

**I AWA
BULLETIN**

1970/1

EDITORIAL

With the appearance of this issue of the IAWA BULLETIN, your Association begins what may be called another era. The new office has been established in Syracuse, New York, U. S. A. at the State University of New York College of Forestry. The transfer of headquarters from Zurich and out of the capable hands of Professor Frey-Wyssling and Professor Bosshard has been a gradual one. However, we now have all of the correspondence files, annual reports, extra copies of the "Bulletin", a large supply of the "Glossary" as well as the current membership file and dues records. In addition, through the cooperation of Dean François Mergen of the Yale University School of Forestry, we have obtained the very early records of IAWA which had been stored there by S. J. Record.

It would seem that an association like ours should look to the future at a time like this. Planning for the development of IAWA should logically include making whatever changes are necessary to provide for the future vitality of such a relatively small organization. As you know, some of these considerations are being voted upon by the membership at large through the ballot on Revisions of the Constitution. The deadline on return of the ballots was extended to September 1 due to the difficulties with the mails. Therefore the results of this vote will be announced in the next issue of the Bulletin, or in a separate communication to all members.

But an organization like ours should not break its ties with the past nor lose sight of the early objectives of the founding members of IAWA. One way of keeping these ideas before us could be through the publication of a brief history of our Association. Council Member Professor William Stern has indicated his willingness to undertake this task. Perhaps in future issues of the IAWA BULLETIN we can publish chapters of this work as it develops.

Another way of retaining some continuity with the past is to review developments in the field over a period of time. Because an index of the "News Bulletin", later the "Bulletin", has not appeared as far as we can determine, this issue carries an index of the Scientific Reviews published since 1957. If the members who have files of issues earlier than 1957 express their desire to have an index of all the Scientific Reviews, a future issue of this journal could include such a listing.

Finally, we would encourage all members to submit suggestions for the improvement of this publication. It has already been suggested that thesis and dissertation abstracts on wood anatomy and related subjects would be appropriate to include. References to publications on relevant topics published by members would bring such information to the attention of our readers who could then write to individuals for reprints. Short technical notes and scientific reviews that are not appropriate for "major" journals, or that represent preliminary reports on research, should also be submitted for consideration. Personal items about members such as promotions, changes of employment or similar information of possible interest to other members might be included. Often our members make extensive tours of research facilities in various parts of the world. An announcement in the Bulletin some months in advance of such a trip could prove to be helpful in arranging worthwhile stops. Please send us your reactions to these ideas so that this little publication can provide the services you desire.

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THE INFLUENCE OF DIFFERENT MEDIA ON ROOT GROWTH IN SEEDLINGS
OF *PINUS SYLVESTRIS* L.

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It is a common experience that root development varies widely with the conditions of the soil, but very little work has been carried out on the morphological modification of the root structure in different media. Richardson (1955) observed different root cap formation in seedlings of *Acer saccharinum* L. grown in soil or in water culture. Here an attempt is made to follow root development of seedlings of *Pinus sylvestris* L.

Eighty plants were grown in root tubes, half in sterilized soil, half in Long Ashton nutrient solution. All were grown in similar controlled environmental conditions. After 35 days the roots were fixed in Formalin-Propionic-Alcohol, then embedded in polyesterwax. The sections were stained with Safranin/Fastgreen.

Roots in soil grew very quickly in length, while in water culture root growth soon became restricted and later stopped, probably due to a lack of an adequate supply of oxygen (Leyton and Rousseau, 1957).

Transverse sections were cut 2 cm below the hypocotyl/radicle junction in three seedlings from each medium. The root was forming secondary xylem and phloem, a phellogen was arising from the pericycle and the cortex had disappeared (PLATE I A-B). Considering roots with the same number of mature tracheids, the outline of the xylem tended to be more rounded in soil than in water and while the xylem tended to be tetrarch in soil it was usually triarch

in water. This is contrary to observations in roots of *Pinus sylvestris* L. reported by several investigators (Noelle, 1916 and Liese, 1926 in Wilcox, 1964) who claimed the diarch structure to be a distinctive feature. However, it is not clear to what extent the number of xylem ridges is affected by root medium, since the number of poles varies so widely within a single plant (Carlquist, 1961). It seems likely that the tetrarch xylem was associated with the greater vigor of roots grown in soil.

