

need no setting forth. The search for them is one of the imperatives with those who experiment or those who cultivate plants and once begun becomes fascinating—indeed irresistible. The seeker is so seldom rewarded—correlations are not common phenomena—that haste may be pardoned in publishing a discovery.

This spring a most striking correlation in the peach, which seems not to have been noted before, came to the attention of the writer. In the work of describing the flowers of a considerable number of varieties of peaches, Mr. Charles Tubergen, of the horticultural department of this station, found that there was a somewhat remarkable difference in the color of the inside of the calyx cups of different varieties. In some of the blossoms the color of the inner surface of the cup was green, usually a light green but varying somewhat in different varieties. In other varieties the cellular tissue of the inner part of the cup was a deep orange in color—not the surface alone but the tissue to the depth of several layers of cells was orange. In no other part of the calyx, the blossom, or the plant, in the spring of the year, does there appear to be a similar color.

Upon investigation it was found that the flowers having the green cup were those of the white-fleshed varieties while the blossoms with the orange cup were those of the yellow-fleshed ones. We were able to observe the character in two trees each of 307 varieties of peaches and of 47 varieties of nectarines. Of the peaches 145 varieties were white in flesh and green inside the calyx-cup; 162 were yellow in flesh and orange inside the calyx-cup. In the nectarines white and green were correlated in 36 and yellow and orange in 11 varieties.

In neither peach nor nectarine are there intermediates in color of calyx-cup or in flesh of fruit. The parentage of a sufficient number of the varieties examined is known to make it certain that green calyx-cup with white flesh and orange calyx-cup with yellow flesh are each inherited as one in cross-breeds.

What is the explanation of this hidden connection between colors in two organs of the peach which are not only quite distinct but which appear on the plant in periods as widely separated as blooming-time and fruiting-time? The correlations are so constant and their hereditary behavior is such as to suggest that each is a single color character diffused through the flesh of the peach fruit and the inner tissue of the calyx cup. Surely the two organs in which the correlation appears are morphologic units but the capacity to produce the same color, differing probably only in degree in the parts in which it is found, and at widely different times, must be conceived to be a physiologic unit. If so, why localized in these two organs and not generalized throughout similar tissue in other parts of the plant as correlated colors generally are?

This correlation has some practical value in peach-breeding, since it will often enable the breeder to tell a year or two sooner than he otherwise could what color of flesh his peach will have since the first blossoms seldom set fruit; it is of material value in classifying peaches—adding another very constant taxonomic character; through its uses for the breeder and the systematist it becomes ultimately of considerable value to peach-growers. Lastly, it seems to the writer to have value in throwing light on current conceptions of morphologic and physiologic units in plants and also presents a problem to be explained as to why there is a localization of a particular color in two quite distinct organs.

U. P. HEDRICK

NEW YORK AGRICULTURAL
EXPERIMENT STATION,
GENEVA, N. Y.

MICHIGAN ACADEMY OF SCIENCE

THE Michigan Academy of Science held its nineteenth annual meeting at Ann Arbor on April 2, 3 and 4.

The following is the program as given at the meeting. The numbers marked with a star will be published in the Fifteenth Annual Report of the Michigan Academy of Science.

*"The Porcupine Gold Deposits of Ontario," Mr. R. E. Hore.

SECTION OF SANITARY AND MEDICAL SCIENCE

Thursday, April 3

*"Ferments," Dr. J. G. Cumming.

*"A Bacterial Disease of the Larva of the June Bug (*Lachnosterna* sp.)," Miss Zae Northrup.

"Duration of Tr. Gambiense Infection in Rats and Guinea-pigs," J. F. Morgan.

*"The Environment of Soil Bacteria," Dr. F. H. Hesselink van Suchtelen.

*"The Influence of *Bacterium Lactis Acidi* on the Changes caused in Milk by some of the Common Milk Microorganisms," C. W. Brown.

"The Use of Chlorinated Lime for the Disinfection of Drinking Water," Dr. M. L. Holm and E. R. Chambers.

