

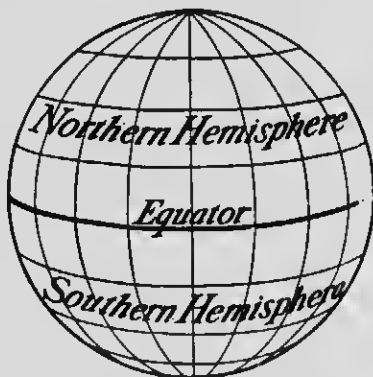
true north. Even uncivilized people know and use these four points.

The Compass. Instead of telling direction by means of the sun or stars, an instrument called a *compass* is used. This instrument has a magnetic needle supported so as to swing about a point.

A magnetic needle will always come to rest so that one end points toward the *North Magnetic Pole*.

If the north pole and the magnetic pole were the same, the compass would tell us the true north. The north magnetic pole is in northern Canada, and is some distance south of the north pole. Hence, it is necessary to know how much a compass varies from the true north, if we wish to measure direction accurately by means of it.

Daylight and Darkness. The earth, in its daily rotation, turns from west to east, so that the sun *seems* to move from east to west. The rate of rotation of the earth is usually measured by means of the sun. As the earth rotates toward the east, the place where we live turns first into sunlight and then into shadow, giving us day and night. Just before



A diagram of the earth showing the equator and the hemispheres.

the sun appears in the eastern part of the sky, and just after it disappears in the western part, we have *twilight*. During twilight the sun is shining through the upper

air, and its light is reflected to the earth, making it partly light, or twilight.

Meridians. When the sun is over an imaginary north-south line passing through our home, we say it is *noon*. This line, if extended, would pass through the north and south poles, and is known as the *meridian* or *mid-day line*.

Every place to the east or west of us is on a different meridian and has its noon

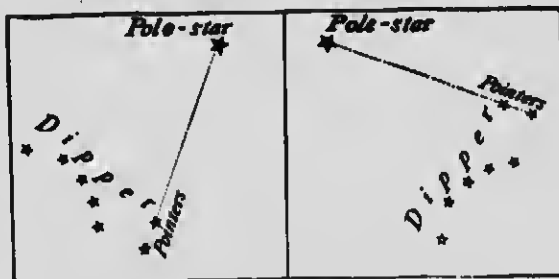
at a different time from ours, because the sun cannot be over more than one meridian at a time. The sun passes a meridian to the east of us before it is over our meridian, and hence places to the east have their noon earlier than we have ours, and places to the west have theirs later.

Longitude and Time. One meridian—that passing through Greenwich, England—is known as the *first*, or *prime meridian*, and time all over the world is compared with Greenwich time. We describe the position

of places to the west of Greenwich as being in *West Longitude*, and to the east of it as being in *East Longitude*.

As it takes the earth twenty-four hours to make a com-

plete rotation, the sun seems each hour to pass over fifteen degrees of the complete 360 degrees of the earth's circumference. Therefore, points which are fifteen degrees



The apparent change in position of the Big Dipper in six hours. It seems to revolve around the Pole-star every twenty-four hours.



A compass.