The root medium appeared to make no difference to the development of the root cap. The organization of the root apex is similar to that of *Pseudotsuga* (Allen, 1947 in Esau, 1965), the root cap being produced by longitudinal divisions at the periphery of a column of rootcap cells (PLATE I C). Richardson (1955) found no root cap in water grown plants of *Acer saccharinum* L.; in contrast to this, water grown plants of *Pinus sylvestris* L. had a root cap thicker than that of plants grown in soil, which may be due to lack of the usual friction between soil and root.

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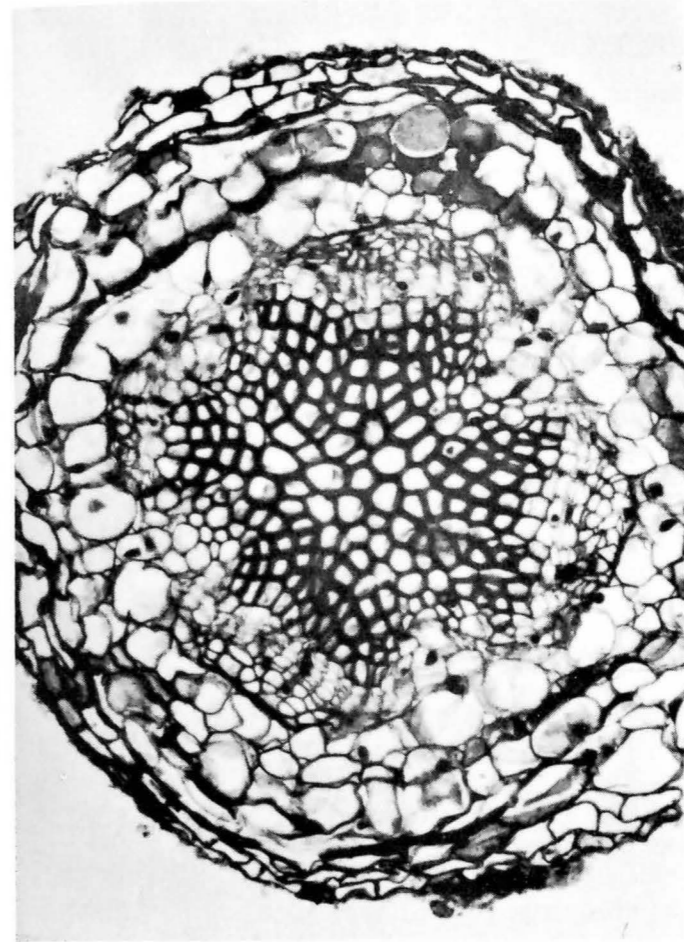
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EXPLANATION OF PLATES