*"Ozone as a Means of Water Purification," R. W. Pryer.

"Toxic Bases in the Urine of Parathyroidectomized Dogs," W. F. Koch.

"Serum Tests in the Diagnosis of Infectious Abortion of Cattle," Dr. E. T. Hallman.

"The Increase of Hog Cholera Virus by Intraperitoneal Injections of Salt Solution," W. S. Robbins.

"Studies in Avian Tuberculosis," L. R. Himmelberger.

"The Sensitizing Group in the Protein Molecule," Dr. V. C. Vaughan.

"Immunization against Tr. Brucei with Cultures," Dr. F. G. Novy.

"Determination of Minimum Lethal Dose of Tr. Brucei," C. A. Behrens.

"Cultivation of Spirilla," P. H. de Kruif.

*"Secret Remedies, Nostrums and Fakes," Dr. W. S. Hubbard.

SECTION OF ECONOMICS

Thursday and Friday, April 3 and 4

"The London Dock Strike of 1912," Carl E. Parry, of the University of Michigan. Discussion opened by W. H. Hamilton, of the University of Michigan.

*"Farm Organization as a Factor in Rural Economics," Wilbur O. Hedrick, of Michigan Agricultural College. Discussion opened by Edward D. Jones, of the University of Michigan.

"The Sphere of Pecuniary Valuation," C. H. Cooley, of the University of Michigan. Discussion opened by Frank T. Carlton, of Albion College.

*"Psychological Antithesis of Socialism," H. A. Miller, of Olivet College.

GENERAL PROGRAM

Presidential address, by Professor E. C. Case: "The Geological History of Michigan."

Reports on the work of the Michigan Geological and Biological Survey, by R. C. Allen, director, and A. G. Ruthven, chief naturalist.

Papers on Eugenics

"Eugenics," Professor Victor C. Vaughan, department of medicine, University of Michigan.

"The Biological Aspect of Eugenics," Professor A. Franklin Shull, department of zoology, University of Michigan.

Public address, "Travels in Mexico," by Professor Charles J. Chamberlain, department of botany, University of Chicago.

The Research Club of the University of Michigan gave a smoker to the members of the academy in the rooms of the University Club, Memorial Building.

SECTION OF GEOLOGY AND GEOGRAPHY

Thursday, April 3

*"Origin of Continental Forms, IV.," Dr. Howard B. Baker.

*"Studies in Structure and Stratigraphy in the Saginaw Valley in Relation to Occurrences of Oil and Gas," Mr. R. A. Smith.

"Climatic Variation in Permian Times as recorded in Red Beds of Texas," Professor E. C. Case.

"The Discovery of Illinoian Till in the Detroit River Region," Professor W. H. Sherzer.

"The History of Lake Erie in Post-Glacial Time," Mr. Frank B. Taylor.

"Further Studies on the Variation of the Angle of the Optic Axes, with Temperature," Professor E. H. Kraus.

"Vanadiferous Pyroxenes from Libby, Montana," Professor W. F. Hunt.

"Some Pro-Glacial Lake Shore Lines of the Bellevue Quadrangle, Ohio," Professor Frank Carney.

"Some Problems in Stratigraphy and Correlation of the Pre-Cambrian Rocks of Michigan," Mr. R. C. Allen.

(a) "Results of Leveling along the Algonquin Beach in the Northern Peninsula in 1912," (b) "Order of Development of Glacial Lakes in the Great Lakes Region," (c) "Centers of Dispersion and Probable Extent of the Kansan and Pre-Kansan Drifts," Mr. Frank Leverett.

"The Chemical Composition of Bornite," Professor E. H. Kraus and Mr. J. P. Goldsberry.

"The Teaching of Economics in the High School." Discussion opened by J. E. Mitchell, of Alma College, and F. M. Taylor, of the University of Michigan.

*"The Taxation of Local Public Utilities in Michigan," E. H. Ryder, of Michigan Agricultural College.

"Public Utility Accounting in Michigan," David Friday, of the University of Michigan. Discussion opened by H. C. Adams, of the University of Michigan.

