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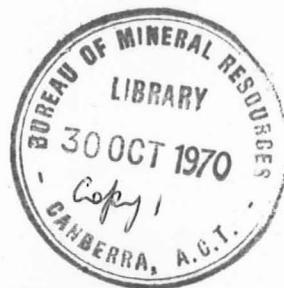
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Report on Petrified Woods from the  
Beaver Lake Area, Prince Charles  
Mountains, Antarctica



by

Mary E. White

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REPORT ON PETRIFIED WOODS FROM THE BEAVER LAKE  
AREA, PRINCE CHARLES MOUNTAINS, ANTARCTICA.

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Report on Petrified Woods from the Beaver Lake  
Area, Prince Charles Mountains, Antarctica.\*

by

Mary E. White

SUMMARY

Petrified wood of two types was sectioned for microscopic examination. The wood is in an excellent state of preservation. Both woods are Gymnospermous, one has pronounced resin canals, the other has none. They differ also in the frequency and depth of medullary rays.

INTRODUCTION

Fossil wood was collected from Locality 3 on map 1 in the Beaver Lake area of Antarctica by A. Medvecky. It was not associated with other fossils at the locality. A Glossopteris flora was collected at the three other localities and this was reported on in Records 1969/100.

Description of Fossil Wood Specimens:

The fossil wood is of two types which can be distinguished readily in hand specimens because of prominent resin canals in the one type. The resin canals appear as circular spots in transverse section and as elongated lenticular patches in tangential and longitudinal sections. The wood is fine-grained and shows annual rings. The second type of wood is without resin canals and the annual rings are close together and the wood exceptionally fine-grained.

