

PLATE XLIII.

OPHRYS INSECTIFERA, Linn.

Natural Order ORCHIDACEÆ.

GEN. CHAR.—*Lip* without a spur. *Pollen-masses* having 2 separate glands enclosed in 2 apparently distinct pouches. *Ovary* not twisted.

SPEC. CHAR.—*Sepals* spreading. *Lip* entire or lobed. *Column* prolonged beyond the anther-cells into a beak of variable length.

Ophrys insectifera, Linn. Sp. Plant. ii. 1343 (1765).

HABITAT.—Bunks in western and eastern bays, from shore-level to about 1000 feet. December to March.

REMARKS.—I have devoted this Plate and the two following to drawings illustrative of a few of the forms which Linnæus considered as varieties sprung from one original type, but which have since his time been always arranged as a greater or less number of species. Of these the principal with which the present inquiry has to do are *Ophrys aranifera*, Huds. (Fl. Angl. ed. 2 (1778), p. 391), the Spider *Ophrys*; *O. arachnites*, Reichard (Fl. Mœnofrancof. ii. 89); *O. scolopax*, Cav. (Ic. ii. p. 46, t. 161), and *O. apifera*, Huds., the Bee *Ophrys*. Linnæus included in this manner, under the same name, plants which, as he said, “seem at the first glance perfectly distinct; but,” he continues, “one who compares them with their congeners, and has before him all the varieties at the same moment, will easily perceive them to be sprung from one stock, and will find no means by which he may distinguish them, however constant they (the varieties) may be” (Linn. Sp. Plant. ii. 1344). I have never had any opportunity of studying the degree of variation to which *Ophrys muscifera*, Huds., may be subject, and I wish it clearly to be understood that my present object is confined to an attempt to show something of the intermediate forms between *O. aranifera*, Huds., and *O. apifera*, Huds., without attempting any consideration of adjacent varieties. It is scarcely necessary to remark that in three plates it is impossible to do more than supply a few examples of the manner of variation, and I have therefore selected such forms as have not previously been figured, so as to add to the information already supplied on this subject by Reichenbach, in his ‘*Icones Floræ Germanicæ*,’ vols. xiii. xiv., by the ‘*Botanical Magazine*’ and ‘*Register*,’ and by Sowerby’s ‘*English Botany*.’ There are three organs in the flower of *O. insectifera*, Linn., on which specific characters have chiefly been founded by modern botanists: 1, the petals, 2, the lip; 3, the anther. In the petals the glabrous and flat form changes till it becomes pubescent and recurved, and the linear-oblong shape is modified into ovate

or cordate. The lip, even in the forms which flower earliest and which best represent *O. aranifera*, Huds., is very variable, being either bossed or not, lobed or entire; the process may also be found in every stage of growth, advancing with the season (for this see Remarks on Plate XLIV.), from the tooth-like point of the January plant to the tridentate or entire lobe of those flowering in May. The markings also undergo a gradual modification, so that the lines resembling the Greek letter π , which are found in all the plants figured in this Plate, vary by the approximation of the parallel limbs until the complex figuring of *O. apifera*, Huds., is obtained. At one time I thought that *O. apifera*, Huds., might be separated from its congeners by the curvature of the terminal lobe of the lip, which is generally so recurved that the process is hidden beneath; but I found specimens in which this character was scarcely evident, and I discovered in Reichenbach's figures (Ic. Fl. Germ. xiii. 96) a plant which he calls *O. apifera*, var. *Trollii*, in which the entire lip is porrect or very slightly curved, as in *O. scolopax*, Cav. The anther also is a variable feature, and cannot be depended on for characters to separate *O. apifera*, Huds., from the forms nearest to it. It is true that the column is generally prolonged into a beak, but this is very inconstant; and it is also true that the pollen-masses are spontaneously released from the cells, but this takes place also at times in *O. scolopax*, Cav. (Cont. to Fl. of Mentone, i. 19). (Continued in "Remarks" on the two following Plates.)

EXPLANATION OF PLATE XLIII.—Fig. A 1, the entire lip of form A. Fig. A 2, anther and stigmatic chamber of the same. Fig. A 3, petal of the same. Fig. B 1, lobed lip of form B. Fig. D 1, incurved lip of form D. All the figures are magnified.

