

is probable, therefore, that this highly specialized type ranked above all other Reptilian types of the Jurassic.

3. *Degeneration.* — Progress in a type from toothed jaws to toothless must be viewed as a decline, although there may be true progress in other respects. Among the Rhynchocephalians — which, in the Permian genus *Palæohatteria*, have numerous formidable teeth — occur later species having a horn-covered extremity of the jaws like the beak of a turtle. Again, the Dinosaurians vary from many-toothed, tiger-mouthed species, to those with few teeth.

The Plesiosaurians are supposed to be degenerate land Reptiles, whose limbs, even in the Triassic, had become paddles, with fingers multiply in number of phalanges; and the Ichthyosaurs, species of some other Reptilian type, carried downward to a still lower urostheneic stage, in which the pelvic girdle had become nearly obsolete, and the fingers sometimes excessive in number, as well as multiply in segments. Turtles are other degenerate forms of the Triassic as well as of the Jurassic period.

Such facts make it manifest that through geological time progress in the Vertebrate type, as in the Invertebrate, was downward as well as upward; that degeneration, while it may make obsolete, may also return a species to a low multiply condition, in which the multiply characteristic extends to the number of vertebræ, to the teeth, to the fingers, to the number of finger bones, and to other parts of the structure. It is atavism under some physiological law deeper than atavism, bringing back characters, not of the earlier Reptiles, but of the earliest Vertebrates, the Fishes, yet not without any loss of the fundamental characteristics of Reptiles.

Considering the very long time that Fishes were in the seas before the rise in grade to the terrestrial type of the Amphibian, and the relatively short time for the much greater rise from the Amphibian to the Reptile, Bird, and Mammal, there is no reason to believe that any of the upward successional lines passed through the water. Through the water, for terrestrial Vertebrates, as many examples show, was a quick way down in grade, not a possible way up.

4. *A fragment of the Triassic world.* — Australia is often spoken of as a Triassic continent. As the world in Triassic time had only Marsupials and Monotremes for its Mammals, so Australia has now, man's encroachments excluded, Marsupials and Monotremes for its only Mammals. The existence there of a species of Bat, and of some Mice and Rats, is hardly an exception to be considered. But although thus restricted in its modern fauna, its Mammals are not of few kinds; for, as Wallace states, "some are carnivorous, some herbivorous; some arboreal, others terrestrial; there are insect eaters, fruit eaters, honey eaters, leaf or grass feeders; some resemble wolves, others marmots, weasels, squirrels, flying squirrels, dormice, or jerboas." Moreover, one of the last four species of Cestraciont Sharks, a tribe of Mesozoic and Paleozoic affinities, the *Cestracion Philippi*, or Port Jackson Shark, lives in Australian seas; and one of the last three species of the Dipnoans, the *Ceratodus*, Carboniferous and Triassic in type, inhabits its