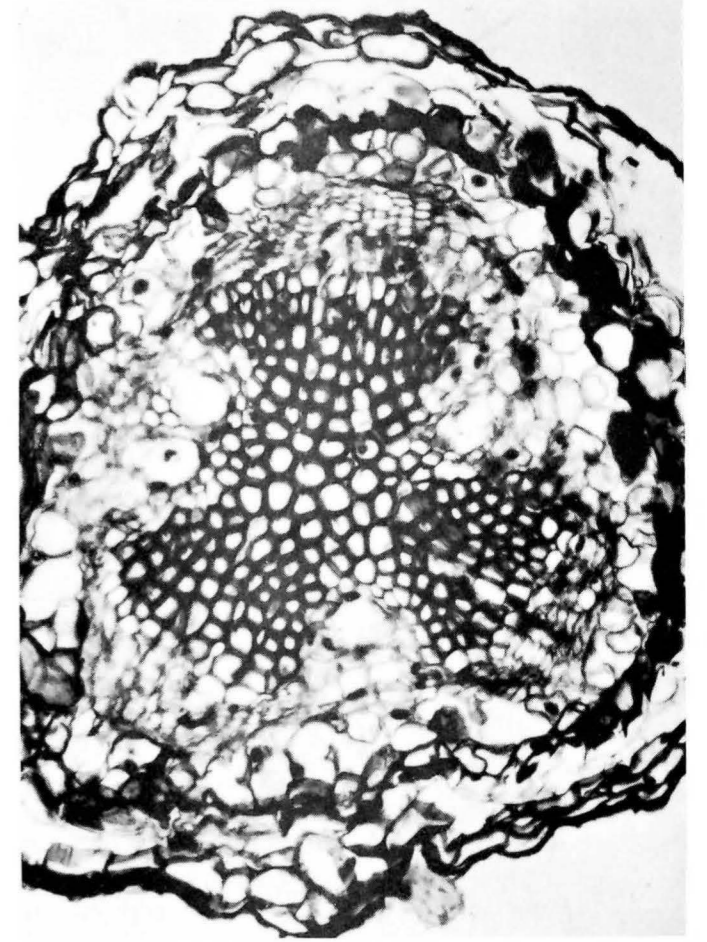
Plate I

- A-B Transverse sections of roots of *Pinus sylvestris* L. Cortex and epidermal tissues have disappeared. Pericycle shows meristematic activity forming the first phellogen. A vascular cambium produces secondary phloem and xylem. A. Root grown in soil, 800X. B. Root grown in water, 800X.
- C Longitudinal section of root tip of *Pinus sylvestris* L., showing the organization of apical meristem. Longitudinal divisions on the periphery of the column give cells to the peripheral part of the root cap (Esau, 1965). Root grown in water, 800X.

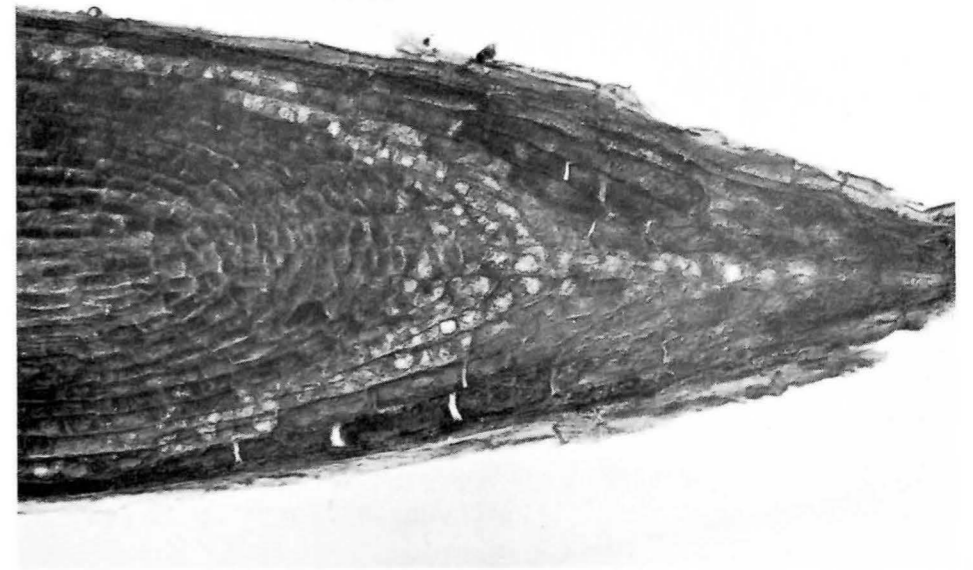
A



B



C



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- 1958/1 Some Aspects of the Application of High-Frequency Heating in Wood Biology, H. H. Bosshard, pp. 1-5.
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