filtrate. Numerous control experiments were made to test the accuracy of the different steps involved in this method. If rats were killed immediately after the sugar feeding, 99.4 to 99.8 per cent of sugar was recovered.

In order to use animals of different weight, one would have to show that the absorbing surface of the intestine is proportional to the body weight, or in other words that the quotient *Intestinal surface/Body weight* or *Amount absorbed/Body weight* is a constant. Our experiments revealed that, within the range of body weights investigated, both sexes showed a proportionality between the amount absorbed (and hence between intestinal surface), and body weight. The amount of substance absorbed per 100 gram body weight in one hour has been called the absorption coefficient. The following example illustrates the constancy of the results that can be obtained with this method: 2.5 cc. of a 50 per cent glucose solution were fed to 8 rats weighing 117.7 to 173.7 grams. They were killed after one hour. The average absorption coefficient was 0.196 grams ± 0.014 grams, or a maximum deviation from the mean of 7.1 per cent. By allowing the absorption to proceed for 2.3 hours and more, definite absorption curves can be constructed for each substance.

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The rate of absorption of hexoses and pentoses.

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With the method described in the preceding abstract, the rate of absorption of the sugars referred to in Table I has been investigated. Over 100 rats have been used for obtaining the data recorded in this table. The absorption coefficients represent an average of 1, 2 and 3 hour periods in the case of galactose and glucose, and of 1, 2, 3, 4 and 5 hour periods in the case of the other sugars. It will be noted that a relatively slight change in

the sugar molecule affects the rate of absorption very markedly. The ketosugar fructose is absorbed at a rate of less than one half of that of glucose. The isomeric change from glucose to mannose reduces the rate of absorption to one-fifth. Pentoses are absorbed at still slower rates. All this indicates that the intestinal membrane is possessed of a high degree of selective permeability for sugars.

TABLE I.

Comparison of the rate of absorption of 50 per cent solutions of hexoses and pentoses.

Type of sugar.	Average Absorption coefficient.	Ratio (Glucose = 100)
d-Galactose	0.196	110
d-Glucose	0.178	100
d-Fructose	0.077	43
d-Mannose	0.034	19
l-Xylose	0.028	15
l-Arabinose	0.016	9

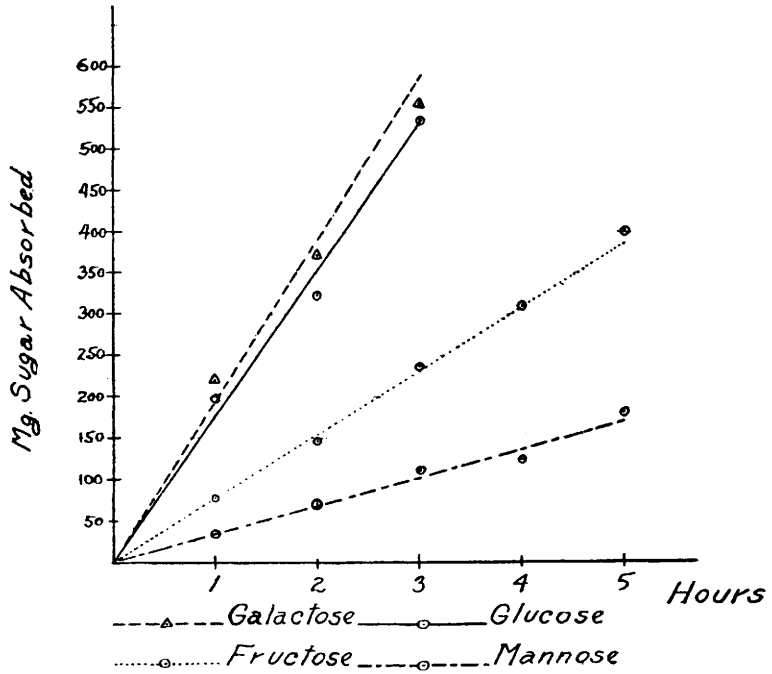

FIGURE 1.

Graphic representation of the rate of absorption of hexoses.

When the amount of sugar that is absorbed is plotted against time, a straight line is obtained, as is illustrated in Figure 1. The maximum deviation from the mean was ±10 per cent, which is as close an agreement as can be expected from a biological method such as the one used for this work. The straight lines in Figure 1 extend to a point where about 50 to 70 per cent of the sugar originally introduced has been absorbed. From this it follows that the rate of absorption remains constant in spite of the diminution of the amount and also the concentration of sugar present in the intestine; or that the rate of absorption is independent of both factors.

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Quantitative studies on the pars tuberalis of the hypophysis cerebri.

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The *pars tuberalis* has been shown to be a distinct portion of the epithelial hypophysis both embryologically and histologically.[1, 2] Whether it serves a distinct function, if any, has not been determined.[3]

The method employed has been that utilized by Hammar, Rasmussen[4] and others. The three parts of the epithelial hypophysis were carefully outlined on paper of uniform thickness using serial sections and the projection microscope. The several parts were then cut out with scissors, and weighed. The volume of each part was determined in per cent of the total volume of the entire epithelial hypophysis. Then the value of the *pars tuberalis* in per cent of the *pars intermedia* was calculated.

In seventeen amphibia examined, there is great variation in the relative size of the *pars tuberalis* and the *pars intermedia*. In the

[1] F. Tilney, *Internat. Monatschr. f. Anat. u. Physiol.*, 1913, xxx.

[2] W. J. Atwell, *Am. J. Anat.*, 1918, xxiv, 271.

[3] W. J. Atwell and C. J. Marinus, *Am. J. Physiol.*, 1918, xlvii, 76.

[4] A. T. Rasmussen, *Endocrinology*, 1924, viii, 509.