

lymph coming from the thoracic duct; these he called lymphagogues. A great deal of physiological work has been done in the last twelve years in this department, and a considerable number of physiological authorities have fallen away from Ludwig's School, although not fully accepting Hiedenhain's theory of endothelial secretion from the capillary wall. The champions of Ludwig have been put to their wits' end in squaring the laboratory evidence with filtration, osmosis, and diffusion.

Before touching upon the contested theories, let us have a glance at the modern anatomy of the lymphatic system. Budge², thought there were two lymphatic systems. One of these disappeared in development. Ranvier, W. G. MacCallum, Sala and Florence R. Sabine have separately arrived at this conclusion, that the lymphatic system is a modification of the circulatory system, that it grows by budding backward from the subclavian vein, and gradually invades the tissues and organs, that these buds are closed or blind at their terminals, and have no physical connection with tissue spaces. Ranvier looked upon the lymphatic system as a great gland, the blind, protruding capillaries as the secretory parts, while the ducts were the excretory canals. These lymphatic capillaries are lined by endothelial tissue. The termination of the lymphatic system in the lacteal of the intestinal villus is a fair sample of its method of termination in other tissues. There are tissues like cartilage and the cornea which are never invaded by lymphatic capillaries. The lymphatic glands seem to be an after thought in development, as they are absent till we reach birds and mammals.

These anatomical and embryological studies bring us face to face with this; that we have included as one system the tissue juices and the lymphatic when in reality they are separate. The tissue spaces and their juices are not part of the lymphatic system. The fact that we have been considering two fluid systems as one demands strong confirmatory testimony of an evolutionary, pathological, and clinical character to be weighed with laboratory evidence in reaching a working hypothesis on this circulation.

The amount of lymph in the human body is difficult of estimation. Waller³, approximately estimated it to equal three or four times that of the blood. This estimate is probably too high, but the quantity of this fluid shows its marvellous importance. Florence R. Sabine, when suggesting the function of the true lymphatic system to be a system of absorbents, gives evidence obtained from a "specimen of twins prematurely born, one of which was normal, while the other was so edematous that it was simply a round ball. Examination of the edematous one showed no trace of a thoracic duct, nor lymph glands."⁴