

1. INTRODUCTION.

During recent years much emphasis has been laid upon the subject of mixed farming (1), as a means of helping to arrest soil erosion and of limiting the practice of shifting cultivation by peasants. By mixed farming is meant the inclusion of stock in the economy of the farm to consume crop residues, to provide manure, a means of haulage and possibly milk. With regard to mixed farming as a means of agricultural improvement, the Recommendations of the Royal Commission to the West Indies (1938-1939) (2) state " that the practice of shifting cultivation by peasants farmers must be abandoned and replaced by an organised system of permanent mixed farming". The same Commission also recommends that even estates growing only one crop should be encouraged to introduce some kind of mixed farming, but it was emphasised that neither reform would be possible without scientific research.

Such a programme of research would have two interdependent parts; one dealing with improvement of the animals themselves with the possible object of obtaining a thrifty draught animal that will also give some milk, and a second part dealing with the fodders available for this improved stock. It has been stated (T.A. March 1939) (3) that in most countries animal husbandry research is behind crop husbandry research. Native peoples do not seem to be aware of the value of F.Y.M. or to follow any fixed methods of feeding their livestock. The poor class of stock prevalent in many countries is doubtless a reflection of poor feeding. Dr.P.L.de Correa (4) of Brazil considers that improvement of stock is subordinate to the improvement of fodders and that without good feeding, races degenerate and breeding work remains stationary. The effect of management, environment and disease should never be overlooked when assessing the effect of feeding on an animal. In some countries new fodders may have to be introduced because the indigenous fodders would not be nutritious enough to maintain improved stock.

Bearing all this in mind it is interesting to consider the position in Trinidad. Improved stock in the form of Holstein cows and bulls is distributed in the island, mainly in independent

dairies or dairies attached to sugar estates. Peasants can have their small scrub animals served by pure-bred bulls, but it would seem that the Holstein is rather a large animal for the peasant's purposes, at least with present feeding arrangements. In Trinidad improved stock have come before much improvement in the fodders available or any accurate knowledge of their exact feeding value. No doubt stockmen have their own ideas about how much of any fodder should be fed, but they may be feeding excesses of some constituents and not enough of others. As regards scientific research Paterson (5,6) has investigated the cropping qualities of various well known grasses, but little if anything is known about their feeding value. Many writers (7,8) in the past have stressed this lack of essential research. Experiments similar to those reported in this thesis have been carried out in the past by Maule (9), Hobbs (10) and Capstick (11) and indications of the probable value of some grasses, including sugar cane, have emerged. The work done by each of these previous workers cannot be considered to be a connected programme: usually the determination of the nutritive value of five or six more or less unrelated fodders. There has been no attempt to discover the feeding value of any leguminous crops, which might serve to satisfy an urgent need in Trinidad. Dairymen look to the cake merchant for a supply of protein and with war spreading ever nearer to Trinidad some sources of imported foodstuffs may be cut off. Virtually nobody has considered the possibility that the protein part of a ration might be obtained more cheaply from a leguminous crop. Circumstances may force many to do so. In these experiments Velvet Beans and Woolly Pyrol, common cover crops in the island, have been fairly fully investigated. Both these crops are annuals however and an ideal fodder is wanted to serve similar purposes to those served by lucerne (*Medicago sativa*) in temperate countries; a perennial legume yielding highly, drought resistant and able to be fed green, dried as hay or as a concentrate in the form of a meal. It is almost certain that such a perennial legume will have to be introduced, and as many desirable plants present germination difficulties, much research will be necessary.

So far only fodders cut and carted to the animals have

been considered. The other important source of food is pasture, which is generally not very productive in Trinidad. The long dry season encourages drought resistant weeds at the expense of the grass. The commonest grass is Savannah Grass (*Axonopus compressus*) but it does not compete well with weeds during the dry season. In pastures, as among fodders, there is an absence of suitable legumes, and Paterson suggests *Desmodium*, *Lespedeza*, *Alysicarpus* and *Meibomia* as suitable species for inclusion with Savannah Grass.

Thus these experiments while being in some ways a continuation of the work done by Maule, Hobbs and Capstick, form a connected programme among themselves and add a small contribution towards removing the lack of knowledge concerning Trinidad fodders.