the same locality and under similar conditions their intestinal fauna was thus shown to be distinctly different. Whether this is due to differences in infectibility, failure of the different species of monkeys to become contaminated with the various species of protozoa or to some other factor is not known. The most probable explanation seems to be one based on differences in diet. The white face monkeys have well-developed canine teeth and a very small cecum,—characteristics of carnivorous animals. The titi monkeys have less well-developed canine teeth and a somewhat larger cecum,—characteristics of omnivorous animals. The red spider monkeys have poorly developed canines and a very large cecum,—characteristics of vegetable-feeding animals. These data confirm laboratory observations and experiments on other animals which indicate that a diet consisting largely of carbohydrates is favorable for the growth and multiplication of intestinal protozoa, whereas a diet high in animal proteins is disadvantageous. The morphological difference between the protozoa that live in monkeys and man are so slight or little known that, although separate specific names have been proposed for some of the monkey protozoa, no satisfactory evidence of specific differentiation has been advanced. Studies of the material obtained in Panama were in progress during the summer but were not completed, hence the data and conclusions arrived at regarding specificity cannot be presented at this time.

RENAL FUNCTION IN ELASMOBRANCH FISHES

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I. *Measurement of Glomerular Filtrate.* Jolliffe, Shannon and Smith ('32) advise the use of non-metabolized sugars as a means of measuring glomerular filtrate. This assumption was based upon various theoretical considerations, and upon the finding in the mammal (dog) that xylose, sucrose and raffinose are excreted quantitatively the same relative to the plasma concentration. Also that in the completely phlorizinized dog there is no increase in the glomerular clearance as calculated by these sugars either absolutely or in relation to a third, indifferent substance (urea), although there is exact correspondence between them and glucose.

Clarke and Smith ('32) have found agreement between xylose and glucose in the phlorizinized dog-fish (*Squalus acanthias*) as was expected from the work on the dog. This work was completed in the summer of 1932 by showing that sucrose and xylose, in the normal dog-fish, and sucrose and glucose in the phlorizinized dogfish are excreted quantitatively the same relative to the plasma concentration. It was also shown that raising the blood sucrose to the extreme level of 1000 mgms. per cent had no effect on the amount of glomerular filtrate.

This establishes on a firmer basis the use of these substances as a measure of glomerular filtration, inasmuch as identical results are obtained on two widely separated classes of animals.

II. *Secretion of Creatinine.* In view of the observation that creatinine is secreted by the mammalian kidney tubule in linear relation to the plasma concentration (Shannon, Jolliffe, Smith '32) and that this is apparently not true of the aglomerular fish (*Opsanus tau,* Marshall and Grafflin '32), it seemed advisable to examine this function further. The dog-fish was used because it secretes this substance abundantly (Clarke and Smith '32) and because it was necessary to have adequate samples of blood and urine for accurate analysis in successive periods.

Glomerular filtration was determined by parenteral administration of sucrose and the creatinine clearance was calculated as cc. of blood cleared per kilogram of fish per twenty-four hours. The plasma level of creatinine was established by the intra-muscular injection of varying amounts of creatinine (from 0.1 gm. to 1.0 gm. per kgm.) and the excretion over a period of several days was followed. This technique was varied by studying the excretion at a low plasma level (after a small initial dose) and then at a high level in the same fish (after second larger dose).

It was definitely established that the clearance at a high plasma level (100 to 200 mgms.%) was lower than at a low plasma level (5-25 mgms.%) indicating a greater efficiency of secretion at the lower level. As the plasma level fell, however, the clearance did not rise, as might be expected, but remained constant at the level initially encountered at the high plasma level. This fact indicates that at high plasma levels creatinine induces some change in the secretory capacity of the renal tubules which persists throughout the remainder of the experimental period (4-5 days). Further work will be required to determine whether this change is physiological or toxic. Experiments designed to settle this point were unsuccessful, so that the complete interpretation of the relation of renal secretion of creatinine to plasma concentration is impossible at this time.

Experiments on the excretion of true endogenous creatinine and creatine were begun but not completed.

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