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Hemoglobin Excretion in the Hornpout, *Ameiurus nebulosus*

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The passage of hemoglobin through the glomeruli and the site of absorption of this protein was examined in a series of experiments on the hornpout kidney. This species was used as an example of a teleost having a differentiated renal tubule. Commercial hemoglobin (DIFCO) dissolved in saline was injected intraperitoneally into the test animals. The kidneys were examined in paraffin sections and as dissected tubules. With the latter method the tubules were partially dehydrated (50% alcohol) and stained with benzidine and peroxide. The benzidine stain was also used with paraffin sections, in addition to the Dunn hemoglobin stain, the PAS and others. Both methods of examination indicated that hemoglobin passed readily through the glomeruli and was reabsorbed in the proximal tubules. Some evidence of peroxidase activity in the distal tubule was indicated but this aspect requires further study. The filter-ability of this protein and its site of absorption corresponds to that described in the mammal. Further studies, in which the tubules were dissected in saline and stained with Janus green, indicated that protein absorption in the proximal tubule is accompanied by transformations in the form of the mitochondria as described in the mammal by Oliver.

These experiments were undertaken as part of a comparative study on protein excretion. Earlier observations by the writer had found hemoglobin uptake in the collecting tubule of the pronephros (*Rana pipiens*). Smetena (Am. J. Path. Vol. 18, 1942) has described protein uptake in certain of the distal tubules in *Amblystoma*. In both cases nephrostomatous tubules are involved. Apparently the distal segment of the "open" tubule can absorb protein in addition to the proximal segment, a function seemingly lost in glomerular kidneys (fish, mammal). This problem is under further investigation.

Mutarotase in the Kidney of Fish and Frog

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Mutarotase, an enzyme which was discovered by this investigator in animal tissues, particularly kidney, catalyzes the interconversion of the various forms of certain reducing sugars. It has been proposed by this investigator that mutarotase is involved in the transport of sugars into cells and the reabsorption of sugars by kidney. He has previously reported evidence consistent with this point of view in that the sugars which are transported across cell membranes in response to insulin, and which are