\* Collected by A. Medvecky 1968/69. Australian National Antarctic Research Expedition.

Figures 1 and 2 show specimens of petrified wood with resin canals.

FIGURE 1

Specimen F 23268.  
Natural size.  
(negative F 5586).



FIGURE 2.

Specimen F 23267.  
2/3 Natural size.  
(negative F 5585).



A small block of petrified wood of this type was sectioned transversely and tangentially. The slides are numbered 69280370. The wood is seen to be composed of uniform tracheids and medullary rays. The resin canals lie in the autumn wood zones. There is no very dramatic variation in tracheid size at different seasons. The autumn-winter wood is composed of tracheids about half the size of those of the spring wood, but not much smaller than the average during the rest of the growth year. This pattern suggests that growth was slow throughout the year, slowing down towards winter a little and speeding up a little in spring without a very marked rest period. This suggests a uniformly cool climate without much variation.

Figures 3 and 4 show transverse sections on slide 69280370.

FIGURE 3. (Mg. 8x)

Annual ring. Resin canal in autumn wood.

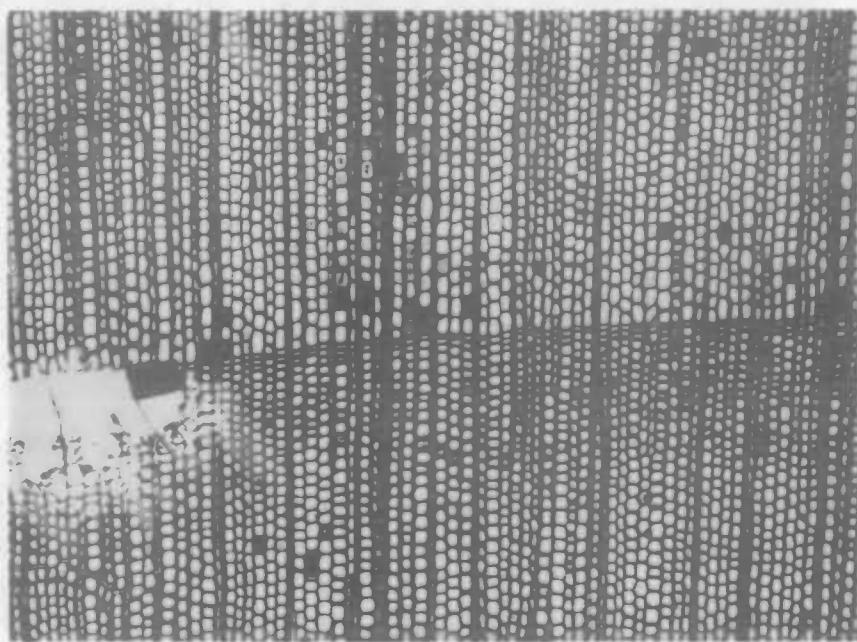
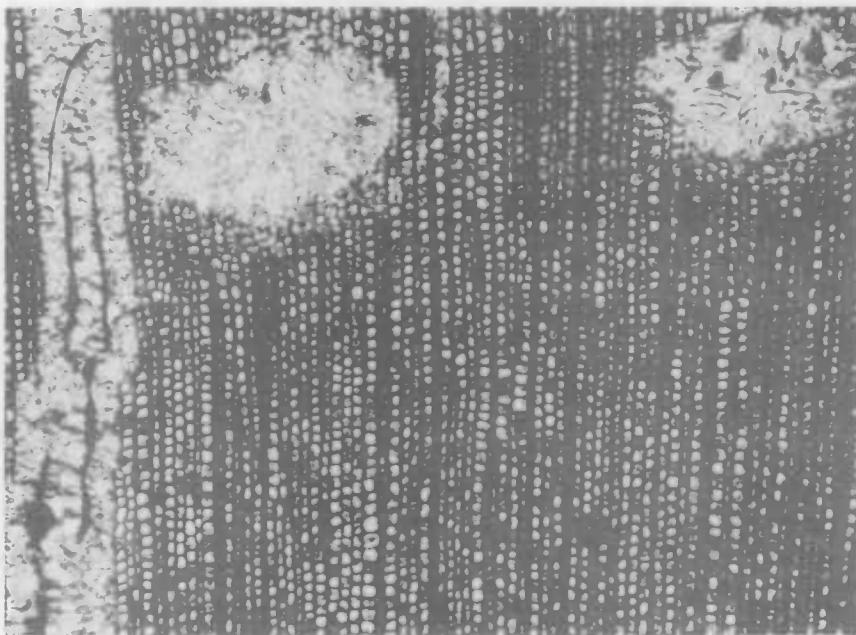


