ON A HITHERTO UNRECOGNIZED FORM OF BLOOD CIRCULATION WITHOUT CAPILLARIES IN THE ORGANS OF VERTEBRATES.

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(*Summary.*)

It was pointed out in a previous paper on the "*Veins of the Wolffian Body*" that there are no true capillaries between the tubules of the mesonephros or pronephros. The present paper offers further results on this class of vessels, for which the term "*sinusoid*" is proposed. A sinusoid is a blood-vessel, usually much wider than a capillary, having an endothelial wall only and no media or adventitia; it has wide and free communications with adjacent sinusoids; its endothelium is closely fitted against the parenchymal cells of the organ, and there is either no tissue or only a minimal layer of tissue between the endothelium and the parenchyma. Sinusoids differ in their development from true capillaries: the latter arise always as new vessels by the differentiation of mesenchymal cells. Sinusoids, on the contrary, so far as their development is known (pronephros, mesonephros, liver and heart), arise by modification of a preëxisting relatively large vessel, which expands so that its endothelium intercresces with the growing parenchyma of the organ, and this parenchyma develops in the form of tubules (nephric or hepatic) or trabeculæ (cardiac). True sinusoids are further differentiated from capillaries by the fact that the latter are always more or less completely surrounded by connective tissue (mesenchyma). Blood-vessels presenting the characteristics of sinusoids can be demonstrated in the pronephros, mesonephros, liver, heart, parathyroid, suprarenal capsules, and coccygeal gland. It is possible that the lymph glands have sinusoids, but this investigation did not extend to them. The vessels of the corpora cavernosa and allied structures are probably not sinusoids, but expanded capillaries. It was noted that the endothelial nuclei of sinusoids are much more widely

separated from one another than those of other blood-vessels, hence the question, Is the sinusoidal endothelium different from that of other blood-vessels? C. Kupffer's observations on the "sternzellen" of the liver suggest that it is.

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