urea concentration. Euphyllin administered intravenously increases the amount of urea excreted in the urine and this increase is roughly proportional to increases in the calculated amount of filtrate formed and in the estimated amount of urea filtered.

The amount of glucose appearing in the urine after the administration of large doses of phlorhizin is, within the limits of error of the methods employed, equivalent to the amount estimated to have filtered through the glomeruli. When euphyllin is given intravenously the amount of glucose excreted is increased and this increase can be accounted for by the greater amount of filtrate formed. The increase in glucose excretion which occurs when glucose is given intravenously to a phlorhizinized dog corresponds to the increased amount of glucose filtered as a result of the rise in plasma glucose concentration.

TABLE I.
Effect of the intravenous injection of urea upon the excretion of urea in the urine.

Time	Urine Creatinine mg./100 cc.	Urine Volume cc./min.	Blood Creatinine mg./100 cc.	Glomerular Filtrate cc./min.	Blood Urea mg./100 cc.	Urea in Glomerular Filtrate mg./min.	Urea in Urine mg./min.
2.20 to 2.50	3168	0.07	4.72	49.0	8.8	4.3	2.9
251	4.5 gm. urea i.v.						
3.00 to 3.21	320	0.38	4.54	26.8	96.0	26.6	12.6
3.22 to 3.39	510	0.50	4.37	57.7	84.8	48.9	22.1

The excretion of sulphate is now being studied in a similar manner.

The evidence so far obtained would indicate that the process of urine formation in the dog may be accounted for solely on the basis of filtration and reabsorption.

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Functional Pathology of the Denervated Kidney.

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Long established clinical observation has made evident the close association of chilling of the body surface with the inception of certain types of nephritis. In those cases where chilling has involved

no evident bacterial invasion, this etiological relationship has continued a puzzling and perplexing factor—but one of importance because of the frequent clinical onset under such conditions.

From a series of studies on the leucocytic partition,[1] we have obtained considerable evidence indicating that the autonomic balance of the kidney follows that of the skin, *i. e.*, when the vessels of the skin contract, those of the kidney are likewise contracted. Skin, muscles, brain, kidneys and lungs are apparently associated in this functional grouping of organs—the liver, stomach and spleen being oppositely oriented.

During the course of observations of animals during continuous intravenous injection of *B. coli* extending over long periods of time[2] we noted the effects on the urine. The urine changes give evidence of renal injury (albuminuria, red blood corpuscles and oliguria) which were definitely related to other concurrent systemic changes in the animal.

In further developments of these studies, we have carried out experiments on the denervated kidney. Dogs were used throughout in these experiments and a unilateral denervation carried out under general anesthesia and recovery was then permitted for 2 weeks.

We have previously noted that with bacterial injections there is no evidence of renal injury, as far as urinary changes are concerned, for the period of about 30 minutes after the beginning of the injection—however, with a chill, albumin, red blood corpuscles, etc., appear, later an oliguria and occasionally an anuria. The bacteria appear in the urine very promptly at the time of the chill.

When we now make a continuous injection in animals so prepared, the two kidneys react quite differently. The denervated kidney continues to secrete a normal urine during the course of the entire experiment. No albumin, no red blood corpuscles, no bacteria make their appearance in the urine. The normal kidney, with the onset of the chill, begins to pass albumin, red blood corpuscles and bacteria in large amounts. Later a total anuria may result. The change is clearly evident with the onset of the chill in the animal.

If we take an animal and chill the skin artificially with an ice pack and now begin our bacterial injection, no latent period is necessary before the altered function of the kidney becomes manifest. Red blood corpuscles, albumin and bacteria begin to pass at once into the

[1] Müller, E. F., Petersen, W. F., and Hölscher, Rose, PROC. SOC. EXP. BIOL. AND MED., 1930, xxvii, 544.

[2] Petersen, Wm. F., Müller, E. F., and Boikan, Wm., *J. Infect. Dis.*, 1927, xli, 405; Petersen, Wm. F., Milles, George, and Müller, E. F., *Z. fur Gesamte Exp. Med.*, 1927, lx, 336.

urine from the kidney that is normally innervated, while the denervated kidney continues to secrete normal urine. The close association of the state of the renal vessels to the possible damage by bacteria and toxins and the obvious importance of the skin-kidney autonomic connection is apparently demonstrated in experiments such as these.

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The Rôle of Staphylococci in Food Poisoning.

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In food poisoning of the gastrointestinal type attention has been previously focused chiefly on the Salmonella (paratyphoid-enteritidis) group of bacilli. Some European observers have been unwilling to attribute etiological significance to any other organisms. During the past few years, however, material from a number of well defined food poisoning outbreaks, apparently of bacterial origin, has been subjected to thorough bacterial examination in our laboratories without being found to contain any paratyphoid bacilli. I have consequently become convinced that in a considerable number of cases some other bacterial factor is involved. A recent outbreak in Chicago in which a yellow staphylococcus was found by Dack and other workers[1] in this laboratory to be the probable causal agent has led me to carry out some observations on other staphylococcus strains.

With the aid of human volunteers the sterile filtrates of 6 staphylococci have been tested. From 5 to 10 cc. of sterile broth filtrates of these organisms taken by mouth has caused in a few hours the train of food poisoning symptoms commonly met with: dizziness, loss of appetite, nausea, vomiting and diarrhea. These staphylococci are of diverse origin and are not of uniform cultural character. Three of these were isolated from normal human throats, one from a case of septicemia in man and 2 from food implicated in "food poisoning" outbreaks. With the amounts of filtrate used not all volunteers were affected, but out of 34 taking approximately the same quantity 26 became definitely ill with characteristic symptoms.

[1] Dack, G. M., Cary, W. E., Woolpert, O., and Wiggers, H., *J. Prev. Med.*, 1930, iv, 167.