The beginnings and the end of worlds.

Mr. Percival Lowell is an artist in the writing of popular books on astronomy. While, as is well known, his chief interests lie with the planet Mars, concerning which he has published two interesting works, he has lately produced a volume of wider range, entitled "The Evolution of Worlds" (Macmillan). Like all his books, this one is a delight to the eye, being sumptuously printed, tastefully bound, and finely illustrated. The elegance of its make-up is well matched by the fascinating style in which it is written. The title of this latest essay on astronomical evolution is somewhat larger than the subject; for the author confines himself to a consideration of the birth of a system like that of our sun and its attendant planets. The systems of double-stars, which bestrew the sky by the tens of thousands, are not studied. The original hypothet-

ical nebula, from which Laplace traced the development of our system, is relegated to the astronomical ash-heap. Mr. Lowell says: "Darwin's theory distinctly avers that we were *not* descended from monkeys; and Laplace's fire-mist under modern examination evaporates away." To account for the origin of our system we are introduced to the more modern speculation that some dark star, feeling its way by the starlight through the darkness of infinite space, comes into collision with another star, or at best barely grazes it. Titanic forces are thus brought into play. The encountering worlds are disintegrated, and the ruins assume the form of a spiral nebula. From this beginning of our family of planets, Mr. Lowell leaps lightly over unmeasured æons of time, and proceeds to describe the inner group of planets — chiefly Mercury and Venus, as we see them to-day — with special reference to the observations made at his own observatory at Flagstaff, Arizona. The asteroids and the large outer planets are next described in illuminating fashion. The reader is then in position to understand better the ensuing discussion of the formation of the planets from the spiral nebula, and of their subsequent history as the heated masses gradually become cold, and fit for the support of life analogous to that on the earth. This part of the argument is beset with numerous pitfalls for even the wariest feet, which the author seems to realize, when he says: "Attacking the subject in this judicial spirit, the reader can hardly expect one to satisfy him with a cosmogony entirely home-made, but at best to pursue a happy middle course between creator and critic, advocating only such portions as happen to be my own, while sternly exposing the mistakes of others." Having led us in this manner through the history of the planets down to our own day, Mr. Lowell goes further and considers the death of a world. The moon is already dead; Mars is going into senility. Even the sun itself, now so plethoric with energy, will some day lose its last spark. "Ghost-like it will travel through space, unknown, unheralded, till another collision shall cause it to take a place again among the bright company of heaven." The cycle of change is then finished, and a new cycle has begun.
