February 1950; Knysna, January 1953. The animals were all males.

After the breeding season, male elephant seals leave the rookeries for about two months, before returning again for their annual post-nuptial moult. The whole herd disappears for the winter to lead a pelagic life, presumably near the pack ice of the Antarctic[1]. Solitary individuals (stragglers) dispersing to warmer waters in the north pose a peculiar problem of distribution. No elephant seals have resorted in numbers to the South African coast within historical times. The nearest rookeries are Prince Edward Islands (900 miles south-south-east) and the Tristan da Cunha group (1,500 miles west). It would appear that the elephant seals are capable of ranging considerable distances. The present record of a cow successfully giving birth nearly a thousand miles from extant herds is perhaps some evidence of the mechanism of dispersal of breeding populations, at present little understood among the pinnipedes.

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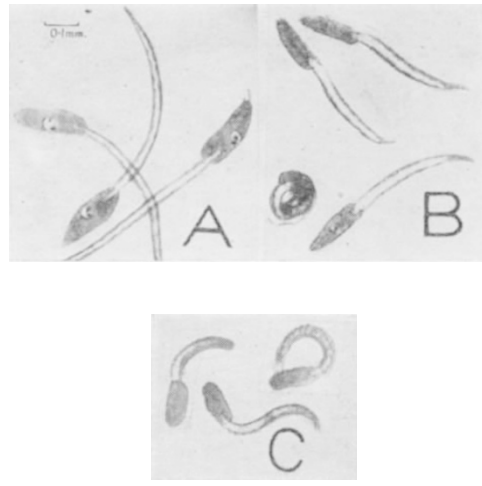
Production of Abnormal Metamorphosis in a Tunicate

IN this laboratory control hatchings of 95 per cent normal control tadpoles are regularly obtained from cross-fertilized eggs of *Ciona intestinalis*. The addition of phenylthiourea to the sea water in which they are developing produces a characteristic abnormality, which has been obtained regularly. A concentration of 0·001 per cent is effective, but not 0·0001 per cent. Apart from the interference with melanization of sensory vesicle structures, which is known in vertebrates[1], this drug prevents the normal elongation of the notochord. Such tadpoles have short curved tails and do not swim. They remain unchanged after hatching for up to five days, when some attempt metamorphosis, which may be successful in the lower concentrations. Control tadpoles are usually 100 per cent attached and metamorphosing 24 hr. after hatching. When the monsters are placed in normal sea water on hatching, they remain unchanged except for melanization of the sensory vesicle. If, however, they are placed in 0·2 per cent phenylalanine in sea water, the tails are absorbed in 24 hr.; dihydroxyphenylalanine, thyroxine and tyrosine are less effective, approximately in that order. Glycine and alanine do not have this action.

The partial overcoming of the block in metamorphosis by phenylalanine suggested using it together with phenylthiourea. Eggs developing in solutions of 0·05–0·1 per cent phenylthiourea with 0·05–0·2 per cent phenylalanine produced a new monster with greatly retarded head development. In some cases the sensory vesicle is suppressed. As phenylthiourea is an antithyroid drug, another—2-thiouracil—was investigated. Animals developing in from saturated to one-tenth saturated solutions hatched to normal tadpoles, though metamorphosis was retarded up to twelve days and was irregular. The chief effect was a retardation of tail absorption.



A, Normal control tadpoles of *Ciona intestinalis*. *B*, Tadpoles which have developed in 0·01 per cent phenylthiourea. *C*, Tadpoles which have developed in phenylalanine and phenylthiourea

It seems that the phenylthiourea monster is not primarily due to antithyroid effects.

This work is being continued. Possible antagonists to phenylalanine are being investigated, as is also the influence of the composition of the sea water on the response to the drugs. The *p*H of the solutions used has varied from 7·6 to 8·2, and normal development occurs in this range in the absence of drugs.

It is easy to obtain many abnormal forms by overcrowding and using dirty glassware, but the phenylthiourea tadpoles are obtained under conditions which give perfect control tadpoles in the absence of the drug.

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Chromaffin Tissue in the Lizard Adrenal Gland

BOTH adrenaline and its possible precursor noradrenaline can be obtained from the adrenals of many animals in the different classes of vertebrates[1]. In the dogfish, where adrenocortical and chromaffin tissue are entirely separate, the latter contains wholly noradrenaline[2]. In the Amphibia, where the two tissues are intermingled, noradrenaline forms 50–69 per cent of the total catechol content in the frog[2] and 35–58 per cent in the toad[3]. In the eutherian mammal, chromaffin tissue, formed as a medulla surrounded by cortical tissue, produces mostly adrenaline[1,2,4].

In this laboratory, where the comparative anatomy and physiology of the vertebrate adrenal is being investigated, it has been found that the chromaffin tissue of the lizard adrenal gland (*Lacerta viridis* Laur.) is distributed in a particularly interesting way. The chromaffin cells form two groups of tissue, one embracing the cortex and thickened considerably in the dorsal region of the gland—the peripheral layer—and the other forming 'tongues' and islets intermingling with the cortical cells themselves (Fig. 1).