FIGURE 4. (Mg. 8x)

Transverse section.

Annual ring. Two resin canals in autumn wood.  
Resin canal in longitudinal section.



In Figure 5 is part of a tangential section of the specimen. Slide no. 69280370. It shows the medullary rays to be uniseriate, mainly 1 - 3 cells in depth, never more than 6. Multiseriate bordered pits are present on tangential walls of tracheids. As these are not very clearly seen in the photograph, a supplementary drawing has been made - Figure 6 - to illustrate them.

FIGURE 5 (Mg. 8x)

Tangential Section  
Uniseriate medullary rays.

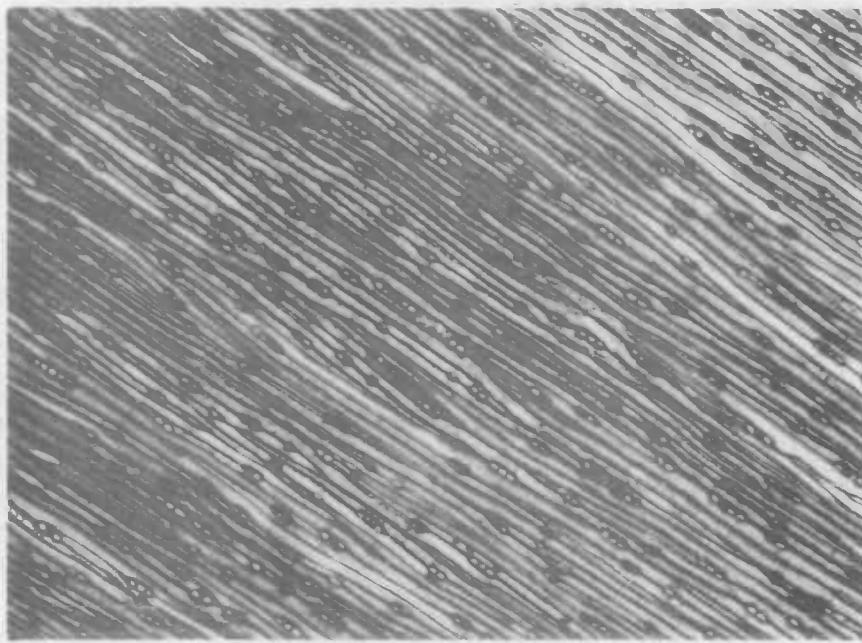
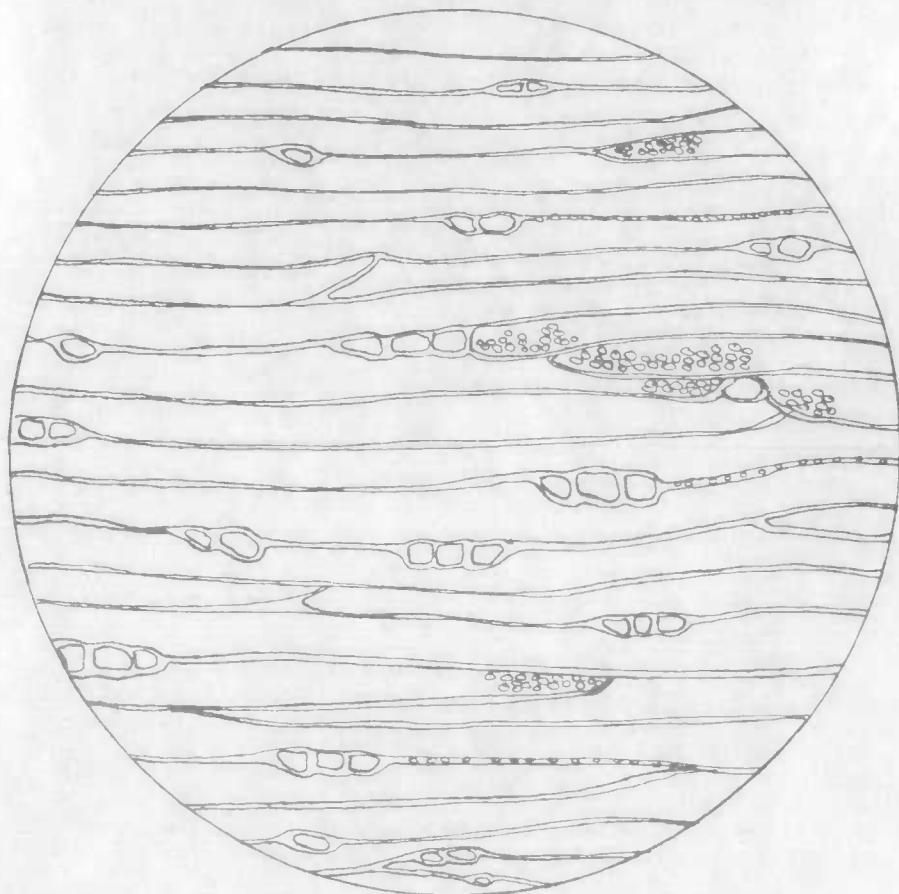


FIGURE 6.

Tangential section showing uniseriate medullary rays.  
Multiseriate bordered pits visible in some areas



A piece of petrified wood of the second type, without resin canals, is seen in Figure 7 of specimen F 23269. (Negative F5587)

FIGURE 7.

Specimen F 23269. Natural size.



There are about forty annual rings in this trunk which has only a  $3\frac{1}{2}$  inch radius. Growth was obviously very slow. Transverse, radial longitudinal and tangential sections were cut from a small block of wood of this type.

Figure 8 shows a transverse section. The annual rings are clearly defined. Autumn wood has heavily lignified, narrow tracheids. The wood has very numerous medullary rays with only two to six tracheids between each pair of rays.

FIGURE 8. (Mg. 8x)

Transverse section.

Annual rings with a clear line at the end of autumn.



Figure 9 shows a tangential section. The very numerous, uniseriate medullary rays are seen. Each medullary ray consists of a number of cells in a straight line.

FIGURE 9. (Mg.8x)

Tangential section.

