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On the relation of calcium metabolism to tetany and the cure of tetany by administration of calcium.

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Various researches, especially those of Jacques Loeb and J. B. MacCallum indicated a relationship between muscular twitching and the impoverishment of the tissues with respect to calcium. An endeavor was therefore made to determine whether the tetany produced by parathyroidectomy depended upon this condition. It was found that when the tetany was well developed it could be made to cease very rapidly by the intravenous or subcutaneous injection of a considerable dose of any soluble calcium salt, although the salts of other elements such as sodium or potassium had no such effect, but rather accentuated the symptoms. The analysis of the blood of dogs killed during tetany shows a calcium content about half that of the normal control dog and similarly the brain of the dog killed in tetany is poor in calcium as compared with that of the control dog, containing in fact only about half the normal amount. As far as the analyses are finished it appears that the output of calcium in the urine increases with the development of tetany.

From this it seems probable that the parathyroid glands exercise a control over the calcium metabolism so that when they are destroyed these processes do not go on normally but the tissues lose calcium and in this impoverished state become irritable, quiescence being restored by the reintroduction of considerable amounts of a soluble calcium salt.

It seems probable that the administration of calcium by injection or by the mouth may be useful in tiding over the severe symptoms in cases of tetany developing spontaneously or as the result of operation.