

kind of investigation can hardly be overrated; and it would be highly desirable that naturalists should turn again their attention that way, now that comparative anatomy and physiology, as well as embryology, may suggest so many new topics of inquiry, and the progress of physical geography has laid such a broad foundation for researches of this kind. Then we may learn with more precision, how far the species described from isolated specimens are founded in nature, or how far they may be only a particular stage of growth of other species; then we shall know, what is yet too little noticed, how extensive the range of variations is among animals, observed in their wild state, or rather how much individuality there is in each and all living beings. So marked, indeed, is this individuality in many families,—and that of Turtles affords a striking example of this kind,—that correct descriptions of species can hardly be drawn from isolated specimens, as is constantly attempted to be done. I have seen hundreds of specimens of some of our Chelonians, among which there were not two identical. And truly, the limits of this variability constitutes one of the most important characters of many species; and without precise information upon this point for every genus, it will never be possible to have a solid basis for the distinction of species. Some of the most perplexing questions in Zoölogy and Palæontology might long ago have been settled, had we had more precise information upon this point, and were it better known how unequal in this respect different groups of the animal kingdom are, when compared with one another. While the individuals of some species seem all different, and might be described as different species, if seen isolated or obtained from different regions, those of other species appear all as cast in one and the same mould. It must be, therefore, at once obvious, how different the results of the comparison of one fauna with another may be, if the species of one have been studied accurately for a long period by resident naturalists, and the other is known only from specimens collected by chance travellers; or, if the fossil representatives of one period are compared with living animals, without both faunæ having first been revised according to the same standard.¹

Another deficiency, in most works relating to the habits of animals, consists in the absence of general views and of comparisons. We do not learn from them, how far animals related by their structure are similar in their habits, and how far

¹ In this respect, I would remark that most of the cases, in which specific identity has been affirmed between living and fossil species, or between the fossils of different geological periods, belong to families which present either great similarity or extraordinary variability, and in which the limits of species are, therefore, very difficult to establish.

Such cases should be altogether rejected in the investigation of general questions, involving fundamental principles, as are untrustworthy observations always in other departments of science. Compare further, my paper upon the primitive diversity and number of animals, quoted above, in which this point is specially considered.