

dental formula, the same toes and claws, in fact, every generic peculiarity which characterizes foxes, whether they live in the Arctics, or in the temperate or tropical zone, in America, in Europe, in Africa, or in Asia. This is equally true of the seals or the whales; the same details of structure which characterize their genera in the Arctics reappear in the Antartics, and the intervening space, as far as their natural distribution goes. This is equally true of the birds, the fishes, etc., etc. And let it not be supposed that it is only a general resemblance. By no means. The structural identity extends to the most minute details in the most intimate structure of the teeth, of the hair, of the scales, in the furrows of the brain, in the ramification of the vessels, in the folds of the internal surface of the intestine, in the complication of the glands, etc., etc., to peculiarities, indeed, which nobody but a professional naturalist, conversant with microscopic anatomy, would ever believe could present such precise and permanent characters. So complete, indeed, is this identity, that were any of these beings submitted to the investigation of a skilful anatomist, after having been mutilated to such an extent that none of its specific characters could be recognized, yet not only its class, or its order, or its family, but even its genus, could be identified as precisely as if it were perfectly well preserved in all its parts. Were the genera few which have a wide range upon the earth and in the ocean, this might be considered as an extraordinary case; but there is no class of animals and plants which does not contain many genera, more or less cosmopolite in their geographical distribution. The number of animals which have a wide distribution is even so great that, as far at least as genera are concerned, it may fairly be said, that the majority of them have an extensive geographical range. This amounts to the most complete evidence that, as far as any of these genera extends in its geographical distribution, animals the structure of which is identical within this range of distribution, are entirely beyond the influence of physical agents, unless these agents have the power, notwithstanding their extreme diversity, within these very same geographical limits, to produce absolutely identical structures of the most diversified types.

It must be remembered here, that there are genera of Vertebrata, of Articulata, of Mollusks, and of Radiata, which occupy the same identical and wide geographical distribution, and that while the structure of their respective representatives is identical over the whole area, as Vertebrata, as Articulata, as Mollusks, as Radiata, they are at the same time built upon the most different plans. I hold this fact to be in itself a complete demonstration of the entire independence of physical agents of the structure of animals, and I may add that the vegetable kingdom presents a series of facts identical with these. This proves that all the higher relations among animals and plants are determined by other causes than mere physical influences.