

Table 1. NUMBER OF LARVÆ PRESENT AT EACH OBSERVATION. AFTER TREATMENT, EXCEPT AT THE HIGHEST DOSAGE, SEVEN MALES WERE CONFINED WITH TWICE THEIR NUMBER OF NORMAL NEWLY EMERGED FEMALES

Days after exposure of males	No. of larvæ present following γ -irradiation of males (dose in rads)			
	0	5,000	10,000	15,000*
3				
4				
5		5		
6	10	2	1	
7	30	4	3	
8		6	7	
9				
10		20		3
11		20	14	5
12			14	8
13		26	14	
14			16	
15				
16			16	
17			20	
18				
19			20	
20				
21	40	26	20	8

* Thirty males were irradiated and confined with thirty females.

Table 2. NUMBER OF MALES FOUND DEAD AT EACH OBSERVATION

Days after exposure	No. of males dead after dose (rads)			
	0	5,000	10,000	15,000
4	4	1		
5	2	1		4
6	0	1	1	5
7	1	3	4	5
8		1	2	12
9				3
10		26		1

The adults of *T. granarium* were irradiated immediately on emergence from the pupæ. Thus the difference between the resistance in the two sexes, when compared with *C. hominivorax*, cannot be attributed to irradiation of the insects at widely different stages in the development of the two species.

Some of the results (Table 2) indicate a possible increase in life-span following irradiation, and it is hoped to investigate the significance of such results in future work.

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¹ Cornwell, P. B., Crook, L. J., and Bull, J. O., *Nature*, **179**, 670 (1957).

² Bushland, B. C., and Hopkins, D. E., *J. Econ. Ent.*, **46**, 648 (1953).

Measuring Productivity in Breeding of Small Animals

It is nearly always desirable, when breeding animals like mice for laboratory use, to select for high productivity, that is, for the largest number of healthy offspring per dam in a given time. This is a function of litter size and 'pre-natal interval'; the time between exposure to the chance of mating and the birth of the first litter, or the time between the births of successive litters. The pre-natal interval is only of interest for monogamous pairs which are never separated.

Carter¹ suggested that the measure of productivity be the number of mice born and weaned, divided by

the number of prenatal days. This index will be less than 1.0, occasionally less than 0.1, and to be useful it will contain two significant figures. Later it was suggested² that the reciprocal of Carter's index be used which will be a figure greater than 1.0 and occasionally greater than 10.0—also needing to have two significant figures. Carter's index is inconvenient owing to the decimal point; but it varies indirectly with the productivity. The other figure is more convenient but still contains a decimal point; however, it varies inversely with the productivity, which is an added inconvenience.

Thanks to a suggestion made by D. S. Falconer (personal communication), we now propose to use Carter's index multiplied by 100 as a measure of productivity, and to call this index *Q*. It will always be less than 100, and in most cases more than 10: a typical range will be between 15 and 35. No decimal points are involved. We further propose to call *Q* the 'index of productivity', and to calculate it cumulatively from the date of the first exposure to the chance of mating to the birth of successive litters up to the last. This index gives, in a convenient form, a current measure of productivity of pairs of animals, on which selection can be based.

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¹ Carter, T. C., *J. Anim. Tech.*, **1**, 4 (1951).

² Lane-Petter, W., *J. Hyg. (Camb.)*, **53**, 234 (1955).

An Unusual Strain of *Escherichia coli* in Septicæmia as an example of the Transformative Effect of Symbiosis

A 54-YEAR-OLD male patient was admitted to hospital with signs of septicæmia and obstructive jaundice after having suffered from gall-bladder troubles for the past five years. By blood culture in brain-heart infusion broth a rich growth of a highly polymorphous Gram-negative organism was obtained (Fig. 1, top) which gave the typical biochemical reactions of an *Escherichia coli* and a positive hæmagglutination test. The macroscopic appearance of the colonies also did not differ from a slightly mucoid *E. coli* culture. No dwarf colonies were found. The polymorphism (filaments with broad swellings, globular and club-shaped forms) was most marked on a culture 24–48 hr. old on 5 per cent rabbit blood agar. After three days the majority of the filaments had broken up into chains of rods and the bizarre forms had disappeared. This aberrant morphology persisted for ten months if the strain was subcultured only on blood agar. After this time it grew in more or less uniform short filaments. If subcultured exclusively on plain agar, it reverted after five months to the typical size and shape of *E. coli*. No morphological change could now be brought about by transferring it from plain to blood agar.