

If the spectroscope had done nothing else than this, it would have established a far reaching and most important generalization, and one which enables us to develop a uniform and homogeneous theory of cosmical evolution, impossible without this knowledge.

If we look up at the sky on one of these brilliantly clear nights, we see stars scattered more or less irregularly over the whole hemisphere visible to us. The number visible to the unaided eye at one time is generally much overestimated, the maximum number being about 3,000 instead of millions as I have heard some people express. The great majority of these objects, as well as thousands of times as many more rendered visible by telescopic aid, are suns shining with their own intense light and heat, many of them similar to our own sun, while many are in earlier or later stages of development, and of larger or smaller size. Besides the stars and the planets, of which latter there are generally not more than two or three visible to the eye at one time, close scrutiny, and knowing where to look, will enable to detect a few objects which look like faint hazy stars but which, when viewed by the telescope, present an altogether different appearance, have a more or less extended, misty, hazy, nebulous appearance generally without sharply defined boundaries. These are what are called the nebulae, and, though not so numerous as the stars, nevertheless number many thousands throughout the sky.

When analysed by the spectroscope some of them give a continuous spectrum, indicating a source composed of luminous solid matter probably in the form of dust or small particles. Others, notably the Great Nebula in Andromeda, the largest in the sky, give an absorption spectrum similar in some respects to that of our sun, indicating a stellar origin of the light, and showing that these bodies are possibly Galaxies or Universes like our own situated at almost inconceivable distances. Many of the nebulae, the Great Nebula in Orion, the most beautiful in the sky, being a conspicuous example, give bright line or emission spectra indicating the elements hydrogen, helium and a gas unknown on the earth which, for want of a better name, we call nebulium. Considerable speculation has been indulged in as to the nature of nebulium which is generally considered to be a very simple form of matter. Only last month a paper appeared in the Monthly Notices of the Royal Astronomical Society by Dr. J. W. Nicholson which assumed the atom of nebulium to be of the nature of a positive charge of electricity surrounded by a revolving ring of negative ions three or more in number. Calculating mathematically the wave lengths of the lines given by such a system they were found to agree quite