



Cambium

CAMBIUM is a word we see fairly often in technical and semi-technical writings, yet unless we are botanists it may be difficult for us to get a real idea of its tremendous significance.

If it were not for cambium, you would not be reading these printed words, you would not be sitting on your chair before a wooden desk or table, you might be shelterless, perhaps even partly naked.

For cambium is the stuff that makes wood, and it is out of wood that this paper, chair and desk are made, wood that enters importantly into the construction of all but the most fireproof of buildings, wood that is the ultimate raw material of most of the rayon we wear.

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SCIENCE NEWS LETTER

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Cambium is a thin layer of living cells between the bark and the wood of the tree. It may be only one cell thick—at most never more than four or five cells. It sheathes the trunk of the tree and all its branches, out to the ultimate, slenderest twig. It is responsible for all growth in thickness of all trees except palms, tree yuccas, bamboos, and a few strange forms of that kind. All the more familiar sorts—oaks and elms and maples, pines and firs and spruces, owe their mighty trunks and their wide-spreading branches to cambium.

It is a continuous inner garment of the woody part of the tree, woven without seam from the top throughout. It forms a cylinder around the trunk, and divides into smaller cylinders around the branches, as the fingers of a glove divide out from its hand and wrist.

The way it forms new wood and bark

is quite simple. Each cell divides on its inner and outer sides, always practically at the same time as all its neighbor cells, and usually forming new cells of about the same size. These subsequently thicken and harden to wood elements on the inside, into bark on the outside.

In spring, when water is plentiful and growth conditions are generally favorable, the cambium cells swell up large and the new cells they form are likewise large. They form wood cells and vessels with large cavities and thin walls. Later, growth slows down, the cambium cells are smaller, and the cells they form are likewise smaller and have thicker walls. It is this difference between spring and summer growth that makes the alternation between dark and light zones in each annual ring in the wood.

Science News Letter, March 16, 1940

ENGINEERING

Develop New Dustless Copper To Reduce Short Circuits

A NEW type of dustless and sliverless surfaced copper, perfected after 10 years' research and over \$1,000,000 expenditure, was announced by Wylie Brown, president of Phelps Dodge Copper Products Corporation.

The new copper, known as "PDCP", is developed to meet the needs of the electrical industry for a metal free of the imperfections of ordinary copper which now are responsible for the penetration of insulation and for a large percentage of electrical failures through short circuit.

Made without melting from electrolytic cathode copper, the metal is plastically converted under tremendous pressure in a reducing atmosphere at elevated temperatures into smooth dense copper bar, rod, strip, or other desired commercial shape. Basically oxygen-free type is declared to be the only solid copper in the world not melted subsequent to the electrolytic purification process. Vibration and magnetic stress in copper windings in motors and transformers eventually cause ordinary copper imperfections to penetrate insulation.

The greater ductility than ordinary copper permits sharper bends and easier forming and drawing, and the new metal approaches the malleability of gold and has greater conducting power for

electricity. Among successful applications are: High frequency and high voltage transformer windings, high tension and submarine cables, refrigeration and air conditioning installations, airplane and electric locomotive wiring, and railway signal bond cable.

The new patented method eliminates both the casting process and hot rolling. A new manufacturing unit was constructed at the Bayway Mills of the Phelps Dodge Copper Products Corporation at Bayway, N. J., for the exclusive production of the new kind of metal.

Science News Letter, March 16, 1940

A fox is a member of the canine family but its eyes are like those of a cat.

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