

of hard ice, and survived. And although it is usually said that a temperature a little below freezing point, say -4°C ., inside the body of an organism certainly means death, Raoul Pictet, who has had much experience with low temperatures, found that frogs might survive -28°C ., snails -120°C ., and bacteria -200°C .

About 47°C . is usually mentioned as the temperature which infallibly kills the living matter of ordinary plant-cells in water, and less is usually sufficient to kill small animals in water; yet there are hot springs in which both plants and animals flourish at about 50°C ., and the spores of the anthrax bacillus are able to survive exposure to over 100°C .

Similarly, there are limits of pressure to be considered; but we need not go further. From our present historical point of view we have only to notice that much interesting experimental work has been done in recent years in determining the limits of vitality in relation to such essentials as food, moisture, oxygen, heat, and pressure, the general result being to intensify our impression of the plasticity of life.

If it were the object of this book to give a statement of the established facts of biology, our discussion of the origin of life might be condensed into a single sentence: we do not *know* anything ^{Origin} _{of Life.} in regard to the origin of life. The only certainty is a negative one—there is no established case in which living organisms have arisen apart from parent organisms of the same kind. But as the whole aim of the book is historical, and as the problem of the origin of life has bulked largely in the history of biology—much more largely in the past than it does now; and as, moreover, the biology of the Victorian Era claims to have finally dismissed, not the possibility of, but all pretended instances of spontaneous generation, it seems in keeping with our purpose to devote a few pages to some account of the long-drawn-out discussion.

If the longevity of a belief were an index to its truth, the theory of spontaneous generation should rank high among the veracities, for it flourished throughout twenty centuries and more. We cannot trace the history of