

Medullary rays from two to twenty cells high, usually of one row, or occasionally of three rows of cells at the centre. Resin tubes conspicuous in the autumn wood, but not numerous.

Transverse section. Annual ring well defined, the autumn wood about equal to the spring wood. Cells disposed in radial rows, usually about five rows between the medullary rays. Rays somewhat abundant and narrow. The resin passages are not large— $55.7 - 103.8 \mu$ in diameter,—conspicuous and located wholly in the autumn wood, chiefly forming a row on its inner face. Many annual rings wholly destitute of resin passages.

Radial section. The thick walled tracheids of the autumn wood provided with a single row of bordered pits, somewhat irregularly disposed, the outer ring $6.9 - 13.8 \mu$ in diameter. The thin walled tracheids of the spring wood with bordered pits in a single row and often scattering, the outer ring $6.9 - 17.3 \mu$ in diameter. The medullary rays somewhat abundant, the cells rather long and thin walled, and showing pits.

Tangential section. The medullary rays usually composed of a single series of cells, sometimes showing two or three rows at the centre; usually from two to twenty cells high. No pits in the tangential walls.

EXPLANATION OF PLATES.

PLATE II.

Picea crantoni.

- 1.—Transverse section showing demarcation of growth ring, and a medullary ray. $\times 290$.
- 2.—Tracheids showing bordered pits (*a*) of the spring wood, and (*b*) of the autumn wood. $\times 300$.
- 3.—Medullary ray passing through the spring wood, showing structure and pits on radial walls. $\times 290$.
- 4.—Medullary ray passing through the autumn wood, showing pits on radial walls. $\times 300$.
- 5.—Tangential section of medullary rays of the ordinary form. $\times 290$.
- 6.—Tangential section of one of the broad medullary rays. $\times 266$.

PLATE III.

Map showing lake ridges in vicinity of Chicago.