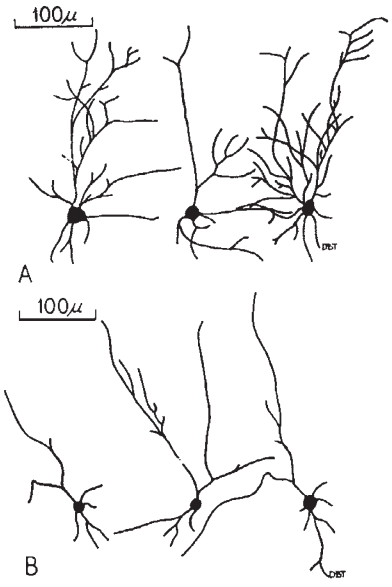

Fig. 1. Pyramidal cell bodies in the pre-piriform cortex of a rat killed a hundred days after unilateral olfactory bulb resection at the age of forty days. *A*, normal side; *B*, side of operation (Golgi–Cox preparation, micro-projector tracing)

Further work is in progress and will be reported elsewhere. We are indebted to Prof. J. Z. Young, who placed the facilities for this investigation at our disposal, for his advice and encouragement.

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The Longevity Function : Some Additional Data from Domestic Animals

In 1825, Benjamin Gompertz[1] analysed the function expressing the law of human mortality and suggested that the rate of mortality increased in a logarithmic manner with the age of the population. Recently, Kershaw, Chalmers and Lavoipierre[2], analysing the pattern of mosquito survival in laboratory conditions, showed that, for a cohort of 1,200, the Gompertz function was linear for both male and female.

Unfortunately, only figures of percentage survival were available for this cohort, and it was desirable to check the function by constructing a life-table. An appeal was therefore made for information on other survival data, published or unpublished, and information was obtained by one of us (J. O. L. K.) on cohorts of 167 draught horses, 63 breeding sows, and on 79 Ayrshire and 82 British Friesian cows. The criterion in these cohorts was economic—the working-life of the horse, the breeding-life of the sow and the milking-life of the cow.

The cohorts, when analysed by the graphic method introduced by Kershaw *et al.*, for numbers near or less than 100, yield a linear Gompertz function. The data on the horses and on the sows, when plotted as a frequency distribution curve of the number of animals against the economic life, show a normal probability curve, and similar curves for each herd of cows show a log-normal distribution.

We have analysed all the data available to us, including information published by the United States Atomic Energy Commission[3], on the survival of mice, guinea pigs and rabbits (the results will shortly be published in detail in the *Annals of Tropical Medicine and Parasitology*); but we have so far been unable to determine why some distributions are normal whereas others are log-normal; nor have we been able to correlate the type of curve with any feature of the biological system involved or with the criterion of survival.

It would appear that the determination of the pattern of mortality of biological systems is of such fundamental importance that all available information should be analysed; we therefore reiterate our appeal for information on survival data.

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Relation between Genetic Constitution of an Offspring and Weight of its Litter-mates

Rabbit does, drawn from a single stock, were artificially inseminated, either from one large buck of the same stock or from one small one of a different strain[1]. The two types of offspring were distinguishable by pre-arranged genetic factors. Offspring of the large buck averaged 2·7 gm. heavier at birth than offspring of the small buck. When they were raised in the same litters, after heterospermic insemination with mixed semen, the difference in birth-weight increased to 6·1 gm. The increase may be called the 'enhancement effect' in relative birth-weight.

This result prompted investigation of a naturally occurring analogue of the experiment. In mammalian dizygotic twin births, there are again two recognizable types of offspring, male and female, whose genetic constitutions carry with them a weight difference, the males being the heavier in most species. Also, the two types of offspring are born either in litters of one type (like-sexed twins), or are born together in the same litters (unlike-sexed twins). Is the difference in birth-weight of the sexes greater in unlike-sexed twins? As shown in Table 1, there is, in fact, an apparent enhancement effect in six sets of data for sheep twins. In the first two sets of data[2], which are unweighted averages, the effect was not found statistically significant by the authors. The small third group, a combination of the control data of three experiments[3–5], also shows an enhancement effect, though not significantly. This group was obtained by listing the four series of births that