

*Direction, Motions and Phases of the Solar Spots.*—As the result of the sun's motion upon his axis, his spots always appear first on his eastern limb, and pass off or disappear on the west.

The figure of the sun affects not only the apparent *velocity* of the spots, but also their *forms*. When first seen on the east, they appear narrow and slender, as represented on the left of Fig. 1. As they advance westward, they continue to widen or enlarge till they reach the centre, where they appear largest, when they again begin to contract, and are constantly diminished till they disappear.

Another result of the revolution of the sun upon an axis inclined to the ecliptic, and the revolution of the earth around him, is, that when viewed from our moveable observatory, the earth, at different seasons of the year, the *direction* of the spots seems materially

to vary. This fact is illustrated by fig. 2. In June we have, so to speak, a side view of the sun, his pole being inclined to the *left*. Of course, then as he revolves, his spots will appear to ascend in a straight line. In September we have passed around in our orbit, to a point opposite the south pole of the sun, and the spots seem to curve upward. In December we have another side view of the sun, but we are opposite the point from which we had our first view, and on the other side of the ecliptic. The result is, that the poles, of the sun are now inclined to the *right*; and the spots, in passing over his disc, incline downward. The polar inclination of the sun, as given in the figure, is greater than it actually is in nature the present design being merely to illustrate the *principle* upon which we account for the peculiar motion of the solar spots.



THE PALM TREE.

This tree was considered one of the most important productions of the East. It was remarkable for its erect and cylindrical stem, crowned with a cluster of long and feather-like leaves; and is as much esteemed

for its fruit, the date, as for its juice, whether fermented or not, known as palm-wine, and for the numerous uses to which every part of the plant is applied. The finest palm trees were about Jericho and Engeddi.