## MACHINERY OF THE HEAVENS RUNNING DOWN. 425

gaze at night upon the stellar host we descry the nearest members of a cluster of suns, which, vast as it is, has limits which have been surveyed. Sir William Herschel, with the graduated powers of his great telescope, sounded the depths of the firmament, and determined its extent in every direction. In the midst of this circumscribed cluster of suns our solar luminary holds a position.

Beyond the confines of the outermost zone of stars lies an empty void. Sir William Herschel, with the higher powers of his instrument, looked through the loop-holes of our firmament, and sent his vision across the cold and desert space which spreads out on every side. The cheering starlight that had accompanied every farther stretch across the populated fields of our firmament now forsook him, and he gazed only upon dread emptiness and blackness. For a moment he imagined he had caught a glimpse of infinity; but lo ! across that measureless void appears another firmament ! And still other firmaments, on every side, beam on us with a blended gleam which fuses their constituent suns into a cloud. These are the nebulæ.

To what order of distances are they removed? Are their histories identical with the history of our firmament? Is infinite space occupied by an endless succession of such starry clusters? These are questions which we shall find answered when thought is permitted to penetrate one step farther, and set foot within the bounds of the supernatural world.

These systems of suns, with their probably attendant planets and satellites, all exist *under one constitution*. The spectroscope has demonstrated that the light of the different heavenly bodies is substantially identical. It has demonstrated the identity of the *luminous matter* of sun, and comets, and stars, and nebulæ. It has declared the existence of carbon in the comets, of hydrogen, potassium,