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Wissenschaftliche Originalmittheilungen.*)

On a case of close external resemblances in Dicotyledons.

By

Prof. **Tokutaro Ito**,

in Tokio, Japan.

Some years since, I was struck with the remarkable resemblances which exist between *Bischoffia javanica* Bl. and *Turpinia pomifera* DC., the former belonging to *Euphorbiaceae* and the latter to *Sapindaceae*.***) These resemblances are brought together in their general habits, in the form and size of their fruits arranged in panicles, and especially in those of their compound trifoliolate-leaves. Hiern,***) indeed, has pointed out his affinity by stating that *Turpinia pomifera* DC. has its „foliage like that of *Bischoffia javanica* Bl.“ The resemblances in the variable leaves of *Turpinia pomifera* DC. to those of *Bischoffia javanica* Bl. are in some cases so close, that, in sterile specimens, even an experienced botanist, might often fail to distinguish the one from the other. Even, I think, that distinguished botanist and an accurate observer

*) Für den Inhalt der Originalartikel sind die Herren Verfasser allein verantwortlich. Red.

**) Pax, however, treats it as *Staphyleaceae* in Engler and Prantl's natürliche Pflanzenfamilien, III. 5. p. 361.

***) Hiern, in Sir J. D. Hooker's Flora of British India. I. p. 699.

of Eastern Asiatic plants, Maximowicz,*) has probably mistaken in his determination of the specimen collected by Döderlein in Satsuma, by referring it as a variety of *Bischoffia javanica* Bl. That these resemblances, however, are only superficial will be seen from the fact that on close examination, the differences between them might be detected. The following essential characters may assist students to distinguish the two plants:

Bischoffia javanica Blume (*Euphorbiaceae*.)

1. Branches with internodes not jointed just above the base of leaves.
2. Leaves alternate; reticulation not very conspicuous beneath; the base of the petioles articulated.
3. Flowers 2 mm. diam., dioecious; sepals 5, petals 5; style entire; ovary 2-celled, with 2 ovules in each cell.
4. Fruits of the same panicles are uniform, 3-celled, enclosing 3 indehiscent cocci; seeds linear-oblong, smooth, shining, dark brown.

Turpinia pomifera DC. (*Sapindaceae*.)

1. Branches with internodes jointed just above the base of leaves.
2. Leaves opposite; reticulation conspicuous beneath; the base of the petiole not articulated.
3. Flowers 3—4mm. diam., hermaphrodite; sepals 5; petals 5; styles 3; ovary 3-celled, with many ovules in each cell.
4. Fruits of the same panicle often vary in form and size, 3-celled, containing 2 or 3—6 seeds; seeds angular, often rotund, glabrous, pale.

How may the above resemblances, then, be accounted for? Sir John Lubbock**) believes that the cases of mimicry which are so commonly met with in animals, might exist as well in plants. He made an interesting reference to what he calls a case of true mimicry, to the close general resemblances between the common stinging-nettle (*Urtica dioica* L.) and the white dead-nettle (*Lamium album* L.), by explaining that the latter is preserved by being mistaken by grazing animals for the former. Sir John may I think be pleased to hear that in the Far East, viz. in Satsuma in Southern Japan, *Urtica dioica* L., is called „Ira“ or „Wo-Ira“ („Ira“ means Stinging Plant, and „Wo“ a male, in reference to its stinging habits), and *Lamium album* L. is called „Me-Ira“, or Female Stinging Plant, alluding to its more tender habits as well as to its flowers. But, in the case of the resemblances between *Bischoffia javanica* Bl. and *Turpinia pomifera* DC., can it be possible that the one plant may derive some benefit by imitating the other? A suggestion might be made in reference to the fact that as *Bischoffia javanica* Bl. belongs to *Euphorbiaceae*, which is remarkable for the innumerable examples of poisonous plants it contains, that *Turpinia pomifera* DC. would derive some benefit by adopting its habits. But the fact

*) Maximowicz in Engler's Botanische Jahrbücher, VI, 1885, p. 59.

**) Sir John Lubbock: Flowers, leaves and fruits, p. 128.

must be proved. I may here state, without adducing to the fact, that in the island of Kiusiu in Southern Japan, where only *Turpinia pomifera* DC. is to be found, the red-fruits of that tree are freely eaten by birds, which, we have some reasons to believe, had never been in the habits of tasting the fruits of *Bischoffia javanica* Bl. It would be also interesting to state that in *Turpinia pomifera* DC., according to my own observations, the leaves of the young plant, frequently deviate from its trifoliolate character, and become bifoliolate or unifoliolate, as the case may be.

It is well-known that adaptations to certain external conditions often alter the general habits of plants; among xerophytes, certain species of *Euphorbia* resemble *Cacti*; coast and alpine plants of different orders are often much alike. To cite only one instance: a form of *Schizocodon soldanelloides* Sieb. et Zucc., a pretty dwarf species of *Diapensiaceae*, growing in the alpine regions of Shinano, Hida, and other provinces of Central Japan, resembles in its general habits *Soldanella alpina* W. of the European Alps. In the case of similarity, however, between *Bischoffia javanica* Bl. and *Turpinia pomifera* DC., both of which commonly grow in the forests of tropical and subtropical Asia, it appears to me that there exists no such external condition for its adaption.*) According to my own observations of the both plants in the Lūchū Islands, where they grow together side by side, the resemblances between the two plants were remarkable.

What I intend in the above communication is to call the attention of those fellow-botanists, who, residing in those countries where both *Bischoffia javanica* Bl. and *Turpinia pomifera* DC. are in their full development, would make observations as well as some experiments by giving the fruits of the both plants for food to various kinds of birds frequenting the places where these plants grow, and settle this interesting question of biological botany.

Tokio, April 13, 1899.

Einige weitere Beobachtungen und Experimente an *Oxalis*-Arten.

Von

Professor Dr. Friedrich Hildebrand

in Freiburg i. B., Botanisches Institut.

(Schluss.)

Anders verhält es sich mit der Farbe der Blumenblätter. Diese ist bei *Oxalis Deppei* ein mehr oder weniger helles Ziegelroth, Gelbroth, bei *Oxalis Tweedeana* hingegen, ähnlich wie bei

*) *Cocculus laurifolius* DC. which are found in Japan (Siebold! Bürger! Ito!), Lūchū Islands (Tashiro!), Nepal (Wallich!), Kumaon (Strachey et Winterbottom!), Himalaya (Royle! Edgeworth!), and Java (Horsefield!) resembles *Lindera* and other genera of *Lauraceae*.

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