SECTION OF ZOOLOGY

Thursday, April 3

"Factors Governing Local Distribution of the Thysanoptera," A. F. Shull.

"Results of the Mershon Expedition to the Charity Islands, Lake Huron Coleoptera," A. W. Andrews.

"Types of Learning in Animals," J. F. Shepard.

"The Lepidoptera of the Douglas Lake Region, Cheboygan County, Michigan," Paul S. Welch.

"Check-list of Michigan Lepidoptera. II. Sphingidæ (Hawk Moths)," W. W. Newcomb.

*"On the Breeding Habits of the Log Perch," Jacob Reighard.

"A List of the Fish of Douglas Lake, Cheboygan County, Mich., with Notes on their Ecological Relations," Jacob Reighard.

"May the Remains of Adult Lepidoptera be Identified in the Stomach Contents of Birds?" F. C. Gates.

"The Mitochondria," R. W. Hegner.

"The Unione Fauna of the Great Lakes," Bryant Walker.

"Notes on the Genus *Edaphosaurus* Cope," E. C. Case.

"Methods of Preparing Teleost Embryos for Class Use" (demonstrations), B. G. Smith.

*"An Adult *Diemyctylus* with Bifurcated Tail," B. G. Smith.

"Notes on the Mollusks of Kalamazoo County, Mich.," Harold Cummins.

*"Sarcoptid Mites in the Cat," Harold Cummins.

*"The Origin of Continental Forms, III.," Howard Baker.

"An Ecological Study of the Birds of Manchester, Mich.," F. Gaige.

"Notes on Crustacea Recently Acquired by the Museum of Natural History of the University of Michigan," A. S. Pearse.

"Distribution of Multiple Embryos on the Blastoderm," O. C. Glaser.

*"Nesting of Our Wild Birds," Jefferson Butler.

*"The Factors that Determine the Distribution of *Boleosoma nigrum* in Douglas Lake, Cheboygan County, Mich.," H. V. Heimbürger.

"Structure of the Olfactory Organs," E. W. Roberts.

"A Method of Producing Cell-like Structures by Artificial Means," E. W. Roberts.

"Some Notes on Rhizopods from Michigan," E. W. Roberts.

"An Interesting Form of Protozoa," E. W. Roberts.

*"Oxygen and Carbonic Acid Contents of Douglas Lake, Cheboygan County, Mich.," D. A. Tucker.

"Some Observations on *Asplanchna amphora*," D. A. Tucker.

"Some Effects of Sunlight on the Starfish," H. M. MacCurdy.

"Some Abnormalities Observed in Proteocephalid Cestodes," G. LaRue.

"Note on a Cestode Found in a Garter Snake," G. LaRue.

*"Some Observations on Intestinal Villi," O. M. Cope.

"Some Physiological Changes in the Lamprey Egg after Fertilization," P. Okkelberg.

"A Collection of Fish from Houghton County, Mich.," T. L. Hankinson.

"The Lagoons and Ponds of Douglas Lake, Cheboygan County, Mich.," H. B. Baker.

"The Shiras Expeditions to Whitefish Point, Mich.": (1) "Birds," N. A. Wood. (2) "Mammals," N. A. Wood. (3) "Amphibians and Reptiles," Crystal Thompson and Helen Thompson.

"Notes on the Ornithology of Clay and Palo Alto Counties, Iowa," A. D. Tinker.

"A Check-list of Michigan Mammals," N. A. Wood.

"The Variations in the Number of Vertebrae and Ventral Scutes in the Genus *Cegina*," Crystal Thompson.

"An Artificially Produced Increase in the Proportion of Male Producers in *Hydatina senta*," A. F. Shull.

SECTION OF BOTANY

Thursday, April 3

"Biometric Studies in Oaks" (with lantern), Carl Oberlin.

"Biometric Studies in Oaks" (with lantern), J. H. Ehlers.

"The Origin of *Capsella arachnoidea*" (with lantern), Henri Hus.

*"The Antitoxic Action of Chloral Hydrate upon Copper Sulphate for Pea Seedlings," R. P. Hibbard.

