each minute to 60 seconds -1 minute of latitude is one nautical mile.

Lines of longitude go from pole to pole. Where to start? Where is 0 degrees? The first Prime Meridian went through Portugal. Prince Henry the Navigator set it up. The British became the rulers of the sea and moved it to Greenwich, England where they had an observatory to mark the sun's passage. 12:00 noon - the sun is over Greenwich, England.

Longitude lines are all great circles they cut the earth into two and are all of equal length and can be used to measure distance. From Greenwich the sun goes west as does lines of longitude - at 180 degrees the longitude line is known as the International Date Line and the sun's passage over it ends one day and begins another. Going from Greenwich east - the lines of longitude are measured from 0 to 180, but are marked as East longitude.

All reading of location in degrees must be labeled as being north or south latitude and east or west longitude.

Charts today are Mercator projections. All lines of longitude are parallel on the charts, but in reality they are not. The further north you go the more the error. As you go north, the degrees of longitude or latitude lines represent different distances. Only measure distances on great circle lines -lines of longitude -the lines going from North Pole to South Pole.

A straight line is the shortest distance between two points, but not on a nautical chart. Great circle routes are the shortest distances on charts. Most planes and ships correct their courses every 200 miles.

Remember, you measure latitude (north and south) on longitudinal meridians and you measure east and west on latitude meridians. All distances are only measured on great circle lines and they are longitude lines.