SECTION 1

THE INTRODUCTION.

It is difficult to determine with any accuracy the amount of water required per day by a given breed or type of animal. Using a large number of animals over a considerable period one can arrive at a figure which will serve as a guide, and a guide only as to the amount of water which the average member of a breed will drink over 24 hours under certain conditions. There is a surprising degree of individuality with respect to water requirements within breeds of cattle under identical conditions, and this has been demonstrated by practically all workers in this field of investigation.

This project has been aimed at determining the amount of drinking water required by zebu oxen in the humid tropics, not merely for academic interest but to assist farmers in these conditions to assess the volume of water which should be supplied for grazing zebu oxen.

The value of the figures obtained from this project is limited to non-working, grazing zebu oxen, but at the same time may be used as useful basis for estimating the requirements of working oxen, zebu cows, nursing calves and other classes of cattle whose requirements may be greater or smaller than those used in this project. Further, the number of oxen used was limited as was the period over which the trial extended due to limited grazing available. Greater value could be attached to the result of this project had there been a large population from which to draw a sample.

Figures showing the amounts of water drunk by animals are of little value unless feeding and grazing conditions are known, temperatures, rainfall, presence or absence of shade and other factors all of which affect the water requirements, and hence these factors were recorded over the trial period and taken into consideration when analysing the final figure obtained.

The importance of an adequate supply of drinking water cannot be overemphasized as the drastic effects on growth rate, reduction in milk production, loss of weight and poor condition are rapidly brought about by an insufficient water supply. On the other hand the supply of great quantities of possibly excess water to stock is frequently very expensive and often renders a livestock enterprise uneconomic.
The amount of drinking water which appears to be necessary for zebu oxen in the humid tropics is shown from this project to be surprisingly little, especially during the wetter periods.

The trial was spread over five months in an attempt to assess differences in requirements during the wet, intermediate, and dry seasons of Trinidad.

The importance of an adequate supply of water for cattle is appreciated by cattle farmers in arid areas to a far greater extent than it is by those working in the well-watered temperate areas of the world.

Water constitutent of the animal body varies greatly with the specific weight, size and degree of feed. The percentage water decreases as animal age and sex increases when a plane intertity ration is fed for a long period. Water is a fundamental constituent of all living cells.

It is essential for the transformation of nutrients into energy by the digestive system, the cells of the body tissues and the nervous system.

"The loss of 10% of body water causes serious disorders and further losses may lead to death, whereas animals may lose nearly all their glycogen and body reserves and live. 10% of their body weight and still live." (Vossen 1933.)

Water in the vessels for transportation of a number of substances and proteins, e.g., minerals and proteins. These in turn in concentration, acidity and osmotic pressure are balanced and equilibrated to serve the life processes. The water circulation in the body depends on the quantity and nature of the substances moving equilibrium (Fawcett 1956).

Since evaporation of water is not active only and dry periods of 90% reduction in plasma volume results, the capacity of blood which tends to bring the temperature comes at a disadvantage. The circulatory system, and the role of the kidney or adrenaline (Smith 1941, 1953).

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