

## PROBLEM XXII.

As the sun passes vertical twice over NAVIGATORS' ISLES, In what degree of the ecliptic and days of the calendar do the circumstances occur ?

*Solve with the Globe.*

RULE.—Bring the sun's centre on the ecliptic circle to the degree where he first passes over the Isles. Note the degree and the day to the same when next the sun is in the same position over the Isles, and the degrees and the days will be found. A.—When the sun is first vertical he is in the 4° Libra on October 25. At the next transit the sun is in 27° Capricorn on the 14th February.

## PROBLEM XXIII.

When does the sun rise and set at the Bermudas, on January 27, and how long is the place in passing through the evening and morning twilight ?

RULE.—Bring the place to the movable meridian for the day given and screw fast the hour pointer to the globe's axis, while it remains at rest. Then turn the globe west till the Bermudas are below the circle marked "twilight begins," and also when they reach the point of sunrise. The difference of the two times gives the period of the morning passage through twilight and the latter number the time of sunrise. Do the same at the evening setting sun and the problem will be solved.

A.—The place is in the morning twilight 1h. 25m., and the time of sunrise 4m. after 7h. a.m. Time in the evening twilight, 1h. 38m., and the sun sets at 5h. 2m. p.m.

## PROBLEM XXIV.

To find the longitude between two different places on the globe ?

*Solve with Globe.*

RULE.—Bring one of the places to the solar meridian and place the axial pointer to that plane, rotate the Globe by the handle till the other place is below the meridian, and the degrees of arc passed over will give the difference of longitude.

Q.—What is the difference of longitude between London (Eng.), and Toronto ? A.—5h. 17m. west. Between New York and Toronto 20m. in west longitude.

## PROBLEM XXV.

To find when continuous twilight takes place after sunset. How long it continues at the following different places in England, Scotland and Ireland.

*Solve with the Globe.*

RULE.—Work as directed in Problem XXI.

London—Twilight begins May 21st; ends July 22nd.

Bristol—Twilight begins May 21st; ends July 19.

The Lands End—Twilight begins June 4th; ends July 10.