an diesen Tagen besonders grosse Werte für die Streuung von Aus- und Einflug. Insgesamt weist das auf eine stärkere Niveaubeeinflussung.

Der Verlauf der Ruheperiode kann durch Messungen der Körpertemperatur verfolgt werden. Ein bis zwei Stunden nach dem Einflug senken Fransenfledermäuse ihre Körpertemperatur. Nachmittags, zwischen 13.00 und 17.00, steigt die Körpertemperatur innerhalb von 20 min bis zur Wachtemperatur an[9]. Bis zum Ausflug sinkt sie dann nicht mehr wesentlich ab.

Der Zeitpunkt des Erwachens scheint um so früher erreicht zu werden, je höher die Aussentemperatur an dem betreffenden Tag ist bzw. je früher ein bestimmter Aussentemperaturwert erreicht wird. Der Zeitpunkt des Aufwachens steht somit mit der Ausflugszeit in engem Zusammenhang.

Summary. Field experiments on the diurnal activity of Natterer's bat (*Myotis nattereri*, Kuhl 1818) are described. The diurnal activity pattern follows the course of the light intensity with a phase difference. This phase difference and certain details of the activity pattern are subject to seasonal changes and are influenced by the ambient temperature.

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Zoologisches Institut der Universität, 5 Köln (Deutschland), 15. Dezember 1967.

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Effect of Temperature on the Translocation of Bacterial DNA in *Solanum lycopersicum* Esc.

We have already published results showing that exogenous DNA could be taken up by plants and, after some depolymerization, enter the cell nuclei without modification of their primary and secondary structures[1-3]. Furthermore this foreign DNA seems to combine with the tomato DNA and replicate[4].

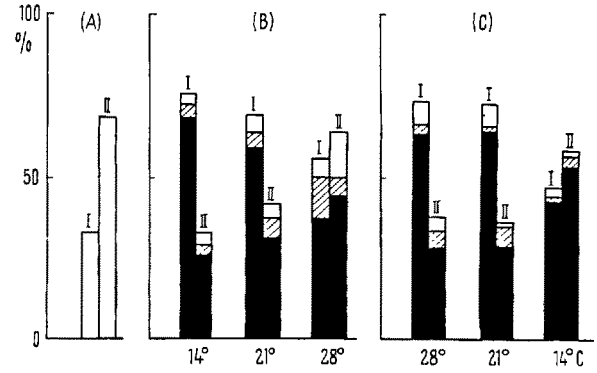
Light affects the quantity and the depolymerization of the DNA uptake[5]. In the present paper we have studied the effects of temperature.

Temperatures within good physiological range were chosen. Tomato plantlets were developed for 15 days in presence of artificial white light (Phytor 28.000 ergs/sec per cm^2) and humidity of 90% at 14°, 21° and 28 °C. Each series was then subsequently incubated in the presence of bacterial DNA-^{3}H either at 14°, 21° or 28 °C. Exogenous labelled DNA (2×10^6 dpm/μg) was extracted[6] from a strain without thymine of *Escherichia coli* (CR 34), cultured on a medium containing ^{3}H-thymine. The stems of the plants were dipped into a solution (200 μg/ml) of *E. coli* ^{3}H-DNA for 6 h. They were then transferred to water for 48 h. The part of the plant submerged in the various solutions was removed before homogenization and the DNA from the remainder of the stem and the cotyledon was extracted by a method already described[1]. This DNA was analyzed by centrifuged chromatography on DEAE-cellulose columns[7].

A parallel study was made of the synthesis of endogenous DNA under the same conditions while incubating the plantlets in a solution of tritiated thymidine with the same specific activity as that present in the bacterial ^{3}H-DNA.

There were no clear differences of the quantities of foreign DNA taken up by the plantlets whatever the temperature of development or incubation was.

As shown in the Figure when temperatures of development and incubation were the same they did not influence the state of polymerization of the labelled DNA. For instance, the relation of fraction 1 to fraction 2 was not significantly different when plantlets were developed at 14 °C and incubated at 14 °C or incubated at 28 °C and developed at 28 °C. On the other hand a rather wide change of temperature between development and incubation reduced significantly the depolymerization of the radioactive DNA in the plants. Both changes from 14–28 °C and from 28–14 °C had the same effect: the majority of the DNA found in the plantlets were over $1–10^6$ molecular weight. This heterothermic treatment might produce a depression of the DNAse activity. It is not impossible that there is a relation between DNAse activity and thermoperiodism.



Percentage relation of fractions of radioactive DNA molecules found in plantlets after absorbtion of *E. coli* DNA ^{3}H. (A) *E. coli* DNA-^{3}H given to plantlets. (B) Plantlets developed at 14 °C. (C) Plantlets developed at 28 °C. Ordinate: percentages, abscissa: temperatures of incubation, (fraction I: molecular weight of 2×10^5 to 1×10^6), (fraction II: molecular weight above 1×10^6). Three series of 10 plantlets are drawn each time. In black, the smallest percentage of DNA-^{3}H in fraction I and II; in white, the largest, the hatchings being intermediate. For instance: see a plantlet developed at 14 °C incubated at 14 °C. The first series in black has 68% of its foreign DNA in fraction I, the second series in hatching 72% and the last in white 75%.

