This third factor is evidently not vitamin A or D, which were abundantly present in the synthetic diet in the form of butter and cod liver oil. It is improbable that it is an ash constituent, in view of the salt mixture in the synthetic diet. It may be of the nature of vitamin E, since no very rich source of E was present in abundance. We are endeavoring to ascertain the nature of this third factor.

[1] Chick, H., and Roscoe, M. H., *Biochem. J.*, 1927, xxi, 698.

[2] Seidell, A., *Bull. Soc. Chim. Biol.*, 1926, viii, 746.

[3] Sherman, H. C., and Spohn, A., *J. Am. Chem. Soc.*, 1923, xlv, 2720.

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Effect of Thyroparathyroidectomy on the Jaundiced Animal.*

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During the course of some experiments on jaundiced puppies we noted a fairly progressive lowering of the blood serum calcium, which, in several instances fell to the tetany level.[1, 2] None of the animals evinced the slightest evidence of increased neuromuscular excitability; on the other hand, some degree of apathy was the rule. It was thought that either some of the circulating biliary constituents or some one or more intermediary products resulting from the perversion of liver function had raised the threshold of nervous excitability, or, that the parathyroids had assumed an added function and were playing some rôle in keeping the animals out of tetany. Apart from such intercepting factors there was every reason to expect the early precipitation of tetany in very young animals with extensive morphologic changes in the liver, a markedly disturbed intestinal condition and in addition a lowering of the blood serum calcium. To remove suspicion from the parathyroids, a series of animals, young and adult, were, after a period of jaundice lasting 16 to 18 days, induced by division of the common duct between ligatures, subjected to thyroparathyroidectomy. Blood calcium determinations were made in the normal, jaundiced and parathyroprivic states.

In the first group of experiments puppies, 8 to 10 weeks old, were used. Only slight symptoms of tetany were noted and in more than

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TABLE I.
Animal No. 3 (C. J. S.), Mongrel.

Date	Time	Blood calcium	Food	Remarks	Weight
		mgm.			lbs.
May 6	9:30 a. m.	11.9	Stock diet	Division of common duct	25½
May 24	9:00 a. m.	11.7		Thyroparathyroidectomy	22
May 25	9:00 a. m.	7.4	150 g. meat	Occasional flapping of ears	
	12:00 m.			Slight excitability	
	5:00 p. m.			Quiet	
May 26	8:30 a. m.		Milk, 6 oz.	Snapping of jaws while drinking	
			Cereal, 8 oz.	Gait unsteady	
	4:00 p. m.			Gait ataxic	
May 27	8:00 a. m.	7.4	250 g. meat	No tetany	
	4:00 p. m.			Slight fibrillation of scalp muscles	
May 28	8:00 a. m.			No tetany. Refuses food	
	5:00 p. m.			Quiet	
May 29	8:30 p. m.		250 g. meat	Slight fibrillation of scalp muscles	
	4:00 p. m.		100 g. bread	No tetany	
May 30	8:30 a. m.		300 g. meat	Some tremors noted	
	12:00 m.			No tetany	
	5:00 p. m.			No tetany. Marked weakness	
May 31	8:30 a. m.	4.9	Cereal, 8 oz.	Very slight tetany after drawing blood	
	2:30 p. m.		Milk, 6 oz.	Slight tetany	
	4:30 p. m.			Very slight tetany	
June 1	8:00 a. m.		150 g. meat	Marked weakness and depression. No tetany	
	12:00 m.		100 g. meat	Evinces jealousy of other animals	
	5:00 p. m.			No tetany. Bloody stools	
June 2	8:30 a. m.		None	Flapping of ears. No tetany	
				Barely able to walk about	20
	5:00 p. m.			Slight fibrillation of scalp muscles	
June 3	8:30 a. m.	3.6	200 g. meat	Very cachectic	
				Slight fibrillation of scalp muscles	
	4:00 p. m.			No tetany. Brady cardia with a tendency to bigeminus	
June 4	8:30 a. m.		250 g. meat	Fibrillation as above	
	4:30 p. m.			No tetany. Heart rate regular	
June 5	9:00 a. m.		150 g. meat	Slight fibrillation	
	12:00 m.		100 g. bread	Bloody stools	
	4:00 p. m.			Incipient tetany when disturbed	
June 6	9:00 a. m.	3.6		No tetany. Profound cachexia	17½
	12:00 m.		None	Refuses food and water	
	5:30 p. m.			On attempting to walk shivering of extremities and ataxia	
June 7	8:00 a. m.			Found dead. Legs not outstretched	

half of the animals manifest tetany did not occur. The symptoms were not altogether unlike those described by Blumenstock and Ickstadt[3] for the Eck-fistula parathyroidectomized animal, and resembled an acute intoxication, the animal usually becoming moribund before death and dying without tetany. The survival period was considerably longer than their nonjaundiced litter mates which developed a most severe tetany. In most instances the blood serum calcium fell to very low levels within 24 hours after parathyroidectomy. The feeding of meat had no effect on the time of appearance or the severity of the tetany, nor, did it seem to influence the survival period, as compared with those that were deprived of the meat.

In the group of adult animals, parathyroidectomized after a period of jaundice of equal duration, severe tetany ensued in a few animals, but, in the greater number the tetany was markedly diminished in severity. The survival period for 5 out of 7 animals was in each instance over 7 days. One animal lived 17½ days. There was a gradual decrease in calcium values to 3-5 mg., before the ninth day. These animals all received stock diet. The typical course of such an animal is shown in Table I.

Conclusions. There is a marked amelioration in the tetany symptoms of parathyroidectomized animals jaundiced for some time previously. Their survival period is longer. There is probably a raising of the threshold of nervous excitability by one or more of the biliary constituents or products arising from a perversion of liver function. The evidence is against any rôle of the parathyroids in jaundice.

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[1] Buchbinder, W. C., and Kern, R., *Am. J. Physiol.*, 1927, lxxx, 273.

[2] Buchbinder, W. C., and Kern, R., Growth Factor in Defective Calcification and Blood Calcium Deficiency in Experimental Obstructive Jaundice. In press.

[3] Blumenstock, J., and Ickstadt, A., *J. Biol. Chem.*, 1924, lxi, 91.