

## FEEDING AND BREEDING OF LABORATORY ANIMALS

XIII. A NOTE ON THE USE OF AUTOCLAVED STOCK DIET  
FOR BREEDING MICE

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(With 1 Figure in the Text)

The establishment of a mouse colony free from certain specific infections was at one time projected and the question of a diet able to withstand sterilization without detrimental loss of nutritive value arose. It was impossible to predict the effect of autoclaving on the stock cubed diet 41 (Bruce & Parkes, 1949) in use at this Institute, and a small experiment was started to check it.

The diet was autoclaved at 15 lb./sq. in. for 20 min., in large brown paper bags holding loosely about 300 g. each, so that steam was able to penetrate. After this treatment which rendered the cubes sterile to broth, they had become slightly dextrinized, giving them a brownish baked appearance quite distinct from that of the untreated diet. It is improbable that complete sterilization such as to render the cubes free from all detectable micro-organisms and suitable for germ-free rearing experiments (Reyniers, 1946; Gustafsson, 1948) was achieved, but the degree of freedom from micro-organisms attained in the cubes would be of advantage in many experiments concerned with specific infections.

Strain differences in the dietary requirements of mice have been suggested (Rogers, McElroy & Cowgill, 1942; Fenton, Cowgill & Stone, 1948) and for the feeding test mice from two strains were used. They were mated as monogamous pairs, the male being left continuously with the female to permit post partum mating and intensive reproduction which would make the maximum demands on the nutritive value of the diet. Three pairs of each strain received the autoclaved cubes from mating; young from first litters were kept for the filial generations and mated at 6-7 weeks old. The males were removed from the older generation as soon as each successive generation started to breed. Four filial generations were bred and young from five generations reared. The results are given in summary form in Table 1 and Fig. 1.

Table 1. *The reproduction of successive generations of mice receiving autoclaved diet 41*

Parent generation	No. of breeding pairs	Total no. of pregnancies allowed	Average litter size		Average wt. of young weaned (g.)	Average no. of young weaned per pregnancy
			Born	Weaned		
—	6	21	6.9	6.0	9.2	4.9
$F_1$	10	24	6.3	6.1	8.3	5.4
$F_2$	10	26	7.2	6.9	8.8	5.8
$F_3$	10	30	6.6	6.4	9.0	5.8
$F_4$	10	18	7.4	6.5	10.1	5.4

The average number of young weaned per pregnancy is an arbitrary but convenient way of expressing reproductive performance. It takes into account abortions, litter size and weaning rate, changes in any or all of which would give evidence of dietary insufficiency. On this basis there were no trends towards a reduction in performance in successive generations (Table 1) and the weaning rate was maintained at the normal level throughout the period of observation (average 85%). For comparison the weaning rates of the two parent colonies recorded during the previous year have been added to the graph.

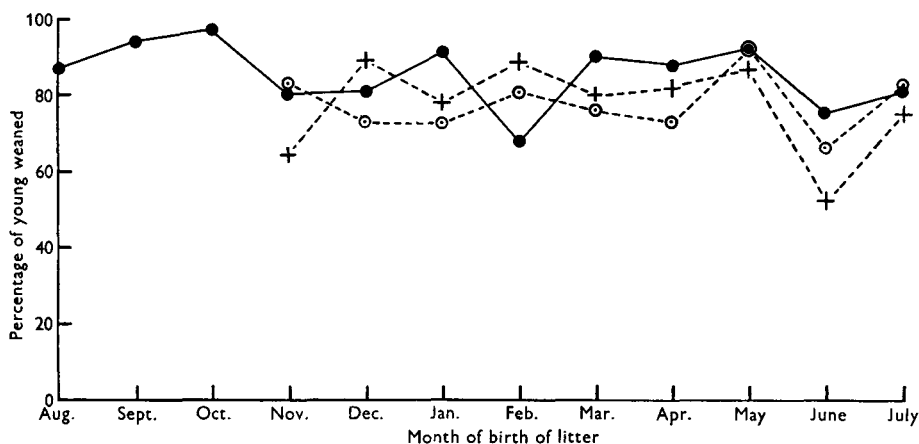


Fig. 1. Seasonal variation in the proportion of young weaned. ●—●, autoclaved diet; ○---○ and +---+, normal diet: parent colonies.

#### SUMMARY

The stock diet for rats and mice, diet 41 cubed, can be rendered sterile to broth by autoclaving at 15 lb./sq. in. for 20 min. without impairment of the nutritive value for breeding mice.

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