

The Electrical Transference of Vitamin B₁ in Aqueous Solution.

WE reported¹ in 1931 that vitamin B₁ in a concentrate, prepared from yeast, migrated to the cathode at pH 8.5 in an electric field. This constituted at that time the only direct evidence for the basic nature of the vitamin, which was supported by a mass of indirect evidence. This appears to be now further corroborated by chemical studies of what appears to be the pure vitamin²:

Recently, however, Sankaran and De³ have called into question our evidence regarding the electrical transference of vitamin B₁. They state that the vitamin has an iso-electric point at about pH 3.0. Although this was considered highly improbable for a variety of reasons, we have re-investigated this question by subjecting a very concentrated preparation of the vitamin, obtained by the fractionation of an extract of rice-polishings to electrophoresis at pH 8.2, essentially according to the method of Sankaran and De, and have corroborated our earlier observation made at pH 8.5. The vitamin migrated to the cathode as tested biologically with rats. The solution in the anode compartment was completely inactive.

The erroneous conclusions of Sankaran and De are perhaps to be ascribed either (1) to their using a suspension of the international standard—a crude "acid clay" adsorbate—for electrophoresis, or (2) to their relying on the measurement of extinction coefficients for the assay of the vitamin, without checking their results by any of the standard biological methods.

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¹ Birch and Guha, *Biochem. J.*, 1931, 25, 1391.

² Windaus, Tschesche and Grewe, *Z. physiol. Chem.*, 1934, 204, 123.

³ Sankaran and De, *Ind. J. Med. Res.*, 1934, 22, 215, 233.

Observations on the Recent Frost Damages.

COLD waves have become rather of regular occurrence since 1929, and this year (1935)

the almost total loss of a promising harvest, has attracted keen attention from scientific standpoint.

Full meteorological data have been kept up at the Station since June 1932. Table I shows the occurrence of two mild cold waves during the first season.

TABLE I.

Days	Max. (F.)	Min. (F.)	Soil temperature at 1' depth (F.)
1932 December 25 ..	70°	43°	75°
1933 January 22 ..	86°	41°	74°
23 ..	86°	42°	74°
26 ..	76°	42°	75°
27 ..	78°	43°	74°
29 ..	76°	41°	73°

Frost for the subsequent years—1934 and 1935—became comparatively very severe and occurred during the same period, *viz.*, 13th to 21st January. The data for these years are graphically represented in Fig. 1.

Observations on the damage done to plants were made almost immediately after each spell. Thus, in addition to cotton and tobacco in 1933, potatoes, cabbage, castor and papayas also suffered to a certain extent in 1934. The intensive study of this year has yielded more exact data regarding the damage. Thus, Cotton (*Gossypium herbaceum* and varieties), *Nicotiana tabacum* (varieties), *Cajanus indicus* and Soya Beans (*Glycine hispida*) were totally destroyed. Others like *Capsicum frutescens* (varieties), *Ricinus communis* (smaller varieties), *Solanum melongena*, *Solanum tuberosum*, *Lycopersicum esculentum* suffered from 95 to 90 per cent. The rest *Saccharum officinarum*, *Brassica oleracea*, *Cuminum cyminum* were affected to varying extents from 45 to 10 per cent. Amongst the few crops that escaped any injury may be mentioned *Allium Cepa*, *Cicir arietinum*, *Linum usitatissimum*, *Triticum sativum*, *Medicago sativa* and *Foeniculum vulgare*.

Amongst the orchard and garden plants that have been affected are *Ficus carica* (100 per cent.), *Carica papaya* (90 per cent.), *Mangifera indica* (10 per cent.), *Anacardium occidentale* (50 per cent.), *Musa paradisiaca* (90 per cent.), *Eranthemum bicolor* (100 per cent.), *Jasminum Sambac* (90 per cent.), *Jasminum arborescens* (90 per cent.), *Tabernaemontana coronaria* (45 per cent.), *Rosa* sps. (10 per cent.) and *Michaelia champak* (10 per cent.).

