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F. Buchanan White M.D. F.L.S.

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The History of Agropyrum (or Triticum) Donianum.

By F. BUCHANAN WHITE, M.D., F.L.S.

(Read 12th December 1889.)

About the beginning of the century George Don found, on Ben Lawers, a grass of which he distributed specimens with (as regards a specimen now before me) this label—*"Triticum alpinum. Nova species. Alpine wheat grass. Rocks on Ben Lawers."* Since Don's time it seems not to have been gathered till Mr Cosmo Melvill rediscovered it on Ben Lawers in 1878, after which it remained undisturbed for ten years, when I found it again near the place where it had been collected by Mr Melvill.

In addition to, or perhaps on account of, its having escaped the observation of collectors, Don's grass was almost generally ignored by botanical writers till Mr Mitten (*Hooker's Journ. of Bot.*, vol. vii. p. 532) called attention to it as follows, referring it to *Triticum biflorum*, Brig.:—"The present is one of those plants gathered by the late Mr G. Don, which appears to have been overlooked by other botanists. His label in Mr Borrer's herbarium runs thus: '*Triticum alpinum. Nova spec. It differs from caninum by its short arista and upright spikes, and from repens by not running at the roots.*' No date is mentioned. It is thus clearly evident that he distinguished it as a new species. The only British species with which it can be confounded is *T. caninum*, from which it may be distinguished by its leaves, smooth on both sides, its usually two-flowered spikelets, and its want of the long awn; it also appears to be a more slender plant, with narrower leaves."

In Hooker and Arnott's *British Flora* (8th ed., 1860) it is given as var. β of *T. caninum*, with the synonym *T. biflorum*, Mitten (scarcely of Brignoli). In the *Student's Flora* (1st ed., 1870) it is mentioned as *T. caninum*, var. *biflorum*, Mitten (*T. alpinum*, Don MSS.), and is said to be "only *T. repens*"—a statement qualified in the 3rd edition by the addition of "judging from the specimen." Nyman (*Conspectus*) places it with a "?" under *T. violaceum*, Horn.

In the *Journal of Botany* (vol. xxv. p. 57, February 1887), Mr Cosmo Melvill writes on the subject under the heading "*Agropyrum (Triticum) violaceum*, Hornemann in Scotland." After mentioning that he had found a *Triticum* on Ben Lawers, he proceeds to say that when he came to examine the grass (some years after collecting it) he found it "to correspond exactly in every minutest particular with specimens of *Triticum violaceum*" from Norway and Lapland. He further adds that Mr A. Bennett had come to the same conclusion, with the addition that it was "identical with an original specimen of Don's *T. alpinum* in the Kew Herbarium." Mr Melvill also notices that "only a small piece of root was gathered with one of the specimens, but this, on a careful examination, would show that the plant was fibro-cæspitose, not creeping; and therefore, assuming this to be Don's original species, Sir J. D. Hooker's theory that *T. alpinum* is only a form of *repens* must fall to the ground. Indeed, it is nearer *caninum* than *repens*; but to my mind a true and very distinct species from any other: one of the chief characteristics by which it can in nearly every instance be told at a glance is the purple tinge of the spikelets, hence, doubtless, its trivial name."

Comparing one of Mr Melvill's specimens (which he kindly gave to me) with one of Don's (which Mr John Knox, of Forfar, had generously presented to the Perthshire Herbarium of the Perthshire Natural History Museum), I found that there was not the least doubt of their specific identity; and, moreover, that they were distinct from *A. repens*. Furthermore, I found that the plant which I gathered on Ben Lawers in 1888 was also the same. That the species was identical with *A. violaceum* seemed to me a little doubtful, but as I had no specimens of the latter with which to compare the Ben Lawers grass, I was content to accept Messrs Melvill and Bennett's determination. The plant I found on Ben Lawers grows on a rock ledge, where it forms a stout tuft. From it I took a small piece of the root, which has now made a good plant. In the course of its growth it developed a creeping stolon, and since N. J. Andersson describes (*Gramineæ Scandinaviæ*, p. 5) *T. violaceum* as altogether destitute of creeping stolons, I determined to compare for myself the Ben Lawers grass with *T. violaceum*. Andersson,