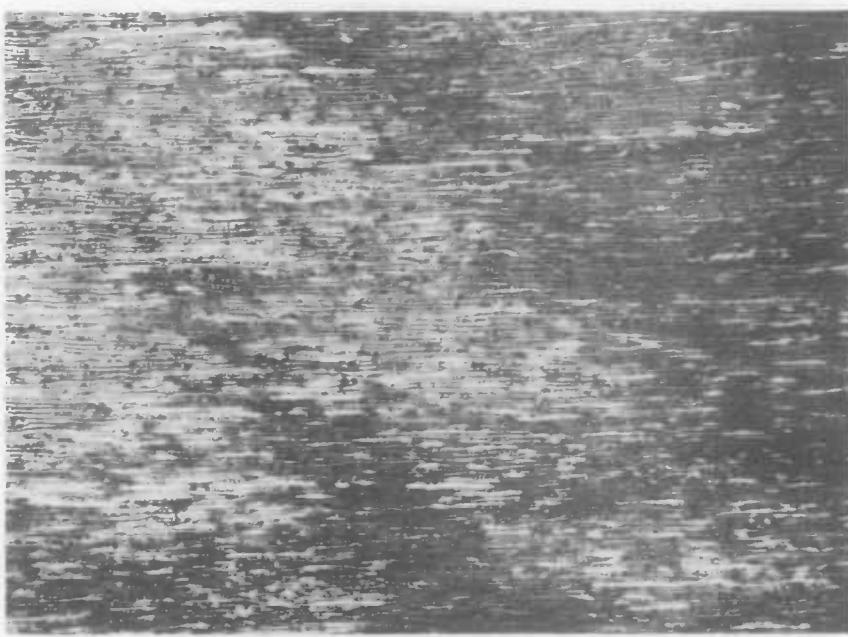
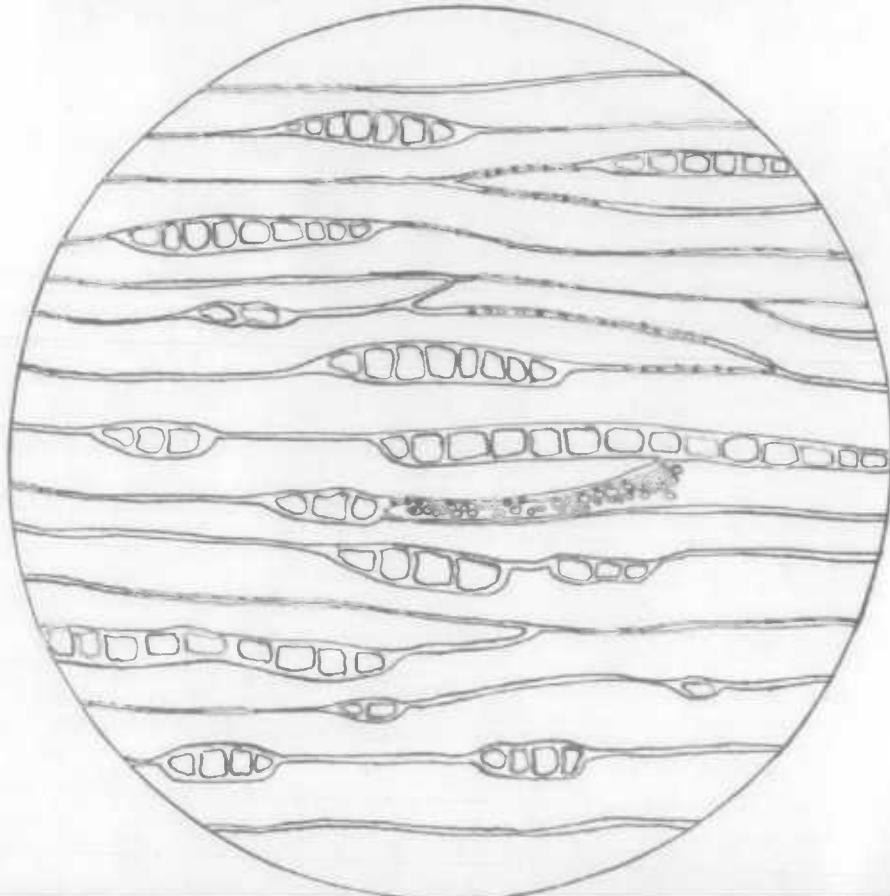


Figure 10 shows an enlarged drawing of part of the tangential section. Multiseriate bordered pits are visible on parts of the tracheids. The multicellular medullary rays are in contrast to the rays of two or three cells which characterised the type of wood which has resin canals.

FIGURE 10

Tangential section. Medullary rays of many cells.



A radial longitudinal section of the wood shows many interesting features.

In Figure 11 is one narrow annual ring about a quarter the length of other annual rings. It is interesting to speculate on the severity of conditions which must have prevailed to curtail growth so drastically.