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Let us note that the synthesis of DNA of plantlets incubated in the presence of tritiated thymidine or hydrolized *E. coli* DNA-^{3} did not seem affected in any way by the change of temperature between development and incubation. Moreover, plants incubated in a solution of ^{3}H-thymidine synthesized during the same time about 10 times less radioactive DNA than the amount found after absorption of *E. coli* DNA-^{3}H.

The fact that under our experimental conditions in certain circumstances temperature affected the depolymerization of the foreign DNA translocated without influencing, in the least, the synthesis of endogenous DNA proves that the 2 phenomena are distinct[8].

Résumé. Nous avons étudié l'influence de différentes températures sur la translation de l'ADN d'origine bactérienne chez les plantules de tomate. La température n'a aucune influence en elle-même. Néanmoins des variations de température diminuent la dépolymérisation de l'ADN étranger migré dans la plante.

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26 January 1968.

[8] This work was done under a Euratom/C.E.N. contract, and was supported by grants from the Belgian 'Fonds de la Recherche Scientifique Fondamentale Collective'.
[9] Boursier Euratom. Present address: The Weizmann Institute of Science, Rehovoth, Israel.
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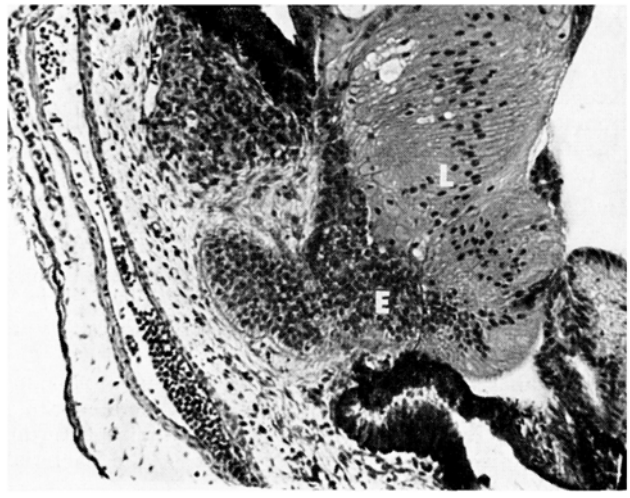
The Question of Lens Regeneration from Parts of the Optic Vesicle in the Chick Embryo[1]

Numerous experiments have demonstrated that, in certain Urodeles, a new lens forms from iris tissue after removal of the original lens from the eye (STONE[2]). Limited studies suggest that lens regeneration from iris tissue does not occur in adult reptiles, birds or mammals (STONE[3]). New lenses are occasionally formed in the optic vesicle of the chick embryo after removal of the original lens but their origin is not clear. Although DETH[4] and REINBOLD[5] have described regeneration of lenses from the optic vesicle in tissue culture experiments the evidence is inadequate. MCKEEHAN[6] found no evidence of lens regeneration following removal of the lens in ovo. The present work was undertaken to further explore the origin of new lenses in the eye of the chick embryo.

The embryos used in these experiments were obtained from White Leghorn eggs supplied by a commercial hatchery. With the aid of fine tungsten needles the lens was excised from the optic cup of embryos of 48–72 h of incubation at 38°C (stages 17–20, HAMBURGER and HAMILTON[7]) following 2 procedures. In some cases the ectoderm was removed from the side of the head, the lens excised and the optic cup cut out. In other cases the lens was removed through a slit in the ectoderm and the optic cup together with ectoderm was cut out. In all cases the optic cup was as free as possible of mesenchyme. The optic cups were cultured either on the chorio-allantois of host embryos or on a modified agar medium (WOLFF and HAFFEN[8]). The explanted optic cups were subsequently recovered, fixed, sectioned and stained for microscopic examination. Of 112 optic vesicles alone cultured in this way none showed any evidence of new lens formation. They did, however, show some degree of metaplasia similar to that described by MCKEEHAN[6]. Of 159 explants of optic vesicles and ectoderm a large number contained lenses or lentoid structures (Figure) frequently clearly associated with the ectoderm. The frequency of lens formation is shown in the Table.

The results of our experiments show clearly that a new lens appears in the explanted optic vesicle after excision of the original lens only if ectoderm is included with the explant and then only if the explant is taken from an embryo of less than 72 h of incubation (Table). The possible origins of new lenses in the optic vesicle are limited to: regeneration from lens fragments left behind after the operation; regeneration from part of the retina; or by induction in remaining competent head ectoderm. In the present experiments care was taken to remove the lens intact and to prevent fragmentation of the lens. It is un-



Optic vesicle and ectoderm of a 60 h embryo, after removal of the original lens, cultured for 5 days on the chorioallantois. A large lens (L) has formed adjacent to ectoderm (E).

[1] This work was supported by a grant from the National Research Council of Canada to D. J. McCallion.
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