

#### IV.

PERMIT me to explain the passage in my article on this subject which Dr. Wallace characterises as "an extraordinary claim." When I wrote that "the present continents are the outcome of a long series of mutations," each phase being "an episode in a long process of geographical evolution," I had in my mind a very different kind of evolution from that assumed by Dana with respect to North America. He regards the surface exposure of the Pre-cambrian rocks in Canada as the nucleus of the continent, and believes North America to have been built up by additions to this nucleus. In the case of America, there does seem to have been a process of building up by additions during Neozoic times; but I maintain that neither America nor any other continent dates back as a distinct continental plateau to Palæozoic times.

The evolution I referred to was the gradual evolution of continents and oceans together out of a more generalised state of geography. I look back to a time when the physical features of the earth's surface were less accentuated than they are now; when there were neither oceans nor continents, but a more equal distribution of land and sea all over the globe.

I cannot see that Dr. Wallace's argument about the relative displacement-capacity of continental masses and oceanic waters proves the continents to have maintained the same positions from the earliest times. Dr. Wallace evidently fails to see the force of my reply; all his argument proves is that, *if the volume of water has been always the same*, the total area of land at any period cannot have been much larger than it is now, but in my article I showed that it was unsafe to assume that the volume of ocean water is a constant quantity.

Again, what does Dr. Wallace mean by the great ocean-basins? and why does he object to the view that the Dolphin Ridge has once been land? To me it does not seem rational to speak of the Atlantic as a single *ocean-basin*; it is distinctly a double basin, and I can see no reason why a large part of the Dolphin Bank should not have been land, say in Triassic or Permian times.

Dr. Wallace must remember that the geologist deals with a length of time that reaches back far beyond the age of the modern genera and families of terrestrial animals, and even if the distribution of such animals can be explained by means of comparatively small geographical changes, it is because most of these families do not date

back beyond the beginning of Tertiary times, and are no guide whatever to the geography of Palæozoic times. Geologists must claim a free hand to draw conclusions from the geological evidence as regards Pre-tertiary epochs untrammelled by any inferences derived from the distribution of modern animals.

On the subject of oceanic islands I shall have something to say elsewhere.

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