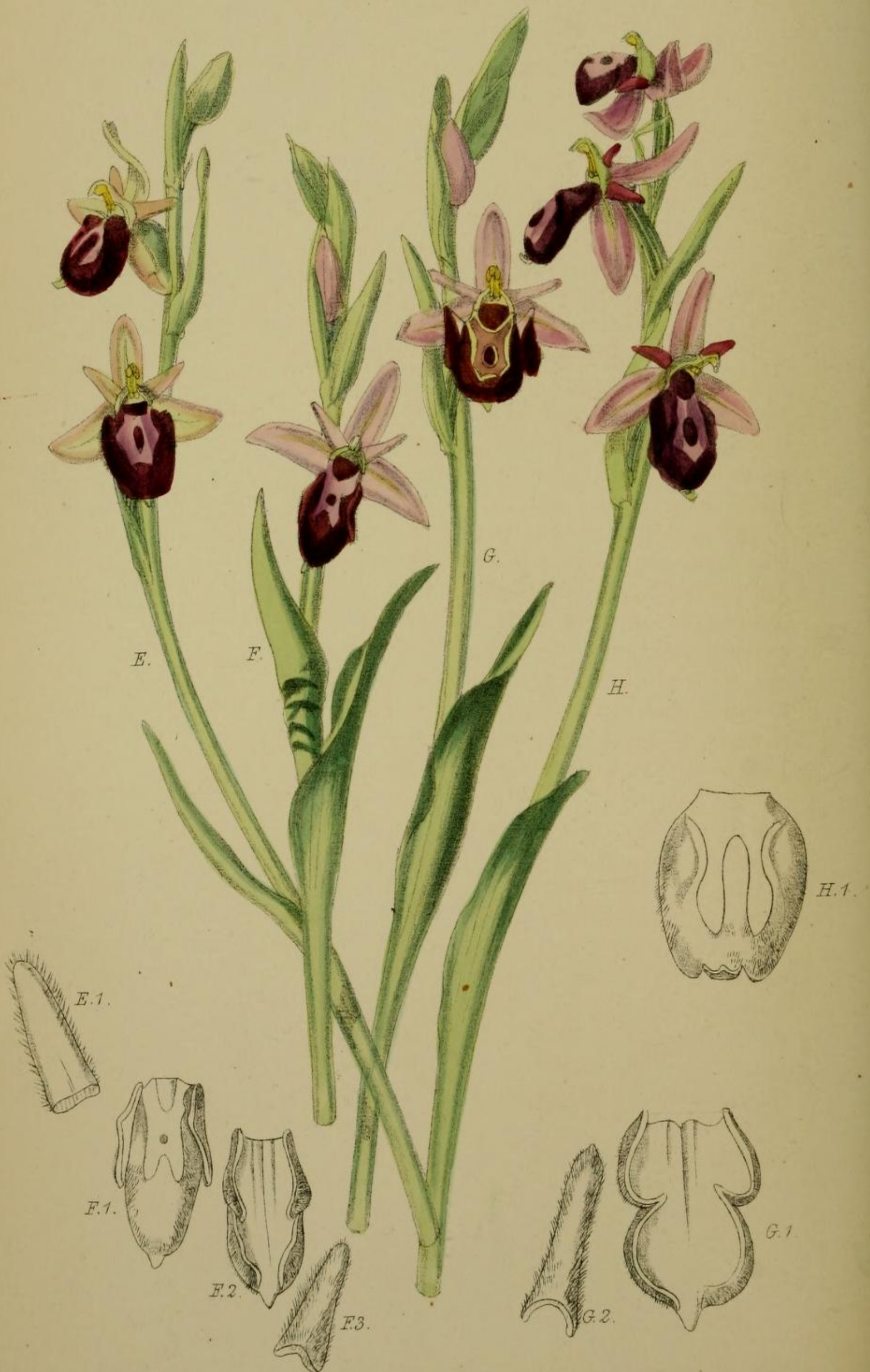


PLATE XLIV.

OPHRYS INSECTIFERA, Linn.

Natural Order ORCHIDACEÆ.

GEN. CHAR.—See description of Plate XLIII.

SPEC. CHAR.—Ditto.

HABITAT.—Banks in western and eastern bays, from shore-level to about 600 feet elevation. End of March and April.