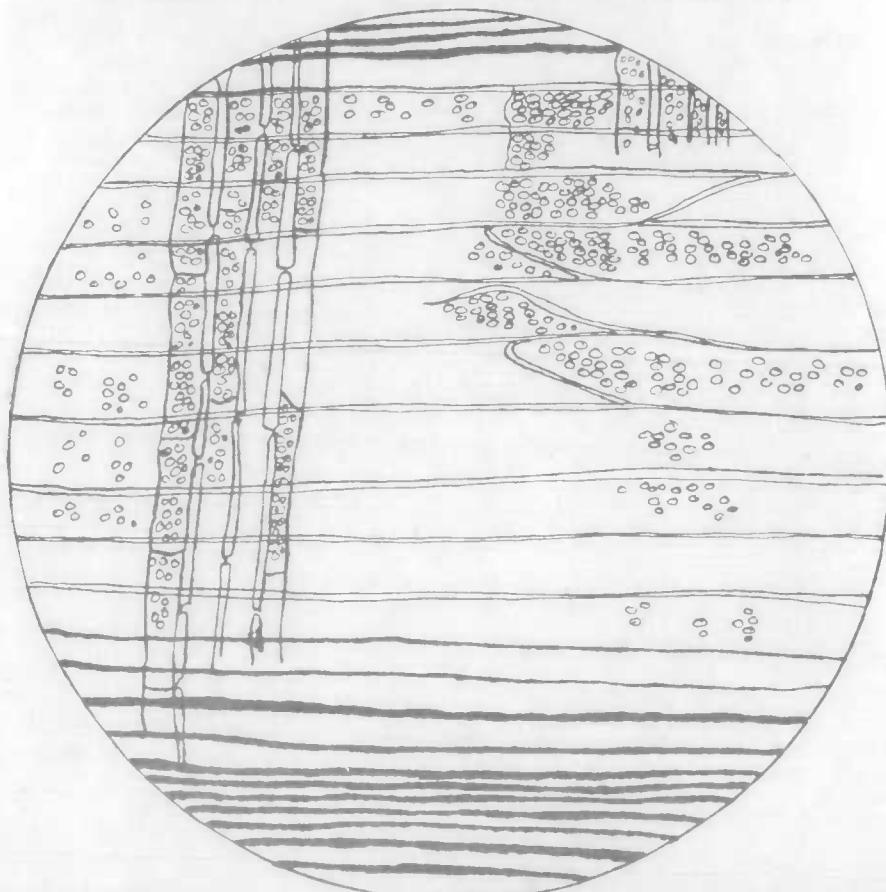
FIGURE 11 (Mg. 8)

Radial longitudinal section.  
Short annual ring in centre.



In Figure 12 an enlargement is drawn of part of the section to show details of cell structure.

FIGURE 12.  
Enlargement of Radial longitudinal Section.



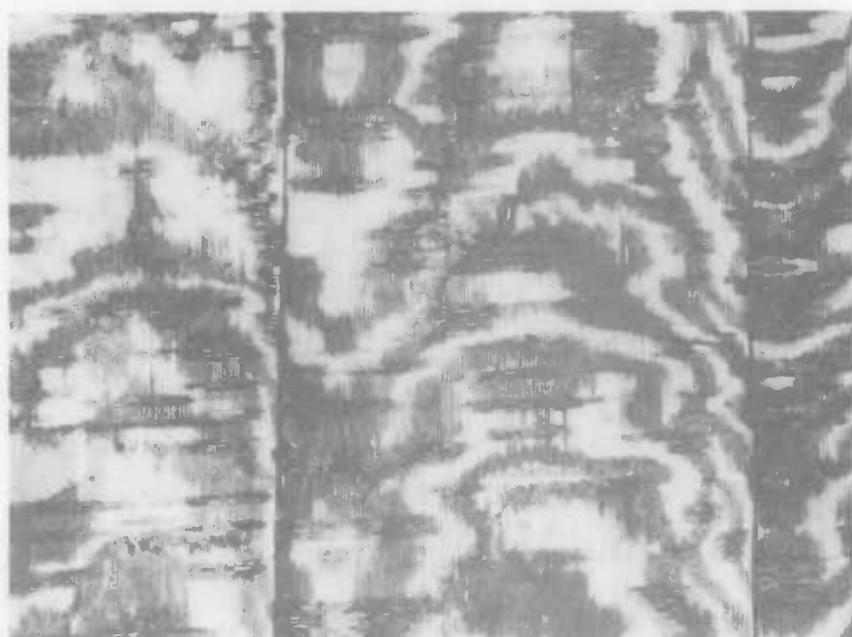
A medullary ray four cells wide runs across the tracheids. The cells of the ray are in the form of filaments with cross connections to each other, not a solid plate of cells. The tracheids of the autumn wood are heavily lignified and narrow. Multiseriate bordered pits are seen on the tangential walls of tracheids. The summer wood has less numerous multiseriate bordered pits irregularly grouped.

Figures 13 and 14 show radial longitudinal sections where annual rings are of regular width.

FIGURE 13 (Mg.x8)



FIGURE 14 (Mg.8x)



CONCLUSIONS

The Gymnosperm nature of the petrified woods under investigation is clearly established. Wood structure is so conservative that no age determinations can be made. Nomenclature is far from satisfactory where isolated wood samples are concerned, and no useful purpose can be served by referring specimens arbitrarily to any of the several genera which could contain them.