"biliary colic " or spasmodic contractions of the gall bladder. (4) In uterine colic or spasmodic contractions of the uterus. (5) In vesical colic or spasmodic contractions of the urinary bladder. (6) In one case of spastic constipation with powerful tonic spastic contraction of the intestine. (7) In a few cases of pylorospasm. (8) In a large number of cases of arterial spasm or hyper-tension. (9) Lastly, one of the most striking of all the effects, in cases of bronchial spasm or true asthma. Administration of these drugs by injection has also been tried. A complete pharmacological study together with further therapeutic observations on the action of the above benzyl-esters and benzyl-alcohol will be published in due time in the Journal of Pharmacology and Experimental Therapeutics. This preliminary announcement, however, is made in this place because it is deemed that a sufficient number of observations, both pharmacological and clinical, have already been recorded by the author and a number of physicians who have kindly collaborated with him, to indicate that the benzyl-esters promise to become useful therapeutic agents.

147 (1325)

## Studies in calcium and magnesium metabolism. Further observations on the effect of acid and dietary factors.

By MAURICE H. GIVENS.

[*From the Sheffield Laboratory of Physiological Chemistry, Yale University, New Haven.*]

Givens and Mendel[1] have found that "Administration of hydrochloric acid produced no significant effect upon the balance of N, Ca, and Mg in the dog." Stehle[2] has stated that "the administration of hydrochloric acid by mouth to the dog causes an increased excretion of calcium and magnesium as well as of sodium and potassium." New experiments have been conducted on two dogs which received a diet poor in lime, consisting of meat, cracker meal, lard, and agar. During two long periods each animal received daily 2 gm. hydrochloric acid. The results with

[1] Givens, M. H., and Mendel, L. B., *J. Biol. Chem.*, 1917, XXXI, 421.

[2] Stehle, R. L., *J. Biol. Chem.*, 1917, XXXI, 461.

such a diet corroborate our former statement and do not support the conclusion of Stehle.

Similar experiments were undertaken with these dogs on a diet enriched in lime by the addition of dried milk. With one animal a negative calcium balance was appreciably increased. It seems unlikely, however, that this outcome is a neutralization phenomenon. It has repeatedly been shown that when acid is introduced into the organism the increased production of ammonia is sufficient to neutralize it.

When sodium chloride instead of hydrochloric acid was added to the diet rich in lime the urinary calcium output was increased and the calcium balance was favorably affected.

The magnesium balance and the partition of this element between the different paths of excretion was not significantly altered in any of the experiments just described.

148 (1326)

## Studies on salt action. I. Effect of calcium and sodium salts upon the viability of the colon bacillus in water.

By C.-E. A. WINSLOW and I. S. FALK.

[*From the Yale School of Medicine.*]

The experiments here reported are preliminary observations designed to test the suitability of a certain bacterial characteristic, the curve of viability in water, for use in more extensive studies of salt action planned for the future.

The organisms used were typical colon bacilli of the *B. communis* (sucrose negative), type, isolated from a polluted stream in the autumn of 1916. These bacteria were grown on standard nutrient agar slants at 37° C. for 16–18 hours. The growth from the surface was washed off in pure water, shaken for 5 minutes to break up clumps and added in 1 c.c. portions to the bottles of sterilized pure water or salt solution in which the viability was to be tested. These solutions had been warmed to 37° before seeding. Plates were made on agar one minute after seeding and the bottles were then replaced in the 37° incubator and kept there for 24–52 hours, the number of surviving organisms being determined