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Selective Distribution of Portal Blood in the Liver. An Experimental Study.

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A few experimental and clinical studies have suggested the possible occurrence of selective distribution of the portal blood in the liver, and the presence of independent currents of blood in the portal vein. The existence of such segregated streams of blood in the portal vein and their subsequent distribution to definite parts of the liver should be of considerable practical significance in the physiology and pathology of the liver. Serege,[1] Glenard[2] and others found that India ink was deposited in the left lobe of the liver after injection of the splenic vein and into the right lobe of the dog's liver after injection into the mesenteric vein. They concluded a dual portal current existed which determined the selective hepatic distribution. Bauer[3] and other workers were unable to confirm these observations. Bartlett, Corper and Long,[4] after studying the distribution of fat emboli in the liver after injection of olive oil in various portal tributaries, concluded that the dog has a dual portal current and that there is a selective distribution of portal blood in the liver.

We made a study of the blood currents in the portal vein itself and observed their subsequent distribution in the lobes of the liver. Trypan blue injected into the veins of the stomach and spleen was conveyed by the blood to the left half of the liver almost entirely. Dye injected into the veins of the upper part of the duodenum, the head of the pancreas and jejunum was carried to the 2 right lateral lobes almost exclusively. When the veins of the colon were injected, the dye was distributed to all parts of the liver, but more particularly to the large lobe of the left side.

An explanation for the selective distribution of the portal blood in the liver is offered by the fact that separate currents of blood in the main portal channel can be demonstrated by transillumination of the vessel after injection of dye into the main tributaries of the portal vein.

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[1] Sérégé, H., *J. de Méd. de Bordeaux*, 1901, xxxi, 271, 291, 312.

[2] Glenard, F., *Bull. et Mém. Soc. Méd. de Hop. de Par.*, 1901, 3, 18, 386.

[3] Bauer, A., and Brissant, E., *J. de l'anat. et de la Physiol.*, 1909, xlv, 1.

[4] Bartlett, Corper and Long, *Am. J. Physiol.*, 1914, 35, 36.