480 mg. urea for each 100 cc. the mercury combining power was 500 cc.

From this test, which may be made in fifteen minutes, with a minimal laboratory equipment, may be determined accurately the absence or presence of nitrogenous retention in the body, and the degree of such retention.

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A smoke precipitator used in iodin analysis of food stuffs.

By J. F. McCLENDON.

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Owing to high potentials needed for the Cottrell Precipitator, and the danger of short circuiting when manipulating the rest of the apparatus, it was decided to try another method of smoke precipitation in the combustion of large samples of food stuffs in the combustion tube, the smoke being passed through an alkaline solution to catch all the iodin. It is very difficult to catch the smoke in wash bottles, in fact it is stated that phosphorus pentoxid dust may be blown through a washbottle without complete precipitation.

The method tried was as follows: The smoke was bubbled through distilled water, this somewhat cooling it and saturating it with moisture at 100°. Its further passage supersaturated it with moisture which caused each smoke particle to be surrounded by a layer of moisture. The precipitation apparatus was a glass tube 7 cm. in diameter and 45 cm. long, closed at one end by fusing the glass, closed at the other end with a rubber stopper, and provided with a side neck 1½ cm. in diameter. By means of holes in the rubber stopper two block tin tubes 1½ cm. in diameter were inserted. One of these tubes was open at the inner end and admitted the hot smoke which passed through the full length of the tin tube (keeping it hot), and then was admitted to the interior of the glass tube, and finally passed out the side neck. The other tin tube was closed at the inner end, and in it was inserted a ½ cm. tube admitting water and keeping it cool. The

smoke in the glass tube was thus between a hot and cool tube. The smoke particles, on cooling sufficiently, were enclosed in droplets of water-vapor which were heated unequally by unequal radiation from the hot and cold tubes. This caused an inequality of the surface tension on the two sides of the drop causing movements of the water surface which, by friction of the air, caused a vortex movement in the air the inertia of which forced the droplet toward the side of the least surface tension, and therefore toward one of the tubes. It is not necessary here to debate the question of which tube, hot or cold, the droplet was precipitated on, it being only necessary at the end of the experiment to wash the outer surface of both the tin tubes and the inner surface of the glass tube to obtain the precipitated smoke.

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Results obtained with the use of the smoke precipitator.

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Heretofore we have experienced some difficulty when precipitating smoke in determining iodin by McClendon's method. The results of smoke precipitation, the theory of which Dr. McClendon has explained, show that the deficiency of the precipitator is in inverse ratio to the amount of smoke given off. When the volume is small the efficiency is around 90 per cent, but when the volume of smoke which passes through is great, it probably does not stop more than one-half of an efficiency of about 50 per cent. Therefore, the average efficiency that has been obtained in all of the determinations would average about 66 per cent.