

THE DESIGN OF EQUIPMENT AND TECHNIQUES
FOR DIGESTIBILITY TRIALS IN THE TROPICS.

INTRODUCTION AND OBJECTS.

It is universally conceded that if an animal is to reach the maximum expression of its genetic capabilities it must have no limitations imposed by bad management. Among the many factors constituting this complex, feeding is held to be of prime importance. Workers in temperate countries have been aware of this fact for many years and have succeeded in placing animal nutrition on a fairly sound scientific basis. This is far from true in the tropics where stockfeeding by indigenous peoples is a most haphazard practice. Yet it is in just these areas where proper livestock feeding is most essential if the acknowledged dietary lack of animal protein is to be in any way improved.

In temperate countries many digestibility trials have been conducted in order to determine the coefficients of digestibility of each of the organic nutrients assessed in the routine feed analysis. It is recognised however that the digestibility of a given feed, no matter how accurately determined in a particular experiment, is not a constant, but may be modified by the conditions of feeding. These conditions include the species of animal; its breed, within the species and the animal's age and sex. The past and present level of feeding, the frequency of feeding, the season of the year and the animal's level of internal parasitism also affect digestibility. Data on these factors is very limited and often conflicting even in temperate regions. Their effect is being studied using grass as the feed in the hope that it will become possible to define

a set of conditions under which the Standard Digestibility of this feed may be measured. Very little work on the digestibility of local foods by indigenous livestock has been carried out in the tropics so the concept of Standard Digestibility under tropical conditions is still most vague.

The object of this investigation is to design suitable equipment and techniques for digestibility trials in the wet tropics. It has been found possible to take advantage of the experience of temperate workers in this field and the main problems have been concerned with the adaptation to tropical conditions of equipment designed for use in temperate regions. A fundamental difference exists in the choice of experimental animals for use in digestibility work. Goats in the wet tropics completely replace sheep and partly replace cattle in their importance in agricultural systems. In view of the limited time and funds available for the investigation therefore, interest has been restricted to problems concerned with the use of goats in digestibility trials.

In detail the whole range of digestibility trials is covered and the various methods of carrying out the trials are described.

The apparatus described is simple and cheap and can be used for trials with any animal which retains the faeces and urine in the rectum. The apparatus is described in detail and the principles of its operation are explained. The advantages of being equally suitable for trials with any animal or for trials with a number of animals are pointed out.