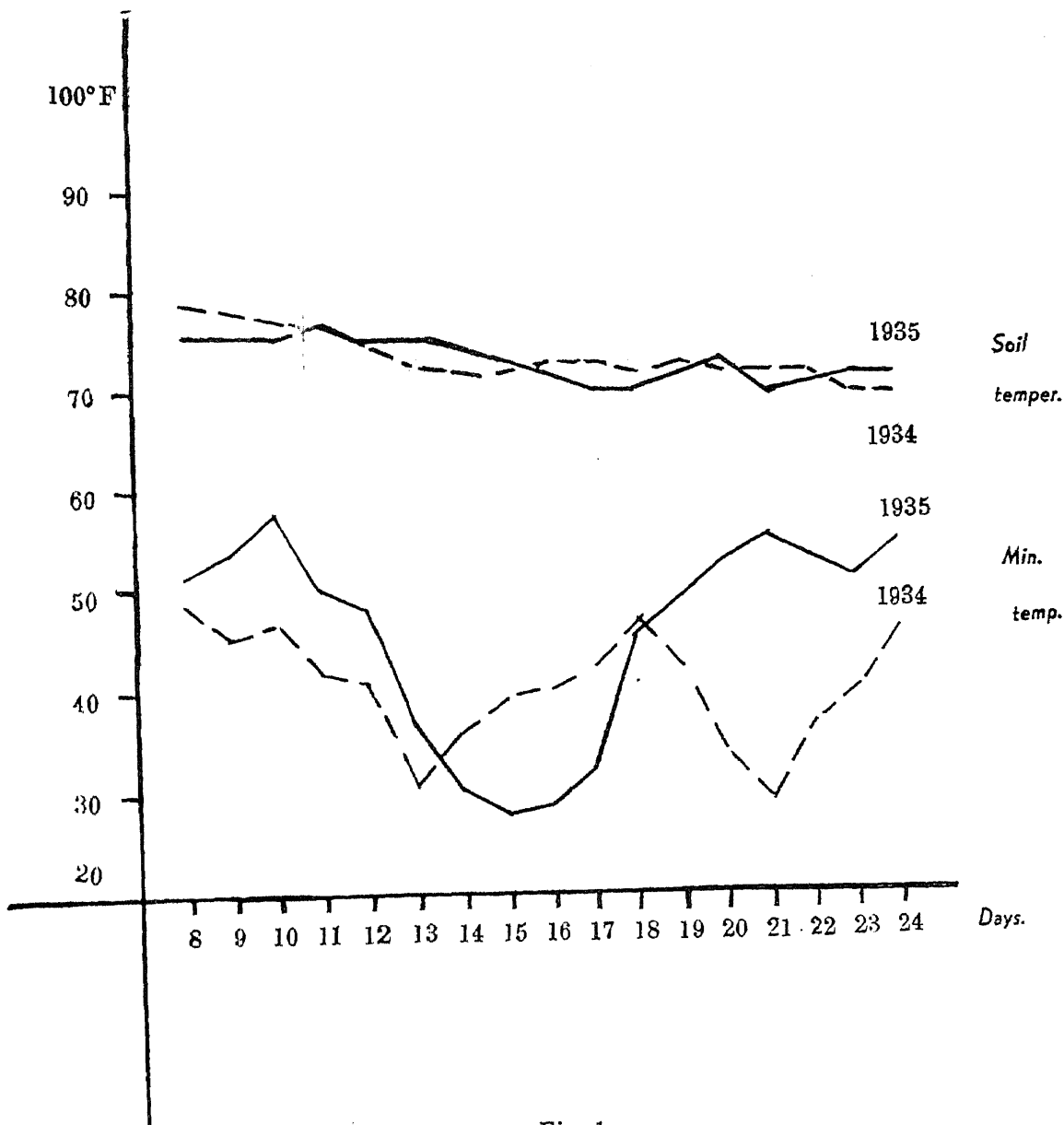


Fig. 1.

Minimum and soil temperatures for 1934-35 during the frost period.

From amongst the weeds *Crotolaria retusa*, *Mallugo hirta*, *Ocimum canum*, *Vioca auriculata* and *Trichodesma zeylanicum* suffered total destruction while the loss to *Celosia argentea*, *Leucas aspera*, *Cassia occidentalis*, *Bergia odorata*, *Cyperus rotundus* and *Phyllanthus Niruri* ranged from 10 to 90 per cent.

It may be noted that the soil temperatures up to 1 foot or below never went below 70° F. and injury had been mostly to the aerial parts of the plants. All the plants sprout fresh after the regain of the normal

temperature but without any economical advantage.

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The Roots of *Psaronius*, Intra-Cortical or Extra-Cortical?—A Discussion.

In a preliminary note with the above title communicated last November to the Indian Science Congress and read before the recent

Calcutta session (January 1935)¹, I wrote as follows:

“In the root-region of *Psaronius* generally two zones can be distinguished: an inner zone of relatively small roots which are very crowded and