What is the sun's declination on the 15th of April? A 10° N. Jan. 21? June 21? Sept. 21? Nov. 21?

PROBLEM VIII.

To find the time of the Sun's rising and setting at any place.

RULE.—Find the sun's declination and elevate the north or south pole, according as the declination is north or south so many degrees above the horizon, as are equal to the sun's declination ; bring the given place to the brass meridian, and set the index of the hour circle to 12   Turn the globe eastward till the given place comes to the horizon, and the index will shew the time of the sun's rising.   Turn the globe to the west verge of the horizon, and the index will shew the time of his setting.

At what time does the sun rise and set at Hartford on the 5th of February ?
A. The sun rises at 7, and sets at 5.

PROBLEM IX.

To find the length of the day and night at any time in the year.

RULE.—Double the time of the sun's rising and it gives the length of the night. Double the time of his setting and it gives the length of the day.

What is the length of the shortest day at Hartford ?   A. 8 h. 56 min.
What is the length of the longest day and shortest night at Edinburgh ?

PROBLEM X.

To find the Antæci, Periæci, and Antipodes of any place.

EXPLANATION.

The Antæcians are those who have the same longitude as ours, but have the same latitude south as we have north.   Their summer is our winter

RULE.—Bring the given place to the brass meridian, and count as many degrees on the meridian south of the Equator as the given place is north ; and you will find the Antæci.

The Periæcians are those which lie under the same degree of latitude, but have 180° difference of longitude.   They have contrary hours ; noon when we have midnight.

RULE.—Bring the given place to the brass meridian, set the index to 12, turn the globe till the index points to the other 12, then under the latitude of the given place you will find the Periæci.

The Antipodes are those who have the same latitude south that we have north, and differ 180° of longitude.   Their hours, days, and seasons differ from ours.

RULE.—Bring the given place to the brass meridian, turn the globe half round, then count as many degrees south of the Equator as the given place is north, and you will have the Antipodes.

Required the Antæci, Periæci and Antipodes of Hartford.
A. Antæci are in the northern part of the island of Chiloe.   The Periæci are in the Desert of Shamo in the Chinese Empire.   The Antipodes are in the Southern Ocean south-east of the island of St. Paul.

PROBLEM XI.

To find how many miles make a degree of longitude in any given parallel of latitude.

RULE.—Lay the quadrant of altitude parallel to the equator between any two meridians in the given latitude, which differ in longitude 15 degrees : the number of degrees intercepted between them multiplied by 4, will give the length of a degree in geographical miles.   The geographical miles may be brought into English miles, by multiplying by 116, and cutting off two figures from the right hand of the product.

EXAMPLE.—How many geographical and English miles make a degree in the latitude of Pekin ?