

## CHAPTER VIII

### LIFE AND THE COSMOS

#### I

#### THE SIGNIFICANCE OF FITNESS

A HALF century has passed since Darwin wrote "The Origin of Species," and once again, but with a new aspect, the relation between life and the environment presents itself as an unexplained phenomenon. The problem is now far different from what it was before, for adaptation has won a secure position among the greatest of natural processes, a position from which we may suppose it is certainly never to be dislodged; and natural selection is its instrument, even if, as many think, not the only one.<sup>1</sup> Yet natural selec-

<sup>1</sup> Natural selection remains still a *vera causa* in the origin of species; but the function ascribed to it is practically reversed. It exchanges its former supremacy as the supposed sole determinant among practically indefinite possibilities of structure and function, for the more modest position of simply accelerating, retarding, or terminating the process of otherwise determined change. It furnishes the brake rather than the steam or the rails for the journey of life; or in better