

both lizards and mammals walk and run on land, all having to cope with the same common resistances of gravity, inertia, and momentum; they should have been given a similar limb structure by the Creator? This same principle applies to digestive systems, since foods are similar; and to the respiratory systems of air-breathing animals, since all breathe air of approximately the same density and composition. So, similarity of the respiratory system of one animal to that of another is not evidence that the two are related. There is similarity between the electric switches and coils on a tractor and the switches and coils in a radio, but this is not taken as evidence that radios and tractors were developed from each other.

9. The fact that science has never actually observed an evolutionary transition from one genus into another genus. In fact, it is doubtful that even a natural transition of one permanent <sup>animal</sup> species into another permanent species has been observed. Such limited transitions as these may be possible, but science has not been able to offer proof of them by observation under controlled conditions. An example of how difficult it is for an organism to cross the genetic barriers and become something other than its own type, is found in the genus Drosophila. This genus has been subjected to intensive genetic experimentation ever since T. H. Morgan began his work with it about 1910. These insects, and many of their eggs, have been subjected to many unusual environmental influences, including varying degrees and kinds of radiation, in order to produce mutations. Many mutated characteristics have been produced; but, in spite of these and the great number of generations of the insect which have been produced since 1910, all have remained Genus Drosophila, showing that the animal varies only within its genetic boundaries.
10. The observation that morphologically similar animals often possess important physiological distinctions which show that they are not closely related. G. A. Kerkut (1960) points out some examples of this (p. 112ff). In this section he discusses the presence and absence of the chemical compounds creatine phosphate and arginine phosphate in the tissues of various kinds of animals. (Creatine phosphate is an important constituent of vertebrate muscle.) Both creatine phosphate and arginine phosphate are found in Phylum Porifera, Phylum Coelenterata, Phylum Annelida, and in certain other phyla; but certain genera in a given phylum possess only one or the other. For example in Phylum Annelida, the following contrasts between morphologically similar pairs appear (as noted by Kerkut, 1960, p. 123): Nereis cultrifera has AP but no CP; Diopatra has CP but no AP. Sabellaria has AP but no CP; Chaetopterus has CP but no AP. Lumbrinereis has CP but no AP; Lumbricus has neither, possessing a chemical called lombricine instead. Neanthes virens has both CP and AP; Nereis diversicolor has AP but no CP. A similar physiological contrast is seen in the kind of sterols found in certain invertebrates. Thus in Phylum Echinodermata the starfishes Asterias rubens and Asterias scoparins are similar morphologically, but the former possesses the sterol stellerol, and the latter hitodestrol instead.
11. The recognition in modern biology that the embryological development of a living organism is not significant as a recapitulation of its phylogenetic history. (Winchester, 1961, p. 313.) It was formerly thought that a developing vertebrate embryo went through the same series of stages as the particular form of vertebrate had passed through in its evolutionary history. Thus a mammalian embryo was thought to exhibit a "protozoan stage," a "worm stage," a "fish stage," an "amphibian stage," etc. However, the theory has been found to be so imperfect that practically no biologists now accept it (even though some text books continue to present it as though it were still recognized). One of the major points at which the theory breaks down is that vertebrate embryos consistently exhibit extensive cephalization from a very early point in their development to the time of hatching or birth. This is