

the apex of the shoot of a bambusa, and at another on the rapidly-growing stem of an American aloe (*Agave Americana*), precisely as the astronomer places his cross of net-work against a culminating star. In the collective life of physical nature, in the organic as in the sidereal world, all things that have been, that are, and will be, are alike dependent on motion.

The breaking up of the Milky Way, of which I have just spoken, requires special notice. William Herschel, our safe and admirable guide to this portion of the regions of space, has discovered by his star-gaugings that the telescopic breadth of the Milky Way extends from six to seven degrees beyond what is indicated by our astronomical maps and by the extent of the sidereal radiance visible to the naked eye.* The two brilliant nodes in which the branches of the zone unite, in the region of Cepheus and Cassiopeia, and in the vicinity of Scorpio and Sagittarius, appear to exercise a powerful attraction on the contiguous stars; in the most brilliant part, however, between β and γ Cygni, one half of the 330,000 stars that have been discovered in a breadth of 5° are directed toward one side, and the remainder to the other. It is in this part that Herschel supposes the layer to be broken up.† The number of telescopic stars in the Milky Way uninterrupted by any nebulae is estimated at 18 millions. In order, I will not say, to realize the greatness of this number, but, at any rate, to compare it with something analogous, I will call attention to the fact that there are not in the whole heavens more than about 8000 stars, between the first and the sixth magnitudes, visible to the naked eye. The barren astonishment excited by numbers and dimensions in space, when not considered with reference to applications engaging the mental and perceptive powers of man, is awakened in both extremes of the universe, in the celestial bodies as in the minutest animalcules.‡ A cubic inch of the polishing slate of Bilin contains, according to Ehrenberg, 40,000 millions of the silicious shells of Galionellæ.

The stellar Milky Way, in the region of which, according to Argelander's admirable observations, the brightest stars of the firmament appear to be congregated, is almost at right angles

* Sir William Herschel, in the *Philos. Transact.* for 1817, Part ii. p. 328.

† Arago, in the *Annuaire*, 1842, p. 459.

‡ Sir John Herschel, in a letter from Feldhuysen, dated Jan. 13th, 1836. Nicholl, *Architecture of the Heavens*, 1838, p. 22. (See, also, some separate notices by Sir William Herschel on the starless space which separates us by a great distance from the Milky Way, in the *Philos. Transact.* for 1817, Part ii., p. 328.)