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Normal Survival Period Following Bilateral Epinephrectomy
in the Cat.

E. L. COREY. (Introduced by J. S. Nicholas.)

From the Osborn Zoological Laboratory, Yale University.

Marked discrepancies in regard to the normal survival period in cats, following bilateral adrenal extirpation, are apparent throughout the literature dealing with the adrenal cortex. Zwemer¹ states the average survival period for a series of 43 cats to be 53 hours with 26 and 111 hours as the extremes. Swingle² finds the average survival period for bilaterally epinephrectomized cats to be about 60 hours. Houssay and Lewis³ found that animals from which the last vestige of cortical tissue had been removed survived but from 24 to 26 hours. Hartman,⁴ in seeking an active cortical extract, considered 90 hours as a marked prolongation of the life of bilaterally operated cats. The above references will serve as evidence that no definite criterion has as yet been established in work of this nature.

In a series of 31 animals the author has found the average survival period to be 115 hours, and concludes that the normal life-span of untreated bilaterally epinephrectomized cats must be placed slightly in excess of 100 hours. These findings have been completely corroborated by the recent work of other investigators.

Hartman⁵ has placed the average survival period at from 5 to 6 days. Marine and Bauman⁶ also agree that the life-span should be placed at somewhat in excess of 100 hours (5.3 days). Professor Swingle, in recent communications to the author, states that he would place this period in excess of 100 hours. Zwemer, in a recent conference with the writer, has stated that he would at present place the life-span of control animals at approximately 100 hours.

The author is inclined to attribute the comparatively short survival periods obtained by various workers to imperfections in operative technique, excessive visceral manipulation during operation, or to excessive handling and excitation.

¹ Zwemer, R. L., *Am. J. Physiol.*, 1927, lxxix, 641.

² Swingle, W. W., *Am. Nat.*, 1927, lxi, 132.

³ Houssay, B. A., and Lewis, J. T., *Am. J. Physiol.*, 1923, lxiv, 512.

⁴ Hartman, F. A., *Proc. Soc. Exp. Biol. and Med.*, 1926, xxiii, 467.

⁵ Hartman, F. A., MacArthur, C. G., and Hartman, W. E., *Proc. Soc. Exp. Biol. and Med.*, 1927, xxv, 69.

⁶ Marine, D., and Bauman, E. J., *Am. J. Physiol.*, 1927, lxxxi, 86.

The establishment of the normal survival period of bilaterally epinephrectomized cats is of prime importance, since the efficacy of all treatment devised to prolong life, as well as the potency of extracts obtained from the adrenal cortex, can only be interpreted by comparison with a definitely established normal survival period.

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**Growth of Heteroplastically Transplanted Eyes and Limbs
in *Amblystoma*.**

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(Introduced by J. S. Nicholas.)

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For the purpose of comparing the growth of normal and heteroplastically transplanted organs, eye vesicles (with lens ectoderm) and limb discs were transplanted between *Amblystoma punctatum* and *A. tigrinum*. The operations were done in the "tail-bud" stage, and the grafts were placed in the normal position and orientation. To standardize the feeding, both species were daily fed the maximum amount they would eat.

Measurements of normal and transplanted eyes were made with a micrometer ocular at regular intervals. As accurate measurements of the developing limb are impossible, pairs of animals with heteroplastically transplanted limbs were killed from time to time as a comparison.

Measurements made as soon as the outline of the eye became sufficiently visible, before either species had reached the feeding stage, showed that the normal and transplanted eyes were of the same size. This relation is maintained during most of the larval period. As the time of metamorphosis approaches, accurate measurements of the eye can no longer be made, but apparently the normal *tigrinum* eye now becomes slightly larger than the transplanted eye on the *punctatum*, and the transplanted *punctatum* eye becomes larger than its control. In other words, the 2 eyes on the *tigrinum*, normal and transplanted, become larger than the 2 on the *punctatum*.

In normal development, the fore-limb of *Amblystoma punctatum* becomes visible externally about the same time as the gills, while that of *A. tigrinum* does not appear until just before the animal begins to feed. When the limb disc is transplanted heteroplastically,