A STUDY OF THE ARROWROOT LEAF ROLLER (CALPODES ETHLIUS),
(CRAMER) WITH SPECIAL REFERENCE TO ITS PARASITES.

INTRODUCTION

Systematic Position and Geographical Distribution.

*Calpodes ethlius*, (Cram.) the "arrowroot leaf roller" is a skipper butterfly of the family Hesperiidae. It has a wide distribution which extends from the South East states of North America to Mexico, Central and South America to the Argentine and throughout the West Indies.

Host Plants and Pest Status.

*Calpodes* is known to attack *Maranta arundinacea*, the cultivated arrowroot and *Maranta indica*, the wild arrowroot, of the family Marantaceae, and *Canna indica*, the cultivated garden *Canna*, and *Canna edulis*, the wild *Canna*, of the family Cannaceae. Both these families belong to the order Scitamineae.

*Calpodes* is a pest of economic importance only in St. Vincent, for it is the only place where arrowroot is grown as a major crop, and it is a constant source of trouble there its larvae defoliating the arrowroot plants.

Myers has discussed the problem with arrowroot planters and found some who believed that "leaf roller" attacks inflicted no losses at all on the crop but it has now been proved experimentally that this belief is erraneous.

The main economic loss produced by attacks would seem to be the reduction of starch in the rhizomes by the production of new shoots to replace the foliage destroyed. These new shoots are attacked more than old leaves thus a new
cycle of attack is initiated and a vicious circle is set up. An indirect loss is also brought about by the cost of weeding since the cover is opened up by defoliation and more weeds gain entry. Natural Enemies.

Rough field counts made by Urich in 1931 and 1932 showed that in St. Vincent about 50% natural control of Calpodes is brought about by indigenous Tachinid and Chalcid parasites. Fifty percent control is not economically effective though and since there is a fluctuation in parasite numbers and fields are often defoliated several times before the appearance of parasitism there is much scope for biological control work.

A Chalcid egg parasite of the family Encyrtidae, Ooencyrtus sp., was found in Trinidad. It brings about a high percentage parasitism of Calpodes eggs on garden Canna which is used as an ornamental plant in the gardens of Port of Spain.

**Objects of Present Investigation.**

The primary object of this work is to add a little to the now existing scanty knowledge of the bionomics of Calpodes ethlius and its parasites.

Unfortunately I have been unsuccessful in my attempts to induce the butterfly to lay its eggs whilst in captivity. It was thus impossible to build up the butterfly population and maintain it at a high level so that many eggs would have been produced on which parasite population might have been developed and studied.