

are rigorously excluded, the attempt hitherto has been a failure: so far, no life has made its appearance under observation, except from antecedent life.

But, to exclude all trace of antecedent life, it is necessary not only to shut out floating germs, but to kill all germs previously existing in the material we are dealing with. This killing of previous life is usually accomplished by heat; but it has been argued that strong heat will destroy not only the life but the potentiality for life, will break up the complex aggregate on which life depends, will deprive the incubating solution not only of life but of livelihood. There is some force in the objection, and it is an illustration of the difficulty surrounding the subject. But Tyndall showed that antecedent life could be destroyed, without any very high temperature, by gentle heat periodically applied: heat insufficient to kill the germs, but sufficient to kill the hatched or developed organisms. Periodic heating enables the germs of successive