

4. The Carbon Stars. The light reddish, and the spectrum marked by flutings with the sharp edges lying towards the red. Carbon is present. Bright lines are sometimes seen.

How have the circumstances here briefly sketched been interpreted? Let me quote from Hale, one of the most distinguished of living astronomers—cautiously sane in dealing with the speculative :

" Our problem is like that of one who enters a forest of oaks, and desires to learn through what stages the trees have passed in reaching their present condition. He cannot wait long enough to see a single tree go through its cycle of change. But on the ground he may find acorns, some unbroken and some sprouting, others have given rise to rapidly growing shoots, and saplings are at hand to show the next stage of growth. From saplings to trees is an easy step. Then may be found, in the form of dead limbs and branches, the first evidences of decay; reaching its full in fallen trunks, where the hard wood is wasting to powder.

Scattered over the heavens are millions of stars, each representing a certain degree of development. The cloud form of the nebulae tells us of stellar origins, the white, yellow and red stars illustrate the rise and decline of stellar life; and the earth itself affords a picture of what may remain after light and heat have been extinguished."

This view of the evolution of worlds, so briefly and simply, yet effectively stated, is accepted very generally by those competent to entertain an opinion in this regard. Nebulae—some tenuous throughout, others, as the great nebula in Orion, showing well marked nuclei of condensation, others grasping in their vast folds, as in the Pleiades, and regions of the Milky Way, whole systems of well defined stars, all of an extent vast when compared with our solar space—disclose an evolutionary movement into stars. Stars of the earlier types, with their freer light and low specific gravity, confirm their affinity to the nebulae. Continued condensation builds up stronger atmospheres that tell their story in the spectral lines, until in the Antarean and Carbon Stars the last period of luminous stellar life is reached. In the great advance one cannot demand uniformity of development; rather, on the other hand, diversity of process, often difficult to explain. Yet no longer can the fact of progressive development along certain broad lines be questioned.