

**THE FRANKLIN GLOBE MANUAL:  
AN AID TO THE STUDY OF  
GEOGRAPHY AND ASTRONOMY  
WITH  
THE USE OF ARTIFICIAL GLOBES**

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The Franklin Globe Manual: An Aid to the Study of Geography and Astronomy with the Use of artificial globes by Various

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**VARIOUS**

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## P R E F A C E.

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THE publishers having been frequently requested to furnish a work which should aid both the teacher and the student in the use of Artificial Globes, have prepared the following pages.

As most of the works on the Use of the Globes are too voluminous and scientific to meet the need of many schools, the present has been made as small as is consistent with a clear presentation of the subject. While much that is foreign to the design—though given by other authors—has been excluded, it is believed that all necessary information has been retained.

Without severe and patient study—not of books alone, but also of the heavens themselves—none can become Astronomers. Yet no one should be *wholly* ignorant of that system to which our earth belongs, and of the simple laws which govern it.

Still more important is it that correct ideas, in regard to the shape, size, and *relative* position of the various natural and political divisions of the earth's surface, should be entertained. The study of Geography, with no other aid than that afforded by the Map, usually results in confused impressions of relative positions; for as the representations of the Earth's surface are all made upon planes, the continents, islands, &c., seem distorted, and their relative positions and distances changed. For example: A student may remember the Map of the Eastern and Western Hemispheres, and may have a tolerably correct idea of the situation of England with respect to France; but he must pause awhile, and, in imagination, join the two Hemispheres before he can determine its position in reference to New York. And still more difficult will it be for him to gain a correct idea of the voyage from China, across the Pacific, to our Western shores; for after following the Eastern course to the right-hand edge of the Eastern Hemisphere, he must apparently go backward to the left-hand edge of the Map of the Western Hemisphere, and then begin his easterly voyage again.

The Globe represents the countries, oceans, &c., as actually situated upon the earth, thus destroying many of the sources of error which are found in the use of Maps alone, and becoming the most useful and powerful ally of the teacher of Geography.

To render the use of the Globes simple and practical, has been the object of the publishers; and they trust that their efforts may not be wholly in vain.

The principal part of the work has been taken from an English treatise by THOMAS TATE; such corrections and additions having been made as were rendered necessary by the progress of the science of Astronomy.

March 5th, 1858.

# CONTENTS.

## PART I.—ON THE USE OF THE GLOBES.

	PAGE
THE TERRESTRIAL GLOBE.—Definitions and Explanations.....	5
Problems on the Terrestrial Globe.....	10
THE CELESTIAL GLOBE.—Definitions and Explanations.....	24
Problems on the Celestial Globe.....	25

## PART II.—ASTRONOMY.

OBJECTS OF ASTRONOMY.—General View of the Heavens.....	29
The Solar System.....	33
The Earth and its motion.....	34
The Moon.....	43
The Sun and Planets.....	47
Atmospheric Refraction.....	55
Twilight.....	57
The Tides.....	57
The Fixed Stars.....	59
THE DIVISIONS OF TIME.—The Calendar.....	61
EXERCISES.....	64



# ON THE USE OF THE GLOBES.

## THE TERRESTRIAL GLOBE.

### DEFINITIONS AND EXPLANATIONS.

1. A **GLOBE** or sphere is a round body, whose surface is everywhere at the same distance from a point within it called the center.

A **HEMISPHERE** is half the surface of the globe. The horizon divides the upper from the lower hemisphere in the heavens; the equator separates the northern from the southern on the earth; and the metallic meridian standing on any place on the terrestrial globe divides the eastern from the western hemisphere.

The pole of a great circle on a sphere is everywhere 90 degrees distant from it.

2. All circles on the globe are supposed to be divided into 360 equal parts, called degrees. Each quadrant of the circle, therefore, contains 90 degrees. By means of these degrees the magnitudes of angles are measured.

3. The **TERRESTRIAL GLOBE** is an artificial representation of the earth. On this globe the four great divisions of the world, the different empires, kingdoms, and countries, the chief cities, seas, rivers, etc., are truly represented, according to their relative situation on the surface of the earth. The diurnal motion of this globe is from west to east.

4. The **AXIS OF THE EARTH** is an imaginary line, passing through the center, upon which the earth turns.

This line is represented, in the artificial globe, by the wire which passes through the north and south poles.

5. The **POLES OF THE EARTH** are the two extremities of the axis. One pole is called the **NORTH OR ARCTIC POLE**, the other, the **SOUTH OR ANTARCTIC POLE**.

6. The **EQUATOR** is a great circle passing round the globe at equal distances from the poles. It divides the globe into the **NORTHERN** and **SOUTHERN HEMISPHERES**.

The **EQUINOCTIAL** is the equator referred or extended to the heavens. When the sun appears on the equinoctial, the days and nights are equal all over the world.

7. **MERIDIANS** OR **LINES OF LONGITUDE** are semicircles extending from pole to pole. These lines cut the equator at right angles.

The meridian passing through Greenwich is called the **FIRST MERIDIAN**.

8. The **BRAZEN MERIDIAN** is the circle of brass within which the artificial globe turns on two axes representing the poles of the earth. One half of the brass meridian is

graduated from the equator to the poles, that is, the point over the equator is marked 0, and the point over the poles is marked 90—this enables us to find the latitude of a place; the other half of the brass meridian commences with 0 at the pole and ends with 90 at the equator—this enables us to elevate the pole to the latitude of the place.

