Gramina britannica, or, Representations of the British grasses : with remarks and occasional descriptions / by J.L. Knapp.

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GRAMINA BRITANNICA;

OR

REPRESENTATIONS

OF THE

BRITISH GRASSES.

WITH

REMARKS AND OCCASIONAL DESCRIPTIONS.

BY

J. L. KNAPP, Esq. F. L. S. & A. S.

> ‘Hinc fessæ pecudes pingues per pabula læta
> Corpora deponunt, et candens lacteus humor
> Uberibus manat distentis.’ LUCRETIUS.
>
> By *these* both man and beast are fed: by *these*
> The herds fatten, and with encumbered
> Bodies ruminate supine amid
> The rich luxur'ant herbage: *hence* flow from
> Wide distended udders, nutritious
> And milky streams.

LONDON:
PRINTED FOR THE AUTHOR, BY T. BENSLEY, BOLT-COURT;
AND SOLD BY J. WHITE, FLEET-STREET.
1804.

PREFACE.

THE application of the vegetable kingdom to the uses, pleasures, and assistance of mankind, is so various and universal, that life and existence are dependent upon it. Before Commerce dispersed credulity, and opened the gates of knowledge to man, from the product of our own isle, fancy prepared the balms and medicines that malady required, and poor necessity trusted to their ideal power; in after ages labouring science discovered the activity of mineral preparations, and the more powerful drugs, the produce of other regions, assumed their just superiority; the domestic still, the cordial water, and the formulæ of the Galenic school, gradually faded from observation, and silently sunk into oblivion.——If we consider Great Britain, and her 1300 species of plants, * how small a number are retained for medical purposes! how very few are applicable to the arts of life! and how infinite a number vegetate without our knowledge of any virtues they possess! contributing in no visible manner to any end to which the limited faculties of man can apply them. The most important then of our island natives, are those classes which serve for the maintenance of quadrupeds, and ultimately for that of man, which were noted for that purpose from the earliest creation, and will continue thus applicable till the final consummation of all things.

It has long been a desideratum that that part of the Triandrious class denominated Grasses, might be assembled, and it is presumed that a step is now taken towards its accomplishment; the endeavour, it is hoped, favours not of arrogance, nor merits contempt.

In regard to the Plates, the author has only to observe, that the drawings from which they were taken were by his own hand, from plants of nearly all his own gathering, in their native stations, and to the best of his opinion judiciously selected; various soils, various seasons, various situations, all influence in a remarkable manner, as the attentive botanist is fully aware of, the vegetable world; hence that these are just and general representations, the candid consideration of the observer must alone determine.

Bath, June, 1803.

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* If to the 1300 species of regular British plants we add those of the Cryptogamia, with the exclusion of Algæ and Fungi, which are not yet perhaps sufficiently ascertained, we may estimate our island natives at about 1900 species.

PREFACE.

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[illegible]

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* [illegible]

VARIOUS have been the opinions formed by authors regarding the number of the species of Grasses,* natives of Great Britain, and our catalogue has been extended to 'upwards of three hundred species.' † Dr. Withering reduces this number to one hundred and twenty-three species; Mr. Curtis enumerates one hundred and fifteen; but since these catalogues were given us many varieties have been excluded, and some species added. The Flora Britannica describes one hundred and thirteen species, and as this enumeration is unquestionably the most perfect, it has been chiefly attended to by us.

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* With certainty we can botanically distinguish Schœnus, Scirpus, Carex, and our other grassy-leaved plants, from the more regular grasses, but it is rather difficult to define exactly for general comprehension the word Grass; yet perhaps we may say that those plants are usually considered as grasses which have commonly round, hollow, jointed, unbranched stems, with leaves very entire, and longer than they are broad; seed contained in chaffy husks, and when germinating, not parting into lobes or cotyledones.

† Martyn's letters.

Anthoxanthum odoratum

J. Hibbert Bath Sculp.t

PLATE I.

DIANDRIA DIGYNIA.

ANTHOXANTHUM.

Gene. Char. Calyx, with two valves and one floret; floret with two valves, both with an arista. *Gen. Plant.*

ANTHOXANTHUM ODORATUM. { *Sp. Plant.*

Sweet-scented Vernal-grass.

Specific Character. One British species only.

The first of our pasture grasses that peeps through the shades of winter, enticed by the summer days of April, is this Anthoxanthum odoratum, and is immediately followed by the Meadow Foxtail. A plant so well known and easily detected needs little description besides that which is afforded by the generical character. Early as the vernal grass makes it appearance, yet it continues in marshy places to produce spikes through the summer, and in peaty spongy soils becomes a plant of a very enlarged stature, with an expanded spike, and at the first sight deludes the botanist. Fig. 2.——It has been supposed by some writers that it is this grass that communicates the sweet flavour that is so much admired in Hay; but this admits of some doubts, as by the time that the pasture grasses are cut, Anthoxanthum has its straw dried up, is sapless and inodorous.——This early product of spring seems not much noticed by the grazier, and it may not in its present situation claim peculiar attention, yet it seems unwise wholly to reject it: in pastures mixed with other grasses it is of little value, because by the time the scythe is introduced the Vernal-grass has faded, the foliage withered and dried up, it being in perfection in the first weeks of May, whereas grass is generally cut in June and July. Spring feed is our grand desideratum, and it may be questioned if this Vernal-grass was selected and cultivated alone as the Ray-grass is, if it would not prove in a certain degree valuable, by affording the most early food for lambs, as it flowers a full month earlier than the Ray-grass.* It has been supposed in some of our cheese counties that the Anthoxanthum is prejudicial to the making that article, the essential oil of the plant causing the 'heaving of the curd;' but if that circumstance was established, the advantages to be derived from it for feeding sheep and lambs would not in any manner be diminished.——This plant, and Bromus diand^{s}: are the only grasses in the class Diandria which Britain possesses.——Haller arranges this Anthoxanthum with Avena, and if we were to be guided in that genus solely by its wreathed aristæ, it might be perhaps scientifically placed.

A, the Calyx.
B, the hairy Valves of the Corolla.
C, the Nectarium.
D, Stamens and Styles.
E, the Corolla, with its wreathed arista, when the seed is perfectly matured.

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* In indicating the utility and purposes to which some of our pasture grasses are supposed to be applicable, we would wish to be most fully understood that they are not pointed out as absolute and confirmed, but with all possible diffidence are hinted, and submitted to those who are better calculated to investigate their characters; and any opinion that may be advanced is to be considered partly as conjectural, instigated by the best wishes for the advancement of agriculture, and our rural concerns.

Nardus stricta

R. P. Nodder Sculp^t.

PLATE II.

TRIANDRIA MONOGYNIA.

NARDUS.

Gene. Char. Calyx, none; corolla with two valves. *Gen. Plant.*

NARDUS STRICTA. { *Spec. Plant.*

Heath Mat-grass.

Spec. Char. One British species only.

This simple and elegant heath-loving plant is very commonly to be found, about the middle of June, both in dry and damp situations, upon commons and waste places, but it prefers a boggy soil,* and wherever Erica tetralix vegetates, its little satellite Nardus is generally in the neighbourhood, and the bright green colour of the straw, and deep violet hue of the florets, tipped with their white antheræ, readily point it out; straw arising from pencil-like tufts, which are always wrapped round with a dry and husky sheathing; root-leaves several, about half the length of the straw, bristle-shaped, and armed with minute spines.

Nardus stricta exists not useless in the great scale of vegetable economy, but often lends its aid to give a solidity to turfy bogs, by the matted base of the numerous leaves and straws which rest upon, and are not buried in the soil, and thus may have been designed by Nature as one of her agents, in conjunction with Carex, Scirpus, Juncus, &c. and that aquatic tribe of plants, to render the situations in which they delight, in process of time, firm and useful land; that purpose effected, they decay from the soil, or are supplanted by better herbage, suitable to animal food: but other means are appointed besides natural decay to root out Nardus from the land; when the original design has been completed; we are told in the Amænitates Academicæ that various Tipulæ (gnats) deposit their eggs at the base of the straws of this plant, as a dry hybernaculum, or winter quarter, but rooks, and the crow, seeking for the caterpillar of the Tipulæ, with their strong beaks stock up Nardus to dislodge the grub, and hence the space it occupied is left free for the increase of more nutritive vegetation.——Perhaps some little portion of the vast work of Nature, to a weak and half-sighted mortal, may seem an insignificant creation; yet by one who is not above the consideration of secondary causes, or humbly attempting the investigation of latent properties, in a world of harmony like that of the vegetable creation, will be found sufficient to employ his talents, enlarge his understanding, or make him perhaps a better man.