REMARKS.—During the past spring (1865) I watched almost from day to day the development of flower after flower, and carefully noted the dates at which the varying forms appeared. I had known from my previous three years' experience that *O. aranifera*, Huds. (represented at letter A, Plate XLIII.), comes into flower in December, and *O. apifera*, Huds. (represented at letters M and N in Plate XLV.), in May, while the intermediate varieties appear in February, March, and April respectively; but it was not till the present season that I became thoroughly convinced of the intimate connection which exists between the sequence in which each variety flowers and its approximation to one of the extreme forms. Thus at Mentone a definite order seems to be maintained among these forms, and one which accords with their respective degrees of similarity to form A. The rule is that during January and February there is but little change, except that towards the end of the latter month the sepals grow pale and lose the green colouring-matter, and the petals become purplish-brown. Early in March, flowers with whitish or pink-tinted petals and sepals appear, and by the end of that month the petals, which were flat and smooth before, become slightly pubescent and occasionally a trifle recurved. As soon as April is well commenced, the lip, which has already shown more or less rudimentary stages of a terminal process, becomes strongly apiculated and variously bossed and lobed; the petals become reflexed, downy, and even velvety, and the varieties creep, step by step, onwards towards *O. scolopax*, Cav. (represented at letter K, Plate XLV.), which appears quite at the end of the month, and forms in its varying characters the nearest link to *O. apifera*, Huds., the latest of all. I cannot regard this sequence as fortuitous, but rather am led to surmise that laws new to me are here in operation. (Continued in "Remarks" on the following Plate.)

EXPLANATION OF PLATE XLIV.—Fig. E 1, the flat, ciliated petal of form E. Fig. F 1, lip of form F, seen from above. Fig. F 2, the

same, seen from below. Fig. F 3, the pubescent, slightly curved petal of form F. Fig. H 1, the lip of form H, showing the upturned process. Fig. G 1, the lobed and bossed lip of form G, seen from below. Fig. G 2, the strongly recurved, pubescent petal of form G. All the figures are magnified.



PLATE XLV.

OPHRYS INSECTIFERA, Linn.

Natural Order ORCHIDACEÆ.

GEN. CHAR.—See description of Plate XLIII.

SPEC. CHAR.—Ditto.

HABITAT.—Banks in western bays, from shore-level to about 600 feet elevation. End of April and May.

REMARKS.—In this plate two specimens of *Ophrys apifera*, Huds., are figured at M, N. The spike figured at N was drawn from one of seven spikes gathered at Reigate on my return to England, four of which had the long petals figured at N 1; the other specimen was from Mentone, and had the almost cordate petal, which is so generally thought to distinguish the Bee *Ophrys*. As all the forms figured seem tolerably abundant and distinct, I shall attempt an arrangement of the characters by which they may frequently be distinguished. I also append their respective dates of first expansion and proximate synonyms.

Sect. 1. *Petals* flat, smooth.

- a. *Petals* green. *Lip* entire or slightly emarginate. (End of December.) *O. aranifera*, Huds.; *O. aranifera*, *a. genuina*, Rchb. Ic. Fl. Germ. xiii. 88.
- b. *Petals* brownish. *Lip* deeply lobed and bossed. (End of January.)
- c. *Sepals* tinged with colour. *Lip* entire, apiculate. (March 8th.)
O. atrata, Lindl. Bot. Reg. 1087, *partly*.
- d. *Lip* elongate, margins inflexed. (March 23rd.)

Sect. 2. *Petals* puberulent or ciliate.

- e. *Petals* ciliate, flat. (March 23rd.)

Sect. 3. *Petals* recurved, pubescent. *Terminal lobe of lip* porrect.

- f. *Lip* lobed, bossed, elongate; *lobes* adpressed. (April 1st.)
- g. *Lip* lobed; *bosses* conical. (April 1st.)
- h. *Lip* entire, margins slightly recurved; *apiculum* upturned. (April 9th.) *O. arachnites*, Reichard (Fl. Mœnofrancof. ii. 89); *O. fuciflora*, Rchb. (Ic. Fl. Germ. xiii. p. 85. t. 461), *partly*.
- j. *Petal* strongly recurved. (May 5th.)
- k. *Process* of lip tridentate. (May 1st.) *O. scolopax*, Cav. (Ic. ii. p. 46. t. 161).
- l. *Bosses* free from the terminal lobe of the lip. (May 5th.)

Sect. 4. *Terminal lobe of lip bent underneath.*

m. Petal not half as long as the anther. Process of lip slightly tridentate. (May 6th.) *O. apifera*, Huds., partly.

n. Petal about equal to anther. (June 22nd.)

It is supposed by some botanists that many of the forms under which these most variable plants appear are only hybrids between a greater or less number of species ; others, again, believe that though an occasional cross is probably a most efficient stimulus to variation, the greater part, if not all, of these individuals are the product of natural selection.

EXPLANATION OF PLATE XLV.—Fig. J 1, petal of form J. Fig. J 2, under side of lip of form J. Fig. K 1, under side of lip of form K. Fig. K 2, upper side of lip of form K. Fig. L 1, upper side of lip of form L. Fig. L 2, under side of the same. Fig. M 1, petal of form M. Fig. M 2, upper side of lip of form M. Fig. M 3, under side of the same. Fig. N 1, petal of form N.



JM