

place these are in the main familiar ideas, and if they were altogether conclusive to prove the existence of really significant fitness, if they could be regarded as alone adequate to establish the necessity of putting fitness by the side of adaptation as a coördinate factor in causing the marvels of life, it is hard to believe that they would have been so long neglected. In the second place there is nothing comparative about such information. Water is indeed a wonderful substance which fills its place in nature most satisfactorily, but would not another substance do as well? Is not ammonia, for example, a possible substitute? And are there not many other chemical bodies which might, in a very different world, serve equally useful purposes? Perhaps, too, the great variety of carbon compounds which are known to the chemist are known only because the vital processes furnish an abundance of material with which to experiment. Is it not possible, therefore, that another element, silicon, for instance, may enter into even greater varieties of compounds? It is such questions, ever present in the minds of men of science, yet never carefully scrutinized to see if an answer be possible, which, I suspect, have long deflected attention from this subject.

Clearly, therefore, it will be necessary to