A, part of the Spike.
B, the Corolla.
C, the Germin, &c.

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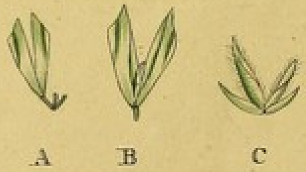
* Nardus stricta is not found however exclusively in low lands, but abounds in the ascents of Ingleborough, and all the northern mountains: vegetating originally on the boggy summits of these great hills, the roots, or seeds, have probably been washed down from thence by the winter floods, or equinoctial torrents, and lodged in various places where the earth might have subsided, or impediments been met with.



Phalaris Canariensis

R. P. Nodder Sculpt.

PLATE III.

TRIANDRIA DIGYNIA.

PHALARIS.

Gene. Char. Calyx with two equal valves, keeled, enclosing a single floret. *Gen. Plant.*

PHALARIS CANARIENSIS. { *Spec. Plant.*

Canary-grass.

Spec. Char. Spike ovate, calyx-valves smooth; floret-valves four,* the larger valves hairy.

We have delineated this plant, and given it a station amidst the British natives, in conformity with several of our preceding botanists, but we have no reason to consider it as indigenous to our island, and although we occasionally find it scattered on the sides of roads, on ash heaps, and at the edges of manure, yet all its stations point it out as originating from the sweepings of the bird-cage, or as a stray from the aviary: its seed is the favourite food of that pretty songster imported from the Tirol, and Canary Islands, and has been cultivated in England for that purpose for perhaps above three hundred years, from the days of our good queen Elizabeth.——The tyranny of the bigotted Philip of Spain, and the persecutions of his evil agent the duke of Alva, expelled from their native country many of the industrious inhabitants of the Low-lands, who flying from their merciless enemy, sought an asylum under the government of these kingdoms, introducing with them the arts of horticulture, and the esculent vegetables at that day unknown in England, and by them was first cultivated Phalaris Canariensis: the county of Kent was chosen by the Netherlanders as the most favourable soil for their employment, nor do we know that the Canary-grass has been attempted to be grown but in that county where first introduced by the Low-land emigrants.——Canary-grass seems perfectly naturalized in the chilling airs of this climate, and as the soil it vegetates in is in general tolerably rich, its straw acquires altitude, and its foliage luxuriance. Our internal consumption of the seed of this plant is so great, that it is cultivated in considerable quantities; and if the character of Britain would be augmented by being considered as a musical nation, our domestication of the little warblers in such numbers as to require a regular cultivation of their food, gives us some claim to that epithet, or at least to be considered as lovers of innocent harmony.

A, a Floret.
B, a Floret with the Calyx expanded, and the Corolla rendered visible.
C, the Corolla.

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* Perhaps if instead of considering the corolla as having four valves, we were to denominate the two smaller ones Nectaries, we might express ourselves with more propriety.

Phalaris arenaria

R.P. Nodder Sculpt

PLATE IV.

PHALARIS ARENARIA. { *Hudson's Flora Ang.* PHLEUM ARENARIUM, *Sp. Plant.*

Sea Canary-grass.

SPEC. CHAR. Spike obovate; calyx bristled towards the summit; floret valves smooth.

THIS Phalaris is an inhabitant of several of our sea shores,* growing often in the very drifts of sand: it makes no conspicuous figure, and is more a solitary than an abundant plant. We sometimes in damp places see it a foot high, but in general it is only a few inches. Straw coloured and shining, and often knee-jointed at the base; sheathing tumid and large, terminating in short broad leaves, free from hairs; antheræ white, and very small.——We must place this our Sea Canary-grass among those plants of whose virtues we are ignorant, small and insignificant in stature, and of utility latent or confined.——Linnæus arranges this plant with Phleum, with which it certainly does not accord; the peculiar dagger-like termination of the calyx in Phleum is an excellent distinction of that genus, and will always detect it; yet the little plant before us approaches towards it; the bristle-like hairs towards the summit, and the manner in which the calyx-valves terminate, shew its affinity, and it may perhaps form the link of connection between the genera of Phalaris and Phleum.——We occasionally find a small variety of this plant about an inch high, with the spike disproportionably large, and almost rotund. Fig. 2.

A, a Branch from the Spike.
B, the Calyx.
C, the Valves of the Floret.
D, the Germin, &c.

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* This Phalaris is occasionally to be found far removed from the sea, and in the dry corn-fields about Narborough, in Norfolk, it is commonly to be met with.

PLATE IV.

PHALARIS ARENARIA.

[illegible]

Sea Canary-grass.

Spec. Char. Spike [illegible], calyx keeled towards the summit, florets [illegible].

This Phalaris is an inhabitant of several of our sea shores,* growing often in the very drift of sand; it makes no conspicuous figure, and is more a solitary than an abundant plant. We sometimes, in damp places, see it a foot high, but in general it is only a few inches. [illegible] coloured and slender, and often knee-jointed at the base; sheathing [illegible], terminating in short [illegible] leaves. [illegible] from base, [illegible] white, and very small.——We must place this our Sea Canary-grass among those plants of whose virtues we are ignorant, small and [illegible] in stature, and of utility [illegible] or unknown.——Linnæus arranges this plant with Phleum, with which it [illegible] does not accord, the peculiar dagger-like termination of the valves in Phleum is an excellent distinction of that genus, [illegible] will always detect it, yet the little plant before us approaches towards it, [illegible] towards the summit, and the manner in which the calyx valves [illegible], and may perhaps form the link of connection between the genera of Phalaris and Phleum.——We [illegible] find a small variety of this plant [illegible] inch high, with the spike [illegible] large, [illegible] round. Fig. 2.

A, a Branch from the Spike.
B, the Calyx.
C, the Valves of the Floret.
D, the Stamens, &c.

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* [illegible]

Phalaris phleoides

J. Hibbert Bath Sculp^t.

PLATE V.

PHALARIS PHLEOIDES. { *Spec. Plant.*

Cat's-tail Canary.

Spec. Char. Panicle compressed into a slender and cylindrical spike.

Britain was enabled to add this species to her Flora from the researches of those accurate and faithful investigators of the vegetable tribes, Messrs. Woodward and Crowe; and it was these gentlemen who pointed out to us the exact situation of this rare Phalaris phleoides.*——Those who have only seen this plant as the nursling of the garden would scarcely know it in an indigenous state, and will smile perhaps at our diminutive representation: amidst an hundred plants we did not discover one that attained the height of fourteen inches, nor was the panicle in any instance the length of two inches, and the whole plant slender and attenuated. The panicle appears to the eye as a spike, the short branches which compose it being upright, and closely compressed.——Leaves short and sheathing, with very fine serratures at the edges; straw smooth.——In the cultivated plant will be found (as mentioned by Dr. Withering), at the base of the inner valve of the corolla, a very minute bristle, but in the indigenous one, if that bristle exists, it was too small to be observed by us.

A, a Branch; a series of which form the spiked panicle.
B, the Calyx.
C, the Corolla.

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* We found it in tolerable quantity towards the termination of the plantation by the side of the road leading from Narborough-hall to Marram, near Swaffham, Norfolk. We have since this been informed that Phalaris phleoides is found at the edges of the small hills behind Hildersham, Cambridgeshire.

Phleum pratense
Meadow Cats-tail

PLATE VI.

PHLEUM.

