

almost exclusively to the formation of the phosphate analogue. The quantitative difference, that is, the reduced toxicity of the O-methyl thiophosphate as compared with the phosphate analogue, could be explained by the various factors involved in the absorption and destruction of the injected thiophosphate before it is transformed into this phosphate. On the other hand, the S-methyl isomer does not appear to undergo any isomerization or oxidation *in vivo* and thus has essentially the same action *in vivo* as *in vitro*.

Should the effects described above be reproducible in other species, it would appear that the well-known differences in relative toxicity of analogous phosphates and thiophosphates towards various forms of life must be due mainly to differences in the water and lipid solubility of these compounds³, and secondarily to differences in the ability of various animal species to oxidize and destroy the thiophosphates. The toxicity of the organo-phosphorus insecticides towards mammals seems to be dependent only on the inhibition of true cholinesterase^{1,4,7}. Some of these compounds may also cause an appreciable inhibition of the ali-esterase in brain; however, no toxic symptoms are observed when the ali-esterase is inhibited selectively by *bis*-(O-*p*-nitrophenyl) S-methyl thiophosphate.

A detailed report of the investigations on ali-esterase inhibition will be published elsewhere.

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Response to Vitamin B₁₂ of Grazing Cobalt-deficient Lambs*

SMITH and collaborators^{1,2} have shown that vitamin B₁₂ injected in sufficient quantity will alleviate the symptoms of cobalt deficiency in penned lambs fed a special low-cobalt ration.

Since cobalt deficiency in grazing lambs is not uncommon in New Zealand, it seemed desirable to test the curative action of vitamin B₁₂ on unthrifty lambs grazing a pasture of low cobalt content. For this purpose suitable experimental conditions were available at the Winton Experimental Farm, Southland. Previous work³ had shown that liver and pasture samples were low in cobalt content and unthrifty lambs had responded significantly to cobalt dosing.

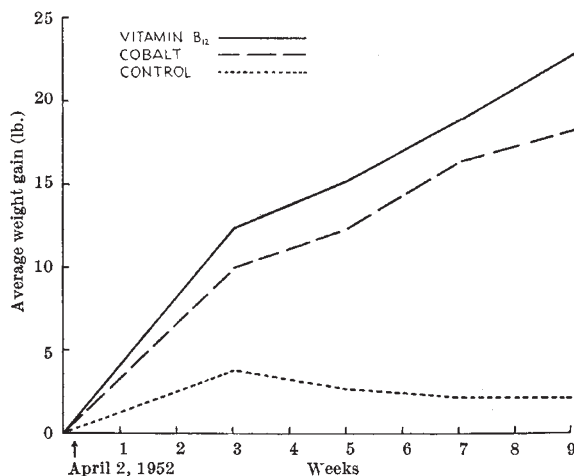
In the present trial, Romney-Southdown cross-bred lambs approximately 6½ months old were used. They had been confined to the same paddock since birth, and prior to the start of the experiment virtually all were showing signs of cobalt deficiency, as judged by small and erratic gains or actual losses in weight. Lambs were divided into three treatment

* See also p. 791.

groups as follows: (1) vitamin B₁₂-injected (4 lambs): 100 µgm. intramuscularly a lamb a week; (2) cobalt-dosed (19 lambs): 4 mgm. a lamb a week; (3) control (9 lambs).

Treatments commenced on April 2, 1952. All lambs were weighed at the start of the experiment, again three weeks later, and thereafter at fortnightly intervals until June 4. At the end of the nine-week experimental period, vitamin B₁₂-treated lambs had each received a total of 800 µgm. vitamin B₁₂ and cobalt-dosed lambs each 32 mgm. cobalt.

Average gains in weight are set out in the accompanying graph. Responses to both vitamin B₁₂ and cobalt are highly significant ($P < 0.01$). Our figures suggest a more rapid response to vitamin B₁₂ than to cobalt, but differences between the two groups do not attain significance.



These results show that, under the conditions of our experiment, grazing cobalt-deficient lambs respond at least equally as well to vitamin B₁₂ as to cobalt. Australian workers⁴ report a similar finding with adult merino ewes on low-cobalt pastures.

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Induction of a Spawning Reflex in Hypophysectomized Killifish

THE observations reported below were made during the course of a preliminary series of experiments with purified fractions of pollack pituitary glands, a study which I am undertaking in collaboration with Dr. A. E. Wilhelmi, Department of Biochemistry, Emory University, with the support of a grant from the U.S. National Science Foundation.

The test fish were two-year-old male *Fundulus heteroclitus* (L.), hypophysectomized at least two months prior to the experiment to allow time for the testes to undergo complete regression. Intraperitoneal injections of 1 per cent saline suspensions were made at a standard dosage level of 100 µgm./gm. weight. Controls, which exhibited no response, received an