When the frequency is near the critical value large anomalous effects occur. For example, the wave may be required to travel over a widely different path by a slight change in either the magnetic field or the ion density. The signal may arrive at the receiver from several directions simultaneously or successively, producing fading or apparent change of direction. The absorption may become extremely high for certain rays.

The detailed theory, with its predictions, will be published soon.

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CARBOHYDRATE STORAGE IN THE ENDOSPERM OF SWEET CORN

A STUDY of carbohydrate storage in the immature endosperm of sweet and waxy sweet corn has disclosed a kind of cell content not previously reported. It is a globule of cytoplasmic origin which stains red with iodine.[1] As these globules increase in size, smaller grains of solid carbohydrate are usually found within them.

The larger grains of carbohydrate, which occur both within the globules themselves and in the cells where the latter are not found, are compound and irregular in shape. There also are smaller, simple grains, ranging in size almost from the limit of visibility upward. In free-hand sections, these are found particularly in the globules and the globule-containing cells. The compound nature of the larger grains is the same in all the sweet corn studied, including the "pseudostarchy" type and has been described in one variety by Mottier in 1921.[2]

The grains of solid carbohydrate in ordinary (non-waxy) sweet corn, whether contained in globules or not, are of starch, and stain blue with iodine, whereas those in waxy sweet corn stain red. This red reaction of iodine with the carbohydrate present in the endosperm of waxy corn was reported by Weatherwax[3] in 1922. The fact that the reaction of the endosperm with iodine is similar in waxy and in waxy-sweet corn due to the nature of the grains of solid carbohydrate was reported by Kempton[4] in 1923. The identity of this carbohydrate has not been definitely determined. However, the further facts that it occurs in grains similar in form and development to the starch grains in non-waxy corn, and that these grains are digested by diastase[3] and are bright with a dark cross in polarized light, support Weatherwax in calling it a dextrin. They also indicate that it is related closely to starch.

The liquid portion of the globules apparently also is a dextrin, but nearer to sugar than are the grains of red staining carbohydrate. It is colloidal, stains red with iodine, is precipitated by alcohol and is digested by diastase. About one half of the polysaccharide content of the endosperm of sweet corn is in the form of globules, except in "pseudostarchy" corn in which there are fewer globules. The liquid portion of the globules probably is identical with the water-soluble polysaccharide obtained in analyses of immature sweet corn kernels by Culpepper and Magoon.[5] It has not been possible to isolate the globules from mature kernels of sweet corn. The membrane of the globule apparently disintegrates, the unaltered liquid portion becoming free within the cell. The nature of the membrane is unknown.

The globules of liquid carbohydrate and the grains of solid carbohydrate appear to develop from plastids imbedded in the cytoplasm. The origin and course of development of these plastids is the same in the endosperm of all the sweet corn studied. The larger granules in the cytoplasm, which may be called proplastids, show a conspicuous but temporary clumping about the nucleus during their development into plastids. This continues until the initiation of polysaccharide storage, at which time differentiation in the plastids is evident.

The kind of carbohydrate stored in the cell is governed by the genetic complex of the kernel. The recessive factor *su,* essential to the production of sweet endosperm, determines the development of the globules in both ordinary sweet and waxy sweet corn, together with the compound character of the larger grains of carbohydrate, and the reduced size of the simple grains. The carbohydrate of the grains in ordinary sweet corn, whether contained in the globules or not, is starch and is determined in development by the dominant factor *Wx.* The carbohydrate of the grains in waxy-sweet corn is determined in development by *wx,* which is essential to the production of their waxy character.

The development of the grains and of the globules in sweet corn apparently proceeds in a definite, orderly course up to the maturation of the endosperm. The accumulation of the liquid portion of the globules precedes the appearance of the carbohydrate grains within them and a surplus of this liquid is present at

[1] An aqueous solution of iodine in potassium iodide was used.

[2] Mottier, D. M., *Ann. Bot.,* Vol. 35, p. 357, 1921.

[3] Weatherwax, Paul, *Genetics,* Vol. 7, pp. 568–572, 1922.

