

an inhabitant of shallow water, and very limitedly locomotive when young, has survived all the changes since the Carboniferous age, and has spread itself over the whole northern hemisphere,¹ though a warm water rather than Arctic type.

I have collected fossil oysters in the Cretaceous clays of the coulées of Western Canada, in the Lias shales of England, in the Eocene and the Cretaceous beds of the Alps, of Egypt, of the Red Sea coast, of Judea, and the heights of Lebanon. Everywhere and in all formations they present forms which are so variable and yet so similar that one might suppose all the so-called species to be mere varieties. Did the oyster originate separately on the two sides of the Atlantic, or did it cross over so promptly that its appearance seems to be identical on the two sides? Are all the oysters of a common ancestry, or did the causes, whatever they were, which introduced the oyster in the Carboniferous act over again in later periods? Who can tell? This is one of the cases where causation and development—the two scientific factors which constitute the basis of what is called evolution—cannot easily be isolated. I would recommend to those biologists who discuss these questions to devote themselves to the oyster. This familiar mollusk has successfully pursued its course, and has overcome all its enemies, from the flat-toothed selachians of the Carboniferous to the oyster dredges of the present day, has varied almost indefinitely, and yet has continued to be an oyster, unless, indeed, it may at certain portions of its career have temporarily assumed the guise of a *Gryphæa* or an *Exogyra*. The history of such an animal deserves to be traced with care, and much curious information respecting it will be found in the report which I have cited in the note.

But in these respects the oyster is merely an example of many forms. Similar considerations apply to all those Pliocene and Pleistocene mollusks which are found in the raised sea

¹ White, *Report U. S. Geol. Survey*, 1882-83.