NOTE.—On December 18, 1898, I took up one of the original prothalli which had not yet produced either frond or bud, shaved off the root-hairs, and examined it with the microscope for archegonia and antheridia. I found the "cushion" crowded with archegonia, in some of which the egg-cell could be distinctly seen. A few antheridia were found in the usual situation, but they were apparently not yet mature.

On December 29, 1898, I went round my garden and snipped off portions of fronds from some eight different ferns, the only principle of selection being to take fronds which were devoid of any trace of sori, and were not too mature to allow any hope of further growth. They were well washed by a stream of water to remove any adherent spores of other ferns, and were then pinned down in a pot and covered with a bell-glass.

Examining these on January 12, 1899, I found that in the case of one fern, *Polypodium vulgare* var. *grandiceps*, Parker, two translucent (presumably prothallial) growths were already proceeding from the termination of a veinlet near the edge on the upper surface of the frond. These growths, as well as the piece of frond from which they grew, I regret to say have been since destroyed by fungoid growth. I hope, however, to repeat the experiment.

On some African *Labiatae* with Alternate Leaves.
By I. H. BURKILL, F.L.S., and C. H. WRIGHT, A.L.S.

[Read 16th February, 1899.]

(PLATE 6.)

A SHORT while ago M. Hua described as the type of a new genus a Labiate from West Tropical Africa, and named it *Icomum paradoxum*. The character upon which he laid most stress is the alternation of the leaves; and on account of this deviation from what is almost universal in the order, he chose the specific name. At the time when his paper* was published we were aware of two Labiates from Africa possessing the same peculiarity; and further search in the herbarium of the Royal Gardens, Kew,

* "Nouveaux matériaux pour la Flore de l'Afrique Française," Bulletin du Muséum d'histoire naturelle, Paris, 1897, p. 329.

had added yet two more. M. Hua, with great courtesy, sent us drawings of *Icomum paradoxum*; and by means of them we are assured of the distinctness of it from any of those which we shall here describe. Thus we know of five African Labiates which possess alternate leaves.

Alternation of leaves is not by any means an unknown condition in this order. Penzig* remarks its moderate frequency as an abnormality, and enumerates the following genera in which it has occurred:—*Collinsia*, *Mentha*, *Hyssopus*, *Monarda*, *Physostegia*, *Leonurus*, *Lamium*, and *Dysophylla*. Bentham also described an anomalous *Hyptis* under the name of *H. anomala* †, reduced later to *H. conferta* ‡, which possesses alternating leaves. Alternation of the flowers of the inflorescence, and of their bracts, is well known in *Scutellaria*, where it characterizes a section (*Heteranthera*), and it also occurs in *Æolanthus*.

All these observations have served as a caution, which we have not disregarded. Yet it seems to us best to retain the genus *Icomum*, and under it we place four of the five plants above mentioned.

Icomum is apparently closely allied to *Æolanthus*—a genus confined to Africa, where most of its species occur within the Tropics. We thus diagnose the first-named, and arrange the plants by which it is constituted:—

ICOMUM, *Hua* (*loc. cit.*), Labiatarum-Ocymoidearum genus, *Æolantho* maxime affine: distinguendum foliis alternis sæpissime angustis, floribus in spicis sine ordine obvia aggregatis, bracteis floribus longioribus angustis: cæteris ab *Æolantho* non diversum.

Spike compound.

Corolla-tube narrow throughout..... *I. paradoxum*.

Corolla-tube wide above *I. salicifolium*.

Spike simple; corolla-tube only narrow in its lowest third.

Leaves linear..... *I. lineare*.

Leaves oblanceolate-obovate *I. subacaule*.

* Pflanzenzeratologie, ii. (Genoa, 1894) p. 231.

† Labiatarum Genera et Species (London, 1833), p. 113.

‡ Bentham in De Caildolle's 'Prodromus,' xii. (Paris, 1848) p. 112.

1. *ICOMUM PARADOXUM*, *Hua*, in Bull. Muséum, Paris, 1897, p. 329.

Hab. Timbo, on the river Timbo, one of the upper tributaries of the Senegal. *Dr. Miquel*, 43, in herb. Mus. Paris. Flowering in June.

2. *I. SALICIFOLIUM*, *Burkill*. (Pl. 6. figs. 1, 2.) *Caules* (? an laterales) 6–10 poll. longi, decumbentes, teretes, dense pubescentes. *Folia* caulina, sessilia, lineari-lanceolata, alterna, apice acuta, basin versus angustata, margine utroque dentibus 2–3 instructa, pubescentia vel glabrescentia, 1–1½ poll. longa, 2–2½ lin. lata. *Inflorescentia* spicis densifloris aggregatis composita; spica terminalis 2 poll. longa; spicæ laterales ad 1 poll. longæ; bracteæ foliis similes sed minores. *Calyx* tubulosus, ad os paullo constrictus, margine leviter sinuatus et pilis conspicue ornatus, florens 1½ lin. longus, fructifer ad 2½ lin. auctus et rima æquali ad basin dissolutus. *Corollæ* extus fere glabræ tubi 3½ lin. longi dimidium inferius angustum, dimidium superius ex inferiori abrupte expansum; labium superius 1¾ lin. longum, dentibus 4 apice rotundatis; labium inferius 2 lin. longum. *Staminum* filamenta 1 lin. longa. *Ovarii* nuculæ ovoideæ; glandula late linguiformis.—*Æolanthus salicifolius*, Baker in Kew Bulletin, 1898, p. 161.

Hab. British Central Africa: North Nyasaland, Nyika plateau, 6000–7000 ft. *A. Whyte*, 107. Commencing to fruit in July.

3. *I. LINEARE*, *Burkill*. (Pl. 6. figs. 3, 4.) *Herba* spithamea. *Caules* erecti, foliis sat crebri, pilis albis aliquo modo puberuli. *Folia* caulina, linearia, sessilia, 4–7 lin. longa, glandulis numerosissimis inconspicue notata. *Spicæ* ramos foliatis terminantes, simplices, 1–1½ poll. longæ; bracteæ foliis similes sed pubescentiores, breviores (2–2½ lin. longæ), paululo latiores; flores ad 15. *Calyx* campanulatus, margine leviter sinuatus, florens ¾ lin. longus, basi rimæ indicationem demonstrans. *Corollæ* extra pubescentis tubus ad ⅔ angustus, dein decurvatus ampliatus, 3½–4 lin. longus; labium superius 4-dentatum, 2 lin. longum; labium inferius superiori longius 2½ lin. longum, antheras includens. *Staminum* filamenta 2–2½ lin. longa. *Ovarii* nuculæ ovoideæ; glandula linguiformis.

Hab. British Central Africa: Nyasaland, near Fort Young, *Dr. T. G. Nicholson*. Flowering in September.

4. *ICOMUM SUBACAULE*, *Burkill*. (Pl. 6. figs. 5, 6.) *Herba* spithamea vel ultra. *Folia* 6-7, ut videtur omnia radicalia, oblanceolato-oblonga, apice obtusa vel rotundata, basin versus longe sensim angustata, utrinque glabra, glandulis conspicue notata, $2\frac{1}{2}$ -3 poll. longa, 8-10 lin. lata; petiolus 9-12 lin. longus. *Spicæ* 5-6, simplices, longe pedunculatæ; pedunculus $4-5\frac{1}{2}$ poll. longus, bracteas lineari-lanceolatas alternatim 3-6 irregulariter gerens, pilis parvis sparse tectus; bracteæ steriles et eæ flores subtendentes $2\frac{1}{2}$ -5 lin. longæ, glabræ, lineares; flores ad 50. *Calyx* campanulatus, margine leviter sinuatus, aliquo modo bilabiatus, florens vix 1 lin. longus, basi rimæ indicationem demonstrans. *Corollæ* extra pubescentis tubus ad $\frac{1}{3}$ angustus, dein fortiter decurvatus ampliatus, 4 lin. longus; labium superius 4-dentatum, dentibus rotundatis, $1\frac{1}{4}$ lin. longum; labium inferius superiori longius, antheras includens. *Staminum* filamenta $1-1\frac{1}{2}$ lin. longa. *Ovarii* nuculæ apicibus obtusæ; glandula linguiformis.—*Plectranthus subacaulis*, Baker in Kew Bulletin, 1895, p. 73.

Hub. British Central Africa: Fwambo, near Lake Tanganyika, *Rev. A. Carson*, 33, 65. Flowering in January.

Icomum, as remarked, is very near *Æolanthus*; but although *Æolanthus* shows in many species characters leading to *Icomum*, it is not difficult to define the boundary between the two.

In *Æolanthus* are two very closely allied species—*A. ambustus*, Oliver, and *A. virgatus*, Gürke; so closely are they allied that one may only be a variety of the other, and Briquet* is certainly wrong in making for each of them a section. These two species approach *Icomum* in the narrowness of their leaves and in their inflorescences. In the accompanying woodcut, fig. 5 represents a portion of the inflorescence of *A. virgatus*. As seen in it, the bracts are paired and opposed, but the flowers are solitary—one to each node. There is then an alternation of the flowers, though not of the leaves. In addition, the branches of the lateral axes similarly alternate, though the leaves from which they arise are opposed; while on the main axis, and now and then on the stronger lateral axes, the branches are opposed: so that one may trace a relationship between the vigour of the shoot and the possession

* In Engler u. Prantl, *Pflanzenfamilien*, iv. 3A (Leipzig, 1897), p. 349. There is little except the size of the calyx by which the two species can be distinguished.

of two or one branch (or flower) at each node. But it must be remarked that there is a tendency to anisophylly, the larger leaf (bract) being that without any flower. The difference in size, which is but little, is shown in the figure. It is in no way so obvious as in another member of the Labiatae—*Pogostemon paniculatum* *.

The position of the flowers is interesting, for, as shown in the diagram (fig. 6), they occupy only two faces of the obscurely

1. Portion of the inflorescence of *Aelanthus Cameronii*, showing the bases of the calyces of six flowers. 2 & 3. The axis in section, in two consecutive internodes. 4. Diagram of position of flowers. 5. Portion of inflorescence of *Aelanthus virgatus*, showing anisophyllous and alternate flowers. 6. Diagram of position of flowers. 7. Portion of inflorescence of *Aelanthus* sp., showing flowers and bracts. 5 and 7 slightly reduced.

quadrangular stem; neither of these faces in the case of lateral axes is turned towards the parent axis.

The arrangement of the flowers in two rows is common in *Aelanthus*. Another form in which the bracts are approximated is shown in fig. 7, taken from an undescribed species. In several others of the genus the bracts alternate, as do the flowers.

Interesting forms connecting these with a more normal arrangement are seen in *A. Cameronii*, described below, and *A. zanzibaricus*, S. Moore. We shall take first the last-named.

* Cf. also Briquet, 'Monographie du genre *Galeopsis*' (Paris, 1893), p. 35, in which genus a tendency in the same direction occurs.

Of *Æolanthus zanzibarius* we have seen specimens collected by Hildebrandt (Kingani river, 1265), Johnston (Kilimanjaro Exped.), and Holst (Usambara, 2957). All have the leaves opposed, but in the inflorescence lose this character. At the base of the spike terminating the axis a pair of lateral spikes spring from opposite sides of the stem; sometimes these again branch, but more often they are simple. Examining the terminal spike first, we see that the lowest flowers are sometimes opposed, but more often alternate; at about the middle the decussation of paired flowers is regular, but apt to become irregular again near the apex. On the lateral axes we see invariably a solitary flower at the first internode, which is situated immediately above the bract in the axil of which the axis arose; next, to right and left, a pair of flowers: then one over the first flower; then a pair; and so on. The sterile face of the axis is that directed towards the parent axis.

In *A. Cameronii** we find a similar arrangement, but all the lateral axes which we have seen possess a sterile face which is turned towards the parent axis. Fig. 1 of the woodcut shows a portion of an axis bearing six flowers; at the very base are two branches; then a solitary flower; next a pair of flowers; then

* *ÆOLANTHUS CAMERONII*, Burkill. *Caules* erecti vel suberecti, pilis parvis puberuli, obscure angulati, internodiis longis. *Folia* ovata, apice acutiuscula, basi obtusa, margine irregulariter serrata, utrinque minutissime puberula, 10-14 lin. longa, 4-6 lin. lata; petiolus 6-8 lin. longus. *Spicæ* candelabri modo compositæ; spica (terminalis?) 15-16 lin. longa; spicæ laterales 8-10 lin. longæ, inferiores ad apices pedunculorum longorum semel et iterum trifurcatæ; bractæ $\frac{1}{2}$ -1 lin. longæ, cito deciduæ, subulatæ vel inferiores lanceolatæ, flores dorsiventraliter in foveolis axi, nodis nunc singuli nunc bini alternatim dispositi. *Calyx* bidentatus, pubescens, florens vix 1 lin. longus. *Corollæ* tubus 1 lin. longus nec ampliatus; labium superius rotundatum, margine leviter 4-lobatum, 1 lin. longum; labium inferius superiori paululo longius. *Staminum* filamenta $\frac{3}{4}$ lin. longa. *Ovarii* nuculæ ovoideæ.

Hab. British Central Africa: Shiri Highlands, Namasi, K. J. Cameron, 18.

It is probable that we only possess lateral branches of this plant, in which case the terminal inflorescence of the main axis may differ in detail. *A. Candelabrum*, Briquet in Engl. Jahrb. xix. 186, seems to resemble it in habit, but differs much in the flower. The extreme delicacy of the calyx at the time of flowering is very noticeable; and under the microscope a series of large stomata are seen on the terminations of conspicuous anastomosing veins, apparently hydathodes.

a solitary flower; and so on. Further, the axis is peculiarly grooved as the rhachilla of a grass-spikelet, so that the flowers fit into the hollow spaces, and the face towards the parent axis is much broader than the others. In fig. 4 the position of the flowers and their caducous bracts is marked diagrammatically. It is to be noted that no trace of a bract persists where the flower is absent.

These are some modifications of the inflorescence which we have noted in *Æolanthus*. They are of special interest in showing an alternation of parts by abortion of one member of the pair. We have introduced them here that they may afford a contrast between what we see in *Icomum*, in *Æolanthus*, in such abnormalities as the condition of *Hyptis conferta* mentioned above, or that of *Stachys circinata* described by Clos*, and in others where torsion is associated with alternation of the leaves—e.g., a *Collinsia* described by De Vries†.

Schlechtendal long ago spoke of the leaves of Labiates as pseudo-opposite, meaning thereby that there is no connection between the two members which oppose one another. Perhaps there is something in the idea underlying this. When torsion twists the stem of a Labiate the leaves often cease to be opposed, those of each pair becoming separated. This is the commoner abnormality; rarer is separation of the leaves without torsion—a condition which we see in the *Hyptis* and *Stachys* named in the last paragraph. Quite another condition is the alternation by abortion of one of the paired organs, such as we have seen in *Æolanthus*; and distinct again is the alternation which apparently has a spiral arrangement, present in *Icomum*, in the inflorescence of *Scutellaria* § *Heteranthera* and in an interesting abnormality of *Physostegia* described by P. Duchartre‡, in which the number of leaves at a node was multiplied and these spread out in a spiral.

So much for the genera *Icomum* and *Æolanthus*. There remains yet to be described a species of the genus *Plectranthus*, in which the leaves are irregularly scattered owing to the unequal development of the internodes, and are never truly opposite. The aspect of this plant is similar to that which is often met with in *Linaria vulgaris*, Mill., but the 4-lobed ovary and gynobasic

* "Théorie des Soudures," Ann. Acad. Toulouse, 8me sér. i. 1879, p. 140.

† "Bijdragen tot de leer van den klemdraai," Bot. Jaarboek, 1892, p. 161.

‡ Bull. Soc. bot. France, xxxix. 1892, p. 120.

M. Smith del.

J. N. Fitch lith.

ALTERNATE LEAVED LABIATE.

style leave no doubt as to its belonging to the Labiatæ. In the dried state the stem is more or less striate, and it is upon the striations that the leaves are borne. The flowers are alternate and somewhat distant, but occasionally a second bract occurs opposite to that which subtends a flower.

PLECTRANTHUS INSOLITUS, C. H. Wright. (Pl. 6. figs. 7, 8.)
Herba glabra. *Caulis* erectus, 9 poll. altus, basi ramosus sublig-nosus, siccitate striatus. *Folia* alterna, linearia vel leviter falcata, acuta, basi attenuata, integra, $1\frac{1}{4}$ poll. longa, 1 lin. lata. *Racemus* terminalis; bracteæ sæpius alternæ, rarius oppositæ, una vacua, ovato-lanceolata, quam pedicelli breviores; pedicelli tenues, 3 lin. longi. *Calyx* campanulatus, extra glandulosus; lobus superior integer, latus; lobi inferiores anguste triangulares. *Corollæ* tubus prope basin contractus, deinde campanulatus; labium inferius extra glandulosum, integrum; superius dentibus 4 subæqualibus obtusis præditum. *Filamenta* basi brevissime connata. *Ovarium* (novellum solum visum) profunde 4-partitum.
Hab. Angola, Welwitsch, 5593.

It may be thought that the shortly united filaments forbid the placing of this plant in *Plectanthus*. But the genera *Capitanya*, *Englerastrum*, and *Solenostemon*, in which this form of union occurs, are unlike it; and we have preferred to be guided by other characters in leaving it thus as a doubly aberrant form of the large genus *Plectranthus*.

The chief interest of our paper centres in *Icomum*; and the increase of its species from one to four establishes the genus upon a firmer basis as a peculiar development of the Labiatæ, confined to Africa. We do not consider that the relationships of the order are in any way explained by it, as there is no evidence for regarding it as primitive. Still the recognition of a genus in Labiatæ characterized by the possession of alternate leaves lessens the distinctness of the order in what is certainly one of its most prominent features. If, at a later date, we are able to investigate the anatomy of the stem, we shall seize the opportunity.

To M. Henri Hua, for the kind way in which he has given us information about *Icomum paradoxum*, and to Miss M. Smith, who has drawn the plate illustrating the forms we describe, we desire to express our most sincere thanks.

EXPLANATION OF PLATE 6.

- Fig. 1. *Icomum salicifolium*, lateral spike, in fruit. Nat. size.
 2. Flower of the same; the calyx in part removed to expose the narrow half of the tube of the corolla.
 3. *Icomum lineare*. Nat. size.
 4. Flower of the same.
 5. *Icomum subacaule*. Nat. size.
 6. Flower of the same.
 7. *Plectranthus insolitus*, flower.
 8. Corolla of the same.
-

Note on the Irish *Carex rhynchophysa*.

By G. CLARIDGE DRUCE, M.A., F.L.S.

[Read 2nd March, 1899.]

IN the 'Journal of Botany' for 1893, on p. 20, an editorial note was inserted to the effect that Mr. R. Lloyd Praeger "had been fortunate enough to add this well-marked species to our British Flora." On pp. 33-35 of the same journal a description of the plant and an account of its discovery is communicated by the finder, Mr. R. Lloyd Praeger. A figure of it with a rather featureless drawing of the perigynium is supplied by Mr. Arthur Bennett, who, Mr. Praeger states, "has now submitted the Sedge to the most rigid examination, and though hesitating at first to add a new plant to the British flora on the strength of a single specimen without the clearest proof, is now convinced of its identity with *Carex rhynchophysa*."

It was discovered in a ten-foot drain with a bottom of deep soft mud and soft peaty sides, which communicated with Mullaghmore Lough in the central part of Armagh, growing in the neighbourhood of *Cicuta virosa* and *Castalia speciosa*. Only one patch, several feet in diameter, was noticed, but this was "immediately distinguished from the groves of *Carex rostrata* which grew around by its taller growth and more glaucous leaves."

The distribution of the true *Carex rhynchophysa* is distinctly northern and eastern. In Finland, as Mr. Praeger points out, it occurs in ten provinces, where it is found on the river- and lake-shores in deep bogs. It is also found in Lapland, Norway, Sweden, Russia, Silesia, Transsylvania, Siberia, and Dahuria.