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Publisher: Taylor & Francis
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Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tped18>

Note On Abnormally Branched Leaves Of *Hippuris Vulgaris*, Linn.

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Published online: 29 Nov 2010.

To cite this article: H.F. Tagg F.L.S. (1908) Note On Abnormally Branched Leaves Of *Hippuris Vulgaris*, Linn., Transactions of the Botanical Society of Edinburgh, 23:1-4, 237-240, DOI: [10.1080/03746600809469156](https://doi.org/10.1080/03746600809469156)

To link to this article: <http://dx.doi.org/10.1080/03746600809469156>

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in water-logged sand, and it appeared as if the plants wanted to reach the clay that without doubt lay a short distance below.

I wish to get as many as possible of the species of *Drosera* examined to see in what relation the variations of bulb-formation stand to the character of leaf and flower, and I hope to have a larger number examined in the course of the incoming spring, and then place at your disposal a more complete series of notes. In the meantime, these few notes, and specimens illustrating them, will furnish information that might otherwise reach you before very long at second hand.

NOTE ON ABNORMALLY BRANCHED LEAVES OF *HIPPURIS VULGARIS*, LINN. By H. F. TAGG, F.L.S. (With figures.)

Among some leafy stems of *Hippuris vulgaris* which were collected some years ago I find a number of specimens with leaves which differ from the narrow linear leaves with entire margins characteristic of the normal *Hippuris vulgaris*.

In the abnormal specimens, while some are entire, many of the leaves in each whorl are provided with one or two or as many as four sharply-pointed tooth-like branches arranged pinnately on the leaf-margins. In some cases one margin only is branched, in others both margins are involved, and when this is so the branches are roughly opposite. A leaf with opposite branches is shown in fig. 1. When two branches occur on the same margin, the lower is, as a rule, the larger, and in some instances, as in fig. 2, the second branch is formed in the upper angle of the first. Other leaves on the abnormal plants are more or less bifurcate, and are provided with two distinct apices, figs. 3, 4, 5.

These differences in form, as one would naturally expect, are accompanied by modifications in the leaf venation. The venation of the normal leaf is very simple. Only one strand of vascular tissue, the midrib, is at all conspicuous, and this runs direct to a very characteristic water-pore at the leaf-apex, its lateral ramifications being few and none of them extending quite to the leaf margin.

Water-pores similar in structure to those of the normal

leaf-apex are present on the apices of the bifurcations and on the tips of the lateral branches of the abnormal leaves. Running out to these are prominent strands of vascular tissue. In the case of the leaves with lateral branches, the vascular strands are lateral and pass off from the midrib, while, where the leaves are bifurcate, two strands more prominent than others, and free from one another, run from the leaf-base, and pass out one into each branch of the bifurcation.

Abnormal Leaves of *Hippuris vulgaris*, L.

FIG. 1. Leaf with opposite lateral branches. FIG. 2. Leaf with two branches on the same margin. FIG. 3. Leaf with forked apex. FIGS. 3 and 4. Bifurcate leaves; *scl.*, sclerenchyma at leaf-base. $\times 4$.

At their point of origin at the leaf-base, the two strands are fused with a mass of sclerosed tissue (fig. 5, *scl.*) occupying the centre of the leaf-base in a position which, in the normal leaf, is filled by the thickened basal portion of the midrib.

Believing that the material among which the abnormal specimens were found had been collected from a certain bed of *Hippuris vulgaris* growing in the Royal Botanic Garden, Edinburgh, I have, since the above notes were written, carefully examined these plants, and my search has been rewarded by the discovery of several plants growing there at the present time which exhibit teratological features similar to those described above.

MR. JAMES FRASER exhibited mounted specimens of the

following interesting alien and casual grasses recently found in the neighbourhood of Edinburgh, where their presence was clearly due to casting out of refuse from foreign grain. New records for Britain are indicated by a star.

**Avena barbata*, Brot. (a native of Asia Minor, Arabia, and the Mediterranean region); *Apera intermedia*, Hackel (first found in 1904 by Drs. Penther and Zederbauer in the Erdschias-Dagh, Asia Minor, once since found as a casual in England and several times near Edinburgh; it occupies a place midway between *A. Spica-Venti* and *A. interrupta*); **Gaudinia fragilis*, Beauv. (frequently found here during the last four years, probably often mistaken for a form of *Lolium italicum*); *Phleum græcum*, Boiss. and Heldr. (often occurring and in great quantities, with spikes varying from four inches to one-eighth of an inch in length); *Phalaris minor*, Retz.; *P. cærulescens*, Desf.; *P. intermedia*, Bosc.; **P. tuberosa*, L.; *P. paradoxa*, L.; **Trisetum pumilum*, Kunth; **Agropyron triticeum*, J. Gærtn.; **Kæleria phleoides*, Pers.; **Poa persica*, Trin.; **Bromus japonicus*, Thunb.; **B. divaricatus*, Rhode (the last named has been placed under *B. macrostachys*, Desf., by several authorities, but is a very distinct plant, which seems to deserve specific rank).

Mr Fraser also exhibited specimens of ergotised grains of *Melica nutans* from near Lochan na Lairige, Perthshire.

Dr. A. W. BORTHWICK exhibited branches and cones of *Picea rubra*. In the year 1869 Mr. William Gorrie read a paper to this Society on *Abies rubra*, and exhibited specimens taken from trees grown on the railway bank near Tynehead Station in Midlothian. The trees at that time were about fifteen years planted, and were from 12 to 18 feet high. Some of these trees still remain, and are now about 40 feet high, and appear to be still thriving, although damaged to some extent by smoke from the passing trains.

Professor BAYLEY BALFOUR, F.R.S., showed a specimen of *Polygonum pseudo-dumetorum*, H. C. Wats., found in the neighbourhood of Edinburgh; also an old and very fine portrait of Linneus.

Mr. R. L. HARROW showed the following plants in flower from the Royal Botanic Garden:—*Aspidistra typica*, *Dalechampia Ræzliana*, *Calanthe Veitchii* ×, *Calanthe Veitchii* × var., *Calanthe oculata*, *Cypripedium tonsum*, *Muehlenbeckia complexa*, *Leucadendron argenteum*, *Acacia alata*, *Senecio macroglossus*, *Corynostylis Hybanthus*, *Momordica cochinchinensis*; *Pelargonium echinatum*.

Mr. L. STEWART showed plants of *Euphorbia uncinata*, *Pedilanthus aphyllus*, and *Utricularia oligosperma*.

R. J. NICHOLSON, M.A., B.Sc., sent for exhibition two casuals from Wigtownshire—*Senecio Doria* and *Lamium maculatum* var. *album*.