under embryonic forms, and at first in few and imperfect species. Facts do not substantiate this. The first appearance of leading types of life is rarely embryonic, or of the nature of immature individuals. On the contrary, they often appear in highly perfect and specialized forms, often, however, of composite type and expressing characters afterwards so separated as to belong to higher groups. The trilobites of the Cambrian are some of them of few segments, and so far embryonic, but the greater part are many-segmented and very complex. The batrachians of the Carboniferous present many characters higher than those of their modern successors and now appropriated to the true reptiles. The reptiles of the Permian and Trias usurped some of the prerogatives of the mammals. The ferns, lycopods and equisetums of the Devonian and Carboniferous were, in fructification, not inferior to their modern representatives, and in the structure of their stems far superior. The shell-bearing cephalopods of the Palæozoic would seem to have possessed structures now special to a higher group, that of the cuttle-fishes. The bald and contemptuous negation of these facts by Haeckel and other biologists does not tend to give geologists much confidence in their dicta.

Again, we are now prepared to say that the struggle for existence, however plausible as a theory, when put before us in connection with the productiveness of animals and the few survivors of their multitudinous progeny, has not been the determining cause of the introduction of new species. The periods of rapid introduction of new forms of marine life were not periods of struggle, but of expansion—those periods in which the submergence of continents afforded new and large space for their extension and comfortable subsistence. In like manner, it was continental emergence that afforded the opportunity for the introduction of land animals and plants. Further, in connection with this, it is now an established conclusion that the great aggressive faunas and floras of the continents