

writers have attempted to identify these two processes. In metamorphosis, as observed among Insects, the individual born from an egg goes on undergoing change after change, in direct and immediate succession, until it has reached its final transformation; but however different it may be at different periods of its life, it is always one and the same individual. In alternate generations, the individual born from an egg never assumes through a succession of transformations the character of its parent, but produces, either by internal or external budding or by division, a number, sometimes even a large number of new individuals, and it is this progeny of the individuals born from eggs, which grows to assume again the characters of the egg-laying individuals.

There is really an essential difference between the sexual reproduction of most animals, and the multiplication of individuals in other ways. In ordinary sexual reproduction, every new individual arises from an egg, and by a regular succession of changes assumes the character of its parents. Now, though all species of animals reproduce their kind by eggs, and though in each there is at least a certain number of individuals, if not all, which have sprung from eggs, this mode of reproduction is not the only one observed among animals. We have already seen how new individuals may originate from buds, which in their turn may produce sexual individuals; we have also seen how, by division, individuals may also produce other individuals differing from themselves quite as much as the sexual buds, alluded to above, may differ from the individuals which produce them. There are yet, still other combinations in the animal kingdom. In Polyps, for instance, every bud, whether it is freed from the parent stock or not, grows at once up to be a new sexual individual; while in many animals which multiply by division, every new individual thus produced assumes at once the characters of those born from eggs.¹ There is, finally, one mode of reproduction which is peculiar to certain Insects, in which several generations of fertile females follow one another, before males appear again.²

What comprehensive views the physical agents must be capable of taking, and what a power of combination they must possess, to be able to ingraft all these complicated modes of reproduction upon structures already so complicated!—But if we turn away from mere fancies and consider the wonderful phenomena just alluded to, in all their bearings, how instructive they appear with reference to this very question of the influence of physical agents upon organized beings! For here we have animals endowed with the power of multiplying in the most extraordinary ways, every species producing new individuals of its own kind, differing to the utmost from their parents. Does this not seem, at first, as if we had before us a perfect

¹ MILNE-EDWARDS, *Rech. anat. et zool. faites pendant un Voyage sur les côtes de Sicile*, 3 vols. 4to. fig.

² OWEN, *Parthenogenesis, etc.*, q. n., p. 90.—BONNET, (Cu.) *Traité d'Insectologie, etc.*, Paris, 1745.