Great circles divide the globe into two equal parts, as the equator, ecliptic, and the colures.

Small circles divide the globe into two unequal parts, as the tropics, polar circles, parallels of latitude, etc.

9. The **LONGITUDE OF A PLACE** is the distance of the meridian passing through that place, from the first meridian, reckoned in degrees on the equator. Longitude is either east or west, according as the place lies to the east or west of the first meridian. The edge of the brazen meridian is usually employed for drawing a meridian through any given place.

10. **PARALLELS OF LATITUDE** are small circles drawn parallel to the equator.

The **POLAR DISTANCE OF A PLACE** is its distance from either of the poles.

11. The **LATITUDE OF A PLACE** is its distance north or south from the equator, reckoned in degrees on the brass meridian.

Parallels of celestial latitude are small circles drawn on the celestial globe parallel to the ecliptic.

Parallels of declination are small circles parallel to the equinoctial on the celestial globe, and are similar to the parallels of latitude on the terrestrial globe.

12. The **TROPICS** are two small circles drawn parallel to the equator at the distance of  $23\frac{1}{2}$  degrees from it. The tropic in the northern hemisphere is called the **TROPIC OF CANCER**, and that in the southern hemisphere the **TROPIC OF CAPRICORN**.

13. The **POLAR CIRCLES** are two small circles drawn parallel to the equator at the distance of  $23\frac{1}{2}$  degrees from the poles. The north polar circle is called the **ARCTIC CIRCLE**, and the south polar one the **ANTARCTIC CIRCLE**.

14. The **ZONES**. The surface of the earth is divided by the tropics and polar circles into five parts, called the zones. The portion lying between the tropics of Cancer and Capricorn, is called the **TORRID ZONE**; between the tropic of Cancer and the Arctic circle, the **NORTH TEMPERATE ZONE**; between the tropic of Capricorn and the Antarctic circle, the **SOUTH TEMPERATE ZONE**; between the Arctic circle and the north pole, the **NORTH FRIGID ZONE**; between the Antarctic circle and the south pole, the **SOUTH FRIGID ZONE**.

15. The **ECLIPTIC** is a great circle representing the sun's apparent path throughout the year. It touches the tropics of Cancer and Capricorn, and is inclined to the equator at an angle of  $23\frac{1}{2}$  degrees. The two points where it cuts the equator, or equinoctial, are called the **EQUINOCTIAL POINTS**.

16. **SIGNS OF THE ZODIAC**. The ecliptic is divided into 12 equal parts, called the signs of the zodiac; each part, therefore, contains 30 degrees. There are six northern

signs, and six southern ones. The sun appears in the former during our spring and summer months, and in the latter, during our autumn and winter months: the days on which the sun enters the different signs are as follows:

## NORTHERN SIGNS OF THE ZODIAC.

## SPRING SIGNS.

- ♈ *Aries*, the Ram, 21st of March.  
 ♉ *Taurus*, the Bull, 20th of April.  
 ♊ *Gemini*, the Twins, 21st of May.

## SUMMER SIGNS.

- ♋ *Cancer*, the Crab, 21st of June.  
 ♌ *Leo*, the Lion, 23d of July.  
 ♍ *Virgo*, the Virgin, 23d of August.

## SOUTHERN SIGNS OF THE ZODIAC.

## AUTUMNAL SIGNS.

- ♎ *Libra*, the Balance, 22d of September.  
 ♏ *Scorpio*, the Scorpion, 23d of October.  
 ♐ *Sagittarius*, the Archer, 22d of Novom.

## WINTER SIGNS.

- ♑ *Capricornus*, the Goat, 21st of Decem.  
 ♒ *Aquarius*, the Waterman, 20th of Jan.  
 ♓ *Pisces*, the Fishes, 19th of February.

17. The EQUINOCTIAL POINTS (that is, the two points where the equator cuts the ecliptic) are Aries and Libra. The former point is called the VERNAL EQUINOX, and the latter the AUTUMNAL EQUINOX. When the sun is in either of these points, the days and nights are equal all over the world.

18. The SOLSTITIAL POINTS are the points where the ecliptic touches the tropics of Cancer and Capricorn. When the sun is in or near these points, the variation in the length of the days is scarcely perceptible. When the sun enters Cancer, it is the longest day to all the inhabitants in the northern hemisphere, and the shortest day to those in the southern hemisphere. On the contrary, when the sun enters Capricorn, it is the shortest day to the people who live in the northern hemisphere, and the longest to those who live in the southern hemisphere.

19. The COLURES are two great circles which pass through the poles: one of them, called the EQUINOCTIAL COLURE, passes through the equinoctial points; the other, called the SOLSTITIAL COLURE, passes through the solstitial points.

The principal lines on the globe, which have just been described, are represented in the annexed figure: thus *ns* represents the axis of the earth; *n*, the north pole; *s*, the south pole; *eq*, the equator; *eqn*, the northern hemisphere; *eqs*, the southern hemisphere; *nts*, a meridian; *lt*, a parallel of latitude; *ln*, the polar distance of *L*; *cv*, the tropic of Cancer; *gp*, the tropic of Capricorn; *de*, the arctic circle; *fq*, the

