15 minutes, both at room and ice-box temperature. Less than 0.1 per cent is recovered in the precipitate, while traces can be demonstrated in the supernatant alcohol. The titer of precipitates is usually about 1×10^{-5} cc. and that of the supernatant alcohol about 1×10^{-2} cc. At room temperature the deterioration of the lytic principle proceeds very rapidly with the further exposure to alcohol so that at the end of from three to eight hours not a trace of the lytic action can be detected, either in the precipitates or in the supernatant alcohol. At ice-box temperature, on the other hand, the lytic titer of 1×10^{-5} cc. remains unchanged for at least five to six days and begins to deteriorate slowly with further exposure to the action of alcohol. This lytic action is not due to the bacteriostatic effect of alcohol but is transmissible in series exactly as in the case of the original filtrates.

90 (2322)

Kidney changes in pyloric obstruction.

By F. D. ZEMAN, WM. FRIEDMAN and L. T. MANN (by invitation.)

[*From the Pathological Laboratory, Mount Sinai Hospital, New York City.*]

Four cases of pyloric obstruction have been studied with particular reference to the microscopic changes in the kidney. Of the four, two showed typical tetany, presumably of gastric origin. One of these was under observation only 24 hours, and was unoperated, dying shortly after admission to the hospital. The other case, in which a huge gastrectasia was demonstrated by Roentgen-ray, developed tetany following operative resection of stomach. The two cases without tetany had symtoms of gastric ulcer with signs of obstruction, and were treated surgically.

The kidney changes were not appreciated before death, and were only discovered in course of routine microscopical examination of autopsy material. The four cases show almost identical kidney changes. These consist in degeneration of cells lining the spiral and terminal straight portions of the first convoluted tu-

bules. In many sections these cells are necrotic and infiltrated by granules staining dark blue with hematoxylin, which merge into larger masses, entirely blocking lumina of tubules. These blue staining granules we have interpreted as calcium salts whose staining reaction with hematoxylin is generally regarded as highly characteristic. Treatment of sections with 5 per cent nitric acid for 20 to 30 minutes and then staining with hematoxylin, showed complete disappearance of blue-staining material.

The changes we have found in these kidneys have long been regarded as a frequent concomitant or result of poisoning with mercuric chloride. The similarity is so marked that in our first case we were for a time entirely misled.

It must be emphasized that we do not consider these kidney changes as evidences of a nephritis. The cardinal signs and criteria of either an acute or chronic inflammatory lesion are entirely lacking. The changes we have observed are entirely of a degenerative nature, and as such are best designated by the term toxic degenerative nephrosis.

The observation that gastric tetany may be accompanied by renal changes was first made by Nazzari, who in Policlinico, 1904, reported two cases of gastric tetany with calcification of renal convoluted tubules. He had observed a similar picture in cases of mushroom poisoning and held that his findings pointed to the toxic origin of tetany.

This work remained without confirmation until very recently when a group of workers from the Mayo Clinic, Brown, Hartman, Eusterman and Rowntree, reported eleven cases of duodenal toxemia resulting from high intestinal obstruction in which they found renal changes, which they described as either a diffuse nephritis or a nephrosis. Calcification occurred in several of their cases, but they attribute this to administration of calcium by mouth. While their work is complete, with full chemical and clinical observations, we cannot as yet subscribe to their interpretation of the findings which are in general similar to our own.

Notwithstanding the fact that three of our four cases received calcium internally we do not feel that this has any direct bearing on the character of the kidney lesions described.

We feel that the primary factor in our observations is pyloric or high duodenal obstruction in association with repeated vomiting, to which the tetany and kidney changes appear to be sec-

ondary. The mechanism leading to the kidney damage we are unable to explain satisfactorily at present. Sections of stomach and other organs in our series showed no deposit of calcium such as occurs in metastatic calcification where the amount of circulating calcium is increased.

These observations have served as a basis for further investigation, and are being tested in the experimental studies which we are now undertaking. By tying off the pylorus of cats, it has been possible to reproduce experimentally kidney lesions similar to those described.

91 (2323)

The skopometer: An instrument for measuring color, cloudiness, and other optical phenomena of liquids.

By WILLIAM G. EXTON (by invitation).

[*From the Laboratory of The Prudential Insurance Company, Newark, N. J.*]

The Skopometer was designed for measuring color, cloudiness, and other optical phenomena of liquids without the necessity of using standards for comparison.

Color is measured in terms of absorption by determining the extinction coefficient of the liquid with the aid of a monochromatic light filter complimentary to its color.

The construction permits measurements of cloudiness by means of several different optical principles. Denser clouds are conveniently measured by determining the height of the column of liquid necessary to extinguish a light image of standardized intensity by means of a target such as a platinized glass disc with a transparent line or design of given dimensions. The target may be used in various ways and illuminated by either incident grazing or transmitted light.

Lighter clouds are measured photometrically by matching the light incident for the target with the light reflected or scattered from the particles in suspension. For very small quantities of