GENE. CHAR. Calyx with two valves; valves truncated, terminating in points, containing one floret. *Flo. Brit.*

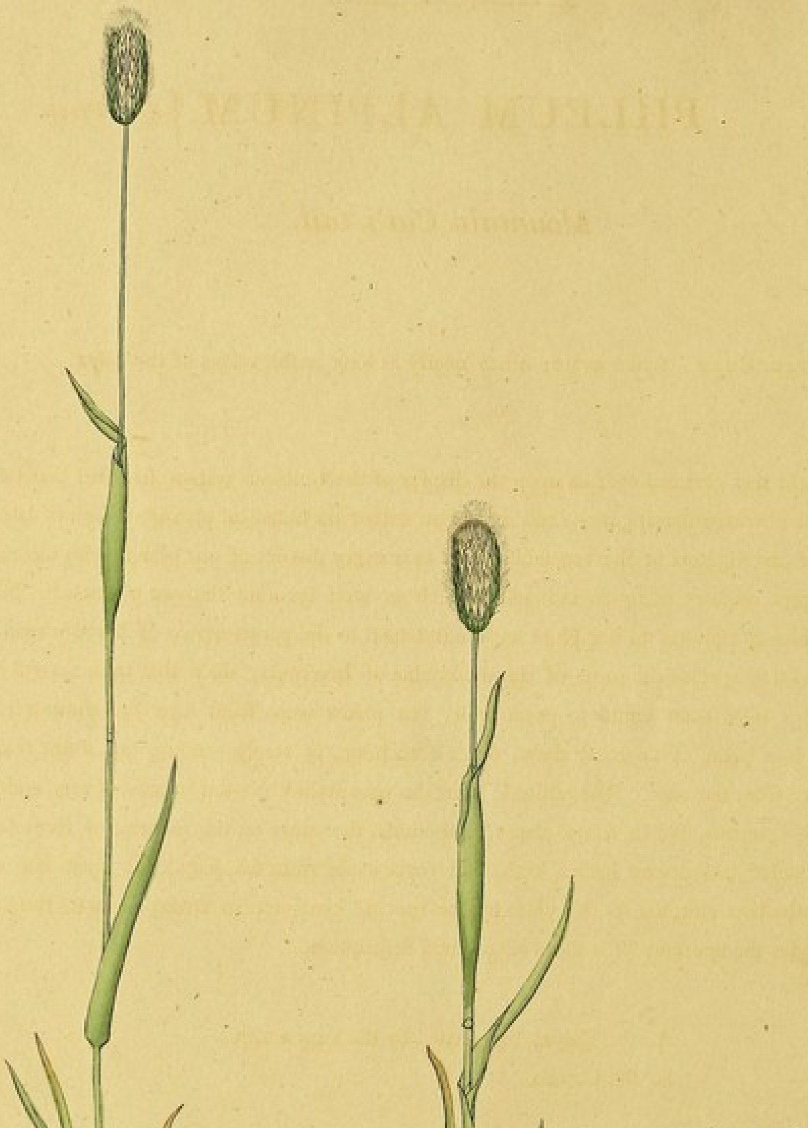
PHLEUM PRATENSE. { *Spec. Plant.*

Meadow Cat's-tail.

SPEC. CHAR. Spike cylindrical, long; calyx bristled; bristles as long as the terminating point of the valve.

THE meadow Cat's-tail will ever rank high amidst the valuable plants that constitute the herbage of our low lands, but will not attain to that eminence that might have been expected from the heated recommendations of Le Roque.——As a cutting grass, its merits are equal to any. When cattle are turned into a pasture they are frequently dainty in the choice of their food, and will not eat till necessitated many of the coarser grasses; horses in particular will be observed to graze in patches, or near the edges of pathways, where the sweeter grasses Poæ, Cynosurus, &c. are found, and which are more grateful to their appetites (for animals are often as dainty as man), rejecting Holcus, Phleum, Dactylis; but when they are cut down and made into hay, the excellence of the tender and sweeter grasses is lost in the promiscuous assemblage; and it is in such cases that the luxuriant grasses will always be found most valuable, producing plenty of food, good and nourishing, provender for the cow and ox (the peasant and the labourer) who require a quantity, nor are they so apt to select and choose.——P. pratense is rather a late grass, but yet produces plenty of herbage by the time that the scythe is generally applied. It flourishes much in low and peaty lands, and in moist damp soils, and thus we find it retaining a verdure later than the upland grasses.——In dry gravelly uplands it becomes knotty and geniculated at the base, and dwarfish in stature, and hence its virtues are by no means conspicuous, or bear any comparison with the same plant in a humid situation.——The filaments which connect the antheræ are very long, and they are frequently entangled by the bristles of the calyx, and thus the antheræ lie close to the stigmata and perfect the seed.——In very dry situations, particularly in sandy downs by the sea, Phleum pratense becomes a very diminutive plant, with a small ovate head, and the root will be found to consist of two or three bulbous joints: this variety has been by some writers arranged as a species, under the name of P. nodosum. Fig. 2.

A, the Calyx.
B, the Floret Valves.
C, the Germin, Filaments, &c.



Phleum alpinum

R. P. Nodder Sculp.

PLATE VII.

PHLEUM ALPINUM. { *Spec. Plant.*

Mountain Cat's-tail.

Spec. Char. Spike ovate; arista nearly as long as the valves of the calyx.

The bright light that gleamed over us upon the display of the Linnæan system dispelled that twilight of doubt which obscured investigation, and incited an ardour for botanical pursuits which of late years has spread the investigators of the vegetable world over every district of our island, who have drawn from their secret recesses many an individual which we were ignorant that we possessed. For the addition of Phleum alpinum to our Flora we are indebted to the perseverance of Mr. Dickson, who first discovered this species on some of the mountains of Inverness; since that time several of the Caledonian alps have been found to produce it: our plants were from near the summit of Ben Lawers; * it is a plant of no great shew, never branching, or rarely sending out more than one flowering spike from the root. The altitude that the mountain Cat's-tail attains is very uncertain; sometimes it is dwarfish, but in damp places, and amidst the moss on the margins of rivulets, it is found from twelve to fourteen inches high, and remarkable from the deep black green hue of the spike: the distinction afforded to this plant by the specific character so strongly marks the species that it supersedes the necessity of a more lengthened description.

A, the Calyx, terminated by the long aristæ.
B, the Corolla.

* This mountain constitutes one of the great Bredalbane chain, and is situated about five miles from Killen, upon Loch Tay: it is exceeded in altitude by not more than one or two of the mountains of North Britain (Ben Nevis, and probably Loch-ne-gar, in Aberdeenshire), but is excelled in the richness of its vegetable stores by none that we possess. A botanic visiter to the Highlands will perhaps find no station in Scotland superior to Killen, and if alpine productions are in request, the profusion of Craig Hallech and Ben Lawers will astonish and delight.

PLATE 13.

PHLEUM ALPINUM.

Mountain Cat's-tail.

[illegible]

[illegible]

a. The Calyx, [illegible]

b. the Corolla.

