NOTE.

ON THE DISTRIBUTION OF CHLOROPHYLL IN THE YOUNG SHOOTS OF WOODY PLANTS.—In the young shoots of many trees and shrubs, the chlorophyll appears to be present not only in the cortex,

but also in the cells of the medullary rays and in some of the cells of the medulla. This is particularly well seen in *Jasminum nudiflorum*, Lindl., which flowers in February and March, before the leaves appear. As might be expected, the axis of the inflorescence in this plant possesses the characteristic features of a typical assimilating axis. Xerophily is well marked by the deeply sunk stomata and the much cutinized epidermis. The surface is increased by small lateral extensions of

FIG. 1. Transverse section through inflorescence axis of *Jasminum nudiflorum*, showing distribution of chlorophyll.

protoxylem. They are thicker-walled and slightly smaller than the more internal medullary cells, and are pitted and give the reaction for lignin with acidulated phloroglucin.

FIG. 2. Tangential section through phloem, showing chlorophyll in medullary rays.

two opposite sides of the square axis; the extended sides alternating in consecutive internodes. The palisade tissue is developed beneath a single colourless hypodermal layer.

The chlorophyll is found not only in the cells of the palisade layer, but in many or all of the cortical cells, in the pericyclic parenchyma bordering on the sieve tubes, in the medullary rays running through the phloem and xylem, and even in some of the medullary cells. The medullary

cells that contain chlorophyll border on the pro-

Starch was tested for in material that had been picked for several days. It was found in the endodermal layer to the outside of the pericyclic sclerotic fibres, but in no other tissue. Starch was also tested for in material that had just been picked after half an hour's bright sunshine. In this case abundant starch was found in the palisade and cortical cells, in the pericyclic parenchyma bordering on the sieve tubes, and in the medullary rays. No starch could be detected in the cells of the pith.

The following is a list of the plants examined, with a general account of the distribution of chlorophyll in their young shoots. In all cases, with the exception of the evergreens, the material was cut when the leaf-buds were just bursting.

PLANT.	CHLOROPHYLL DEVELOPED IN
<i>Tilia europaea</i> , Linn.	Cortex, medullary rays, and the pitted medullary cells bordering on the protoxylem.
<i>Aesculus Hippocastanum</i> , Linn.	Cortex, scantily in the medullary rays, and in the medullary cells bordering on the protoxylem.
<i>Betula alba</i> , Linn.	Cortex, medullary rays, and throughout the medulla which is of small size.
<i>Carpinus Betulus</i> , Linn.	As in <i>Betula alba</i> .
<i>Acer Pseudoplatanus</i> , Linn.	Cortex, medullary rays (especially in the very broad ones), and in the medullary cells bordering on the protoxylem.
<i>Ulmus campestris</i> , Linn.	Cortex, medullary rays, and in the thickened medullary cells bordering on the protoxylem.
<i>Populus nigra</i> , Linn.	Cortex, medullary rays, and in the medullary cells bordering on the protoxylem, especially where sclerenchymatous.
<i>Fagus sylvatica</i> , Linn.	Cortex, medullary rays, and thickened medullary cells bordering on the protoxylem.
<i>Fraxinus excelsior</i> , Linn.	Cortex, medullary rays, and thickened medullary cells bordering on the protoxylem.
<i>Quercus Robur</i> , Linn.	Cortex, scantily in the medullary rays and the medullary cells bordering on the protoxylem where sclerenchymatous.
<i>Pyrus amygdaloides</i> , Linn.	As in <i>Quercus Robur</i> .
<i>Rosa canina</i> , Linn.	Cortex, and in the cells surrounding each bundle.
<i>Crataegus oxyacantha</i> , Linn.	Cortex, medullary rays, medullary cells bordering on the protoxylem.
<i>Prunus spinosa</i> , Linn.	Cortex, medullary rays, and thickened medullary cells bordering on the protoxylem.
<i>Rubus</i> , sp.	As in <i>Prunus spinosa</i> .
<i>Laburnum vulgare</i> , J. Presl.	Cortex, scantily in the medullary rays, and in the medullary cells bordering on the protoxylem.
<i>Robinia Pseudacacia</i> , Linn.	Cortex, medullary rays, scantily in the thickened medullary cells bordering on the protoxylem—particularly clear in the pericyclic parenchyma.

PLANT.

CHLOROPHYLL DEVELOPED IN

<i>Sambucus nigra</i> , Linn.	Cortex, scantily in the medullary rays, in a few medullary cells bordering on the protoxylem.
<i>Syringa vulgaris</i> , Linn.	Cortex and lateral extensions of the cortex, medullary rays, and medulla except the very centre.
<i>Corylus Avellana</i> , Linn.	Cortex, medullary rays, cells of medulla bordering on the protoxylem.
<i>Viburnum Lantana</i> , Linn.	Cortex—medullary rays, cells of medulla bordering on the protoxylem.
<i>Lonicera Periclymenum</i> , Linn.	Cortex, medullary rays, cells of medulla bordering on the protoxylem.
<i>Hedera Helix</i> , Linn.	Cortex, medullary rays, and at the points where the rays run into the medulla.
<i>Aucuba japonica</i> , Thunb.	Cortex especially thickened hypodermal layers, scantily in medullary rays and cells of medulla bordering on the protoxylem.
<i>Daphne Mezereum</i> , Linn.	Cortex, medullary rays, medulla.
<i>Cestrum</i> , sp.	Cortex, medullary rays, medulla.
<i>Ilex Aquifolium</i> , Linn.	Cortex only.
<i>Plumbago</i> , sp.	Patches between sclerenchyma in the cortex only.
<i>Larix europaea</i> , DC.	Scantily in outer layers of the cortex only.

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