COEFFICIENTS OF DIGESTIBILITY FOR RAW AND COOKED EGG WHITES.

Subject	For Protein of Whole Ration.			For Protein of Whites of Eggs Only.			Remarks.
	Eggs Cooked, %.	Eggs Raw, %.	Diff. (in Favor of Cooked).	Eggs Cooked, %.	Eggs Raw, %.	Diff. (in Favor of Cooked.	
G. S. .	85.7	82.6	+3.1	85.4	81.0	+ 4.4	½ beaten
L. S. .	86.2	82.5	+3.7	86.0	80.8	+ 5.2	½ beaten
M. K.	83.2	83.9	−0.7	81.8	82.8	− 1.0	All beaten
M. F..	83.3	75.7	+7.6	81.9	71.2	+10.7	All unbeaten

In these experiments the raw white was as well digested as the cooked if beaten light, and the difference between the two was not striking when taken half beaten and half unbeaten. The greatest difference was observed when the whites were swallowed with no subdivision whatever, and even then the difference between the cooked and the raw was only 11 per cent. when as many as ten or twelve whites were taken per day. The effect of beating on the coefficient of digestibility is under further investigation.

68 (1528)

A study of the sugar and oxygen relationships in the blood of dogs during exercise.

By ERNEST L. SCOTT and A. BAIRD HASTINGS.

[*From the Department of Physiology, Columbia University, New York.*]

As a phase of our investigation of the chemical changes in the organism resulting from exercise, the following study of the sugar and oxygen relationships in the blood of dogs was undertaken.

Samples of blood amounting to about 1 per cent. of the body weight were drawn from the external jugular vein. Determinations of the blood sugar by the MacLean method, of the oxygen by the Van Slyke technique, and of the volume of the corpuscles by a precision hematocrit were made every two hours during the course of six-hour working periods. During these periods the dogs ran on an electrically-driven, horizontal treadmill at the rate of about five miles per hour. For each such experiment, we made a corresponding series of control observations on the same

dog similar in all respects save that the exercise factor was eliminated. The figures given in the table are the averages of the data obtained from five dogs.

The fact that the averages of the initial samples are so nearly identical for each constituent, indicates that our series is sufficiently long to permit the attaching of significance to subsequent variations.

Since it is desirable to compare figures which were obtained under conditions identical except for the added element of exercise, we wish to point out that in studying the table the figures given for exercise should be compared with the figures for the corresponding periods of rest, rather than with the initial values for the exercise experiments. This is indeed necessary in the interpretation of the effect of work because variations of significant magnitude in the control series make comparisons between initial and successive periods unjustifiable for this purpose.

	Experimental Conditions.	Number of Experiments Performed.	Elapsed Time in Hours.			
			0.	2.	4.	6.
Oxygen content c.c. per 100 c.c. blood	Rest	12	16.5	13.7	14.5	14.0
	Work	13	16.1	17.3	17.0	16.6
Difference due to work			−0.4	+3.6	+2.5	+2.6
Oxygen capacity c.c. per 100 c.c. blood	Rest	12	24.6	23.8	23.6	23.1
	Work	13	24.8	25.6	26.4	26.4
Difference due to work			+0.2	+1.8	+2.8	+3.3
Volume of corpuscles expressed as per cent	Rest	8	49.9	47.1	46.9	47.9
	Work	10	49.1	50.6	51.0	51.5
Difference due to work			−0.8	+3.5	+4.1	+3.6
Sugar as glucose mg. per 100 c.c. blood	Rest	12	69	68	70	66
	Work	13	69	66	64	60
Difference due to work			0	−2	−6	−6

From the table it will be seen that the oxygen content of the blood rises during the first period of work as compared with the first period of rest and falls slightly thereafter. These results may be due among other things, to increased aeration in the lungs, increased oxygen capacity of the blood, and to an increased rate of blood flow through the tissues.

The oxygen capacity of the blood rises progressively, but at a decreasing rate, throughout the period of work. This phenomenon

is correlated with a parallel rise in corpuscular volume as indicated in the table.

The concentration of sugar falls steadily throughout the work period. It should be noted, however, that the variations during the first period in work and those during the same period in rest are almost identical, but from this point on there is a divergence which becomes quite pronounced in the later stages of the experiment.

It is perhaps worthy of notice that there is a rather distinct change in the magnitude of the effects of work after the first period. This we have interpreted as indicating that the day's work falls into at least two phases; first, one in which certain augmenting effects of exercise apparently predominate, second, one in which fatigue phenomena are relatively more prominent.

69 (1529)

Further studies in the measurement of vitamine content.

By WALTER H. EDDY and HELEN C. STEVENSON.

[*From the Department of Physiology Chemistry, Teachers College, Columbia University and the Department of Pathology, New York Hospital.*]

During the past year two papers have appeared in the *Journal of Biological Chemistry*, one by Dr. Bachman[1] and the other by Dr. Williams[2], which postulate the requirement of the water-soluble B vitamine in yeast growth. Both these papers suggest the use of yeast cells as a means for the measurement of vitamine content and present a technique that may be used to that end.

In an earlier number of the PROCEEDINGS[3] we reported on a study of the suitability of the Bachman test for vitamine measurement and some of the difficulties encountered. Since that time we have carried out similar studies of the Williams technique and as a result have devised a method which employs features of both

[1] Bachman F., Vitamine requirements of certain yeasts. *Journ. Biol. Chemistry* 1919, xxxix, 235.

[2] Williams, Roger J., The vitamine requirement for yeast. A simple biological test for vitamine. *Journ. Biol. Chem.*, 1919, xxxviii, 465.

[3] PROCEEDINGS SOC. EXPER. BIOL. AND MED., 1919, xvii, 52.