[illegible]

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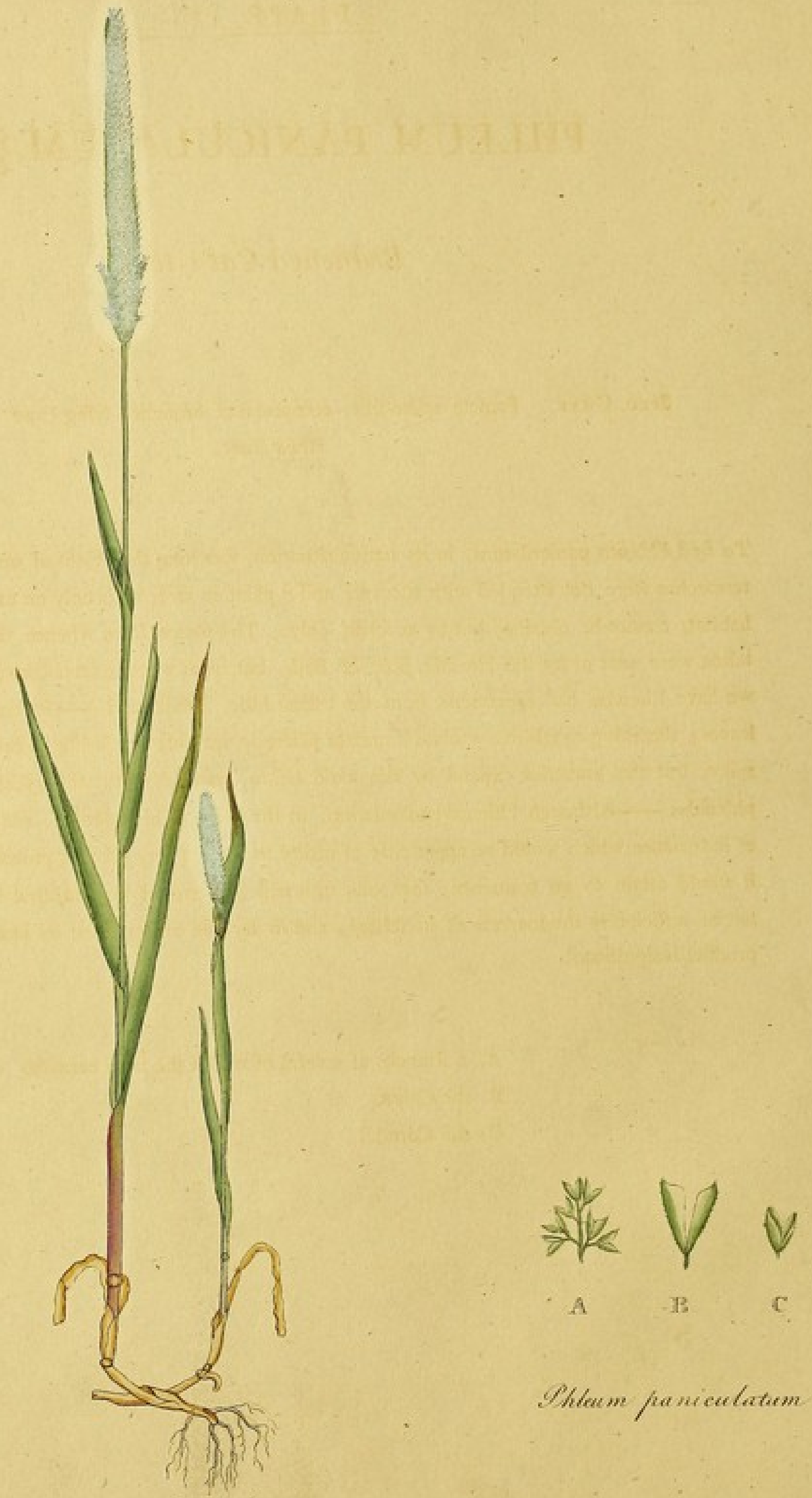

Phleum paniculatum

R.P. Nodder Sculp^t.

PLATE VIII.

PHLEUM PANICULATUM. { *Hudson's Flora Ang.*

Branched Cat's-tail.

Spec. Char. Panicle spike-like, composed of branches lying close to each other; straw leafy.

To find Phleum paniculatum, in its native situation, was long the object of our endeavours, but our researches were not attended with success; and a plant so rare, with only an uncertain and extended habitat, cannot be obtained but by accident only. The plants from whence the representation was taken were sent us by the late Mr. Sole of Bath, but from whence he obtained them is not certain: we have likewise had specimens from the ballast hills, Sunderland.——Straw furnished with many leaves; sheathing roughish: panicle branches perfectly upright, and, being compressed closely, form a spike, but the branches expand by the hand being stroaked down the spike, similar to Phalaris phleoides.——Although Phleum paniculatum, in the rich soil of a garden, acquires a certain degree of luxuriance which would be apparently of utility to the grazier, yet it is probable that in cultivation it would attain to no eminence; few soils into which it would be admitted being rich enough to favour sufficiently the increase of its foliage, and in dry and hungry land its stature is small, and its product insignificant.

A, a Branch, of several of which the head consists.
B, the Calyx.
C, the Corolla.

Panicum verticillatum

R. P. Nodder Sculpt.

PLATE IX.

PANICUM.

Gene. Char. Calyx with three valves and one flower, third valve very small; seed enclosed in a cartilaginous and cork-like corolla. *Flo. Brit.*

PANICUM VERTICILLATUM. { *Spec. Plant.*

Whorled Panick-grass.

Spec. Char. Spike with involucelli; florets disposed in whorled tufts round the general receptacle; corolla with three valves.

Of all the genera of our British grasses Panicum is the most rare, and it is difficult to find for them a permanent habitat, as even locally they are seldom abundant, and being found chiefly in cultivated fields, the operation of the plough removes or effaces the station of a preceding year, and the finding of a few plants must rather be considered as a discovery.——The leaves of Panicum verticillatum are broadish, rough on both sides, and minutely serrated on their edges: straw smooth, excepting in the upper part, which is rough with minute spines pointing upwards.*——The spike, when young, is of a light green colour, but this hue fades as the plant advances in age, and the florets assume a pink or purple tint: the bristles at the base vary, but we have most generally observed two at the base of the stipes; all the florets however are not furnished with these involucelli.——The valves of the corolla (two of them) that invest the seed in the genus Panicum are formed of a substance much more strong and durable than that of any other of our grasses, and when dry they are almost of a bony nature; being a peculiar provision for securing the seed from the depredation of insects, and from being injured by the transitions of seasons, as the seeds remain in the earth perhaps eight or nine months previous to germination: notwithstanding however this ordination for securing the continuation of the race of Panicum, we find them rarely, and even in stations known to have produced them half a century past, they appear to have scarcely wandered from the small circumference they were originally observed in.

We have noticed this plant more commonly than elsewhere in some of the dry corn-fields above Melford-bridge, near Woodbridge, Suffolk.

A, a Floret and its involucelli, with the footstalk of another floret.
B, the three valves of the Calyx.
C, the Corolla and its three valves.

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* We are strongly of opinion that Britain possesses another species or remarkable variety of P. verticillatum, as we have seen in several collections plants of this Panick, said to be indigenous, in which the spines on the upper part of the culm are pointed downwards; and the involucelli catch, and attach themselves to every passing body, by means of their strong inverted spines.

10

Panicum viride

R.P Nodder Sculpt

PLATE X.

PANICUM VIRIDE. {*Spec. Plant.*

Clustered Panick.

Spec. Char. Florets with involucelli, and clustered into a compact cylindrical spike; corolla with three valves.

A great similarity exists between this Panicum and the preceding verticillatum, and in a young state, before the separation of the spike, it is with difficulty that the eye alone can detect them: in this species the florets are placed by fours or sixes in a set, and clustered into a spike, which never separates into verticillate divisions, as in the former plant: the bristles that are seated at the base of the footstalk of each floret vary continually in number, from two to four, and in maturity their summits are tinted with purple: the little footstalks that support the florets are curiously hollowed out, like a cup, in both these species (E), to receive them, and they are so very slightly fixed in them that the expansion of the calyx will frequently detach the floret; and it appears probable that the object of the third valve is to accomplish this purpose, and elevate by its extension the florets from their stipes.——Leaves rough on both sides, and serrated at their edges. Stipulæ a circle of white hairs. Straw smooth, excepting near the spike, which is there rough, with spines pointing upwards. ———Nature appears to have very strongly armed and defended the seeds of these Panick grasses from the attacks of insects, and their bristles give some annoyance to the smaller birds which pillage the spikes, promoting the increase and continuation of the species for purposes that are not revealed to the comprehensions of man. The medicinal and alimentary virtues of plants have, for the most part, been long known and manifested to us, and many of them are daily applied in secondary offices to the aid of our various necessities; yet there remains a very large portion, fabricated with peculiar wisdom, and defended by mechanism of the most appropriate construction, serving for the security and propagation of a race, of whose utility we have not the remotest conception; and to endeavour to obtain this knowledge would possibly be a useless curiosity, as there appears no probability that we could profit by the discovery, or yoke them to the services of man.

