

accounted for the great gaps between mammals, birds, reptiles and fishes.

Let us now glance at the main facts on which the theory is based,

1. The enormous power of increase in geometrical progression, hence an inevitable struggle for existence.

2. The great power of variation.

3. Animal and plant population remain stationary.

4. This implies a terrible destruction.

5. Hence favoured races are preserved and the continued action of these laws originates new species. Survival is not determined by chance. The most healthy, active, intelligent or best protected, are the most likely to survive.

He now passes on to consider many popular objections :

1. Variations are too slight to effect much. Ans.—They are not slight. They are very often large.

2. How does variation occur just when required? Ans.—Variations do not occur singly or at very long intervals only, but are very numerous.

3. How are important organs developed, since the first rudiments are useless? Ans.—Darwin said that this objection is most difficult, and "the thought of it gave him a cold shiver." But it has been shown to be possible in some cases, and further knowledge is expected to throw light upon any remaining difficulty, e.g., rudimentary eyes and mammary glands.

4. Many distinguishing characteristics of species are useless. How account for this? Ans.—Many apparently useless structures are really useful, as shown by fuller investigation, as, e.g., the form, size, colour of plants, the colours and markings of animals. Besides, there may be uses of which we are ignorant.

5. The sterility of hybrids, so long considered an insuperable barrier. Ans.—(1) Sterility is due to physical causes not yet fully traced. (2) Cases of fertility of hybrids can be cited which shows that this objection is founded on a very plausible but too hasty generalization.

6. But one of the most powerful objections for a long time, was that geology gave no evidence of the gradual development of organic forms. Whole tribes and classes appear suddenly and with very perfect organization. Ans.—The geological record is as yet