of the tail moves under these conditions. Late in this phase the pectoral fins move spontaneously for 9 minutes or more after the fish has become insensitive to touch. In phase D, therefore, the myotomes of the trunk are purely neurogenic in action, while the movements of the caudal and pectoral fins are purely myogenic, and most of the tail, although potentially myogenic in function, is normally neurogenic.

The axial somatic muscles and those of the pectoral fin are first purely myogenic and finally purely neurogenic in action, and between these pure states is an intermediate one in which the contractions are potentially myogenic but normally neurogenic.

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Effect of Parathormone on Bone Phosphatase Activity in vitro.

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The relationship between hormonal and enzymic activity is of considerable biological interest. Kay[1] noted high plasma phosphatase values in generalized *ostitis fibrosa*. Page[2] reported a decrease in the bone phosphatase in rats after parathormone injections. Bodansky and Jaffe[3] obtained increases in plasma phosphatase 8 hours after injection of single large doses in the dog and decreases in the guinea-pig after 1 and 2 days.

Heymann[4] reported a direct effect of parathormone *in vitro*. He observed decreases of 50 to 100% in bone phosphatase activity when 0.1 units of parathormone were added per cc. of hydrolysing mixture. The effect on kidney and intestinal phosphatase was much less marked. He conducted his experiments at a pH of 7.7 using a 50% concentration of a phosphatase preparation which had been extracted from the tissue with glycine buffer. Sodium glycerophosphate and hexosephosphate were employed as substrates. The parathormone was added in a glycine solution.

[1] Kay, H. D., *J. Biol. Chem.*, 1930, **89**, 249.

[2] Bodansky, A., and Jaffe, H. L., *J. Biol. Chem.*, 1931, **92**, XVI.

[3] Page, I. H., *Biochem. Z.*, 1930, **223**, 222.

[4] Heymann, W., *Biochem. Z.*, 1930, **227**, 1.

We have studied the effect of parathormone* on the phosphatase activity of aqueous extracts of rat and cattle bone. The sodium diethylbarbiturate buffer of Michaelis was used. This buffer in 0.5% concentration is without effect on phosphatase activity and hence is to be preferred to glycine which, in the concentrations used for buffering, retards phosphatase activity about 30%.[5] The technique of tissue phosphatase activity estimation was similar to that used in previous studies.[5] 0.0127 M sodium β glycerophosphate (Eastman Kodak) was used as the substrate. The reciprocal of the time in minutes necessary to liberate 0.05 mg. of inorganic phosphate as P per cc. of hydrolyzing mixture was used as the measure of enzyme activity (Q).

For each activity determination, a series of 4 hydrolyses was conducted in the neighborhood of the optimal pH. The amount of phosphate liberated was estimated at varying time intervals. The reaction velocity (Q) was determined by graphic interpolation from the time-change curve in the hydrolysis tube showing optimal activity.

Two different rat bone extracts and one cattle bone extract were used. The enzyme concentration, parathormone concentration, and temperature were all varied.

TABLE I
Phosphatase Activity (Q)

Units parathormone per cc. hydrolysing mixture	Rat Bone (Preparation R B D) 12.5 % 24° c.			Rat Bone (Preparation R B E) 24° c.		Cattle Bone (Preparation C B E) 30°c
				25%	50%	50%
0.0	.0077	.0081	.0081	.0068	.0149	.0471
0.1	.0079					.0463
0.5	.0076			.0074		.0464
2.5	.0081	.0077	.0084		.0162	

The results are shown in the table. Parathormone has no effect *in vitro* upon the β glycerophosphatase activity of bone extracts of the rat or cow.

* We wish to express our thanks to Eli Lilly and Company for supplying the parathormone.

[5] Bakwin, H., and Bodansky, O., *J. Biol. Chem.*, 1933, **101**, 641.