We have seen Panicum viride in a few places in the sandy fields called ' the Walks,' near Melton, in Suffolk.

A, a Floret, with the involucelli.
B, a Floret, with the valves of the Calyx expanded, shewing the corolla.
C, a valve of the Calyx enlarged, and the small one at its base.
D, the Corolla, and its three valves.
E, the cup-formed summit of the Stipes.

Panicum crus galli

R.P. Nodder Sculp.t

PLATE XI.

PANICUM CRUSGALLI. { *Spec. Plant.*

Branched Panick.

Spec. Char. Panicle branched; branches solitary, alternate, and distant; calyx hairy; corolla with three valves.

After some investigation of our British grasses in their indigenous and cultivated states, there is no genus that appears to us to vary so greatly, or that locally assumes such different characters, without acquiring that belonging to another, as does this of Panicum; and manifestly shews us the necessity of observing plants in their native stations, and before domestication shall have given a new character, or have changed indigenous habits. The branched Panick is the largest of the genus that inhabits this country, often being found of the height of three feet. Leaves very broad, smooth on the outer side, rough on the inner, and the edges are usually tinted with purple: branches solitary, but at times towards the termination of the panicle we have observed them in opposite pairs: the little dependance that can be placed on the aristæ of grasses is obvious in Panicum crusgalli, for on the same branch we find the inner valve of the calyx to be terminated by an arista scarcely visible, and again we see it two or three times the length of the valve! Linnæus notes a variety with aristæ ten times the length of the floret: the corolla in this and the two preceding species is remarkable, and a singularity in our grasses, Nature having appointed it with three valves, the third valve being a fine transparent membrane, to be found attached to the inner valve of the corolla, and hidden by the inner valve of the calyx.——We have observed this Panicum no where so plentifully as in one part of Battersea-field,* where it was originally noticed by Mr. Hudson: the size and weight of the seeds prevent them from being dispersed by winds, and thus they occupy the space only where they casually fall.——As a genus, Panicum is the most tardy of our British grasses, appearing in August and September.

> 'Festinat decurrere velox flosculus æstatis.'

But we have few of them that produce such abundant and luxuriant foliage as this Crusgalli, an habit that is undoubtedly aided by the goodness of soil in which it almost always vegetates; but its requiring so rich an earth to flourish in, and the late period of the year in which it becomes in perfection, renders this property of no utility in its present station, nor is it probable that the cultivation of this annual plant for agricultural purposes would be advantageous, or that the experiment will ever be made.

A, a back and front representation of two Florets from the same branch.
B, the valves of the Calyx.
C, the three valves of the Corolla.

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* The place where we mostly found our plants was opposite the Linseed-mill, in the open field, near the foot-path, under the hedge nearest to the mill.

PLATE XI.

PANICUM CRUSGALLI. {*Spec. Plant.*

Branched Panick.

Spec. Char. Panicle branched; branches compound, alternate, and distinct; calyx hairy; florets with three valves.

After some investigation of our British grasses, in their indigenous and cultivated states, there is no genus that appears to me very [illegible] that locally assumes such different characters, without acquiring that belonging to another, as does this of Panicum; and which only shows us the necessity of observing plants in their native stations, and before inferences are made [illegible] or have changed indigenous habits. The Branched Panick is the largest of the genus that inhabits this country, often being found of the height of three feet. Leaves very broad, smooth on the under side, rough on the upper, and the edges are usually edged with purplish [illegible], but as we go towards the termination of the panicle we have observed them to approach points: the little dependance that can be placed on the awns of grasses is shewn in Panicum crusgalli, for on the same branch we find the inner valve of the calyx to be terminated by an awn scarcely visible, and again we see it two or three times the length of the valve. Linnæus notes [illegible] two times the length of the florets: the corolla in this and the two preceding species is remarkable, and a singularity in our grasses, Nature having supplied it with three valves, the third valve being a thin transparent membrane, to be found attached to the inner valve of the corolla, and hidden by the outer valve of the calyx.——We have observed this Panicum to vegetate as plentifully as in our [illegible] Battersea-fields,* where it was originally noticed by Mr. Dickson: the size and weight of the seeds prevent them from being dispersed by winds, and thus they occupy the same spot where they originally fall.——Of the genus, Panicum is the most rarely of our British grasses, appearing in August and September.

[illegible]

But we have few of those that produce more [illegible] and luxuriant foliage as this Crus-galli, [illegible] that is undoubtedly added by the produce of soil in which it [illegible], but it is only so rich an earth as [illegible] the late period of the year in which it becomes in perfection, renders the prospect of [illegible] it is probable that the [illegible] annual plant for agricultural purposes would be advantageous, as that the [illegible] same.

A, a back and front representation of two Florets from the same spike.

B, the valves of the Calyx.

C, the three valves of the Corolla.

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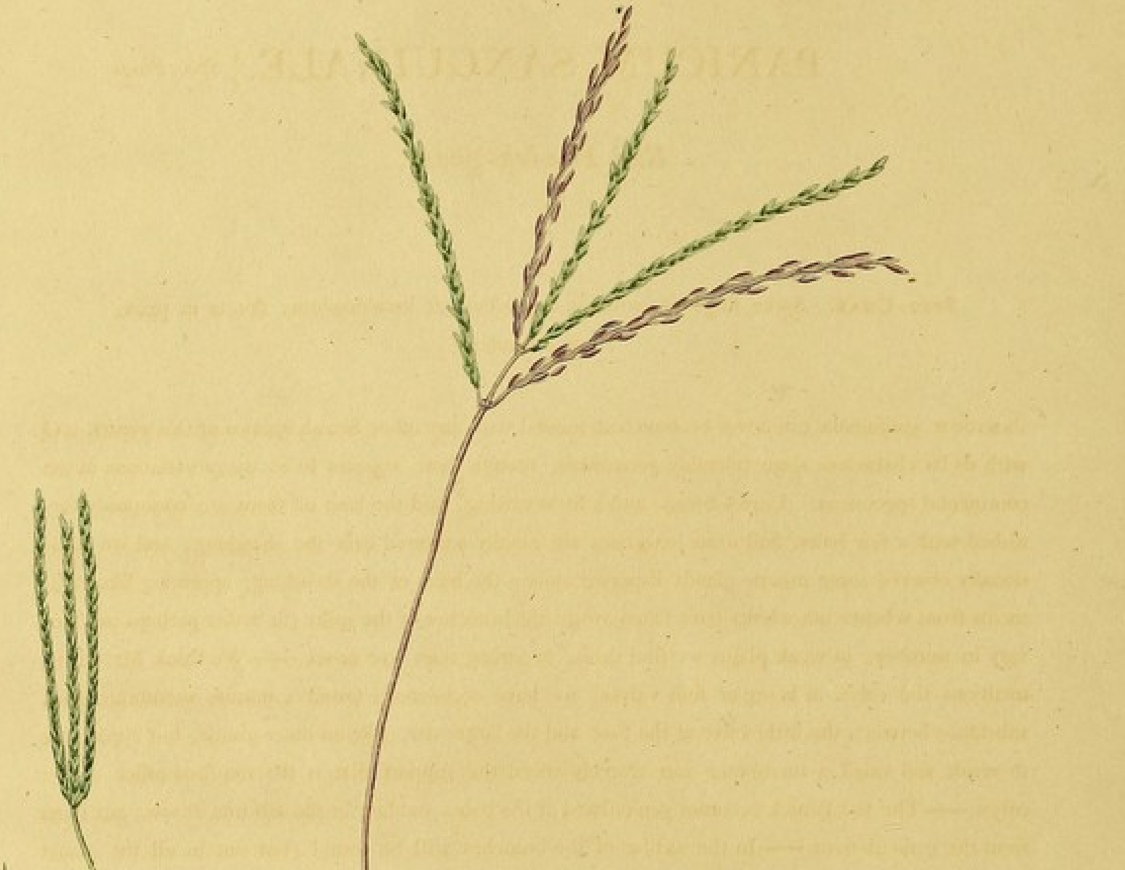
* The place where we noticed it [illegible]



Panicum sanguinale

R.P. Nodder Sculp.

