

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.

4014

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

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(Introduced by J. S. Nicholas.)

From the Osborn Zoological Laboratory, Yale University.

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,

the transplanted limb and the normal limb of the donor species appear at the same time. During the major portion of larval life the transplanted limb and the normal limb of the donor species maintain the same size. Eventually, in late larval life, the normal limb of the *tigrinum* becomes somewhat larger than the limb transplanted to the *punctatum*, and the transplanted *punctatum* limb becomes larger than its control. The growth relations of the eye and limb after heteroplastic transplantation are therefore the same.

There is a great difference in the growth rate of the 2 species. With maximum feeding, 5 weeks after operation the *tigrinum* has attained a length twice that of the *punctatum*, and therefore requires much more food. We have found that if this greater food requirement of the *tigrinum* is not met, its growth will be correspondingly retarded, and the normal *tigrinum* organ will be smaller than that transplanted to *punctatum*, and conversely the *punctatum* organ on *tigrinum* will not become as large as the normal control on *punctatum*.

With maximum feeding, then, the behavior of heteroplastically transplanted organs indicates that the factors controlling their growth are intrinsic to the grafted tissue.

4015

Anhydraemia in Rats Suffering From Lack of What Has Been Called Vitamin B.

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Students of vitamin "B" deficiency are well aware that animals fed a complete diet except with respect to vitamin "B" lose their appetite for the deficient ration and rapidly decline in body weight. It is also well known that an increase of blood concentration occurs in starvation. The question arises whether a deficiency of what has been spoken of hitherto as vitamin B is associated with anhydraemia, and if such is the case, whether this can be accounted for by the starvation phenomenon which so frequently prevails.

Consequently, a series of albino rats weighing between 200 and 250 gm. were placed on a vitamin "B" deficient diet. Control animals were given on an average the same amount of food and water daily as the vitamin "B" deficient rats consumed. Blood samples