

isms in 48-hour broth cultures of *B. proteus* were collected, washed repeatedly with saline, dehydrated with acetone and ether and then finely powdered. Testing for urease activity, by adding 0.5 gm. of the extracted organisms to 100 cc. of 0.5% urea dissolved in water, resulted in the production of 177.8 mg. of ammonia. Controls consisting of the urea solution alone and of urea solution plus 0.5 gm. of the extracted organisms, previously boiled for 10 minutes, showed no increase in ammonia. Therefore the splitting of urea, in the foregoing experiments, was brought about by an endo-urease.

Summary. Evidence is here presented that glucose and urea simultaneously present in broth media interact to accelerate the breakdown of each other by *B. proteus*; that this is in large part due to their end products maintaining the reaction at a more optimum range and that the splitting of urea is accomplished by an endocellular urease.

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Calcium and Phosphorus Balances of Epileptic Children Receiving a Ketogenic Diet.

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Three epileptic children, 3, 7 and 9 years of age, receiving a ketogenic diet were made the subjects of a metabolic study with special reference to the calcium and phosphorus intake and output. The diets furnished approximately $1\frac{1}{2}$ gm. of protein per kg. of body weight per day, and an energy value sufficient for average activity. The diet of the youngest child contained 2 gm. of potential fatty acid to each gm. of potential glucose. In the diets of the older children this ratio was 2.5:1. Each patient was excreting ketone bodies in considerable quantities and no epileptic symptoms were manifested during the period of observation. The diets were planned to include as much calcium and phosphorus as their limited carbohydrate content would allow, and were composed of cream, meat, eggs, butter and low carbohydrate vegetables and fruits. The usual metabolic procedures were employed.

In each instance the calcium and phosphorus output exceeded the intake, and the usual excess of excretion of calcium and phospho-

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rus in the stools over that in the urine was not found in these cases. There was a great increase in the urinary calcium and phosphorus, the increase of urinary calcium being proportionally greater than the increase of urinary phosphorus. Two of these children while receiving a general diet showed the average retention of calcium and phosphorus and the usual relationship between the stool and urine in the excretion of these minerals. Blood calcium and phosphorus determinations made during each period of metabolic observation were within normal limits.

In this study of 3 epileptic children the data indicate that when a ketogenic diet is employed the calcium and phosphorus output ex-

TABLE I.
Showing the calcium and phosphorus intake and output of 3 epileptic children.

No.	Intake			Output						Retention or loss								
	F.A./G.	Ca.	Inorg. P.	Urine			Stool			Total			Total			Per Kg.		
				Ca.	Inorg. P.	gm.	Ca.	Inorg. P.	gm.	Ca.	Inorg. P.	gm.	Ca.	Inorg. P.	gm.	Ca.	Inorg. P.	gm.
1	2 : 1	.264	.437	.165	.323	.196	.181	.504	.097	.067	.008	.005						
2	2.5:1	.654	.591	.699	.895	.211	.158	1.053	.256	.462	.011	.020						
3	2.5:1	.688	.706	.586	.855	.233	.167	1.022	.131	.316	.004	.015						
2	1:2.6	1.015	1.230	.039	.525	.703	.347	.872	.273	.358	+.012	+.011						
3	1:2.6	1.184	1.435	.047	.459	.629	.559	1.018	.508	.417	+.016	+.013						

ceeds the intake, and there is a shift of the major excretion from the stool to the urine.

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Antipyretic Action of Magnesium Chlorid Alone and Combined With Amidopyrin.

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The temperature reducing properties of magnesium salts in doses below the threshold for the well known Meltzer narcosis, have been described by J. Schütz,¹ for normal rabbits. Rabbits artificially fevered with β -tetra-hydro-naphthylamin also exhibited antipyresis with magnesium. The latter, however, has apparently never been investigated hitherto with regard to the reduction of fever of bacterial origin. In animals with hay-infusion fever, it is not difficult to demonstrate a marked antipyretic action with doses of magnesium salts far below the toxic range. This can be especially well shown with magnesium chlorid in rabbits previously injected with hay-infusion incubated 48 hours, at 37° C.

Healthy adult rabbits after fasting over night were injected subcutaneously with 1 cc. (per kilo) hay-infusion. A rise in temperature amounting to at least 1.5° F. was found within about 2 hours, in approximately two-thirds of the injected rabbits. The antipyretic agent was injected subcutaneously, usually 2 to 3 hours after the fever injection; at least 2 well fevered rabbits were retained for controls.

In the present work $MgCl_2$ was used in 5% solution, amidopyrin in 4% solution. When "combined" the same solutions were used, one immediately following the other; whether injected at the same or different sites was found immaterial.

The results as shown in the curves (Figs. 1 and 2) represent differences in body temperature between treated animals and untreated fever controls, the zero temperature being the temperature at the time (zero hour) of giving the magnesium chlorid.

To produce definite magnesium antipyresis in hay-infusion fever rabbits, about 200 mg.* of the chlorid per kilo are required, as il-

¹ Schütz, J., *Arch. f. exper. Pathol. u. Pharmacol.*, 1916, lxxix, 285.

* All Mg calculations are made in terms of anhydrous salts.