

"9. These experiments indicate that there is a close relationship between lizards and snakes, on the one hand, turtles and crocodiles on the other. They further indicate that birds are more nearly allied with the turtle-crocodile series than with the lizard-snake series, results for which palaeontological studies had already prepared us.

"10. 'Tests were made by means of anti-sera for the fowl and ostrich upon 792 and 649 bloods respectively. They demonstrate a similarity in blood constitution of all birds, which was in sharp contrast to what had been observed with mammalian bloods, when acted upon by anti-mammalian sera. Differences in the degree of reaction were observed, but did not permit of drawing any conclusions.'

"11. I have already called attention to the fact that the problematical Horseshoe-crab is indicated by its embryology to be related to the air-breathing sorders and scorpions rather than to the marine Crustacea. It is of exceptional interest to learn that embryology is supported by the results of the blood tests.

"it must not be supposed that there is any exact mathematical ratio between the degrees of relationship indicated by the blood tests and those which are shown by anatomical and palaeontological evidence. Any supposition of the kind would be immediately negated by the contrast between the blood of mammals and that of birds. It could hardly be maintained that an ostrich and a parrot are more nearly allied than a wolf and a hyena and yet that would be the inference from the blood tests. . . The results of blood tests must be critically examined and checked by a comparison with the results obtained by other methods of investigation, but after every allowance has been made, these tests are very remarkable."

-- W. B. Scott, *The Theory of Evolution* (New York: The MacMillan Company, 1917), chapter entitled "Evidence from Blood Tests"

"Comparative Serology. Much the most impressive physiological evidence is drawn from the field of comparative serology. If a small amount of the blood serum of an animal is injected into a guinea pig (or other test animal), the foreign blood acts as an antigen that is, it causes the production in the serum of the guinea pig of antibodies which will precipitate and destroy the antigen if a second inoculation should occur. The guinea pig is then said to be immunized to the kind of blood which was injected. The precipitation reaction will occur in a test tube as well as in the bloodstream. Thus, if one prepares an antiserum from an immunized animal and adds to it a few drops of antigenic serum, a precipitate will be formed. This can be measured by two principal methods. The first of these is the ring test method. A small quantity of undiluted antiserum is placed in a test tube, and diluted antigenic serum is then carefully layered over it. A ring of precipitate then forms at the interface between the two sera. The greatest dilution of the antigenic serum at which a ring is obtained gives a measure of the strength of the reaction, with a high dilution corresponding to a strong reaction. if, however, the two sera are mixed, the precipitate will make the solution turbid, and the photometric measurement of the absorption of light gives an excellent measurement of the strength of the reaction.

". . . If serum from an animal immunized against human blood were divided among five tubes, and serum added from man, an anthropoid ape, an