

I. INTRODUCTION

The existence of conspicuous leaf variegations of certain species of plants, and the possibility of transmitting the variegation by grafting, have been recognized for over 200 years. Research in the subject gained impetus in 1868, when a plant of Abutilon striatum Dicks. possessing variegated leaves was introduced to England, probably from the West Indies. There was an economic demand for this plant as an ornamental shrub, and it was widely propagated vegetatively in Europe. In 1869 Lemoine made the first observation on the transfer of this leaf variegation to other Abutilon species by grafting. Later, the variegation was transmitted by the same operation to a number of representatives of the family Malvaceae by Lindemuth. By 1899, Beijerinck considered the variegation to be like tobacco mosaic, and to belong to the same class of infectious diseases. The virus nature of the causal agent is now firmly established, and it has been named Abutilon Virus 1 by Smith.

For some years, leaf variegations suggestive of a virus causation have been observed on a number of species of Trinidad plants belonging to the Malvaceae (and one to the Tiliaceae). The present investigation was designed to survey this group of diseases in Trinidad and to study their inter-relationships. The problem is not without some practical significance, since one of the plants concerned, okra (Hibiscus esculentus L.), is of economic importance as a food crop. It must be stated clearly at the outset that the major object has been to attempt transmission of the causal agents of the diseases between as many different species as practicable in the time available, in carefully controlled experiments: all other observations must

be considered as more or less incidental and of secondary importance. The experimental work was carried out at the former Empire Cotton Research Station, from November 1944 to August 1945.

The writer considers that the terms "infectious chlorosis" and "infectious variegation", used to describe chloroses of plants caused by viruses, are antiquated, and proposes to use "mosaic" to cover the symptoms of the diseases with which this investigation deals. A note is made of this point, since some writers restrict the term "mosaic" to sap-transmissible chloroses, but in this work it will be used in a general sense.

A mosaic of Triumfetta lappula L., a species of Tiliaceae, occurs in Trinidad, and has been included in the investigation, since the symptoms are very similar to those of the Malvaceous mosaics, and the Tiliaceae and Malvaceae are very closely related. It should also be mentioned here, to avoid confusion, that for the purposes of this thesis Sida carpinifolia L. (syn. S. acuta Burm. var. carpinifolia K. Schum.) is considered as a member of the same species as Sida acuta Burm.