

are without doubt coagulated sero-albumin and paraglobulin. I have made careful studies of their structure, and have satisfied myself that the living epithelium secretes some ferment which causes the albumin, which chances to transude into the tubes, to become coagulated to form these cylinders. They are most plentifully seen in cases of physiological albuminuria; their presence or absence in a sample of urine I consider of value in diagnosing physiological from organic albuminuria.

Allow me to say here that any physician who depends wholly on the chemical and microscopical examination of albuminous urine without reference to the general condition and history will find himself making sad blunders, so that in forming my diagnosis of physiological albuminuria I would not leave out of sight the following six points along with the cylinders: (1) The intermission in the output of albumin; (2) no impairment of health; (3) amount of albumin less than one-fifth from a 24-hour sample; (4) specific gravity of same about or over 1.024; (5) the youth of the patient; (6) absence of pus, blood, or casts. Yet I have seen in a plentiful sample of mucus cylinders a few shade off into casts, and the other end of the cast often shading off again into mucus cylinders. I think I can put myself clearly before you when I say that albuminous urine showing plentiful mucus cylinders only is almost certainly physiological; their absence is a point, and a strong one at that, in favor of the case being organic. Leaving aside cylinders for the examination of the tubular epithelium in nephritis, we are confronted with the term "cloudy swelling." I do not like it, because it is used loosely to cover numerous changes. I prefer to designate the earliest changes as "œdema of the cells." The best guide to this is the distended and actually dilated membrana propria. This dilation is not sufficiently emphasized by authors; it does not always stop with œdema, but may reach an enormous diameter after its epithelium is swept off. I believe that this dilatation, often arising from plugging of the tube below, ends in the formation of a cyst in this manner, and thus we get cystic kidneys.

Following upon œdema we get hyaline degeneration of the epithelial cells, mostly confined to that half of the cell nearest to the tube

lumen. Here hyaline granules make their appearance; and the free border of the cells having broken down, these particles commingle with those from the neighboring cells to form with albumin a coagulated cast of the diseased tube.

The half of the cell with its nucleus often remains behind; and if the change terminates here, this maimed cell will rebuild its free border, and even the nucleus can be seen occasionally undergoing karyokinesis to replace the swept-off cells. This shows what wonderful reparative power injured epithelium may possess. The change may be so complete as to involve the whole cell, leading by fragmentation to the disappearance of the nucleus; casts from this complete necrosis will occasionally show crescents of undegenerated epithelium which have been carried from the glomeruli into the tubes.

Another change in some way allied to the last is fatty degeneration. The fat droplets are deposited in the border of the cell next to the membrana propria; it is seldom that the entire cell shows this change unless from toxic doses of phosphorus, arsenic, etc. A sample of acute Bright's disease showing plentiful fatty casts does not yield a very hopeful outlook for the patient's return to health, because the tubes lose their epithelium completely.

One more point before bringing this paper to a close. I referred to dilatation of the membrana propria as a valuable point in showing that necrotic changes had taken place in the tubular epithelium. I will call your attention to a diminution of their calibre as pointing to atrophy or cirrhosis.

## CHLORALISM.

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Chloralism has largely waned in the last half decade. The advent of other—though not better, in some respects, I am bound to say—hypnotics has lessened the growth of a toxic disease that, ten years ago, bade fair to assume large proportions and wreck some of the best in the land. Its victims came mainly from the educated rank of our people—brain-workers—those who by super-zealous devotion to duty, or long and exhausting vigils over mental toil, had