[4] Kempton, J. H., SCIENCE, n. s., Vol. 57, pp. 556–557, 1923.

[5] Culpepper, C. W. and Magoon, C. A., *Jour. Agr. Res.,* Vol. 28, pp. 423–425, May, 1924.

all times. There is no evidence from our studies of a reversal of these processes or of any hydrolysis of the carbohydrate grains after they are formed. So far we have not found an intermediate polysaccharide not associated with the globules either in ordinary sweet corn, or in waxy sweet corn.

A more detailed description of carbohydrate storage in the endosperm of corn together with the experimental data will be published later.

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

ORGANIZATIONS RELATED TO BOTH ZOOLOGY AND BOTANY AT THE WASHINGTON MEETING

(Reports for Sections F and G appeared in Science for February 6 and reports for the two corresponding groups of societies appeared in Science for February 27 and March 6)

The American Society of Naturalists

President, William H. Howell.

Secretary, A. Franklin Shull, University of Michigan, Ann Arbor, Mich.

(Report by A. Franklin Shull)

The American Society of Naturalists held sessions on only one day, Thursday. The morning session was devoted to an address by Dr. John C. Merriam, of the Carnegie Institution of Washington, on "Time and space as factors in the problem of evolution." In the afternoon was given a symposium on "Growth," participated in by Dr. Charles R. Stockard, with a paper on "The nature of growth from the standpoint of its deviations," and by Dr. D. T. MacDougal, who spoke on "Conditions of accretion and distention of plant cells." Two other papers, by Dr. Alexis Carrel and Dr. Lafayette B. Mendel, respectively, had been arranged for, but the speakers were unable to attend the meetings. The naturalists' dinner in the evening was followed by an address by the president, Professor William H. Howell, on "Theories of inhibition."

The Ecological Society of America

President, Edgar N. Transeau.

Secretary, A. O. Weese, University of Oklahoma, Norman, Okla.

(Report by A. O. Weese)

The society held sessions on four days beginning Monday, December 29. The opening session on Monday afternoon was a symposium on "Soil reaction," the chief participants in which were Frederick V. Coville, W. P. Kelley, C. S. Scofield and E. T. Wherry. The attendance at this session taxed the capacity of the meeting room and indicated widespread interest in this comparatively new field. The Wednesday afternoon symposium on "The plant and animal ecology of the coastal plain" was the second of a series, the first (on "The ecology of the Ohio region") having been held at Cincinnati this year. The interest aroused makes it probable that the series will be continued at Kansas City next year. Joint sessions were held with the Entomological Society of America on Tuesday, with the Botanical Society of America on Wednesday, and with the American Society of Zoologists on Thursday. Among the more important reports received at the business sessions were those of the representatives of the society on the Council of the Union of Biological Societies, that of the delegate to the National Conference on Outdoor Recreation and that of the representative on the Council on National Parks, Forests and Wild Life. Report of progress was made by the Glacier Bay Committee, and the editorial committee of the *Naturalists' Guide* reported that the manuscript of this important work had been turned over to the publisher. The Committee on the Preservation of Natural Conditions will continue its efforts to establish and protect natural areas. The officers elected for the coming year are: *President,* A. S. Pearse, University of Wisconsin; *vice-president,* J. E. Weaver, University of Nebraska; *secretary-treasurer,* A. O. Weese, University of Oklahoma. The representatives of the society in the Council of the American Association will be E. N. Transeau and W. C. Allee.

The American Microscopical Society

President, B. H. Ransom.

Secretary, Paul S. Welch, University of Michigan, Ann Arbor, Mich.

(Report by H. J. Van Cleave)

The forty-third annual meeting of the American Microscopical Society was held on December 31. Reports of officers comprised the chief business. Secretary Paul S. Welch tendered his resignation. In accepting the resignation, the society extended to Professor Welch a vote of appreciation. The following officers were elected: *President,* C. O. Esterly, Occidental College, Los Angeles; *first vice-president,* E. M. Gilbert, University of Wisconsin; *second vice-president,* A. M. Chickering, Albion College; *secretary,* H. J. Van Cleave, University of Illinois, for three