

59.
Supersession of astronomical view.

60.
Plenum substituted.

able processes, which afford to our understanding a convenient resting-place, a temporary and provisional foundation upon which to build. But this aspect upon which the astronomical view of nature is based, which governs almost half the exact science of the nineteenth century, and which still enjoys popular favour, was in the course of the century dispelled or superseded by the theory of action by contact. According to this view, empty space disappeared in the imagination of natural philosophers, a plenum being put in the place of the vacuum of intermediate space. This change of aspect, which was brought about mainly through the study of the phenomena of radiation, may be identified with the name of Faraday. To him and his school it seemed more natural to reduce mechanical action to processes in the immediate vicinity of the acting centres, and they accordingly filled empty space with an imaginary something called ether, and undertook the very fruitful task of defining in terms of measurable quantities the properties and the behaviour of this all-pervading substance or entity. What we may call the second school of French mathematicians after Laplace, those who were largely influenced by Fresnel's discoveries, adopted an intermediate position, looked upon the ether as an atomic structure, and attempted to explain the movements of this structure on the same lines as physical astronomy had followed in the calculation of cosmic phenomena. They employed attractive and repulsive forces acting at very small distances, as astronomers had used them at very large distances. This remnant of the astronomical view was finally destroyed in the school of