

are due to collisions and that after the vapour has cooled down they become nebulae ready to again develop into suns.

We may be able to roughly compute the probability of such collisions maintaining the energy of the universe. We may assume that the time required for a body to be developed from the nebula, pass through all its stages to extinction, is of the order of 500,000,000 years. If we further assume that there are 100,000,000 stars in the visible universe it is evident that if a new star and in consequence a nebula were to appear every five years, it would suffice to maintain the universe at its present brilliancy. As a matter of fact, there seems to be no doubt that, from the past few years, new stars have appeared at intervals of from 5-10 years, which, allowing for the fact that the less brilliant of such objects may easily escape detection, seems sufficient to establish a continuous cycle of development of the universe.

Hitherto we have considered the evolution of the stars or suns themselves from the primal nebula, and have passed over, what is fully as important from our standpoint, the formation and development of planetary systems. Now that we have, I hope, obtained some idea of the methods and laws governing the formation of suns, we will have to consider those relating to the attendants of the suns, the planets, and we will find that the same principles apply. We know, of course, that our own sun has a number of planets revolving around him, and travelling with him in his journey through space but we have no means of knowing except by analogy whether other stars are similarly accompanied for even the largest of telescopes could not possibly detect planets like ours. We do know that the double stars, pairs of suns revolving around one another, can not have attendant planets as the perturbations would soon cause them to be drawn into one or other of the pair. The latest estimate places the proportion of double stars as nearly one-third of the whole. Of the remaining two-thirds, it seems probable that the conditions, which gave rise to planets in our own system, should be effective in many if not most of them, and there are likely many millions of planetary systems throughout the universe.

The history of the development of planetary theories is a most interesting one, but I have not time to more than briefly touch upon it. Although some vague and curious notions were entertained by the ancients, it was not until the middle of the eighteenth century that Wright of Durham, England, published a theory of the universe. This was read by the young philosopher, Kant, who at once turned his brilliant mind to the problems of cosmogony, and in 1755 published a treatise on the subject, marked by the beauty and generality of its treatment.