

or dome, or hemisphere. However, if we sweep the sky with the eye from the horizon to the zenith, or the reverse, it will be seen that the dome is not spherical but that it is flattened, the appearance being that it is farther to the horizon than to the point overhead. The preceding is true whether looked at by day or by night, particularly in a cloudless sky. This is easily demonstrated by estimating say the point of the heavens midway between the horizon and the zenith or the point overhead, and then measure with an instrument the elevation of the point of bisection. It will be found that the halving point is only about half as high as it appears to be. The physiological effect of passing the eye from its normal position towards the horizon, to overhead, is to give the impression of a depressed vault or dome, and the arc we bisect is not that of a semi-circle but the segment of a larger circle. Any one who has been in our Rocky Mountains will recall the impression of "the giants towering to the skies," but when we measure their angular elevation we find the "towering" very much lessened; physiological effect, due to our constitution. A similar illusion we may notice in the apparent size of constellations near the horizon.

The most familiar object for this illusion is of course the moon, although the sun shares it equally, but I suppose the most of us see the moon rise more frequently than the sun, reminding one of the man who when asked, if he ever saw the sun rise, answered, "I don't go to bed as late as that."

Many observations and measurements have been made on the sun and moon by setting up a circular disk and viewing alternately, say the moon and disk, always moving to or from the disk until it appeared the same size as the moon, and then measuring the distance to the disk. From such and mathematical considerations it is found that the moon appears of its proper size when elevated between 30° and 35° , while when it is on the horizon it is nearly two and half times larger, and when high up in the sky only about half as large as it should be.

When Coleridge lets the "Ancient Mariner" say:—

"All in a hot and copper sky,
The bloody Sun at noon,
Right up above the mast did stand,
No bigger than the Moon,"

he gave expression to the fact, just stated above, that our dispenser of life and light, and our satellite appear small when they are high in the heavens.

Now for another phenomenon, that we observed later as the gloaming was receding. Let us paraphrase the well-known couplet into,