



**FIGURE 4.4.** Apparent path of the sun in the sky at the equinoxes and solstices for eight latitudes on the globe.

for it comes from the Latin words *aequus*, equal, and *nox*, night.

### Winter solstice

At winter solstice, December 22 or 23, the north polar end of the earth's axis is inclined the full  $23\frac{1}{2}^{\circ}$  away from the sun (Figures 4.5 and 4.6). Our view point in

Figure 4.6 is from the plane of the ecliptic opposed to the direction of the earth's orbital motion, with the sun to the right. The circle of illumination is tangent to the Arctic and Antarctic Circles,  $66\frac{1}{2}^{\circ}\text{N.}$  and  $\text{S.}$  respectively, but still bisects the equator. For the earth-bound observer, the sun's path in the sky at winter solstice is shown in Figure 4.4 by a series of circular paths labeled "December solstice."

Strikingly different from equinox conditions is the