

verse which have dwarfed the labors of otherwise great minds, and kept back the truths which the world now chiefly values; and it is due to the enlargement of men's views respecting the vastness of nature's periods and spaces that all true progress in our acquaintance with the universe has been achieved.

The two categories of time and space have been at last acknowledged as admitting unlimited series of relations of succession and co-existence;\* but the category of causation is as yet restricted to finite series of phenomena. This, too, must be enlarged and the truth recognized that forces have been at work from all eternity, and that processes of vast duration have been required to produce the effects which we behold around us. A series of changes in the direction of organization may as easily be conceived to extend through millions of centuries as through a few thousand years; and such a conception clears away at once that thaumaturgic character which such phenomena usually present. *Nil admirari*. Amazement at the lofty reaches of natural processes belongs to the infantile stage of the human mind. The enlightened intellect may contemplate with a serene satisfaction of the highest order the relatively vast operations and achievements of physical law, and this is the final and purified form of what is called the religious sentiment in man; but to lose one's self in wonder and awe is only to confess ignorance and refuse instruction.†

Neither is there more need to assume an external conscious and intelligent guiding power in biology and anthropology than Laplace‡ found in astronomy. The directive law is that of Adaptation. It is surprising to see how difficult it seems to be for the human mind to grasp this conception in its entirety. When Du Bois-Reymond defends the explanation of Galiani, who illustrated the apparent harmony in nature by the example of the loaded dice, he evinces a total inability to comprehend the fundamental notion of natural adaptation. What better is the theory of the loaded dice than the doctrine of external teleological design? How came the dice loaded? Who loaded them? If not a personal deity existing outside of nature and antedating it, then what other agent can be named? Clearly this is no new explanation, but only the old one with a somewhat novel illustration.

How, then, is the harmony we see to be accounted for? We shall presently see reason to believe that the degree of adaptation in the world is far less than is popularly supposed, but it nevertheless exists in an obvious way. Yet it is effectually accounted for by the not at all circular proposition that things *are* adapted because they *have adapted themselves*. What we see exists of necessity. It might have been

\* "In the economy of the world I can find no trace of a beginning, no prospect of an end." - *Hutton*.

† Auguste Comte, "Philosophie Positive," viii. 321.

‡ It is related that once, when asked how he could have written so great a work as the "Mécanique Céleste," on the subject of the system of the universe, without once making mention of its Author, he replied: "*Je n'avis pas besoin de cette hypothèse-là*" ("I had no need for that hypothesis"). M. Ed. Perrier quotes Laplace as follows: "*Dieu est une hypothèse dont la science n'a que faire*" ("Rèvue Scientifique," 22 Mars, 1879, p. 891).