

In half-gallon jars of soil the disease usually appears in Turkish tobacco plants soon after the first evidence of nitrogen deficiency in the lower leaves. Frenched plants may be brought back to normal growth by the addition of a complete nutrient solution or by the addition of nitrogen in the form of calcium, sodium or potassium nitrate, ammonium sulfate, urine and other common sources of nitrogen. Recovery will also result when an excised top of a frenched plant is grafted on a healthy plant or when placed in tap water (containing a trace of nitrate) or in a complete nutrient solution or in a weak solution of nitric acid with an excess of calcium carbonate.

Soil which has produced frenched plants rapidly recovers its ability to produce a normal plant if allowed to stand a short time. The removal of one plant from a jar in which two frenched plants are growing will often result in recovery of the other.

These results and others of a similar nature suggest that frenching is brought about when the rate of carbohydrate metabolism proceeds relatively more rapidly than nitrogen absorption. This results in the production of leaf tissue which, in the absence of sufficient available nitrogen, can not develop chlorophyll and other necessary cell constituents as fast as they are required for the production of a normal green leaf.

The marked similarity between the symptoms of apple² and pecan rosette³ and tobacco frenching suggests that the three diseases have a common cause; namely, a deficiency of available nitrogen. This is further strengthened by the fact that nitrates added to the soil bring about rapid recovery of frenched tobacco plants, while organic matter, especially legumes, plowed under has been found to bring about recovery of affected pecan and apple trees in the course of two or three years.

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A WIDESPREAD ERROR RELATING TO LOGARITHMS

THE integral part of a logarithm is commonly called characteristic, while the decimal fraction part thereof is known as its mantissa and is the only part of a common logarithm which is found in the usual modern table of logarithms. In view of the fact that stu-

dents of mathematics frequently meet the word mantissa for the first time when they begin the study of logarithms it may be assumed that some of them are inclined to consult a large dictionary for the purpose of learning something about the origin of this word. If they should happen to look up this term in a recent edition of "Webster's New International Dictionary," or of "The Century Dictionary and Cyclopedia" they would find the statement that the noted British mathematician, H. Briggs, used the term mantissa with its modern mathematical meaning. They would find the same misinformation on consulting the most recent American text-book on the general history of mathematics, for the purpose of obtaining more light as regards the origin of this term.

In view of the fact that this error is so widespread in works which are naturally consulted by many readers with unusual confidence as regards their reliability it may be desirable to note here that as far as is now known the word mantissa was first used as a mathematical term by J. Wallis in the Latin edition of his algebra, 1693. This was more than sixty years after the death of H. Briggs. The word mantissa does not appear in the English edition of this algebra, which was published eight years earlier than the Latin edition and has been said to contain the word in question. J. Wallis used this word with a more general meaning than that noted above, and some very good recent writers, including H. Weber, have followed his example in this respect. Since I have previously directed attention to various errors appearing in F. Cajori's "History of Mathematics," 1919, it gives me pleasure to be able to say here that as regards the term in question his statement on page 152 is essentially correct.

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LITERATURE CITATIONS

MAY I add my bit to the discussion of literature citations from the standpoint of a user. The method of indication of references recommended by *Chemical Abstracts* has a logical sequence of arrangement.

In the case of a typical reference, J. Amer. Chem. Soc. 48, 34 (1926), the first subject of interest is the journal, which thus refers to certain shelves in the library. This leaves a block containing the volume in heavy type or underlined in typewritten or handwritten notes, the page and the year. The volume, and series if more than one, are outstanding because of their location as the first item or items of the block, and because the volume is in heavy face type.

In general the reference is located by the volume number, in only isolated cases by the year. Only when the volume is located is the page reference of

² Morris, O. M., "Apple Rosette," Wash. Agr. Exp. Sta. Bul., 177, 1923.

³ Skinner, J. J., and J. B. Demaree, "Relation of Soil Conditions and Orchard Management to the Rosette of Pecan Trees," U. S. Dept. of Agr. Dept. Bul., 1378, 1926.