PLATE XII.

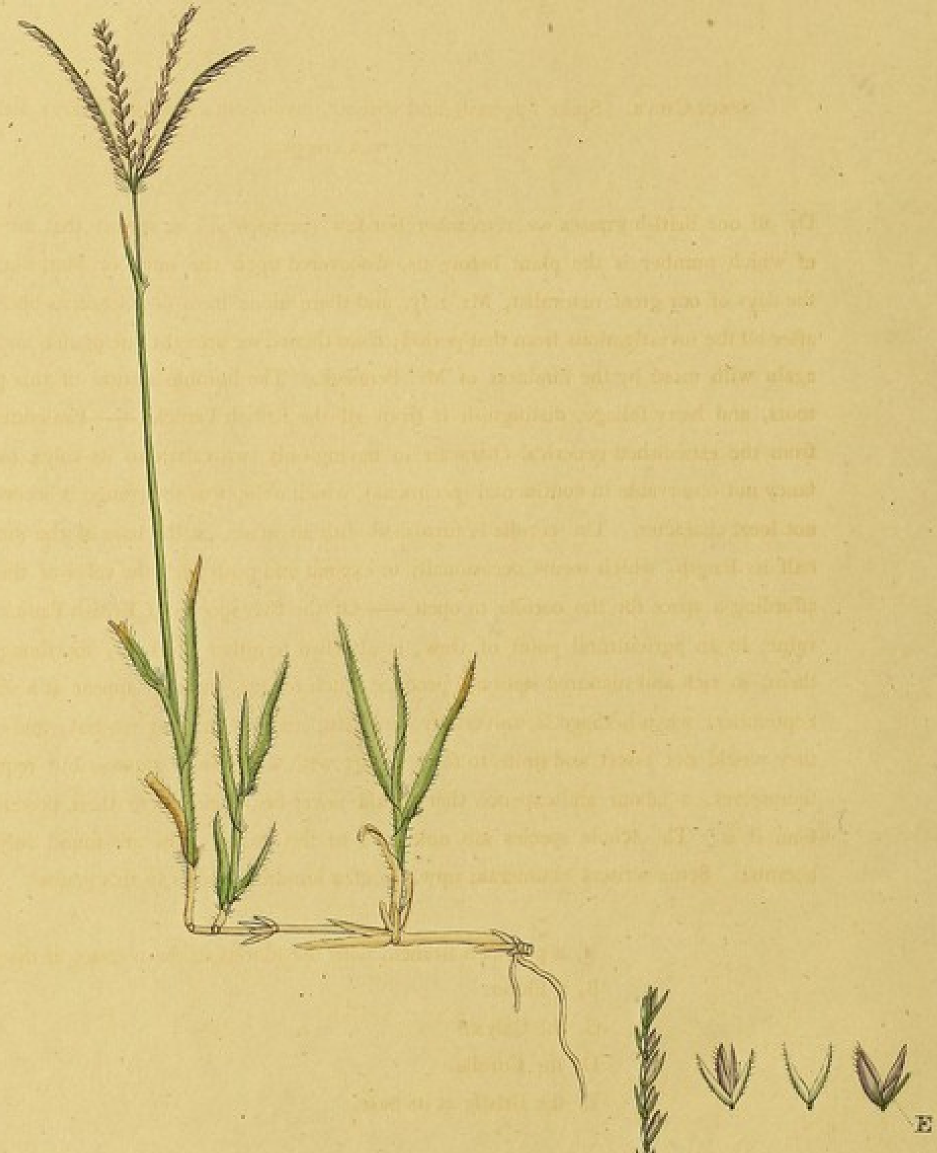
PANICUM SANGUINALE. { *Spec. Plant.*

Red Panick-grass.

Spec. Char. Spike fingered, without any setaceous involucellum; florets in pairs; straw ascending.

Panicum sanguinale can never become confounded with any other British species of this genus, and with us its characters seem tolerably permanent, though there appears to be many variations in the continental specimens. Leaves broad, and a little waving, and the base of them are commonly furnished with a few hairs, and some long ones are usually scattered over the sheathing; and we occasionally observe some minute glands dispersed among the hairs of the sheathing, appearing like rudiments from whence other hairs have fallen away: the branches of the spike (or rather perhaps panicle) vary in number; in weak plants we find three, in strong ones five or six.——We think Mr. Curtis mentions the calyx as being of four valves; we have occasionally found a minute membranaceous substance between the little valve at the base and the larger one, like an inner glume, but apparently so weak and small a membrane can scarcely afford the support that is the required office of the calyx.——The red Panick becomes geniculated at the base, and late in the autumn throws out roots from the geniculations.——In the axillæ of the branches will be found (but not in all the plants though from the same station) small nodes, apparently designed to effect the expansion of the branches, and prevent their being clustered together, which they are when in a young state: these nodes in Poa distans, and some others of our grasses, cause the branches to become retroflexed, but seem only to expand them in Panicum sanguinale. The same station in Battersea-field which produces P. crusgalli affords likewise P. verticillatum, P. viride, and this species; so small a space of ground producing four plants, scarce as are these Panicks, is of rare occurrence, and must not be expected often.

A, part of a Branch, with a set of Florets.
B, the three valves of the Calyx.
C, the Corolla: in all this genus the outer valve closely invests the inner one.
D, the Germin, Stamens, and Styles.



Panicum dactylon

R.P. Nodder Sculp.

PLATE XIII.

PANICUM DACTYLON. { *Spec. Plant.*

Hairy Panick-grass.

Spec. Char. Spike fingered, and without involucelli; florets solitary; straw humble; root creeping.

Of all our British grasses we remember but few (perhaps six or seven) that are decidedly solitary, of which number is the plant before us, discovered upon the sands of Marazion, in Cornwall, in the days of our great naturalist, Mr. Ray, and there alone have our botanists been able to detect it, after all the investigations from that period; from thence we brought our plants, and we were favoured again with more by the kindness of Mr. Penneck. The humble stature of this plant, its creeping roots, and hairy foliage, distinguish it from all the British Panicks.——Panicum dactylon deviates from the established generical character in having only two valves to its calyx (a circumstance we fancy not observable in continental specimens), which obliges us to arrange it according to its general, not local character. The corolla is furnished with an arista, at the base of the inner valve, of about half its length, which seems occasionally to expand and push back the valve of the calyx,* and thus affording a space for the corolla to open.——Of the five species of British Panicks not the smallest value, in an agricultural point of view, is attached to either of them; for though two or three of them, in rich and manured stations, produce much foliage, yet they appear at a season (August and September) when herbage is universally abundant, and not in great request; and it is probable that they would not assort and unite to form a turf with the pasture grasses, but require cultivation by themselves; a labour and expence that would never be repaid, were their product more abundant than it is. The whole species are unknown to the farmer, and are found only by the assiduous botanist. Some writers enumerate upwards of a hundred species in this genus!

A, a part of a Branch, with the Florets in the recesses of the undulations.
B, a Floret.
C, the Calyx.
D, the Corolla.
E, the Bristle at its base.

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* The English botany and Flora Britan. observe that the calyx-valves are in reverse to the floret; that may be the case, but they did not appear thus disposed to us.

Alopecurus pratensis

J.Hibbert Bath Sculp^t

PLATE XIV.

ALOPECURUS.

GENE. CHAR. Calyx with two valves; corolla with one valve. *Gen. Plant.*

ALOPECURUS PRATENSIS. { *Spec. Plant.*

Meadow Fox-tail.

SPEC. CHAR. Calyx cleft to the base, and hairy.

A GRASS so generally known as is the meadow Fox-tail needs little description, and so well does it preserve its characteristic distinctions, that there is no probability of confounding it with any individual of the genus. As a low-land grass, it is as valuable as any we possess, and ranks high in the estimation of the farmer, springing early, and producing plentifully.——In the rich pampered lands in the vicinity of the metropolis, and near market towns, this Alopecurus is commonly abundant, but yet it is far from being an universal plant,* nor will it thrive but in deep and manured soils; in some counties it is only locally found, in South Wales it is rather a scarce plant, and it is probable that this Fox-tail may have been a grass originally introduced into our pastures, and not indigenous to all soils, as are Holcus and Lolium; or perhaps the system that prevails in some places, of liming the land till it becomes a caustic, may have burned it from the field.

Useful as is this grass, yet the produce of the seed is not equal to what one might fancy, from the simple observance of the spiked head, which is capacious enough to afford abundance; a species of fly, we are told, deposits upon the plant its eggs, and as the young larvæ are produced, they feed upon the sweet and milky substance which the tender germ contains, and which in time would be matured to seed: the depredations of this fly are said to be so great, that shortly every germ must be destroyed, had not Nature appointed another insect to seek this animal as its food! Cimex campestris is the leviathan who takes his pastime there, and gorges on the delicate and helpless larvæ, and, Mr. Swayne observes, 'so corpulent does he become through his gluttony, that although it is provided with wings, it can scarcely make use of them, nor even walk with agility: it is probable it destroys thousands in a day.' Could we carry our researches farther, there is little doubt but this Cimex becomes, in its turn, an instrument to the being of higher orders of creation, and they to others, and thus, by successive gradations, contribute to the existence of Nature's noblest animal! who seems, in every instance, to have been the designed favourite of his Creator; and ultimately all his good works perfect themselves in order, some to satisfy his natural wants, some for his comfort, and some even for his fanciful desires; and all teach us to receive them with gratitude, and enjoy them with humility.

A, the Calyx.
B, the Floret Valve.
C, the Pointal.

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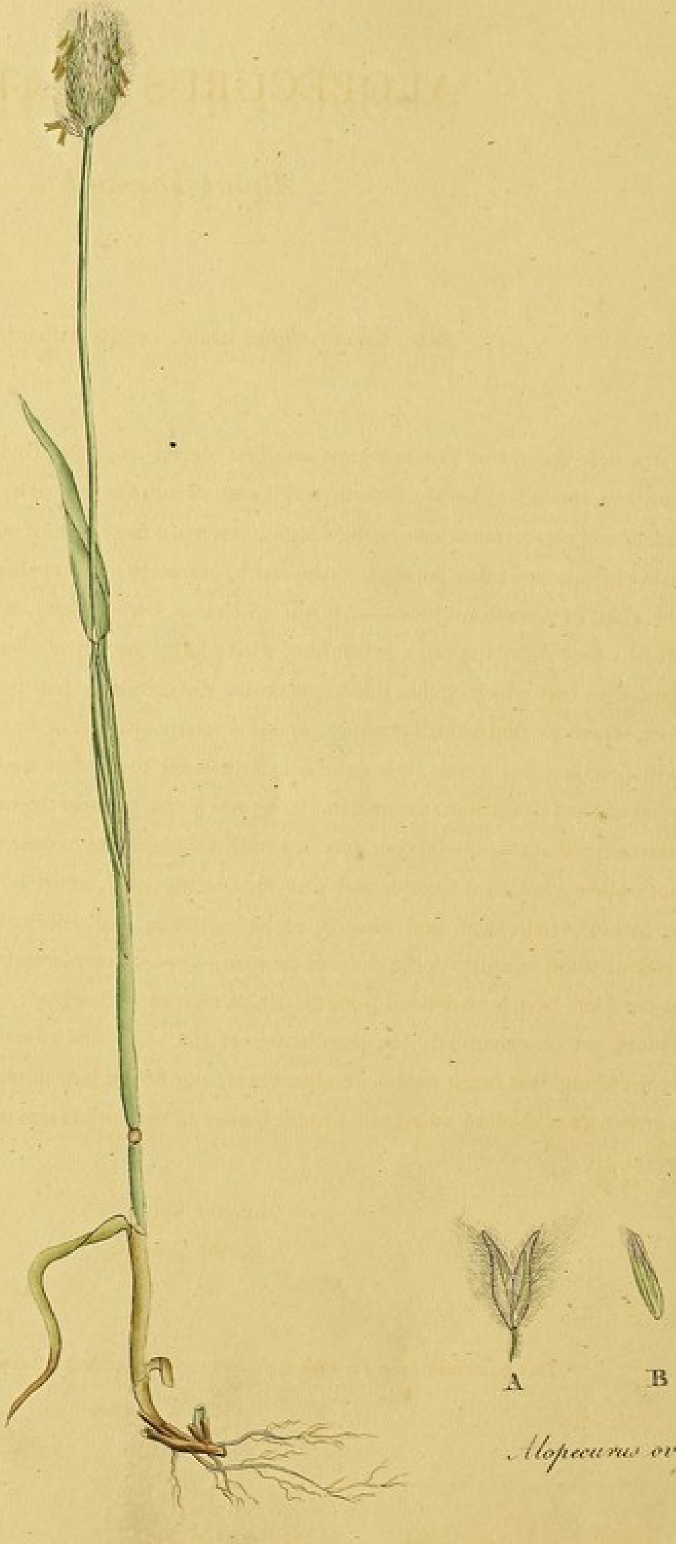
* Plants have their peculiar stations, as have insects their peculiar foods; they will exist in many places, but some will be more congenial to their several appetites than others: this is instanced in Alopecurus pratensis, and is a corroboration of the remark regarding the universality of it. We are told by Mr. Marshall, in his Devonshire Economy, that he could not find this Fox-tail in several meadows that he examined in that county; but so valuable a grass being in request, Mr. Hudson introduced the seeds of that plant collected in the neighbourhood of London, causing them to be sown in those fine meadows round Buckland Abbey; but the success was not equal to the expectation, as no plants were obtained by these means.



Alopecurus ovatus

R.P. Nodder Sculpt

ALOPECURUS OVATUS.

Alpine Fox-tail.

Spec. Char. Spike ovate; corolla without an arista.

This new species of Fox-tail grass was first shewn us in Scotland, being found upon one of the northern mountains by Mr. Brown, and it was afterwards sent us by Mr. G. Don, of Forfar,* whose ardour and perseverance have enabled him to traverse a larger extent of the alpine regions of his country than perhaps any other botanist. Alopecurus ovatus has hitherto been found only upon Loch-ne-gar, the giant of Aberdeenshire.——All our specimens were solitary, unconnected plants, upright, and about a foot high: the calyx is furnished with a large quantity of woolly hair, longer and more abundant than that which clothes the A. pratensis: the corolla is free from wool, excepting in the upper part, where we find a small quantity, and it is totally divested of an arista! a circumstance that marks with precision this species, being the only British one that is free from it; but until we are agreed for what end and designation the awn in grasses was given, to guess the cause of exemption in this instance must be premature.——It is our duty in a work of this nature to delineate every species that falls within our sphere; but to delineate, and partially describe only, must be our lot in many instances; the rarity of the individual, and obscurity of its habitation, will effectually preclude all observation as to its destination or utility in the chain of creation.———A very considerable portion of the late additions to our Flora have been derived from the alpine regions of Scotland, and a field so varied and extensive cannot yet be exhausted; the peculiarities of the soil † and climate allow us sufficient reason for conjecturing that much remains undiscovered, nor do the impediments attending the access to these storehouses of Nature afford but a feeble barrier to the enthusiasm of science: 'increscunt quotannis scientiæ.'

A, the Calyx.
B, the Corolla.

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* This gentleman has since been appointed to superintend the Botanical Gardens at Edinburgh.

† See Poa flexuosa.

Alopecurus agrestis

Hibbert Bath Sculpt

PLATE XVI.

ALOPECURUS AGRESTIS. { *Spec. Plant.*

Slender Field Fox-tail.

Spec. Char. Calyx cleft half way; blossom a little fringed with hair.

