

MARGINAL RAY PARENCHYMA IN ARAUCARIACEAE AND IN PODOCARPACEAE

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In the course of xylotomic examinations it could be observed that in the case of several *Araucariaceae* and *Podocarpaceae* species some of the rays, seen in the radial section, even if they are only one seriate, are bordered by thin-walled marginal cells, the height of which differs essentially from that of the innermost ones. At first sight this phenomenon seems to show as if these marginal cells were originated on both the top and the bottom side of the rays, from the endings of the walls of the tracheids. However, on tracing these undulating margin lines, it can be established that this ray margin exists also independently of the tracheid endings and that occasionally the exterior margin line can be traced well at the width of 10—15 tracheids too. They cannot either be regarded as transverse tracheids as they do not contain bordered pittings, nor even simple pits. On the other hand, the structure of their thin walls corresponds completely with that of the walls of the internal rays. Where is then the origin of this ray cell margin?

If in the radial section there are, on the top as well as on the bottom of the ray cells, such marginal cell parenchymas, then these very low marginal cell parenchymas must be visible in the tangential structure of the rays too. And, indeed, on examining the tangential structure of the rays more thoroughly, it can be seen, that at the upper and lower angle of the rays, quite small, usually triangle parenchyma cells, which can also be seen on the radial section at a height corresponding exactly with that of the margin (8μ), can be detected. On this tangential side too, the height of these angular parenchyma cells amounts always to one third and one fourth respectively, of that of the internal rays (25μ). On this side their wall is also quite smooth and thin, hence these are primary walls not exhibiting any pitting. On the upper left side of *photo no. 1* the height of the ray is the same as that of the ray on the right side of the photo, of course at identical magnification: on the tangential slide, their height is similarly the same. This part illustrates clearly, that the arrangement and dimension of the marginal parenchyma cells on the radial side corresponds completely to that of the structure of the ray at the end of the dotted line, hence also to that of the marginal parenchyma cells.

On the right side of the photo actually two rays adhere one above the other, the marginal parenchyma cell on the bottom of the one adhering directly to the upper marginal parenchyma cell of the ray beneath it. At the end of the lower one there is a parenchyma cell too, exhibiting clearly that these parenchyma cells differ essentially in shape and in size from the parenchyma cells in the interior of the rays.

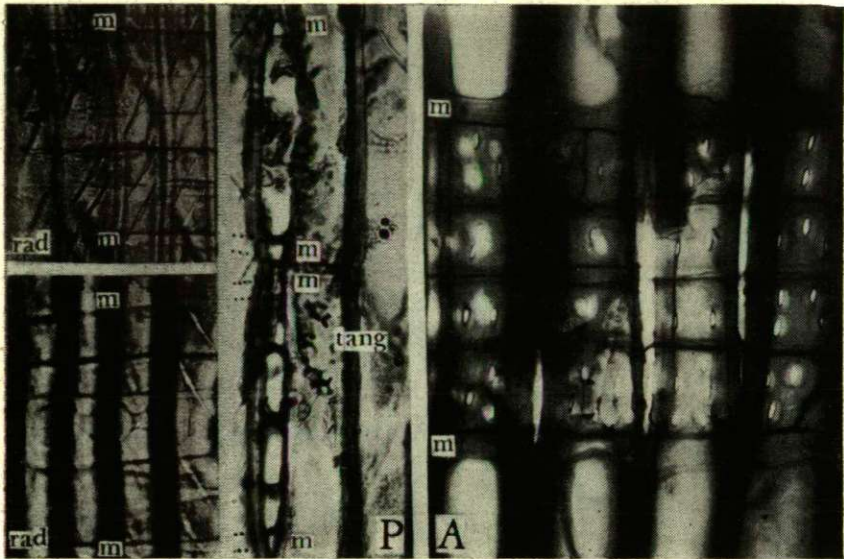


Photo 1. Marginal ray-parenchyma in the *Podocarpus* (P) and in the *Agathis* (A)

Another photo on the lower left side of *photo no. 1.*, made from another place, confirms that when these marginal parenchymas proceed adjacently, they can become connected to one another through vertical laths.

The rays of *gymnospermae* and *angiospermae* may partly be surrounded by transverse tracheids and partly too by parenchyma cells, the pitting of which vary from that of the interior ones. However, the literature up to date does not describe such quite low very thin-walled marginal parenchyma cells occurring within *gymnospermae*.

Such a phenomena can be observed distinctly and always in the case of certain *Podocarpaceae* and *Araucariaceae* species. Once already notified by the author (1).

The right side of *photo no. 2.* shows a radial-section of *Agathis celebica* Warb. x 300. Also this photo clearly illustrates, that the ray is limited like the *Podocarpus vitiensis* Seemann from above as well as from below by a quite thin-walled, low marginal parenchyma cell, without any pitting. The same phenomenon can be detected in the rays of *Agathis beccarii* Warb. and *A. borneensis* Warb. too. All of these point to the fact that the presence of this mar-

ginal ray parenchyma is not an accidental, extraordinary phenomenon, but an interesting feature of certain species, and can be made of good use at the xylotomic determination of different species. However, concerning the more exact task of these marginal ray parenchyma cells, at the present only conjectures can be made.

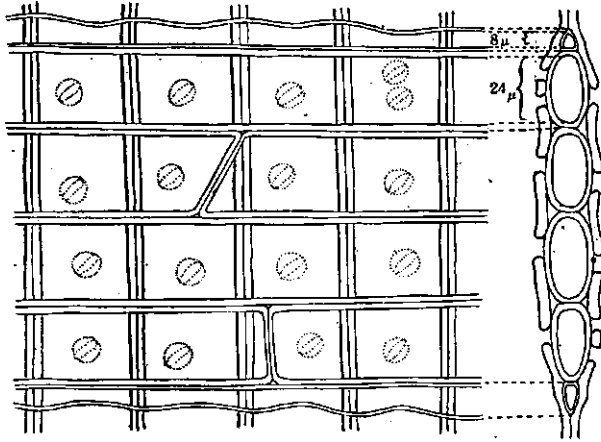


Photo 2.

Content

Sometimes the rays of certain *Araucaria* and *Podocarpus* species have on the top and on the bottom quite low and thin-walled parenchyma cell margins. These are not transverse tracheids, as they do not contain bordered pittings.

Reference

(1) P. Greguss: Identification of living gymnosperms on the basis of xylotomy. Budapest (1955).