vitamin C preparation is identical in chemical and physical properties with hexuronic acid, the iodine titration of orange juice may serve as an indication of the probable vitamin C potency of preserved orange juice. Further investigations on the effect of maturity, variety and treatment on the iodine value of orange juice and other citrus juices are under way and will be reported shortly. A comparison of the formal titration, which has been found by A. Neithammer[3] to give a good indication of the nature of lemon juice, and the iodine titration is also now being studied to determine the probable mechanism of the reactions involved.

M. A. JOSLYN
G. L. MARSH

FRUIT PRODUCTS LABORATORY,
UNIVERSITY OF CALIFORNIA

PROPERTIES OF STARCH FROM TROPICAL AND TEMPERATE CLIMATES

IN a recent article[1] mistakes occur in the description of the temperature of gelatinization of starches produced by plant families of temperate habitats. The text (page 190) gives this "gelatinization temperature as from 50° to 90° C.," and to have "higher gelatinization temperatures than starch from tropical plant families." It is also stated "that the high temperature of gelatinization of temperate starch corresponds to the higher melting points of hydrocarbons, acids, alcohols, esters and saponins of temperate climates." These three errors are repeated in the summary of the paper on page 192.

The chart on page 189 of the article shows the gelatinization temperatures of starches examined from temperate plant families to extend from 50° to 65° C. This is correct according to the evidence presented by Reichert and McNair, to which references are cited in the paper. As a consequence starches from the examined plant families of temperate habitats have *lower* gelatinization temperatures than starches examined from tropical plant families. Likewise, the *low* temperature of gelatinization of the temperate starches examined *does not* correspond to the higher melting points of hydrocarbons, acids, alcohols, esters and saponins of temperate climates.

It is not to be concluded that all temperate starches necessarily have lower gelatinization temperatures than all tropical starches, nor is it to be concluded that all tropical starches of necessity have higher gelatinization temperatures than all temperate starches. The observation is confined at present to the average values of those starches analyzed by Reichert.

It is of interest to note that both temperate starches and temperate glycerides have higher iodine values than tropical, and that the low gelatinization temperatures of starches coincide with the low melting points of temperate glycerides.

JAMES B. MCNAIR

CHICAGO, ILLINOIS

WATER SOLUBLE MAGNESIUM IN SOILS

SINCE April, 1923, the writer has studied a so-called phosphorus deficiency in highly calcareous soils classified as belonging to the Bearden series as mapped in Cass County, North Dakota. Although many areas of these Bearden soils have the most desirable physical characteristics of any of the soils of the Red River Valley and are admirably adapted to general farm crops, alfalfa yields are not considered satisfactory. Since February, 1928, the writer suspected the presence of water soluble magnesium salts as a factor in this apparent lack of fertility.

A note by Ruigh (*J. A. C. S.*, 51–1456, 1929) suggested a method for the determination of water soluble magnesium in soils. It is briefly: 5 cc of a 1 to 5 water extract of soil is made slightly acid with dilute hydrochloric acid. One drop of a dilute solution of p-nitrobenzeneazoresorcinol is added. When this mixture is made alkaline with sodium hydroxide, a sky-blue lake is formed. Yields of alfalfa and sweet clover grown on soils, which develop this lake from a 1 to 5 water extract, have been markedly increased by the application of superphosphate. The writer is continuing the development of this test as an indicator of water soluble and exchangeable magnesium in highly calcareous soils. The method is simple, rapid and sensitive.

JAMES E. CHAPMAN

NORTH DAKOTA EXPERIMENT STATION,
FARGO

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A NEW MULTIPLE-UNIT ELECTRODIALYSIS APPARATUS

DURING the last decade the principle of electrodialysis has found extensive application in the various fields of science. Intensive studies have been made to develop technique and apparatus which will broaden the usefulness of the process and insure greater reliability for the results secured.

[3] *Z. Untersuch. Lebensm.*, 59: 420, 1930.

[1] James B. McNair, "Some Properties of Plant Substances in Relation to Climate of Habitat—Volatile Oils, Saponins, Cyanogenetic Glucosides and Carbohydrates," *American J. of Botany*, xix, pp. 168–193, 1932.