ceous and Tertiary, and checking the accuracy of conclusions derived from other lines of evidence.

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THE BROWN GRAPE APHID

This aphid is commonly known as *Macrosiphum viticola* Thomas. Unable to find any record of its complete life cycle the writers have made some observations on the form at Vienna, Va. These seem worthy of note at the present time, in view of the economic importance of the species.

The eggs are polished black and are laid during November or late October. They are placed in the axils of the leaves of *Viburnum prunifolium* Linn. In the spring they hatch before the leaves open and the young feed on the bursting flower buds. The stem mother appears unlike a *Macrosiphum,* having short cornicles. Late in April, or in early May, the second generation matures and this nearly all becomes alate.

Such alate forms are unable to subsist on the *Viburnum,* but migrate to the grape and produce the third generation on that plant. Here the species lives throughout the summer, producing apterous and alate forms. We have also some intermediates similar to those recently described by us in *Aphis pomi* DeGeer. These intermediates were taken in May and June.

The fall migrants are unlike the spring migrants in sensory characters, the sensoria on the antennæ averaging about as follows: Segment III., 30; IV., 25; V., 15. These fall migrants may be found depositing their young upon the *Viburnum* leaves during the middle of October.

The ovipara is apterous and, after being fertilized by the alate male, deserts the leaves and migrates to the twigs in order to deposit her winter eggs.

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THE RELATION OF MITOCHONDRIA TO GRANULES OF THE VITAL AZO DYES[1]

The more ardent hopes which relate to the subject of vital staining are perhaps connected with the successful staining of living, preformed components of the cell. Instances of such a phenomenon are often enough alleged without sufficient substantiation. Goldmann,[2] whose papers did so much to attract general interest to this subject, believed that the dyes, isamine blue and trypan blue, must be looked upon as combining with some preformed, but hitherto unidentified, elements of the living cell, and this is substantially the attitude of Kiyono,[3] who has added the latest considerable contribution to this subject. Tschaschin[4] of Maximow's laboratory has given this hypothesis its most concrete formulation by claiming that we are dealing with an elective, truly vital staining of the mitochondria of connective tissue cells. On the other hand, Evans and Schulemann[5] came to the conclusion that the process of staining with these dyes is more intelligible as an ultra-microscopic phagocytosis, and interpreted the dye granules as storage phenomena, in no way related to the living elements of the cell. In view of this discrepancy in the points of view of different workers, a cytological study of some of the cells which react to azo dyes has been suggested by Dr. Evans and carried out under his direction.

The study has been limited to cells of subcutaneous tissue in adult mice. As has been

[1] From the anatomical laboratory of the Johns Hopkins Medical School, Baltimore.

[2] Goldmann, E. E., "Die äussere und innere Sekretion des gesunden und kranken Organismus im Lichte der 'vitalen Färbung,'" Tübingen, 1909. "*Neue Untersuchungen usw.,*" Tübingen, 1912.

[3] Kiyono, "Die vitale Karminspeicherung," Fischer, 1914.

[4] Tschaschin, S., *Folia Hæmatologica,* Bd. XIV., S. 295, 1912; Bd. XVI., S. 247, 1913, Bd. XVII., S. 317, 1913.

[5] Evans and Schulemann, *Jahresb. d. Sch. Ges. f. Vat. Kul.,* 1913; Science, Vol. XXXIV., p. 443, 1914; *Deut. med. Wochenschr.,* No. XIII., 1914.