

## MICROSCOPIC EXAMINATION

The greater part of the cortex appears fairly normal, although the glomerular tufts completely fill the capsules, and the cells of the convoluted tubules are swollen and somewhat granular. Some of the glomeruli show thickened capsules with beginning proliferation of the endothelium, and some are surrounded by areas of round-cell infiltration. (Fig. 2.) The greatest change is seen in the medullary rays where the tubules are dilated, their epithelium flattened, and their lumens filled with exudate and desquamated cells. (Fig. 1.) Many of the convoluted tubules in the vicinity show a similar change, and there are areas at and near the cortical margin where the same condition obtains. There are some desquamated cells and exudate in the lumens of the collecting tubules. There are no areas of definite fibrosis, but there are many areas of round-cell infiltration occurring chiefly near the junction of the cortex and medulla, and frequently in close relation to the medium-sized veins. There are no dense hyaline casts in the tubules and very little hyaline degeneration of the basement membranes. A few small patches of calcification are seen in the medulla.

**PROTOCOL 4—Guinea-pig 26.** (Fig. 3.)—Thirty-six injections of 0.25 mg. were given in forty-five days, and the animal died on the forty-fifth day. The weight dropped from 587 gm. to 480 gm. Albumin was present in the urine for one day after the eighth dose and for one day before death. There was almost complete anuria for sixteen hours before death, but no convulsions were observed.

**Autopsy.**—The peritoneum was definitely congested, and was adherent to the abdominal wall in the region where the injections had been made. There was a considerable amount of clear fluid in the peritoneal cavity. The bladder contained about 7 c.c. of clear urine, which gave a definite reaction for albumin and contained granular casts, some epithelial cells, and a few leucocytes. The stomach and intestines were distended and were filled with a fluid material. The heart, lungs, liver and adrenals showed no gross changes. The kidneys were about normal in size and color. The capsule stripped easily and there was some bulging of the cut surface on section.

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The condition shown is very little different from that described above. There is no definite fibrosis, but there are many areas of round-cell infiltration, and a fair number of glomeruli with thickened capsules which are surrounded with atrophied tubules. There is definite hyaline degeneration of the basement membranes, both of the tubules and of the glomerular capsules, and there is some cyst formation, chiefly of the glomeruli. The epithelium of the tubules is not granular, but many of the tubules are dilated, have flattened epithelium, and contain exudate and desquamated cells in their lumens. (Fig. 3.) Many dense hyaline casts are present in the tubules, but no areas of calcification are seen.

**PROTOCOL 5—Guinea-pig 30.**—Eighty-three injections of 0.25 mg. were given in one hundred and twenty days, and the animal was killed on the one hundred and fifty-seventh day. The weight fell from 540 gm. to 470 gm. during the time the injections were being made, but went up to 615 gm. during the following thirty-seven days. The urine was not observed until after the forty-sixth dose. Albumin was present in the urine for three days after the fifty-first dose, and for four days after the fifty-seventh dose. No casts were found.

**Autopsy.**—The peritoneum was not congested, there was a very small amount of clear fluid in the peritoneal cavity, and all the organs, including the kidneys, appeared normal on gross examination.