

are present in the sun, and very often, at least, in the stars. Exceptions may arise, but probably they will hardly suffice to invalidate the rule.

The large, dark, dense bodies which are directly known to us are the planets and their satellites. There are, however, many indications that the heavens are occupied by great numbers of "dead" suns, incrustated and therefore no longer luminous. Such appear to be the only conclusions which can be drawn from a study of the energetics of solar evolution, for sooner or later a sun must cool from loss of energy until at length a crust forms, and, barring catastrophe, it must then endure forever. Moreover, as we have seen, the varying aspects of the stars seem to disclose suns in all stages of such a process.

More nearly direct is the evidence furnished by study of variable stars of the Algol type. Algol itself (β Persei) is a star of second magnitude with a period of 2 days, 20 hours, 48 minutes, 53.8 seconds. During each period

hitze flüchtigen Stoffe mussten in ihr vorkommen. Eine entsprechende Beschaffenheit muss heute noch die Atmosphäre der Sonne besitzen." — G. KIRCHHOFF, — "Untersuchungen über das Sonnenspektrum und die Spektren der Chemischen Elemente." Abhandlungen der Königlich Akademie der Wissenschaften zu Berlin, 1861. Zweite, durch einen Anhang vermehrte Ausgabe. Berlin, 1862.