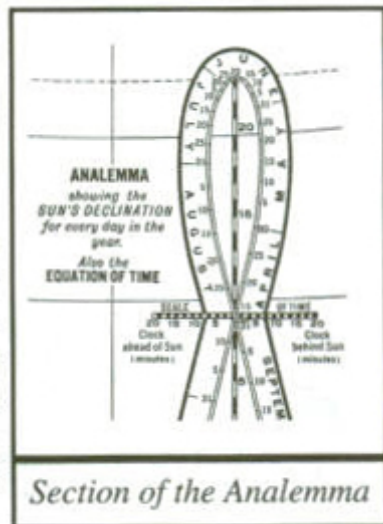


What is the Analemma?



The Analemma or vertical sunray indicator is the diagram of the large figure 8 in the Pacific Ocean. (The Analemma is not shown on some globes; i.e. Physical/Political globes.) For every day in the year, the Analemma shows the latitude where the Sun's rays are vertical and the Equation of Time, which tells whether the clock is ahead or behind the Sun time.

The Analemma extends between the points $23 \frac{1}{2}$ north and $23 \frac{1}{2}$ south only, or between the Tropic of Capricorn and the Tropic of Cancer. The region between these lines is known as the tropics. The Sun's rays do not fall vertically outside the tropics.

To those living in the United States and the Northern Hemisphere, June 20th is the longest day and December 21st is the shortest day in the year. The Analemma shows that the vertical rays of the Sun have reached the northern-most point on June 20th and the southern-most point on December 21st. The Sun's rays are more direct on June 20th in the Northern Hemisphere and less direct on December 21st than at any other time in the year.

One can easily discover where the Sun's rays are vertical on specific days. For instance, on December 21st, one finds the latitude to be $23 \frac{1}{2}$ south. The Equator crosses the Analemma on March 21st and September 23rd indicating that on these days the Sun's rays fall directly on the Equator.

The term Equation of Time shows the difference between mean solar time (clock time) and solar time (Sun Time). It is shown by a horizontal scale of time. A good watch and the sun do not keep the same time. According to solar time (sun time) a day may vary in length from $23 \frac{3}{4}$ hours to $24 \frac{1}{4}$ hours, whereas according to the mean solar time (clock time) a day is always 24 hours long. Stretching a piece of paper parallel with the nearest meridian from a certain date to the scale of time will show how much ahead or behind clock time the sun time is. For instance, on November 2nd the Sun is 16 minutes fast according to the clock time and on February 11th it is 14 minutes slow. Mean solar time and solar time match on June 20th, April 14th, August 30th, and December 20th.