

trapezium is a mass of stars, the rest of the nebulae also abounding with stars, and exhibiting the characteristics of resolvability strongly marked." At a subsequent period (1848) Lord Rosse had not announced that his expectations had as yet been fulfilled, although he cherished the hope of being able to resolve the remaining portion of the nebula into stars.

When we separate the results of actual observation from those of mere inductive conclusions in this much-disputed question of the existence or non-existence of a self-luminous, vaporous matter in the universe, we find that although the increasing improvements in telescopic vision may indeed considerably diminish the number of nebulae, they can not by any means wholly exhaust them. By the application of increasing powers, each new instrument may resolve what the preceding ones had left unresolved, but it must, at the same time, in consequence of its greater powers of penetrating space, replace (at least partially) the resolved nebulae by others not previously reached.* A resolution of the older, and the discovery of new nebulae, would therefore follow one another in endless succession, as the fruit of increased optical power. For if we suppose a different result, we must either, according to my view, assume the occupied regions of space to be limited, or that the world-islands, to one of which our system belongs, are so remote from each other that no telescopic instrument can ever be invented of sufficient power to penetrate to the confines of any other of these worlds, and that our last or extremest nebulae may resolve themselves into clusters of stars, which, like the stars in the Milky Way, "are projected on a black ground entirely free from vapor."† But can we believe in the probability of a condition of the universe, and of a degree of perfection in optical instruments, in which the entire firmament will no longer exhibit any unresolved nebulous spots?

The hypothetical assumption of a self-luminous fluid, appearing, when sharply defined, in round or oval nebulous spots, must not be confounded with the equally hypothetical assumption of a non-luminous ether pervading the universe, and generating by its undulatory motion the phenomena of light, radiant heat, and electro-magnetism.‡ The emanations from cometary nuclei, which, in the form of tails, frequently extend over enormous tracts of space, disperse the substance of which they are composed—and with which we are unacquainted—

* Compare *Edinburgh Review*, vol. lxxxvii., 1848, p. 186.

† *Cosmos*, vol. iii., p. 144, and note.

‡ *Ibid.*, p. 34.