

vivifying influence; and to this office a distinct set of arteries and veins is appropriated, constituting a distinct circulation. This I have endeavoured to illustrate by the diagram, Fig. 353 where *D* represents the auricle, and *E* the ventricle of the heart; and *A* and *C*, the main arterial and venous trunks; and where the two circulations are, for the sake of distinctness, supposed to be separated from one another, so that the two systems of vessels may occupy different parts of the diagram. The vessels which pervade the body generally (*R*,) and are subservient to nutrition, belong to what is termed the *greater*, or *systemic* circulation: those which circulate the blood through the respiratory organs, (*R*,) for the purpose of aeration, compose the system of the *lesser*, or *respiratory* circulation.

Few subjects in Physiology present a field of greater interest than the comparison of the modes in which these two great functions are, in all the various classes of animals, exactly adjusted to each other. So intimately are the organs of circulation related to those which distribute the blood to the respiratory organs, that we never can form a clear idea of the former, without a close reference to the latter of these systems. While describing the several plans of circulation presented to us by the different classes, I shall be obliged, therefore, to assume both the necessity of the function of respiration, and of a provision of certain organs for the reception of air, (either in its gaseous form, or as it is contained in water,) where the blood may be subjected to its action. It is necessary, also, to state that the organs for receiving atmospheric air, in its gaseous state, are either *lungs*, or *pulmonary cavities*, while those which are constructed for aquatic respiration are termed *gills*, or *branchiæ*; the arteries and the veins which carry on this respiratory circulation, being termed *pulmonary*, or *branchial*, according as they relate to the one or the other description of respiratory organs.

In many animals it is only a part of the circulating blood which undergoes aeration; the pulmonary or branchial arteries and veins being merely branches of the general system