

"In the absence of paleontological evidence the question of the interrelationship amongst animals is based upon similarities of structure in existing forms. In Judging of these similarities, the subjective element may largely enter.' 'The very interesting observations upon the eye made by Johnson also demonstrate the close relationships between the Old World forms and man, the macula lutea tending to disappear as we descend in the scale of New World Monkeys and being absent in the Lemurs. The results which I published upon my tests with precipitins directly supported this evidence, for the reactions obtained with the bloods of Simiidae (i.e., Man-like Apes) closely resemble those obtained with human blood, the bloods of Cercopithecidae (Old World Monkeys) came next, followed by those of Cebidae and Hapalidae (New World Monkeys and Marmosets) which gave but slight reactions with anti-human serum, whilst the blood of Lemuroidea gave no indication of blood relationship.' 'A perusal of the pages relating to the tests made upon the many bloods I have examined by means of precipitating anti-sera, will very clearly show that this method of investigation permits of our drawing certain definite conclusions. It is a remarkable fact . . . that a common property has persisted in the bloods of certain groups of animals throughout the ages which have elapsed during their evolution from a common ancestor, and this in spite of differences of food and habits of life. The persistence of the chemical blood relationship between the various groups of animals serves to carry us back into geological times, and I believe we have but begun the work along these lines, and that it will lead to valuable results in the study of various problems of evolution.'

"The general conclusions on interrelationships, so far as they are of particular interest for our purpose, reached by Nuttall and Graham-Smith as the result of many thousands of blood tests, may be summarized as follows:

"1. If sufficiently strong solutions be used and time enough be allowed, a relationship between the bloods of all mammals is made evident.

"2. The degrees of relationship between man, apes, and monkeys have already been noted.

"3. Anti-carnivore sera show 'a preponderance of large reactions amongst the bloods of Carnivora, as distinguished from other Mammalia; the maximum reactions usually take place amongst the more closely related forms in the sense of descriptive zoology.'

"4. Anti-pig serum gives maximum reactions only with the bloods of other species of the same family, moderate reactions those of ruminants and camels, and moderate or slight reactions with those of whales. Anti-llama serum gives a moderate reaction with the blood of the camel, and the close relationship between the deer family and the great host of antelopes, sheep, goats and oxen is clearly demonstrated.

"5. Anti-whale serum gives maximum reactions only with the bloods of other whales and slight reactions with those of pigs and ruminants.

"6. A close relationship is shown to exist between all marsupials, with the exception of the Thylacine, or so-called Tasmanian Wolf.

"7. Strong anti-turtle serum gives maximum reactions only with the bloods of turtles and crocodiles; with those of lizards and snakes the results are almost negative. With the egg-albumins of reptiles and birds a moderate reaction is given.

"8. Anti-lizard serum produces maximum results with the bloods of lizards and reacts well with those of snakes.