Because of the technical difficulties of the incision experiments we are not sure whether all the conductive strands of the stem had been severed or some of them remained intact. Also the possibility of diffusion of the stimulus through an incised surface can not be excluded, as no device against diffusion was applied. Therefore from this experiment neither the mode of transmission nor the tissue concerned can be with certainty established.

In a plant with two buds the developing bud on the higher node received more stimulus and produced more flower primordia than that on the lower node. Recently, Salisbury reported that an actively growing bud of *Xanthium* has higher sensitivity to photoperiodic induction than a dormant one, i.e. if actively growing buds are removed during or after induction, the dormant buds, when they become active, remain vegetative (5). This is also the case in *Pharbitis Nil*. In the present investigation, in plants with two buds the bud on the higher node was activated immediately upon removal of the main axis but that on the lower node was dormant or nearly so, and was forced to develop about 20 days after the photoperiodic treatment.

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SHORT COMMUNICATION

Hideo TORIYAMA** : Preliminary Note on the Migration of a Colloidal Substance in the Motor Tissue of *Mimosa pudica**

鳥山英雄** : オジギソウの運動組織におけるコロイド状物質の移動

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Leaflets, petioles or whole branches of *Mimosa pudica* are known to show an appearance of wilt by stimulation. This change in the turgor of the responsible tissue cells is supposed to have a close relationship to the behavior of potassium ions in the tissue, which has been analysed in detail previously.²⁾ The present author was able to observe the translocation of some kind of colloidal substance in the

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motor tissue of primary pulvinus at the moment of bending movement as described below. In this report, tissue cells of the upper and the under side of the pulvinus are chiefly dealt with.

Mimosa was cultivated in the same manner as had been described in the previous paper.^{1,2)} For the observation of the motor cells before receiving a stimulus, the plants were exposed to ether vapour for 15 to 20 minutes, thus rendering the pulvinus of these plants incapable of responding to any stimulus. The material was then fixed with Müller's fluid, Regaud's fluid or Zenker's fluid etc. The fixed material was washed by running water 8 to 10 hours. These tissues were cut in sections of 20 to 40 micra thick by a cylinder microtome or by a hand razor. In order to stain the protoplasm the author tried to use 0,1 and 0,05 per cent water blue and other dyes.

Before receiving a stimulus, both the colloidal substance and the tannin vacuole were found to be as inclusions of the central vacuole (Figs. 1, 3). But after receiving a stimulus, the colloidal substance ceased to appear in the vacuole, while the tannin vacuoles remained still observable in the cell. The colloidal substance was observed to have flowed out into the intercellular spaces (Fig. 2). This phenomenon was especially noticeable in the zone where numerous intercellular spaces are found. Figure 5 is the schematic figure in which the distribution of the colloidal substance in the intercellular spaces is illustrated. It means that the colloidal substance issues from the motor cells into the intercellular spaces at the time of bending movement. The migration of potassium ions in these spaces was studied particularly in the previous work. And there can be no doubt to assume that the K^+ ion is an ingredient of the colloidal fluid. The recovery from the bending posture may be brought about by the recovery of turgor which can be attained probably by the restoring permeation of the colloidal substance and potassium ions through the motor cell membranes. From this consideration it can be suggested that the permeability of the cytoplasm for the colloidal substance together with potassium ions increases in the duration of time between the bending movement and recovery.

The colloidal substance is fixed with fixatives such as Müller's fluid, Regaud's fluid, and Zenker's fluid which contain potassium bichromate solution. Furthermore, Champy's fluid and 10 per cent neutral formalin are also suitable for fixing the colloidal substance. In any case, this substance as well as protoplasm is stainable with 0,1 or 0,05 per cent water blue solution. However, the best result was obtained by using Müller's fluid and water blue staining. Further details of the chemical nature of this colloidal substance will be reported in another paper in the near future.

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Fig. 1. Motor tissue before bending movement. Fig. 2. Motor tissue after bending movement. Both materials fixed with Müller's fluid and stained with 0.1% water blue. $\times 480$. i, intercellular space. Fig. 3. Motor cells before bending movement. Fig. 4. Motor cells after bending movement. Both materials fixed with Müller's fluid and stained with 0.05% water blue. $\times 800$. t, tannin vacuole; co, colloidal substance; cy, cytoplasm. Fig. 5. Schematic figure of the cross section of primary pulvinus. Lined area shows colloidal substance which is issued into intercellular spaces.

本会名誉会員 牧野富太郎氏は昭和32年1月18日
死去されました。ここに報告し謹んで哀悼の意を表し
ます。

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