

it show as a vast panorama the nobility and grandeur of truth and justice and righteousness ; let it be living, earnest, given from a warm heart and enlightened brain. You are sowing seed ; if it be not mouldy, shrunken, dried, baked, lifeless, you may hope that there shall some of it fall in good ground and bear fruit, some thirty, some sixty, and some an hundred fold.—*Dr. Willard, in Chicago Teacher.*

A DOMINIE'S TALK WITH HIS PUPILS.

THE EXTENT AND CONFIGURATION OF THE STARRY UNIVERSE.

"Our talk to-day," said the dominie, "will carry us into a subject on which much has been attempted and much conjectured, yet little learned. It is probable that these conjectures date as far back as the days of the patriarch Job, who, in the magnificent poem which bears his name, speaks repeatedly of Arcturus, Orion, and the Pleiades, or 'Seven Stars,' under the ancient names of *Ash*, *Keel*, and *Kimah*.

"No doubt Job and other wise men of his day believed, as all do now who allow their faith to follow the lead of their sight, that the earth is a solid, immovable center, around which the sun, moon, and stars daily revolve. And so natural is this idea of our *centrality* that it is scarcely possible even for an astronomer, however veteran, to look up on a starry night to 'the spangled heavens,' and see them

—in solemn silence all

Move round this dark terrestrial ball,

without mentally asking the question, 'Do not these stars crowd the great concave in every direction? Do they not enwrap us, as it were, in a garment of light? We are certainly not on their *outskirts*. Must we not of necessity therefore be in their centre, or very near it?'

"To answer this question it is necessary that some one study the configuration and, if possible, the extent of the starry universe, and gather for our guidance some reliable data. Until within the last hundred years no one seems to have made so much as an attempt at this study; and this neglect arose, not so much from a lack of interest in the subject as from a lack of any reliable plan by which the star-depths might be sounded.

"About one hundred years ago, or a

little later, the great English astronomer, Sir Wm. Herschel, a German by birth, conceived a plan by which this grand problem might be attacked, if not mastered. For this purpose he was furnished with the most powerful telescope then in existence—a telescope whose light-gathering power was equal to that of a human eye in which the pupil had been dilated from one-eighth of an inch to eighteen inches diameter. With this enormous increase of the power of vision he began, in the year 1784, to sweep the whole heavens in successive zones, about as wide as four times the apparent diameter of the moon, counting in each zone and recording as exactly as possible all the stars visible in the fields of view. The rule by which he guided himself was this: Assuming that the stars, like trees in a forest, are scattered throughout space with a fair degree of uniformity both as to position and magnitude, and that the brighter and seemingly larger stars are less distant than those which are faint, and that his telescope was powerful enough to reach the boundary of that system of stars of which our sun was supposed to be a member, he thought that by counting and recording the number of stars in each portion of the sky he might be able to determine the portion in which the star-stratum was thinnest, and in which we are therefore nearest the boundary, just as a person in a moderate and thinly-wooded forest may judge its boundary to be nearest on that side where fewest trees are to be seen.

"Sir Wm. Herschel had not proceeded far in these sublime labors before he made some unexpected and surprising discoveries, as I informed you in our last talk, which for a time diverted him from his main purpose, and which at the same time con-