

This view of the subordination of organic evolution to general laws is sustained by the paleontologist Professor A. Gaudry, of Paris, in his review of the parallelism between Europe and America in the succession of types from the Cambrian upward (*Bull. Soc. Géol. de France*, December, 1891). He compares the correlate tribes through the successive stages of progress, and the gradual changes by which old characteristics disappeared and new features were developed for the two distant regions, notwithstanding the differences that existed in climatal and other conditions; and he concludes that these and similar facts are not all explainable by migrations, but only by evolution under general laws of progress.

*Origin of species.*—The *origin* of the *special* causes for each line of change or variation, which Darwin did not undertake to study out, is yet very imperfectly understood. The paragraphs on the evolution of the Horse and the Artiodactyl, on page 929, and others bearing in the same direction, show some success. It is admitted that (1) bones will coössify if movement between them ceases; (2) that the progressive enlargement of one organ or part may cause the dwindling of others adjoining; (3) that running under an impulse would lead to a rising of the foot on the toes, to secure greater length of lever and greater speed; (4) that activity in the limbs may determine adjustments in the position of the ankle bones fitted for greatest strength and security; (5) that the use of the teeth may lead to increased complexity of structure.

But from the statements with regard to the Horse and Artiodactyl, it may be thought possible, also, that the great elongation of the foot, chiefly of the metacarpals and metatarsals, would be a natural consequence of the rhythmic stroke of the foot in running, this inducing a variation that was continued in growth by interbreeding. And this apparent success in explaining leads to the suggestion that the graceful form, so general in fleet animals, may be a result of the free movements of all parts of the structure in running; and that the horns in the Ruminants and other Ungulates may have come from a variation commenced by the strokes made by the forehead or front of the head, in conflicts.

But another Artiodactyl, the "high-reaching" Giraffe, puts a check to speculation; for it has the anterior pair of legs much the longer, the foot portion alone three feet long; and the neck more than triple the ordinary length in Ruminants, owing to the great elongation of six of the seven vertebræ. The elongation of the legs has the same purpose as that of the neck—"high-reaching in quest of food." The question comes up—How should the Giraffe have had to run to make its fore legs grow faster than the hind legs, and what kind of antics would have started the change in the neck? It has to be supposed that the requisite augmentative variations were somehow begun, and that under interbreeding, accelerated growth went forward. But the origin of the variation is without explanation. And so it is for the most part throughout the Kingdoms of life. Enough is known to encourage study.