school at nine o'clock in the morning, and the Honolulu boy is breaking his night's fast at 6 a. m., and the Chinese boy is dreaming of kites and fire-crackers.

At St. Petersburg, in sixty degrees north latitude, the speed of the rotation is about nine miles a minute; in Paris it is eleven and a half; at the equator it is eighteen miles a minute, or a thousand miles an hour, which equals the flight of a cannon ball.

The earth rotates once in twenty-four hours. The proof is found: (*a*) In the apparent rotation of the Great Dipper and other stars, every twenty-four hours; (*b*) If a stone is dropped from a high monument or cliff, it always falls east of a vertical line.

The *effects* of this rotation are to cause: 1. An alternation of day and night; 2. A flattening at the poles; 3. The apparent motion of the sun, moon and stars, in the opposite direction.—*King's Methods and Aids in Geography.*

7. The Yearly Motion of the Earth, or Its Revolution

A globe held before the light streaming in through a solar camera gives the pupils the best idea of the illumination of the earth, and the changes of the seasons. A common lamp and the globe, used on a dark afternoon, will answer very well.

If three pasteboard maps or writing charts be spread out upon the teacher's desk, and a large ball be placed in the centre, or, better, to avoid confusion, if the teacher place a circular piece of paper of a bright colour on the centre of the chart, to represent the sun, the pupils will have a pretty good representation of the sun, the plane of the earth's orbit and the orbit itself. A small globe carried around the *edge* of these charts, not above the edge, the north pole always pointing towards the north, will help the children to imagine how the world travels around the sun each year. Place something high up on the north side of the room to represent the North Star.

The globe placed on the side of the representative sun nearest the North Star, with the north pole pointing towards the supposed North Star, will be in such a position that the children can readily tell the season of the year north of the equator and south of the equator, if they remember about perpendicular and oblique rays of light. Place the globe on the opposite side of the sun, the axis still inclining as before, twenty-three and a half degrees, and ask the pupils to tell how the rays of light, supposed to be shining from the supposed sun, will strike the portion of the globe near the north pole; near the United States. They will answer correctly.

The next day the children can be led to see why the tropics are placed where they are, and also in reference to the Arctic circles.

Now call their attention to the reasons for the zones, their characteristics, and the fact that the zones are belts.

With the same simple apparatus, the teacher can lead the boys and girls to imagine when the sun will be in the zenith at noon to a person standing on the equator; on the tropic of Cancer; on the tropic of Capricorn.—*King's Methods and Aids in Geography.*

8. Change of Seasons.

The principal effect of the revolution of the earth, together with the inclination and unvarying direction of the earth's axis, is the change of seasons.

Another effect is the change in the length of day and night.

A third effect is the apparent yearly motion of the sun through the different signs of the zodiac.

Learn the significance of the dates, September 21, December 21, March 21, June 21.

September 21 the sun will be directly over the equator, the terrestrial hemisphere from pole to pole will correspond with the hemisphere of illumination and the line of illumination will extend from pole to pole. Hence every parallel will be half lighted at once.

Consequently day and night will be the same length throughout the world. The sun will rise in the true east and set in the true west.

March 21 the sun is over the equator, and the days and nights will be equal.

December 21 the sun will be directly over the tropic of Capricorn. This tropic will be more than half lighted, and the day will be longer than the night to any living on that tropic. The difference on the equator, December 21, between day and night, will not be very great. But the tropic of Cancer will have a smaller part of the circle lighted than is not lighted, hence then the day will not be as long as the night. On the fortieth parallel north latitude, the difference will be very great. December 21, the day is ten hours and five minutes, and the night is thirteen hours and fifty-five minutes.

December 21 the sun, at noon, on the fortieth parallel north latitude, is not very high in the heavens; and we speak of the sun being very far to the south. The arc cut on the sky this day is small, and consequently the sun rises and sets south of the true east and west.

December 21, on the Arctic Circle, the sun will only appear at noon in the south, as if about to rise. Within the Arctic Circle no sun will be seen at this time. Darkness reigns supreme.

The Arctic night in Smith Sound lasts a third of the year. Dr. Hayes has given several sublime descriptions of the darkness.

As the south pole is turned towards the sun at this time, this part of the earth receives an unusually large amount of light and heat. The sun is now perpendicular over the tropic of Capricorn, and illumines a hemisphere extending ninety degrees south and ninety degrees north of this circle. Ninety degrees south will carry the light as far as the farther side of the Antarctic Circle. The day on this circle will be just twenty-four hours long. Within the circle the day will be more than twenty-four hours long; and it will grow longer and longer till the south pole is reached, when it will be six months long. At this season of the year the days will be longer than the nights everywhere south of the equator. Consequently the nights must be longer than the days *north* of the equator.

Suggestive Questions.

The teacher should ask such questions as the following:

1. December 21, what is the length of day at the Arctic Circle? Of the night?