

to the surface of the kidney and cause a depression on it. There are much larger areas of normal appearing cortex, but here too, there are many tubules which are completely surrounded by thin processes of connective tissue. Many of the glomeruli in these areas show little if any change, but some have thickened capsules with proliferation of the endothelial layer. In the inner zone, however, the condition closely resembles that found in Guinea-pig 33. There is definite cyst formation, extreme atrophy of the tubules, marked proliferation of the connective tissue, and thickening of the glomerular capsules. (Fig. 10.) There is no marked dilatation of the loops of Henle, but many of them are filled with exudate and desquamated cells, and others contain dense fragmented casts. Many of the collecting tubules contain exudate and debris. There is marked hyaline degeneration of the basement membranes of the thickened capsules and atrophied tubules, and there is definite new formation of elastic tissue around some of the glomeruli. There is some granular calcium deposit in the degenerating epithelium, and some scattered areas of calcification in the medulla.

PROTOCOL 7—Guinea-pig 47.—A single injection of 5 mg. was given subcutaneously, and the animal was killed on the two-hundred-and-fortieth day. The weight dropped from 580 gm. to 335 gm. in the first ten days, but had increased to 475 gm. on the seventeenth day. It was not observed at time of death. There was a steady decrease in the amount of urine during the first twelve days until there was almost complete anuria. Albumin appeared in the urine on the third day after the injection and was still present on the seventeenth day. The "sugar" reaction appeared on the third day and lasted four days. No further examinations of the urine were made during the life of the animal, but after death there was a small amount of urine in the bladder which contained a few leucocytes, some epithelium and a few granular casts.

Autopsy.—The animal was very fat, the peritoneum was slightly congested, and there was a small amount of fluid in the peritoneal cavity. The kidneys were not swollen but were somewhat pale and rather mottled. The capsule stripped easily. On section there was no bulging of the cut surface and no edema. The other organs appeared normal on gross examination.

MICROSCOPIC EXAMINATION

The cortex of the kidney shows many small cysts which are mostly glomerular in origin. Many of the glomeruli have thickened capsules with hyaline degeneration of their basement membranes, and a few are surrounded by newly formed elastic tissue. Many of the convoluted tubules are dilated, having flattened epithelium and containing exudate and desquamated cells in their lumens, and many of the loops of Henle are blocked with dense, fragmented, hyaline casts. There is no marked diffuse new growth of the intertubular connective tissue, and there are no areas of round-cell infiltration. There are a few areas of calcium deposit occurring chiefly in the medulla.

PROTOCOL 8—Guinea-pig 44.—A single injection of 5 mg. was given subcutaneously, and the animal died on the two-hundred-and-twenty-fourth day. The weight dropped from 510 gm. to 440 gm. during the first six days, and the animal weighed 385 gm. at time of death. There was no decrease in the amount of urine excreted after the injection, but there was definite albuminuria commencing on the second day and persisting throughout the seven days during which observations were made. The "sugar" reaction appeared on the second day and lasted for four days. The animal gained weight rapidly after the first ten days, and remained in apparently good health until within a few days before death.