DISCUSSION AND CORRESPONDENCE

ON THE INHERITANCE OF ANILINE DYE

In one of the German magazines I have found a short account of Dr. Riddle's work, "On the Inheritance of Aniline Dye," published in SCIENCE. Dr. Riddle showed that the yolks and embryos of the eggs laid by hens which were fed with the dye Sudan III. were colored. As in the account the remark is made that since the year 1896, when an Italian, Daddi, discovered that Sudan III., given as nourishment, possesses a staining power, no one has undertaken any further experiments upon animals with this dye, I should like to state that my experiments carried out in Professor Dr. Hoyer's laboratory, and entitled, "Contribution à la biologie des teignes," were already published in the year 1905 in the "Bulletin intern. de l'Academie des Sciences de Cracovie, 1905."

Giving wool together with the dye Sudan III. as food to the caterpillars of a certain moth (*Tineola biselliolla* Hummel), I caused their bodies to be colored red. Their adipose tissue was the most intensely stained. The larvæ thus colored undergo normal metamorphosis, the pupæ and also the butterflies produced from them continue to preserve the typical red color of Sudan. The tinge of the head, thorax, abdomen and limbs of a butterfly may be easily seen with the naked eye beneath the scales covering the body. In general this coloring makes its appearance where adipose tissue is present. There is also an accumulation of dye in the female's ovary. In the cells surrounding an egg there are seen small drops of fat stained with Sudan. The eggs laid afterwards look reddish and the drops of fat contained in them have the very characteristic color of Sudan. Thus, by feeding the larvæ of one generation with Sudan, I obtained all the stages of development of the moth colored with the same dye, and this dye was later transferred into the reproductive cells of the same generation. From all this we may conclude that the reserve material accumulated by a larva in the form of fat serves not only for one stage of development, but is also transferred almost without change and is of use in the further development of the insect. Besides, the dye, introduced into the organism of an individual as a material admixture, is transmitted by means of the reproductive cells to the offspring and in this manner it may be inherited.

In later researches, the results of which are not yet published, I have proved that larvæ, hatched from eggs colored with Sudan, possess its special tinge of red. I have also succeeded in obtaining similar results, when using a series of dyes of different colors, *e. g.*, blue, and in experimenting with different kinds of butterflies and other insects.

Ludwik Sitowski

NON-FRUITING OF JAPAN PERSIMMONS DUE TO LACK OF POLLEN

Since its introduction in the seventies, the Japan persimmon has received a considerable amount of attention from growers and investigators. Its culture has gradually increased until it is now cultivated to a greater or less extent over a fairly wide area, a section corresponding roughly with that in which cotton can be produced.

Complaint has many times been made that the Japan persimmon does not hold its fruit, that it blooms profusely, but the young fruits drop off shortly after the flowering period is past; in fact, at this time, each season, the ground under large trees is often literally covered with the calyces and ovaries of the plant. At harvest time, either not a single fruit remains or only a few scattered specimens on trees which should have borne bushels of luscious fruit.

Various reasons have been given for this phenomenon, such as lack of necessary food supply, lack of moisture or uncongenial soils, and the remedies suggested and most frequently put into effect have been more frequent cultivation, no cultivation at all and heavy applications of fertilizers, particularly potash; but in spite of all these, the Japan persimmon has continued to behave in much the same way, some varieties holding a fair crop, others none, bearing one year and not another. There has always been something

extremely erratic in their behavior. It would appear that the problem is not one of cultivation or fertilization and the cause and remedy must be sought in an entirely different direction.

While it is a fact, well known to botanists, that plants of the genus *Diospyros* are diœcious (occasionally polymorphous or monœcious), yet the question of sex as related to the non-fruiting of the Japan persimmon, *D. Kaki,* appears to have been entirely overlooked. Examination, both macroscopical and microscopical, of hundreds of flowers of different varieties shows that the stamens in the pistillate flowers are abortive and no pollen is borne in them. Without question, herein lies the reason for Japan persimmons so often setting no fruit, or only a very light crop—an abundant supply of pollen at the proper time is lacking and the only source of pollen for the Japan persimmon is the chance supply furnished by staminate trees of *D. Virginiana.* So far as the records show, no male trees of *D. Kaki* have been brought to this country. A change in orchard practise is needed, and as in the culture of Smyrna figs or dates, carob bean and pistache nut, the planting of male trees to supply pollen is a necessity, so in orchards of Japan or other persimmons, the presence of male persimmon trees, covering the blooming period, is necessary to secure an abundant setting of fruit. To this there are doubtless exceptions, as some varieties (Tane-Nashi, for instance) are almost invariably seedless and apparently set and mature fruit without being pollinated. Seedlessness is in many cases due to environment and is not an inherent character in fruits. It is often due simply to lack of pollen.

It is possible that some specimens of *D. Kaki* in this country do produce pollen-bearing flowers, but such trees are extremely rare, and in ten years of observation, but one such tree, a monœcious specimen of Tabers No. 23 has been noted. So infrequently do such occur, it may not be too much to say that all Japan persimmon seedlings originated in this country have a strain of some other persimmon (usually *D. Virginiana*) in them.

The problems connected with this matter are being carefully investigated.

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GLEN SAINT MARY, FLORIDA,
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SCIENTIFIC BOOKS

The Rise and Progress of the British Explosives Industry. Published under the auspices of the Seventh International Congress of Applied Chemistry by its Explosives Section. Small quarto; pp. 418; 39 illustrations. New York, Whittaker and Co. 1909.

This is the first fruit of the congress held in London, May 28 to June 2, 1909, which was attended by some 3,000 members. This book originated in a suggestion made to the Committee of the Explosives Section, which has financed the project, on December 5, 1908, and it is the product of the joint efforts of a large number of collaborators, most of whom are intimately connected with the special branches of the industry of which they treat, under the supervision of Mr. E. A. Brayley Hodgetts, editor. The contents are classified into an Historical Part, treating of gunpowder, nitrocellulose, nitroglycerine and its derivatives, permitted explosives, percussion caps, Bickford's safety fuse, fireworks, legislation, bibliography, chronology and list of gunpowder makers; and a Descriptive Part, treating of the three existing government establishments and some fifty-four private establishments.

The bibliography and chronology fill some 132 pages, while there are, in addition, considerable lists of papers and patents attached to some of the special articles, and these are quite useful, but the special articles, as might be expected from so large a number of contributors, and especially where so many of them are engaged in other than literary or scientific pursuits, exhibit a marked unevenness in the method of treatment and the quality of the product. This lack of system is especially to be noted in the part devoted to private establishments where the accounts vary from a two-line notice of one establishment to a ten-page description of another.

In fact, a large part of the text could have