

FOREWORD.

An experiment (5) was made at the Cotton Station, where responses to normal dressings of superphosphate are very poor, to see if very heavy dressings would produce any response. It was found that cotton on plots receiving heavy dressings grew very well, while that on plots receiving no superphosphate or only a dressing of 3 cwts. per acre grew very poorly. The explanation given was that the soil, probably because of its content of active hydrous iron oxides, was able to fix in a difficultly-available form, more phosphorus than was applied in the normal dressing of superphosphate, but not as much as was applied in the very heavy dressings, so that, with the latter, there was still some phosphorus available for the growing cotton. It was recommended that the experiment be repeated.

While this experiment was under way, studies (1) were being made at the College, of the Hawaiian principle (3) of briquetting fertilizers to prevent leaching and fixation. Since one of the objects of briquetting phosphatic fertilizers is to prevent their fixation in a difficultly-available form in the soil, it was suggested that an experiment should be made on Cotton Station soil, in which both briquetting and large dressings of superphosphate would be included. As a result of this suggestion, the experiments described in this paper were carried out.

It should be noted that the use of the term "phosphate-fixation" as used in this paper, applies only to that type of fixation in which phosphorus is fixed in a difficultly-available form by certain compounds of iron and aluminium, and does not apply to the normal fixation of phosphorus by calcium compounds.