whose descriptions are always careful, describes the inner pales of *T. violaceum* as acute, and those of *T. repens* as bifid. The Ben Lawers grass had, I found when examining Don's and Melvill's examples, acute inner pales, but had, in addition, the ribs of the pale produced into short lateral awns lying on each side of the acute apex. Numerous examples of *T. repens* showed without exception inner pales constructed as described by Andersson, therefore it seemed probable that the character was a reliable one. A specimen of *T. violaceum* was then examined, and no trace of the lateral awns could be detected. Under these circumstances, and having occasion to mention the rediscovery of Don's grass, I provisionally named it (*Proceedings of the Perthshire Soc. of Nat. Science*, vol. i. p. xli.) *Agropyrum Donianum*. This name was adopted in preference to Don's manuscript name of *Triticum alpinum*, since that has been attended with much confusion, and because, moreover, it seemed desirable to associate Don's name with a flowering plant of the Scottish hills.

As, however, the species of the genus *Agropyrum* are so variable, it appeared advisable that the specialist on grasses, Professor Hackel, should be consulted. The opinion which he very kindly gave is briefly this:—If the characteristic of the lateral awns of the inner pales is constant, the specific separation of *A. Donianum* from *A. violaceum* would be justified; but if not constant, or at least not obvious (and from the specimens he has seen he is doubtful as to the constancy), it can serve only to separate *A. Donianum* as a variety.

This, then, is the history of *A. Donianum* up to the present time. It remains to be considered whether there are sufficient grounds for believing that the distinction of the lateral awns of the inner pale is to be relied on as a constant character.

In search of this character I have examined numerous pales in—(1) Don's plant; (2) Mr Melvill's specimen; and (3) many spikes from my cultivated Ben Lawers plant. In all of these I have never failed to find it. If, however, the pales are examined before the fruit has developed, the awns may easily be overlooked, since at that time they appear to be in a rudimentary condition only. As the fruit

matures the awns grow larger, till they become (as Professor Hackel remarks) "very obvious even for the naked eye." I am compelled, therefore, to think that this character is a constant one, and if constant, then *A. Donianum* is a good species.

Of the British species of *Agropyrum*, *A. Donianum* is most like *A. repens*. The leaves of *A. Donianum* are more rigid, and more scabrid on both surfaces; the spike (erect in both species) has comparatively shorter and broader glumes; the rachis is more strongly spinulose, not only on the edges, but on ribs within the edges; and the axes of the spikelets have longer internodes, which are hairy. The inner pale in *A. repens* is shortly bifid or emarginate at the apex.

From *A. violaceum* the chief distinction lies, as already mentioned, in the lateral awns of the inner pale, but there are other differences. The apex of the inner pale is more acute, and the spinulose pectination of the ribs is more dense, and not so long; the glumes and outer pale are proportionately longer and narrower; and the axis of the spikelet appears to be somewhat shorter and more longly spinulose. In colour the spike of *A. Donianum* is usually of a glaucous green, rarely slightly tinged here and there with violet, whilst *A. violaceum* derives its name from the violet colour of the spike. This colour character is probably, however, of comparatively little importance, since I have found both *A. repens* and *A. caninum* with violet-coloured spikes, and Swedish specimens of *A. caninum* with violet spikes have been distributed as *A. violaceum*. The spikelets of *A. Donianum* are three to four flowered.

Though *A. violaceum* is described as being altogether without stolons, this is, it seems, not quite the case, since Professor Hackel tells me that he has a specimen of the true *A. violaceum*, which shows short runners, but different from the long and scaly runners of *A. repens*. The stolon produced by my plant of *A. Donianum* is also short and scaleless.

As regards the specimen seen by Mr Mitten, and called by him *T. biflorum*, there is, judging from the description, some doubt, since our plant has not "leaves smooth on both sides," nor "usually two-flowered spikelets." *A. caninum* differs from *A. Donianum* by its often-nodding spike, softer

leaves, longer and flexuose awn of the outer pale, and structure of the inner pale, which is truncate or scarcely acute at the apex, into which the ribs converge and vanish.

Though *A. Donianum* has as yet been detected on Ben Lawers only, it probably occurs elsewhere, and possibly may have been confounded with forms of *A. violaceum* in Northern Europe. In *Alopecurus alpinus*, Sm., we have an example of a grass which was found first in Scotland, and afterwards in the Arctic regions and in Fuegia.