*"Improved Methods for the Quantitative Determination of Dilute Solutions of Electrolytes," R. P. Hibbard.

"Effect of Illumination on the Twining of Plants," F. C. Newcombe.

"Conditions for the Diageotropism of *Asparagus plumosus*," Margaretta Packard.

"A Heterotrophic Mycorrhiza" (with lantern), Walter B. McDougall.

*"Some Notes on the Black Knot of Plums," J. A. McClintock.

"Some Further Observations on *Sclerotinia*," J. B. Pollock.

"A Sand-binding Fungus," J. B. Pollock.

"The Relic Dunes of Little Point Sable" (with lantern), W. E. Praeger.

*"The Pine Hills at Lowell, Mich." (with lantern), Bert E. Quick.

"Plants observed on Mackinac Island in 1912," C. K. Dodge.

*"The Flora of Parkdale Farm, Rochester, Mich.," O. A. Farwell.

"The Early Extent of Prairies in Southern Michigan," H. A. Gleason.

*"Notes on a Few Plants from the Vicinity of Ann Arbor," H. A. Gleason.

*"Car-window Notes on the Vegetation of the Upper Peninsula," R. M. Harper. Read by H. A. Gleason.

*"Permanent Vegetation Quadrats at Douglas Lake," Ada K. Dietz.

*"Rôle of Vegetation of a Mill Pond" (with lantern), F. A. Loew.

*"Key to the Species and Varieties of *Solidago*, in Michigan," C. H. Otis.

*"An Easy Formula for Obtaining Alcohols of any Strength," Richard de Zeeuw.

"Lipolytic Action in a Rust," G. H. Coons.

"Soft Rot of the Hyacinth," G. H. Coons.

RICHARD DE ZEEUW,
Secretary

EAST LANSING, MICH.

SOCIETIES AND ACADEMIES

THE BOTANICAL SOCIETY OF WASHINGTON

THE eighty-ninth regular meeting of the Botanical Society of Washington was held in Assembly Hall of the Cosmos Club, at 8 P.M., Tuesday, May

6, 1913, with twenty-four members and two guests present.

The following papers were presented:

The Effect of the Recent Freeze in California (with lantern): Dr. DAVID GRIFFITHS.

Dr. Griffiths discussed the effect of the January freeze on vegetation of the southwest, with special reference to California. The main regions where tropical and subtropical things are being grown were visited. He showed 40 slides made from negatives taken in February and March, showing injuries to citrus fruits, avocados, cherimoyas, mangoes, carobs, acacias, olives, eucalyptus, etc.

While the temperatures were unusually low, there are indications that they have been lower in the remote past. That such cold spells of weather are very infrequent is proved by the fact that such natives as *Rhus laurina*, eriogonums and other natives in California, and the giant *Cereus*, *cholla*, *Celtis*, *Olneya*, etc., in southern Arizona, are severely injured. Many introduced trees which have attained a diameter of three feet have been killed outright.

Injuries were very severe throughout all of the citrus regions, but even where the temperatures went to 10-17° F. in general throughout a region, an occasional orchard situated upon an abrupt elevation above the general plain escaped with even unfrozen fruit. Owing to differences in elevation, air-drainage and exposures, conditions are exceedingly varied and present some of the most important problems in connection with the relation of climatic conditions to crop development. At no time in the present generation has there been such an opportunity to determine the adaptability of the scores of introduced plants of the Pacific Coast region. Through some of the various agencies operating in agricultural lines a careful survey should be made the present season to systematize and place on record the results of a condition which, although of infrequent occurrence, is nevertheless of the utmost scientific and economic import.

The Method of Types Applied to the Nickernut:

Mr. H. C. SKEELS.

Mr. Skeels called attention to the last sentence of division (e) under Canon 15 of the American Code of Botanical Nomenclature, which reads as follows: "The genera of Linnæus's *Species Plantarum* (1753) are to be typified through the citations given in his *Genera Plantarum* (1754)." Under this clause the following genera were mentioned: