8. *A. SACCATA*, Baker.—*Anisanthus saccatus*, Klatt in *Linnaea*, xxxv. 300. *C. B. Spei*.
9. *A. PANICULATA*, Klatt in *Linnaea*, xxxv. 379. *Natalia*.
10. *A. INTERMEDIA*, Baker. *C. B. Spei*.
11. *A. FUCATA*, Baker.—*Tritonia fucata*, Herb. in *Bot. Reg.* xxiv. t. 35. *C. B. Spei*.

Note on the Disarticulation of Branches. By R. IRWIN LYNCH,
Esq. Communicated by J. G. BAKER, Esq., F.L.S.

[Read April 19, 1877.]

(PLATE III.)

THE object of the present communication is to bring before the Fellows of the Society a short notice of some striking examples of the disarticulation of branches, which recently have come under my observation. The literature of the subject includes:—a contribution by H. von Mohl to the '*Botanische Zeitung*,' 1860; "On the shedding of branches and leaves in *Coniferæ*," by Dr. James Stark, in *Trans. Roy. Soc. Edinb.* vol. xxvii.; mention by Prof. Sachs, in his *Text-book of Botany* (Engl. trans. p. 446), of the case of *Taxodium distichum*, where the axes bearing the leaves are deciduous; and the Report of the Scientific Committee of the Roy. Hort. Soc. ('*Gard. Chron.*' 1877, p. 506), before whom Sir Joseph Hooker exhibited branches of *Dammara robusta*, illustrating their deciduous nature. It has thus been observed of many trees that branches are cast off in an irregular manner; and this often, I think, arises from the ripening process having ceased at the point where detachment takes place. *Vitis macropus* is a notable instance: only the lower part of the year's growth is ripened, and by far the larger portion falls away with the leaves (see subjoined woodcut). *V. cirrhosa* offers a similar illustration. A specimen at Kew has now two climbing stems ten feet long, the whole of which will apparently be cast off this autumn, with the exception of about three inches,—all above the second and third leaves respectively.

In *Castilleja*, however, the lateral branches are detached at the point of insertion, regularly from below upwards, apparently from the same cause that determines the fall of a leaf, leaving behind a similar scar (consult figs. 1-6, Plate III.). Nature, in this case, leaves a provision for replacement of the fallen branch: beside the scar there always exists a dormant bud, which bud is on

either its right or its left side. In the Royal Gardens, Kew, are plants from two sources ; in one case the buds are on the right,

Vitis macropus, Welwitsch. Sketches from a living specimen growing in Kew Gardens. A, the entire plant, considerably reduced: *a*, the swollen base of the stem; *b*, line marking where last year's branch was thrown off; *c*, another line indicating the position of next disarticulation, the interval between *b* and *c* being the permanent portion of current year's growth; *d*, portion (all above *c*) which falls off with the leaves. B, another drawing, of natural size, of the parts of fig. A between the letters *b* and *d*. At *c* in this figure an interspace is given to show the mode of disarticulation of the year's growth from that part of the stem which remains.

and in the other on the left side*. *Antiaris toxicaria* has the same habit of detaching its branches at the point of insertion. The scars do not always remain round, as in the illustrations, but

* The plants have further developed since writing the above, and show that exceptions may occur, the buds changing side in part or throughout the entire growth.

are gradually compressed to almost a horizontal line, and at last become obliterated.

In reply to some questions with reference to *Castilloa elastica*, I have received the following information from Mr. R. Cross, the well-known collector of Caoutchouc, *Cinchona*, and other plants. He states that in the forest the young *Castilloas* push up stems to a great height, and during the progress of growth throw out at variable distances a number of simple leafy shoots. These, on becoming mature, begin to wither in succession from the oldest or lowest, and finally separate by an articulation. At last, however, branches are produced which bear fruit and do not drop off. Sometimes the trunk, after running up to a certain height, divides into two or three stems, each furnished with numerous short stiff upright branches, which are permanent and ripen fruit abundantly. Probably, however, the "abortive" shoots are produced during the entire growth of the tree. Mr. Cross does not consider these to be "true" branches. He says that the wood is not properly formed, the buds are imperfectly developed, and from these the plant cannot easily be propagated. All this perhaps arises from the nourishment being required for the ascending growth—a conclusion borne out by the plants at Kew, which show that a given bud may grow into an erect permanent branch, or into a horizontal deciduous branch, according to the requirements of circumstances. The latter, if taken in time, appear, under cultivation, to strike as freely as the permanent branches. The character of a branch is evidently brought about by the direction of its growth.

In the preceding cases the disarticulatory branches have not a leaf-like appearance; in *Vitis macropus* (woodcut) they bear flowers and fruit, but never, as before said, in *Castilloa*, or perhaps in the case of *Antiaris*. In the following cases, however, the deciduous branches are very leaf-like (in some instances have been described for leaves) and bear flowers and fruit. The examples laid before the Society are *Phyllanthus* (*Reidia*) *glaucescens* and *P. juglandifolius*; further instances may be found in other species of the genus and in the allied genera of *Cicca*, *Sauropus*, &c., all belonging to Euphorbiaceæ. The leaf-like branches of these plants have much in common with true leaves; they fall off in the same way, and have buds in their axils which alone continue the permanent branching of the plant; the stem also is swollen at the base, as are many petioles. It must be remarked that branches are always axillary in production, and in these cases are subtended by

minute squamiform leaves. These leaves therefore subtend two buds, one of which grows into a leaf-like deciduous branch, and the other remains dormant unless required to produce a permanent branch. The deciduous branches have in some species the form of a pinnate leaf, as in the above mentioned, or may in some cases be supra-decompound, as, for instance, *Phyllanthus Conami*.

The foregoing has, I think, some interest, as bearing on the morphology of leaf and stem. In Dr. Masters's 'Vegetable Teratology,' p. 479, it is said that the two organs may be spoken of as morphologically identical. It is important to observe that the fall of a flower or inflorescence is equal, morphologically, to the fall of a branch, all the parts of the flower representing leaves.

DESCRIPTION OF PLATE III.

- Fig. 1. Part of the stem, with portion of the branches and a leaf of *Castilleja elastica*, of natural size. Drawn from a specimen growing in the Royal Gardens, Kew. The following lettering (except where otherwise given) applies to this and the succeeding figures:—*br*, branch; *bd*, dormant buds; *sr*, scars remaining after the disarticulation of the lateral branches; *ls*, scars of the fallen leaf.
- Fig. 2 is the lower portion of stem or continuation of fig. 1; and shows the scar of earliest fallen and lowest branch with the scar of its subtending leaf.
- Fig. 3. A segment of the stem of another and larger specimen of *Castilleja elastica*, showing branch and leaf-scar, of natural size.
- Fig. 4. Enlarged view, part of stem of fig. 2, showing leaf-scar in a different aspect.
- Figs. 5 and 6. A profile and end view, showing the articular surface of a fallen branch of *Castilleja elastica*, slightly enlarged.
- Fig. 7. Angle of junction of a stem and branch of *Phyllanthus juglandifolius*; *sl*, scale-like leaf.
- Fig. 8. A portion of the stem, branches, leaves, and flowers of *Phyllanthus (Reidia) glaucescens*: *bd*, bud growing into permanent branch subtended by deciduous branch-bearing flowers; *sl*, scale-like leaf. Also from a plant growing at Kew and sketched of about nat. size.

Remarks on the Distribution of the Perfoliate Penny-Cress
(*Thlaspi perfoliatum*, Linn.) in Britain. By GEORGE S.
BOULGER, Esq., F.L.S., F.G.S.

[Read May 3, 1877.]

THE insignificant little Crucifer a few notes on which I wish to lay before the Society, derives its chief interest to us from its very limited area of distribution in Great Britain.