

June, 1958, a highly significant negative correlation between the mean faecal production (for 12 days before slaughter) and mean internal fat weight of the four differently wintered groups (each of 2 cattle) grazing on spring pasture. The mean weight in lb. of hot carcass at slaughter in June, internal fat and daily production of faecal dry matter for the four groups over-wintered on treatments high yard, high pasture, low yard, low pasture in 1958 were respectively 723, 750, 728, 682; 42.6, 33.2, 29.0, 22.0; and 5.95, 6.69, 6.97 and 7.31.

The evidence presented shows that 'fill' weight (with the influence of carcass weight removed) is lower in steers carrying more internal fat. This suggests a physical cause for the lower intake by groups previously fed on a higher plane of nutrition. There remains the possibility that weight of internal fat is itself associated with a stage of physiological maturity which affects or controls appetite. If, however, a causal relationship can be accepted, the limitation of bulky food by fat, and by the gravid uterus of the pregnant animal, may be of importance in ruminant husbandry. In order to maintain high nutritional status in late pregnancy, and to avoid ketosis, it may be necessary either to ensure a low level of fatness or to increase the proportion of concentrates to bulky food in the diet. It may be inferred, also, that cattle most suited to the utilization of bulky feed would be those inherently low in perinephric adipose tissue.

The higher intake of spring herbage by store cattle, than by those well fed in winter, contributes towards their more rapid carcass gains or 'compensatory growth'. In relatively short extra periods of grazing, the carcasses of these store cattle can be brought to weights equal with those of steers wintered at higher feed levels. The system of providing a winter store period for cattle to effect economy in feeding is thus supported by the fact that recovery in carcass weight is made, in part, by the greater intake of relatively cheaply grazed spring herbage.

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### Reduction in the Anestrus Period of Laboratory Cats by Increased Illumination

THE occurrence of breeding is closely associated with climatic conditions and the periodicity of the seasons. Increased length of illumination advances the date of the first oestrus in mammals like the ferret<sup>1,2</sup>, and was briefly reported by Dawson<sup>3</sup> to have a similar effect on cats maintained in Cambridge, Mass.

The present study was carried out to determine the practical value of increased illumination for cats, bred, reared and maintained under controlled conditions of feeding, heating and ventilation. It has been shown<sup>4</sup> that cats in this colony are usually anoestrus during October, November and December. Ten healthy female cats aged 15–18 months were subjected to increased illumination during the autumn

and winter. Artificial light was provided by a 5 ft. fluorescent 'daylight' lamp, controlled by a time-clock, suspended over the animals' pen. The duration of the additional artificial light was calculated and continually adjusted to give 12 hr. light and 12 hr. darkness from September 27, 1958, until March 15, 1959 (Fig. 1).

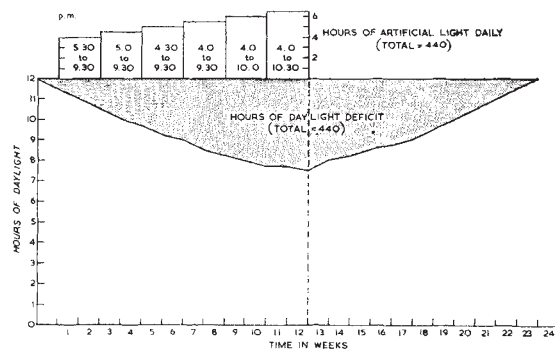


Fig. 1. To illustrate the method of calculating the duration of artificial light

Behavioural observations were made and vaginal smears collected twice weekly from the experimental group. Smears were taken from the colony of 22 cats maintained under conditions of ordinary daylight to act as controls.

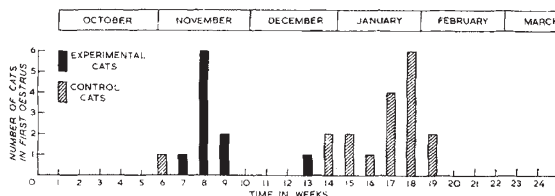


Fig. 2. Occurrence of the first oestrus cycle in experimental and control cats

Nine out of ten experimental animals exhibited oestrus in late November and early December (Fig. 2), the first at 54 days from the beginning of the experiment. In all instances oestrus behaviour was associated with characteristic oestrus changes in the vaginal smears (disappearance of small basal epithelial cells, appearance of large cornified cells with pyknotic nuclei and absence of leucocytes). In 8 cats regular cycles were at once established. These animals were successfully mated and afterwards used for experimental purposes. Of the 22 colony cats, one exhibited oestrus and was mated in November. The remainder were anoestrus until early January.

Increased illumination is thus a simple method of improving the breeding performance of cats by spreading the supply of kittens more evenly throughout the year. This is an important point when considering the economics of maintaining breeding cats under laboratory conditions.

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