The accompanying photomicrographs show the thyroid of a control non-hibernating snake kept at 24° C. (a) and the gland of a snake, kept under similar conditions, which had been twice injected with half a unit of thyrotropic hormone at 24-hour intervals, and killed twenty-four hours after the final injection (b).

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Cholinesterase at the End-Plates of Voluntary Muscle after Nerve Degeneration

THE concentration of cholinesterase is increased in voluntary muscle of guinea pigs after nerve degeneration¹. It has been suggested² that this increase results from the considerably decreased volume (V) of muscle fibres. The number of fibres and end-plates remains constant, at least during the period examined (five weeks). Whilst the volume of muscle fibres decreases, the unchanged volume of end-plates becomes relatively more important. Due to the high concentration of the enzyme at the end-plates a change in the relation: V end-plates/ V muscle fibres in favour of V end-plates must produce an increase of the enzyme concentration of the whole muscle as taken for the determinations.

We have measured the relation between the volume of normal and denervated muscle fibres and determined at the same time the concentration of the enzyme. Two weeks after cutting the sciatic nerve of guinea pigs, the increase of the concentration of cholinesterase is approximately inversely proportional to the decrease of volume of the denervated muscle fibre. This indicates that the concentration of enzyme at the end-plates at this time is nearly unchanged. Four to five weeks after denervation, the diminution of volume of the denervated muscle fibre is more important than the increase of the enzyme concentration. The concentration at the end-plates at this date seems to be a little smaller than in normal end-plates. But even then there is still a very high concentration.

In the peripheral part of the cut sciatic the concentration of cholinesterase after two weeks is decreased (about 30 per cent), whereas in the neuroma formed at the central end of the cut sciatic the concentration increases to a value which is twice as high as in the normal nerve³. The endings of the nerve fibres in muscle at this date have disappeared. These experiments provide evidence that the enzyme is localized at a high concentration in the end-plates of muscle and not in the endings of the nerve fibres.

This work has been made possible by a grant of the Ella Sachs-Plotz Foundation.

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¹ Marnay, A., and Nachmansohn, D., *C.R. Soc. Biol.*, **126**, 785 (1937).

² Nachmansohn, D., *C.R. Soc. Biol.*, **128**, 599 (1938).

³ Nachmansohn, D., not yet published.

Vernalization of Excised Embryos

IN a previous letter¹ attention was directed to the fact that the process of vernalization could be carried out successfully on excised embryos of winter rye, var. Petkus (fuller information has been published elsewhere²). The embryos in the case referred to were removed from grains previously soaked for 5 hr. in a sterilizing solution and were kept on an agar medium containing nutrient salts and glucose.

More recent work has shown that, even during the first few hours after soaking, far-reaching changes occur in the grain, leading to exchanges between

ABOVE: PLANTS GROWN FROM EXCISED EMBRYOS KEPT AT 1° C. FOR SIX WEEKS ON NUTRIENT AGAR WITHOUT CARBOHYDRATE.

BELOW: PLANTS GROWN FROM SIMILAR EMBRYOS TREATED IN THE SAME WAY, BUT ON NUTRIENT AGAR CONTAINING 3 PER CENT SUCROSE.

aleurone layer, endosperm and embryo, resulting in large variations in growth of roots and coleoptile. The experiment here reported investigates the possible role of such exchanges by utilizing embryos excised from the dry grain. Such exchanges were found to be inoperative in vernalization. On the other hand, the presence of carbohydrate supply (3 per cent sucrose) has been found to be essential.

In the accompanying photographs, plants are shown grown from excised embryos removed after