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### Kidney Function in the Beaver

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If the kidney operates as a countercurrent-multiplier system, as suggested by Hargitay and Kuhn (1951), the maximum concentrations of salt and urea that the kidney can establish in the urine should be related to the length of Henle's loops. The present work is part of a study in which the concentration ability of mammalian kidneys is compared with the length of the loops and the number of short and long looped nephrons. According to Sperber (1944) the beaver kidney seems devoid of long loops. It consists of cortical nephrons and short looped nephrons only. The cortical nephrons are mostly without thin segments. The short looped nephrons all turn in the thick segment. Thus, the kidney has no inner zone of the medulla. The kidney has two or more short papillae, and the medulla is not divided into zones.

The concentration ability was studied in six beavers maintained at the laboratory on aspen leaves and bark. The beavers drank copiously when given free access to drinking water and the urine was isotonic or slightly hypertonic to the blood. When water was restricted to once a day the concentration of the urine was 400-600 mosm/l. When deprived of water, the beavers lost weight and the plasma concentration increased. However, the urine concentration did not rise above 600-700 mosm/l. The administration of pitressin did not increase the urine osmolality any further.

The maximum total electrolyte concentrations measured corresponded to 250 mN KCl. The maximum urea concentrations in the urine during water deprivation and pitressin administration were 220-250 mM/l. When a 1% urea (167 mM) urea solution was given as drinking water the plasma urea concentration increased and urine urea concentrations reached values of 350-375 mM.

These figures indicate an extremely low ability of the beaver kidney to concentrate the urine and are consistent with the hypothesis that concentration ability is related to the length of Henle's loop.

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### Extrarenal Salt Secretion in Marine Birds

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Investigations of the extrarenal salt excretion in marine birds were continued and extended to further species. Field work was conducted on Ship Island and Great Duck Island, Maine, and Bonaventure Island, Quebec, Canada.

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