

INTRODUCTION

It has been generally recognised by animal husbandmen that discomfort of dairy cows can lead to physiological disturbances, nervousness and an ultimate reduction in yield. Although not so commonly appreciated, it seems likely that discomfort also has a similar effect on the well-being and growth rate of all other classes of cattle.

This project is concerned with two particular factors which cause discomfort to cattle; namely high temperature and solar radiation.

These factors lead to heat stress where no shade is present. The symptoms resulting are described by McDaniel and Roark (1956) as being aimless walking, panting, standing at the expense of lying, reduced rumination and frequent drinking. Finally when the day becomes cooler, the animals tend to lie down, due to fatigue, at the expense of grazing.

The seriousness of these physiological effects is increasing with the importations of temperate breeds of cattle into the tropics. Bonsma et al. (1940) found that the body temperatures and respiration counts of temperate breeds of cattle rise noticeably in environmental temperatures of over 80°F., while tropical breeds remain unaffected.

With the swing of the pendulum towards the establishment of pastures, in order to eliminate the high labour costs of cutting and carting soilage grasses, the importance of protecting animals from solar radiation becomes even more important.

After the establishment of a new pasture it may be some time before permanent shade trees can provide adequate shelter. Furthermore permanent shade can be a grave disadvantage if the land is farmed in rotation and will periodically be cultivated.

Alternatively shade can be provided by thatch or aluminium shelters erected in the pasture. Possible disadvantages of these are insufficient labour for their construction, too high a cost or, where pasture is limited, spoiling of patches of pasture may be considerable.

Protection from biting flies and solar radiation can be provided by a third alternative method. Animals can be confined indoors in existing buildings or byres during the hottest part of the day. In order to get the full benefit of this method, without cutting and carting fodder to the animals indoors, and without undergoing a production decrease, an optimum period of time during which the animals are housed needs to be determined. This optimum should be one which provides the animal maximum protection without reducing total grazing time.

Northwood (1959) has been one of the first workers to investigate this problem but the optimum period of housing is still unknown. This project is designed as a further stepping-stone in this line of investigation.