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The Histogenesis of Renal Casts.

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During the study of some artificially nephropathic animals, the probable origin of the so-called circular reticulum of the kidney, and of the well known urinary casts, has been found.

Under the influence of a pathological environment the cells lining the convoluted tubules swell toward their tip and become vacuolated. The swelling continues until there is found a globular bulb, containing some of the cytoplasmic granules, and surrounded by a thin membrane. This bulb is gradually pinched off from the parent cell and comes to lie, with its neighbors, free in the lumen of the convoluted tubule. Such a collection of cell extrusions constitutes the circular reticulum. Each unit is globular in shape and contains more or less cytoplasmic granules. The limiting membrane of these globular bodies dissolves next and the granules contained within become massed together. At first the granules are large and stain deeply with phosphotungstic acid. At this stage they occur in clumps separated by circular clear areas. The granules gradually become finer, stain more intensely with eosin, and less intensely with phosphotungstic acid, and are changed into a more or less homogeneous mass, whose surface is granular. As this mass descends through the collecting tubules, the surface becomes smooth, or nearly so, and it emerges at last as the familiar cast.

The first stages, globe-like bulbs, are found only in the convoluted tubules. Various modifications of the granules occur in the loops of Henle while the true cast and its immediate predecessor are found only in the collecting tubules.

Exactly the same process has been followed in sections of human kidneys, though the first stages are difficult to find owing to the ease with which they disintegrate after death. This is a preliminary report.