changes. Brain metabolism so estimated is at least 20 times as intense as that of resting muscle. This average does not differentiate the higher respiration of gray matter from white, the large amount of non-neural elements, and similar factors tending to dilute a much higher value for the nerve cells proper. Insulin does not uniquely influence brain sugar utilization.

5959

Effect of Calcium Administration to Rachitic Rabbits.

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The rabbits used in this work were made rachitic with the McCollum diet 3143, which is high in calcium and low in phosphorus. The calcium is present, chiefly, in the form of calcium carbonate. Previous work with this diet has shown that after about 20 days the animals have more or less marked rickets, as evidenced by X-ray of the bones and by determination of the phosphorus in the serum.

The control animals were given the same diet with the addition of cod liver oil, about 1 cc. per 100 gm. of diet.

Calcium was given in the form of calcium chloride or calcium gluconate, both in the strength of 10 mg. Ca per cc. of solution, administered in one dose by stomach tube. The dose, both in controls and rachitic animals, varied from 25 mg. to 200 mg.

Blood was taken by heart puncture before the administration of calcium and again a few minutes afterwards.

The normal animals did not seem affected by the administration of calcium. Of the 24 rachitic animals, however, 12 died within 15 minutes of the administration. In these animals the blood was very thick and coagulated rapidly.

The cause of death in the rachitic animals was, probably, hypercalcemia. Before the administration of calcium both controls and rachitic animals showed, rather constantly, a serum calcium of about 12 mg. per 100 cc. After the administration of calcium one control animal showed a rise of the serum calcium to 19 mg., in the remaining controls the maximum rise was to 15 mg. In the rachitic animals quite a number showed extremely high values for serum calcium after calcium had been given by mouth. The maximum was 61 mg.,

and 12 of the 24 showed values of 20 mg. or higher.* These were the 12 animals who died immediately after the administration.

The serum phosphorus was, generally, not affected by these very marked increases in serum calcium.

The increase in serum calcium was, roughly, correlated to the dose given, although in some cases a marked increase of serum calcium was obtained after the administration of only a small arount of calcium by mouth. There seemed to be no difference in the effect of the gluconate and the chloride.

As it seems possible that the above results may be due to hyperparathyroidism, we are now determining the amounts of parathyroid hormone in the serum of normal and rachitic rabbits.

5960

Formation of Antibodies in Fertile Hens Eggs.

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The theoretical and practical interest inherent in the question of the time and location of antibody formation in the developing organism is responsible for a series of experiments in which fertile hens' eggs were repeatedly injected with foreign sera. After incubation for a certain time, the eggs were opened and precipitin tests were made on the remaining egg white. These tests were positive in approximately 4% of the cases.*

The handling of the eggs during the process is quite delicate, and in spite of careful manipulation, a number of eggs were lost. Because of the obvious necessity of insuring a well-growing chick, the best grade of hatching eggs must be procured. The first injection is usually made on the third day of incubation, when fertility may be ascertained. The egg shell was first washed with mercuric bichloride and then with alcohol. Into each egg, from 0.1 to 0.25 cc. of sheep serum [foreign soluble protein] which had previously been passed through a Berkefeld filter, was injected. In piercing the shell, care must be taken to cause as little disturbance of the con-

* 5 animals had a serum Ca of 20-29, 5 of 30-39, and 2 over 40.

* Young animals are poor antibody producers. R. H. Jaffé, *Physiol. Rev.*, 1931, **11**, 279.