XI. *On the Structure of* Cuscuta europæa. *By* CHARLES C. BABINGTON, *Esq.*, *M.A., F.L.S., F.G.S., &c.*

Read January 16th, 1838.

IN Sir James Smith's English Flora (ii. 25.) it is observed that the flowers of *Cuscuta europæa* are "in all the British specimens as well as in Ehrhart's German ones destitute of scales in the throat of the tube (of the corolla), which Dr. Hooker confirms, in contradiction to the opinion of our learned friend Mr. Brown, who possibly examined specimens of *C. epithymum*, some of which often approach the *europæa* in size." Mr. Brown's words (Prodr. 491.) are, "squamæ in *C. europæa* et *monogyna* certè extant."

These conflicting statements led me to examine fresh specimens of the plant referred to, (gathered at Sompting in Sussex, in company with Mr. Borrer, who was fully satisfied of its being the true *C. europæa*,) and I have great pleasure in confirming the observation of Mr. Brown. The fact of these scales having been overlooked by Smith and Hooker is easily accounted for by their lying quite close to the corolla, their perfect transparency, and very minute size. They are, indeed, so difficult of detection as not to have been at first noticed by Mr. Borrer and myself, even when examining fresh specimens, and it is scarcely possible to discover them in flowers that have been dried.

Upon referring to the different authors who have described this plant, I find that the presence or absence of scales is frequently passed over without any notice:—That Persoon, Host and Besser (*Prim. Fl. Galliciæ Austr.*) say that they do not exist; Reichenbach describes and figures them as "palmato-subsexfidis;" Gaudin says, "in iconibus Sturmii, Schkuhrii et Eng. Bot. filamenta male depicta fuerunt. Squamæ enim utique, sed ægre conspicuæ adsunt;" and by Bluff and Fingerhuth, in their 2nd edition, they are said to be "erectis adpressis." This last description agrees with that of Mertens and Koch, whose words are, "aufrecht, angedrückt," erect and adpressed. Rœmer

and Schultes in their specific character say, "fauce nuda," but add the observation, "Squamulas ad stamina bifurcas vidit Raymond."

The strongly palmate form which is given to the scales in *Reich. Icon. Pl.* v. f. 690, and the words "squamula crenata" used by Spenner, caused me to examine numerous flowers before I could satisfy myself that their structure was such as I have given in f. 1., but I was unable to detect a single tooth upon any of the specimens. I cannot explain the cause of their error. Reichenbach figures each scale exactly under its corresponding stamen, and yet supposes them to be petals and to alternate with the stamens. He would appear to consider, what I believe to be one single scale, as in reality two. It may be as well to quote his words; they are, "Clarior enim redditur illa fabrica ubi intelligere placeat, stamina calyci adhærentia produci nec non usque inter ipsorum petalorum insertionem decurrere." (*Icon. Pl.* v. p. 62.). This view is manifestly incorrect, for the scales constitute a complete internal whorl, each of them being connected with its neighbour so as to form a short tube, the upper edge of which is always free and distinct from the corolla (calyx of Reich.), and the lower parts of the filaments of the stamens may be traced under the cuticle of the corolla, descending exactly behind the centre of each scale. It is perfectly clear, therefore, that the scales cannot represent petals, since the whorl of stamens is invariably found within that of petals, but in this plant the stamens are situated further from the axis of the flower than the so-called corolla.

I do not attempt to form any theory concerning these minute organs, but hope that some fortunate botanist will soon discover them in such a state of monstrous development as to show what is their real nature.

That the number of scales is equal to that of the segments of the corolla is proved by their structure in *C. epithymum*, in which plant they are not even divided into two lobes. There is not, indeed, the slightest trace of a division to be discovered with a very high power of the microscope. I ought to add, that Reichenbach does not continue the above theory in his *Flora excursoria*; but reverts to the old nomenclature.

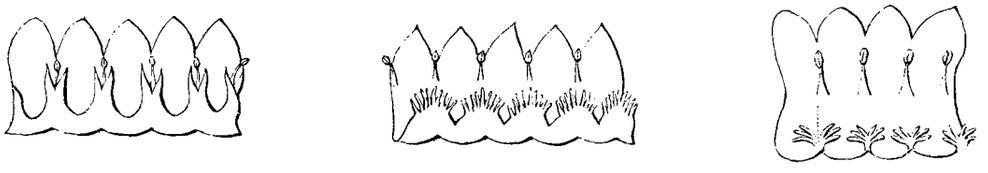
I shall not attempt a description of the scales in our two native species of *Cuscuta*, since my figures will convey a far better idea of their structure than can be given in words. Fig. 1. represents the corolla of *C. europæa* laid open,

so as to show the stamens and scales. Fig. 2. exhibits the same parts in *C. epithymum*. Fig. 3. is a traced copy from Reichenbach's representation (*Ic. Pl.* v. f. 690. B.) of *C. europæa*. It will be seen that this last differs materially from my fig. 1. May not his plant be a distinct species characterized by its constantly 4-cleft corolla and palmate sexfid scales? This genus is well deserving of attention from British botanists, for several other species are known in Germany, Sweden, and France, which most probably exist in these islands. I add corrected specific characters for our two recorded species.

C. europæa. LINN. (Sp. Pl. 180.) "florum glomerulis bracteatis" sessilibus, squamis bifidis erectis tubo corollæ per anthesin cylindrico, fructiferæ ventricoso, adpressis.

C. epithymum. SM. (Eng. Bot. sub p. 378.) "florum glomerulis bracteatis" sessilibus, squamis palmato-sectis conniventibus, tubo corollæ cylindrico limbo campanulato.

1. 2. 3.



St. John's College, Cambridge,
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Since this paper was written I have been informed that my friend Mr. J. E. Bowman has gathered *C. epilinum*, Weihe (Rchb. Ic. Pl. t. 500. f. 693,) at Croesmere in Shropshire. I have not seen specimens.