

rated by as wide an interval as the lichen from the palm tree. But the secret once fathomed and the type established, their visible connection is read off plain. Owen has satisfactorily demonstrated that by changes of one form alone, the archetypal vertebra, all varieties have been effected, yet all are connected. Some idea of the infinity of life may be formed by a comparison between the microscopic animal, which, when magnified 5,000 times, only appears the size of a visible point, and the huge form of the whale, measuring something like 100 feet; yet all the intermediate space is filled up with animated beings of every form and order, more or less connected; or in the vegetable kingdom by comparing the microscopic mildew with the giant trees of California, and yet knowing that the immense interval is filled with plants, shrubs and trees of every form and size.

One mark of the connecting link of animal life exists in what are known amongst naturalists as rudimentary structures. There is discoverable in all vertebrate animals a general type amidst the diversity of form; there are undeveloped limbs or members which are of no use to the particular animals in which they are found. Apparently functionless and useless where they occur, but representing similar parts of large size and functional importance in other animals, they seem to serve no other purpose than to prevent the gaps in the scale of nature being too large. As examples of these rudimentary structures, I will mention a few: The Rorqual, a species of whale has rounded horny filaments in its jaws, united by a common membrane, in addition to the balaena or whalebone, these filaments apparently corresponding to the teeth of the spermaceti whale. The foetal teeth of the common whale, and of the front part of the jaw of ruminating animals, are minute in size and never cut the gum, but are absorbed without ever coming into use, and no other teeth succeed them or represent them in the adult condition of those animals. The Ornithorhynchus of Australia possessing no teeth, has a horny appendage on each side of either mandible, but without roots, evidently corresponding to teeth in other animals. The Apteryx, a New Zealand bird, utterly incapable of flight, has an almost imperceptible wing in quite a rudimentary condition, yet it contains bones which are miniature representatives of the ordinary wingbones of birds of flight. In the Emu the wings are discernible, and in the Ostrich they become largely developed, although useless as wings proper. The Anacondas and Boas, the largest known