PROTOCOL 4—Guinea-pig 19. (Fig. 8).—A single injection of 5 mg. was given subcutaneously, and the animal was killed on the twenty-fifth day. The weight dropped from 545 gm, to 360 gm, during the first fifteen days, but increased to 405 gm, during the following ten days. No analysis of the urine was made.

Autopsy.—There was no congestion of the peritoneum, but there was a small amount of fluid in both the pleural and peritoneal eavities. Neither kidney had any fatty capsule. The right kidney was slightly swollen and very pale though mottled in color. On section there was some bulging of the cut surface which had a peculiar gravish color. There was a fine striation of calcareous infarction along the outer margin of the medulla. The left kidney was much smaller than the right, and was chalky white in color. On section the whole cut surface of the kidney was uniformly white and the pelvis of the kidney was filled with a milky white fluid which contained a few leucocytes, and numerous small white globules which dissolved with effervescence in dilute acid. The other organs showed no gross changes.

## MICROSCOPIC EXAMINATION

The type of change found is very similar in both kidneys, but has progressed much farther in the left than in the right. The right kidney shows an outer zone of cortex (about one-half the width of the cortex), in which there is very ittle change in either the glomeruli or the tubules. The inner half of the cortex, however, shows very definite change. The capsules of the glomeruli are very much dilated, forming small cysts. There is no thickening of the basement membrane of the glomeruli, and except in a few cases there is no proliferation of the endothelium. The tufts are slightly shrunken but not collapsed, and they show no increase in their connective tissue elements. The intracapsular space is dilated to about five-thirds its original size, and in most cases does not contain any exudate. (Fig. 8.).

The tubules of the inner zone show varying degrees of change. Some are dilated, having flattened epithelium and containing exudate in their lumens, while others are collapsed and show a moderate though not an advanced degree of atrophy of the epithelium. In these areas the tubules are separated by a recent cellular proliferation of the interstitial tissue. There are very many fragmented hyaline casts in the ascending limbs of Henle's loops, and there is exudate and desquanated cells in some of the collecting tubules. There are a few small patches of degenerated tubules in the outer zone of the cortex which show some increase in their cellular elements, and which correspond to microscopic dimples on the surface of the kidney. There are many large areas of round-cell infiltration in the inner zone of the cortex which are mostly situated in the neighborhood of the larger veins. There is no hyaline change in the basement membranes of the glomerular capsules or of the tubules, and there is no new formation of elastic tissue.

The left kidney, which was the smaller, presents a much more advanced degree of change. The condition described in the inner zone of cortex in the right kidney, is found throughout the whole cortex of the left kidney, so that there is practically no normal appearing parenelyma left. Almost all the glomerular capsules are dilated and show no thickening of their basement membranes, although a very few have a slight proliferation of the endothelial cells. Practically all the tubules are degenerated, some being dilated and containing