If pneumococci are similarly deposited in the liver of an actively immunized rabbit, in the presence of immune rabbit blood, a gradual decrease in the deposited pneumococci is observed. By the end of 5 or 6 hours' incubation, the tissues have usually become relatively sterile. The few remaining microörganisms usually multiply later to form distinct colonies. The microörganisms in the larger hepatic blood vessels, not in contact with the specific parenchyma cells, are not so destroyed.

This hepatic destruction of the pneumococci is not associated with leucocytic accumulations, nor is it necessarily accompanied by phagocytosis by the endothelial cells. There is apparently an hepatic mechanism in the immune animals for the extracellular destruction or digestion of the microörganisms. Pneumococci taken up by the endothelial cells are apparently protected to a certain extent from this destruction.

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A method for the determination of small amounts of sugar in urine.

By V. C. MYERS.

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All human urines probably contain small amounts of sugar, as has quite recently been pointed out by both Cole[1] and Folin,[2] who have described tests for the detection of this small amount of sugar. It has been found possible to determine this reducing substance by precipitating the creatinine and uric acid, and probably other interfering substances with picric acid as suggested by Folin for his qualitative test, and then employing a technique similar to that introduced by Benedict and Lewis[3] for the estimation of the sugar of the blood.[4] It is presumed that the re-

[1] Cole, S. W., *Lancet*, 1913, II, 861.

[2] Folin, O., *J. Biol. Chem.*, 1915, XXII, 327.

[3] Lewis, R. C., and Benedict, S. R., *J. Biol. Chem.*, 1915, XX, 61. See also Myers, V. C., and Bailey, C. V., *J. Biol. Chem.*, 1916, XXIV, 147.

[4] In a recent conversation with Professor S. R. Benedict, he informed me that Mr. Oesterberg, of the Cornell Chemical Laboratory, had likewise utilized this method for urine.

ducing substance in question is glucose, although this has been found difficult of positive proof. This question is being further investigated.

The method is carried out as follows: About 2 grams of dry picric acid are added to 10 c.c. of urine in a test tube and the tube vigorously shaken. The tube is now stoppered and placed in an ice box at 0° C. After the tube has stood for an hour, it is again shaken and then allowed to stand over night in the ice box, after which the mixture is filtered through a small filter paper into a dry test tube. The filtrate now contains less than 0.1 mg. of creatinine per c.c., a quantity too small to invalidate the estimation of the sugar. If the urine has reacted negatively to Benedict's qualitative reagent, the filtrate is diluted 1–5 or 1–10 with saturated picric acid solution. If the qualitative test has shown a small amount of sugar, a greater dilution is made. The following rule may be followed: for 0.1 per cent. of sugar dilute 1–5, for 0.2 per cent. dilute 1–10, for 0.3 per cent. dilute 1–15, etc. To develop the color, pipette 3 c.c. of the diluted fluid into a tall, narrow tube graduated to 10, 15 and 20 c.c., add 1 c.c. of saturated sodium carbonate solution and heat in a beaker of boiling water for 15 minutes. The tube is now thoroughly cooled and diluted with water to the mark most satisfactory for colorimetric comparison. Either pure glucose in saturated picric acid or a standardized picramic acid solution may be used as standard.[1]

INFLUENCE OF THE INGESTION OF GLUCOSE ON THE SUGAR OF THE URINE

Time[2] A. M.–P. M.	Sugar of Blood, Per Cent.	Sugar of Urine, Per Cent.	Benedict's Qualitative Reaction for Sugar in the Urine.
	0.12	0.09	
9–10	0.15	0.10	Negative
	0.17	0.17	
10–11	0.23		
	0.22	0.90	Strongly positive
11–12	0.16	0.41	Positive
	0.15	0.32	Slight cloudiness
12– 1	0.14		
	0.14	0.27	Slight cloudiness
1– 2	0.13		
	0.13	0.25	Very slight cloudiness
2– 3	0.09	0.17	Negative

[1] See Myers and Bailey, *J. Biol. Chem.*, 1916, XXIV, 150.

[2] 75 grams of glucose by mouth at 9.15.

Normal urine appears to contain between 0.08 and 0.2 per cent. sugar. Urines which give only a slight reaction with Benedict's qualitative reagent give higher figures with this method, generally between 0.25 and 0.35 per cent. The data on the previous page from a human adult, kindly loaned by Dr. Bailey,[1] nicely illustrate several of the points in question.

The above results scarcely appear to support the recent conclusions of Taylor and Hulton[2] regarding the assimilation limit of glucose. If, however, only the twenty-four hour specimen of urine had been examined as in their experiments, the result would, no doubt, have been negative.

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Regeneration in the mesencephalon of Amblystoma.

By **H. SAXTON BURR.** (By invitation.)

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In April of the present year the writer published a report of an experimental study of regeneration in the forebrain of *Amblystoma*. The results showed that the removal of the cerebral hemisphere together with the end-organ normally connected with it (the nasal placode), was not followed by a regeneration of nervous tissue. On the other hand, when the cerebral hemisphere was was removed, leaving the nasal placode in place as a functionally active organ, complete regeneration of the hemisphere occurred. It was concluded that the functional activity of the nasal placode provided the requisite stimulus, at first through some hormone reaction and later through the active ingrowth of the olfactory fibers, for the regeneration of the hemisphere.

This spring the same type of experiment has been performed with the ocular complex. *Amblystoma* larvæ were subjected to two series of operations. In the first the right eye and the underlying mesencephalon was removed. In the second the right eye was turned back with a flap of skin and the underlying brain removed, the eye being then returned to its normal position.

[1] See Bailey, C. V., PROC. SOC. EXPER. BIOL. AND MED., 1916, XIII, 154.

[2] Taylor, A. E., and Hulton, F., *J. Biol. Chem.*, 1916, XXV, 173.