FIGURE 11.12 The rotation of a plane about a horizontal axis.

required rotation, and then returning R to its original position. The second is more direct, though perhaps somewhat more time consuming.

PROBLEM

Rotate the plane (N 83 E, 52 S) 80° clockwise, as viewed looking toward the northeast, about an axis plunging 30° to the N 42 E.

APPROACH

As a pole P rotates about the axis R with constant angle, it will generally describe a small circle on the surface of the sphere. This circle projects as a small circle on the stereonet. While it is useful to draw this circle as an aid to visualization (Fig. 11.14; see Chapter 14 for the method), it is not necessary to do so. A sketch will do. The construction technique consists of rotating the plane containing both the rotational axis and the line in question, rather than rotating the line directly.

CONSTRUCTION (Fig. 11.14; after Turner and Weiss, 1963, p. 69)

1. Plot the rotational axis R and the pole P of the plane to be rotated.
2. Construct the great circle trace representing the plane perpendicular to R.
3. Construct the trace of the plane containing P and R to intersect the plane of step 2 at L. The angle between P and R can be easily read ($= 41°$).
4. As P rotates about R, so too will the line of intersection L rotate in the plane perpendicular to R. To find the final position of L ($= L'$) count off the required 80° from L going clockwise. In this
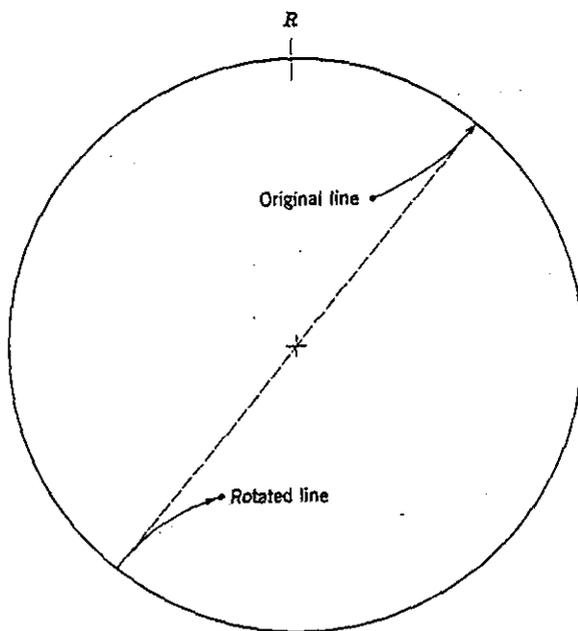

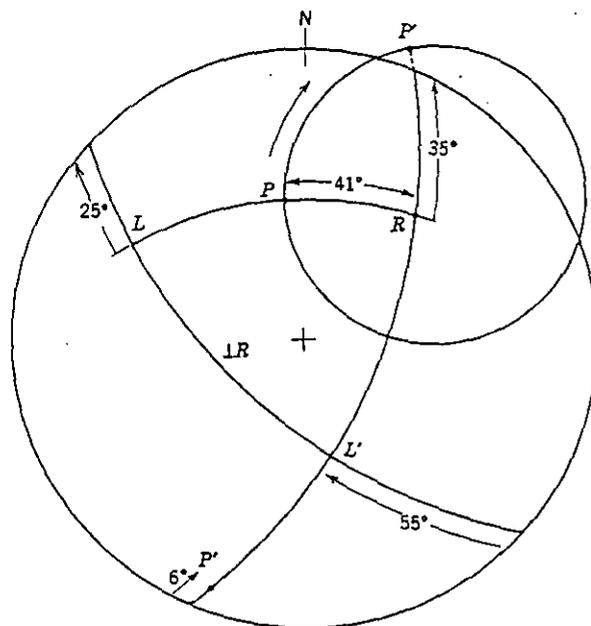FIGURE 11.13 The rotation of a line to the horizontal and beyond.

FIGURE 11.14 Rotation of a plane about an inclined axis.