

the present work, such results were obtained only in cases where the brain had been injured in the process of removing the pituitary.

The experiments were done during the months of February and March on different shipments of frogs at room temperatures estimated to be about 22°C. with a fluctuation of not more than $\pm 3^\circ\text{C}$. These factors may be partly responsible for individual variations in weight losses in the different groups, although it is admitted that the nature of the operation may be responsible for the wider variation in the hypophysectomized group. Since there is no real consistent difference in rate of weight loss in frogs with or without the power (due to hypophysectomy) of dilatation and constriction of melanophores, we conclude that changes of background have no effect on the ability of the frog to retain or lose water.

8098 P

Contracture of the Rectus Abdominis, Tetany, Calcium and Phosphorus, after Spinal Transection, with and without Thyro-parathyroidectomy.

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As one phase of some observations on the effects of parathyroidectomy on cats,¹ a previous study² showed that on stimulation of the rectus abdominis muscle following thyroparathyroidectomy, more contracture usually appeared than was the case with the same muscle stimulated in the same manner in control animals. During the past months a series of experiments has been done on 20 cats in which the ionizable calcium and inorganic phosphorus of the blood were determined from 2 to 3 days after (1) aseptic transection of the spinal cord alone in the upper thoracic region and (2) when thyroparathyroidectomy was done at the same time as the spinal transection. The working power of the curarized muscle, together with the presence or absence of tetany and of contracture, was determined in the same manner as in previous experiments.

The results are given in Table I .

¹ Coombs, H. C., Searle, D. S., and Pike, F. H., *Am. J. Psychiatry*, 1934, **13**, 761.

² Coombs, H. C., and Searle, D. S., *Am. J. Physiol.*, 1934, **109**, 23.

TABLE I.

Section of Spinal Cord						Section of Spinal Cord and Thyroparathyroidectomy					
No.	Ca mg./100cc.	P mg./100cc.	Ca/P	Contr.	Tetany	No.	Ca	P	Ca/P	Contr.	Tetany
4	10.1	6.9	1.4	+	—	2	7.2	8.2	.88	—	+
6	8.1	15.3	0.5	+	—	3	6.5	8.8	.73	—	+
8	10.6	11.0	0.9	—	+	5	4.6	7.1	.64	—	+
11	10.1	6.0	1.7	+	+	7	9.0	8.3	1.0	—	+
12	10.4	5.9	1.7	+	+	9	6.3	7.1	0.9	+	+
15	11.1	6.1	1.8	—	—	10	10.4	4.0	2.5	+	+
17	11.1	8.3	1.3	+	—	13	4.8	8.9	.54	—	+
19	10.3	6.1	1.7	+	—	14	7.5	8.4	.90	—	+
21	11.1	6.1	1.7	+	—	16	9.0	5.9	1.4	+	+
						18	7.1	6.0	1.2	+	+
						20	8.0	5.9	1.3	+	+

It appears from the table that 1. Either contracture or tetany was present in all but one case, in which the contracture occurred at the beginning of the excitation of the muscle and was merely transitory. 2. Contracture and tetany were found together in only 6 of the 20 experiments. There appears to be no necessary relationship between them. 3. Contracture did not occur when the ratio of calcium to phosphorus was less than one, except in one case (No. 9). From these and previous observations it would appear that contracture occurs infrequently when the ratio of calcium to phosphorus is less than one, and then only when the calcium is relatively low; on the other hand, contracture was observed in only one case where the concentration of phosphorus was above 8 mg. per 100 cc. serum. (No. 6.) In those experiments in which total protein was estimated (No. 14-21), the range was from 5.9 to 7.3 gm. Values within this range are not considered pathological.³

8099 C

Course of Phosphatase Activity in Healing of Fractured Bone.

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Robison^{1, 2, 3} suggested that the enzyme phosphatase may play an important part in the deposition of phosphates in growing bone. Later studies by Robison and his coworkers, Kay⁴ and other authors have furnished much additional evidence in support of this concept. Most of this work has dealt with the growth of bone, and the study of this enzyme in relation to regeneration of bone has been largely neglected. Studies by McKeown and Ostergren⁵ and Kamada⁶

³ McLean and Hastings, *J. Biol. Chem.*, 1935, **103**, 295.

¹ Robison, R., *Biochem. J.*, 1935, **17**, 286.

² Robison, R., *The Significance of Phosphoric Esters in Metabolism*, New York, 1932.

³ Robison, R., *Ergebnisse der Enzymforschung*, 1932, **1**, 280.

⁴ Kay, H. D., *Physiol. Rev.*, 1932, **12**, 384.

⁵ McKeown, R. M., and Ostergren, J. I., *PROC. SOC. EXP. BIOL. AND MED.*, 1931, **29**, 54.

⁶ Kamada, K., *Fukuoka Acta Med.*, 1932, **25**, 207. Quoted from *Chem. Abst.*, 1932, **26**, 6002.