A glance at the above table will suffice to show that the flow of urine bears but slight relation to the degree of dilution of the blood as indicated by the specific gravity determinations. Diuresis is apparently the greatest when the percentage of blood sugar is highest. On the other hand, there is no question but what diuresis is absent in experiments showing excessively high blood sugar.

For the experiments of May 27 and 28, and of June 4 and 5, the same animals were used, the experiments differing only in that the rate of injection was rapid in one case and slow in the other. Here it seems that the presence of diuresis depends upon the rapidity of injection, and not upon the blood sugar content, which in both cases is excessively high.

III. The quantity of sugar per c.c. of urine was surprisingly *constant* when the blood sugar was above 0.4 per cent., *i. e.*, during the period following injection. In a series of experiments with the blood sugar varying from 0.4 to 0.6 per cent. the sugar per c.c. of urine varied from .045 to .052 gm., independently of the presence or absence of diuresis. Toward the end of the experiment, however, with blood sugar falling, and diuresis coming to an end, the sugar per c.c. of urine rises steadily. For example, in one experiment, at different periods, the blood sugar percentage was .5, .35, and .28; while for corresponding periods the urine sugar per c.c. was .05, .07, and .08 gm.

42 (1106)

A method for the estimation of levulose in presence of glucose.

By LEON LOEWE (by invitation).

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The reagent consists of 0.2 per cent. aqueous solution of orcein (Kahlbaum) and 85 per cent. phosphoric acid (Eimer and Amend) in separate containers.

The qualitative test is carried out as follows: to 1 c.c. of the solution under investigation in a test tube, add from 6 to 8 drops of the orcein solution and 1 c.c. of the phosphoric acid. The test tube

is heated to boiling over a free flame and then placed in a boiling water-bath for ten minutes. If levulose is present, a yellow color appears which is deeper for greater concentrations of the sugar. A yellow precipitate settles out on cooling. Upon the addition of alkali (KOH or NaOH) sufficient to neutralize the phosphoric acid, the yellow color changes to a distinct orange. The characteristic orange color developed was made the basis for the quantitative determination of levulose.

The procedure for the quantitative test is essentially the same. The standard for colorimeter comparison is a definite known solution of levulose in distilled water. The strength of the standard is arbitrary but should be as near the concentration of the unknown solution as possible to favor a more accurate comparison. Hence the advisability of performing a preliminary test to determine the optimum standard. The standard and unknown solutions are similarly treated, to 1 c.c. of each in separate test tubes add 8 drops of the orcein solution and 1 c.c. of phosphoric acid. The solutions are, as before, boiled over a free flame and heated in a boiling water-bath for ten minutes. The test tubes are then removed and the contents of each are transferred quantitatively to separate ten c.c. volumetric flasks and made up to the mark with 5 *N* NaOH. The solutions are at once placed in the colorimeter chambers and the orange colors compared.

RESULTS.

Qualitative.—Levulose was detected in 1 c.c. of a 0.005 per cent. solution.

A positive reaction was obtained from 0.5 c.c. of a 0.01 per cent. solution of levulose in the presence of 0.5 c.c. of a 20 per cent. solution of dextrose.

Maltose, lactose, galactose, and R. arabinose in solutions of various strengths did not interfere with the test.

Cane sugar yielded a positive test, due to the presence of levulose from the hydrolytic cleavage of the sugar in the presence of the phosphoric acid.

Quantitative.—The orange color was found to be characteristic for the different concentrations of levulose. Uniformly good results were obtained with unknown solutions in the presence of various amounts of glucose.

Levulose was added to urine and subsequently quantitatively recovered after treatment of the urine with lead acetate to remove coloring matter and inorganic salts.

43 (1107)

A method for obtaining suspensions of living cells from the fixed tissues, and for the plating out of individual cells.

By PEYTON ROUS and F. S. JONES.

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The method depends on the ability of living tissue cells to withstand tryptic digestion. It is applicable to such cells as will proliferate *in vitro*. Bits of tissue are cultivated in plasma, according to Burrows's modification of Harrison's technic, and when growth is well under way the preparation is flooded with trypsin dissolved in Locke's solution. Under the influence of this fluid the growing cells contract into spheres, and with the digestion of the fibrin network they are liberated. Suspensions of individual cells are thus obtained comparable to suspensions of leukocytes. When washed and plated anew in plasma the cells put forth processes and proliferate. The digestion and plating can be repeated. The method is most successful with tissues that grow loosely in strands or a network,—sarcoma, choroid, endothelium (?), connective tissue,—in distinction from those proliferating in sheets, as do the epithelial tissues. The cells of these latter are usually liberated in clumps, not as individuals.

44 (1108)

The carbon dioxide content of blood and alveolar air in obstructed expiration.

By E. D. FRIEDMAN and H. C. JACKSON.

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In the course of a study of the effects of respiration on the circulation and more especially the modification of these effects in