It is the purpose of this paper to report that a large number of experiments have been performed on dogs to determine the relation of the vagus nerves to the sinus node. The experiments were performed under ether; a small opening in the chest was made by resecting one or two ribs, and both vagus nerves were dissected, cut and laid on shield electrodes. Records were taken electrocardiographically. The results of stimulation of both vagus nerves were first registered. Then the sinus node was carefully clamped off with a suitable T-shaped clamp, all the tissue surrounding the node being crushed. Stimulation of both vagus nerves was repeated and records were obtained.

In the greater number of experiments, it could be shown that stimulation of the vagus nerves after clamping the node was effectual in producing effects on the rate and on the rhythm of the heart in a way similar to that seen before the clamp was placed. In a number of cases the effect of stimulation was more profound after than before the clamping. The conclusion is therefore warranted that the sinus node does not represent a simple relay in the course of the vagus nerves.

These experiments will be published in detail later, and the histological examinations of the areas at which the clamp was applied will be reported.

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The energy requirement of the new born.

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To find whether it would be desirable from a physiological standpoint to furnish some artificial food together with the colostrum during the first three days of life, the energy requirement of the newborn was ascertained by means of a respiration incubator.

Series of cases from the wards of Bellevue Hospital show that the initial weight loss averages over 250 gm. and that this loss is increased by lengthening the interval of feedings and lessened by

the supplementary feeding of a milk mixture similar to colostrum. The infants were able to take the extra feedings without any disturbances of digestion.

Mr. Frank Gephart, of the physiological laboratory, made analyses of five specimens of second- and third-day colostrum and found the utilizable heat value averaged 65 calories per 100 c.c. While the food value of the colostrum is great, our own observations and many reports from the literature show that the average amount of breast secretion is 14 c.c. on the first day, 77 c.c. on the second day, 173 c.c. on the third day and from that time on gradually increasing to 372 c.c. on the sixth day, hardly, in the first three days at least, an amount that would give the infant much nourishment.

With the respiration apparatus of Benedict connected to an airtight chamber placed within a Freas electric constant temperature incubator of special construction, the carbon dioxide eliminated and the oxygen absorbed were measured under proper temperature conditions.

Nineteen observations were made on six newborn infants varying in age from 6 hours to 12 days. From the results were obtained the respiratory quotients and by the indirect method, using the method of Zuntz and Schumberg, the heat production was calculated.

SUMMARY OF THE RESULTS.

The respiratory quotient reaches as high as 1.0 on the first day of life and indicates the combustion of carbohydrates. Thereafter it drops to 0.67 on the second day and remains in the neighborhood of 0.70 for the following two days indicating a condition of starvation and the combustion of fat. After the milk secretion is well established the quotient reaches 0.90, which is the normal for a mixed diet.

The average food requirement for combustion alone during the first four days of life for a large infant weighing 4.5 kg. is 1.7 calories per kilogram per hour; and for a small infant weighing 3 kg. is 2.0 calories per kilogram per hour.

Comparing the calories per 100 c.c. of samples of colostrum with this requirement it is evident that the infants would have to

suckle at least 30 c.c. at ten feedings. This is an amount that the breast does not secrete, at least until the fourth day. Feeding the newborn infants for the first three days, in addition to the breast secretion, a formula of about the same composition as colostrum would appear to be a logical proceeding not only to fulfill the energy requirement but also to supply the water lost.

Even after the breasts are secreting a considerable quantity of milk it would seem to be rational to feed these babies as often as every two or two and one half hours during the day or eight or nine feedings in all.

68 (885)

The influence of phenylquinolin carbonic acid (atophan) and of radium emanation upon the uric acid concentration of the blood.

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The prompt and marked increase in the uric acid output following the administration of 2-phenylquinolin-4-carbonic acid (atophan) has been repeatedly demonstrated. More recently, Folin and Lyman[1] reported a concomitant diminution in the uric acid concentration of the blood, which suggested an increased renal permeability as an important factor in the physiological action of atophan.

In the course of our studies with atophan, begun more than a year ago, we have endeavored to ascertain, (1) the promptness with which the decrease in blood uric acid is brought about; (2) the minimum to which it can be reduced; and (3) the rapidity with which the initial concentration is regained after the administration of atophan has ceased.

We have observed a marked decrease in the uric acid concentration of the blood after a two day period with atophan; and are attempting to determine more exactly the speed of this reaction.

[1] Folin and Lyman, *Jour. Pharm. and Expt. Ther.*, IV, p. 539, 1913.