ing subcutaneous injection in rats and mice.

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A sudden loss of renal tissue, the essential feature of the situation under discussion, can be experimentally reproduced by removing three-fourths of the total kidney. This was done in 86 young rats, which were divided into groups. The first group was fed a diet free of protein; the second a diet containing 22.6 per cent protein; the third 61.4 per cent.

The mortality rates during seven days after operation were 0 for Group I, 13 per cent for Group II, and 43 per cent for Group III. Uremia as the cause of death was proved by measuring the urea concentration of the tissues shortly after death. Six days after operation, the survivors were tested for urea concentrations of urine and blood. In Group III, it was found that 33 per cent of the body weight had been lost and the blood serum levels of urea were 273 mg.

No signs of renal failure were present when no protein was taken, but as the consumption of protein increased, the concentration of urea and creatinine in the serum rose toward uremic levels, although at the same time, the rates of urea excretion, of urea clearance, of work accomplished and of new renal tissue constructed were all augmented. This was, therefore, not absolute renal failure but one that was a failure only in relation to the demand imposed.

These data indicate that in the face of decreased renal tissue even a moderate consumption of protein may induce renal failure and death. Since the human kidney is fundamentally no different from that of a rat, the amount of protein given to men who have suffered a sudden loss of renal function becomes a matter of real concern. The nature of any protein injected for the reconstitution of a normal circulation is important because some proteins induce a considerable increase in urea excretion and thus increase the work required from the remaining kidney.

Rat serum gave the least increase in urea excretion in rats maintained on a basic non-protein diet, but that induced a 30 per cent increase over the control group. Thus an increased demand for work from the kidney is imposed by the parenteral injection of any protein to a degree that varies with its nature and the conditions under which it is administered.

To restore the circulation without imposing work on the kidney, there is a need in certain clinical situations for a purely carbohydrate substitute for plasma that is efficient and safe.

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Variable factors are so numerous that systemic consequences of traumatizing operations are not reflected in the circulating blood, and determinations of hematocrit, hemoglobin, or plasma proteins give little information as to the quantity of blood loss or of impending shock. Even in simple uncomplicated hemorrhage in relatively normal individuals, variable factors contribute to make the changes in hemoglobin, plasma protein and hematocrit unpredictable. A rarely considered variable is the uncertain amount of blood expressed from the spleen. Only in situations of relatively simple