

Four months after the trees had had a dose of copper sulphate scattered on the soil around their bases, they were thrifty, healthy and actively growing, their leaves glossy green. Similar "frenched" trees left without a ration of copper were still "frenched" and unhealthy-looking. The leaves of the copper-treated trees, upon examination, proved to have 4.6 times more chlorophyll in them than did the leaves of the untreated trees.

Science News Letter, January 6, 1934

RADIO

Diagram Classifies Radio Tubes

SO MANY vacuum tubes are now manufactured for radio and other electrical uses that a complex graphical diagram for listing and selecting them must be used by engineers, Dr. Harry Rowe Mimno of Harvard University told the Institute of Radio Engineers meeting in Boston.

"During the past two years the number of available types of tubes has increased so rapidly that some radio journals have started 'Tubes of the Month' departments," Dr. Mimno explained.

A method of charting kinds of tubes, devised by a Russian, S. J. Zilitinkevitch, has been adapted to American conditions. Dr. Mimno has classified 125 tubes ranging from the tiny "peanut" tube used in the smallest battery-operated receivers to the larger water-cooled multi-electrode transmitting tubes. Any technician can plot a new tube upon the diagram and then compare its properties with the tubes that he has been using.

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ETHNOLOGY

West African Negroes Have Thirteen Kinds of Marriage

IF YOU think American marriage and divorce are complicated, consider the natives of West Africa.

Thirteen forms of marriage are recognized, Dr. Melville Herskovits of Northwestern University said, reporting what he has learned about marriage and divorce among Negroes of Dahomey. The report was made before the American Anthropological Association in session in Columbus, Ohio.

In some forms of West African marriage, the arrangements call for the husband to assume certain obligations and to have control of the children, if any. In other marriage forms, the wife controls the children, and the husband has no obligation to maintain the family.

If a Dahomean princess marries a commoner, the husband must renounce all claim to the children, for descendants of the royal household must belong to the royal side of the house.

To add to the complications of 13 possible ways of getting married, polygamy is recognized in Dahomey.

Marriage is always proposed by a girl's father, and divorce must always be initiated by her family.

"For a man in Dahomean society to refuse a woman who has been offered to him is boorish," explained Dr. Herskovits, "and should he feel compelled not to accept the offer he must resort to subterfuge."

If he wants a divorce, likewise, he manages it by subtle means. He makes his wife unhappy enough so that she starts the divorce machinery, by asking her family to take her away from her husband.

If a serious quarrel arises among the branches of a family, there may be wholesale divorce affecting many matches, and causing much trouble.

"The multiplicity of marriage types which may obtain in a single culture has not been recognized to the extent that is desirable," said Dr. Herskovits, discussing theoretical significance of his study. "It is possible that such diversity of types may be discovered in other cultures where a single marriage-form has been assumed."

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PLANT PHYSIOLOGY

Roots Grown Free From Tops of Plants

THOUSANDS of growing root tips have been kept alive and increasing rapidly for over a year, without any attachment to their parent plants, and fed only from an artificial liquid medium, at the Rockefeller Institute for Medical Research, New York. The experiment was described by Dr. P. R. White, before the American Society of Plant Physiologists.

The roots used were those of tomato plants. The growing tips were cut off and placed in the nutrient liquid, where they continued to increase and multiply in a manner reminiscent of the famous chicken-heart tissue culture started at the same institution many years ago. One of these tomato-root isolations, Dr. White reported, has produced approximately 20,000 growing points, from an initial fragment less than half an inch long. The ratio of the original bit of material to the resultant growth is expressed by the fraction written as 1 over 10 followed by nineteen zeros, so that there is no doubt that the new growth was made by the roots out of the material present in the liquid medium.

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