Our first species of Fox-tail grass always delights in damp situations, but the agrestis is found in several, but all of them tending to dryness; it commonly abounds in the spring months (to the detestation of the farmer) in wheat fields and among clover; from these habits the leaves have a tendency to curl up, and the straw, calyx, and foliage, are tinted with red, a colour which plants growing in dry and arid places are observed to acquire.——Stipulæ large; leaves roughish on the inside, and set with minute prickles on the edge; arista almost half as long again as the floret valve.——It flowers something earlier than the Alop. prat.——The appellation of our great naturalist, Mr. Ray (of whom every lover of science speaks with enthusiastic veneration), to this Alopecurus is very apposite; 'Myosuroides' (Mouse-tail), as it seems to bespeak the character of the plant; and that of Agrestis is equally fitting, indicating its habits, in contradistinction to Pratensis, which is only a casual visitor, not an inhabitant of our corn fields; nor is Agrestis ever an intruder in the purlieus of the meadow.

A, the Calyx.
B, the Floret Valve.
C, the Pointals.

Alopecurus bulbosus

R. P. Nodder Sculp^t.

PLATE XVII.

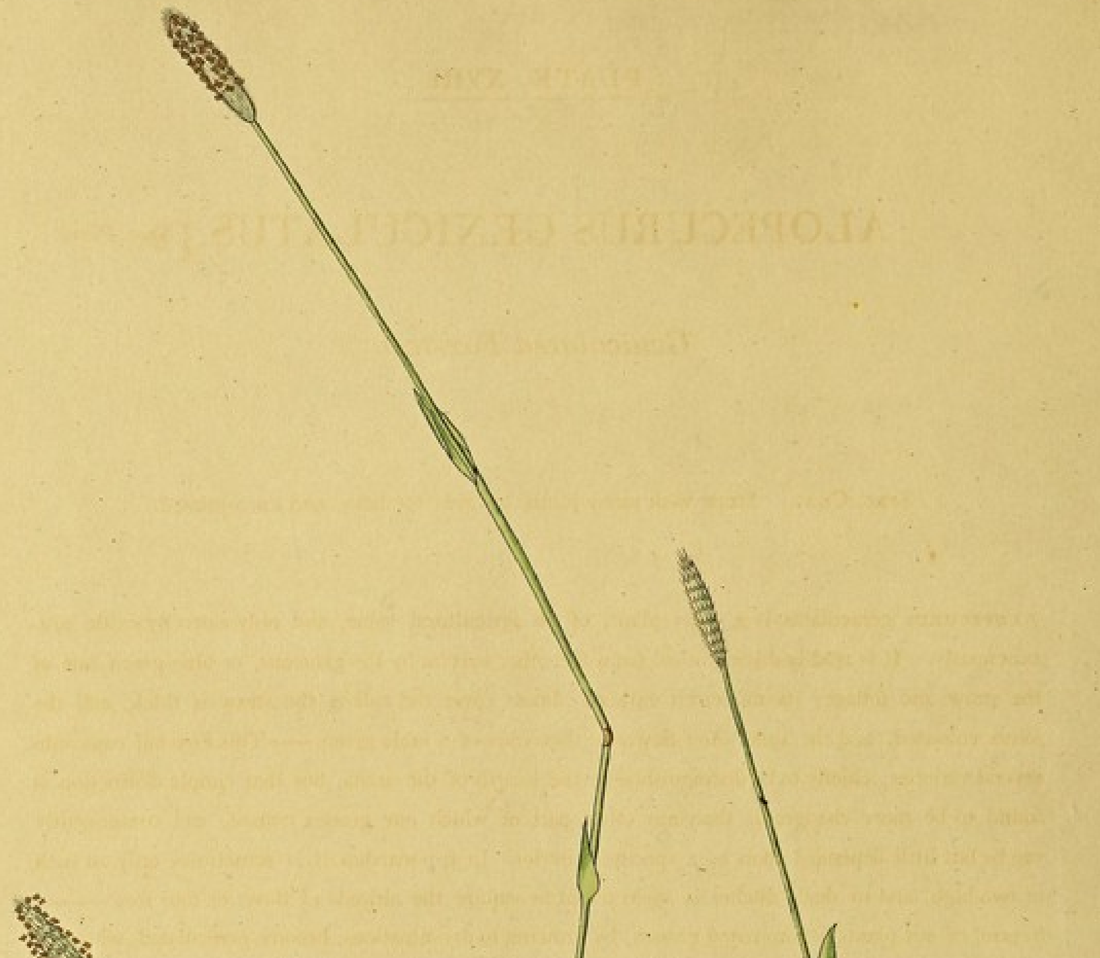
ALOPECURUS BULBOSUS. { *Spec. Plant.*

Bulbous-rooted Fox-tail.

Spec. Char. Straw slender, upright; root bulbous.

This singular plant has been found in several situations in the neighbourhood of the sea, but in none more abundantly than at Yarmouth, Norfolk, and in a little marshy meadow behind the 'Cinder ovens,' it vegetates with luxuriance; at once remarkable for its slender habit and small lanceolate spike.—— This plant, and the following species, have been by some botanists considered as bearing a strong affinity to each other, and that the variations between them were effected only by situation and casual circumstances; but we think A. bulbosus has full claim to a specific arrangement.———From the flexibility and weakness of the straw this plant has a tendency to become geniculated, but is never decidedly knee-bent, as is observable in A. geniculatus, nor have we observed the joints to throw out stoles, as that plant generally does: A. geniculatus will occasionally become club-shaped at the base of the straw, but never produces the bulbs that we find always attached to this Fox-tail, and the A. bulbosus is in all respects a weaker plant. When fresh, the bulbs are prettily coloured with purple.

A, the Calyx.
B, the Corolla.



Alopecurus geniculatus

R.P. Nodder Sculp!

PLATE XVIII.

ALOPECURUS GENICULATUS. { *Spec. Plant.*

Geniculated Fox-tail.

Spec. Char. Straw with many joints towards the base, and knee-jointed.

Alopecurus geniculatus is a puny plant, of no agricultural value, and only eaten by cattle promiscuously. It is readily distinguished from the other species by the glaucous, or blue-green hue of the straw and foliage; its numerous antheræ almost cover the spike; the straw is thick, and the joints coloured, and the spike after flowering becomes of a sable green.——This Fox-tail runs into several varieties, chiefly to be distinguished by the length of the arista, but that simple distinction is found to be more changeable than any other part of which our grasses consist, and consequently can be but little depended upon as a specific criterion: in sea-marshes it is sometimes only an inch or two high, and in shady ditches is again found to acquire the altitude of three or four feet.——Several of our plants denominated grasses, by growing in dry situations, become geniculated, when the general habit of the plant is to have long and unbent joints, as they seem in those situations to acquire their nourishment by uncertain and precarious means: in dry weather they vegetate slowly, and frequent joints are thrown out, containing saccharine matter, to supply a nutriment where there is a defect in that required from the soil; but by vegetating in due moisture, they grow freely, and require not the saccharine food furnished by the joints: but in all respects this Fox-tail is an aquatic plant which we find in splashy places, where water has been lodged in the spring and dried up, and in wet ditches; in all of which stations it is constantly bent and kneed, evidently making it as an invariable habitual character, and not an occasional and accidental occurrence.——The expression of Linnæus in the Syst. Natura, of 'corollis muticis,' both for the Alop. pratensis and Alop. geniculatus, is singular, as no doubts of the existence of aristæ could arise, and can perhaps only be attributed to inadvertence in his laborious works of the first edition, and continued unobserved through the following impressions.

A, the Calyx.

B, a Floret Valve.

Milium effusum

R. P. Nodder Sculp^t.

PLATE XIX.

MILIUM.

Gene. Char. Calyx of two obtuse valves, both smooth; * corolla of two equal valves, one in each calyx.

MILIUM EFFUSUM. { *Spec. Plant.*

Wood Millet.

Spec. Char. One British species only.

Milium effusum is not the most universal, but perhaps as elegant as any of our sylvan grasses; it seldom or never wanders from its much-lov'd shade, delighting in woody places, of sandy and stony soils, in which it is readily observed by its wide-spreading and airy panicle, and sometimes by its size, acquiring in particular situations the height of four or five feet: it flowers very early, and in a favourable spring it is in perfection by the end of April. Branches issuing from one point in alternate bundles; leaves very broad, and when young with a glaucous hue; a little rough in the hand, and minutely serrated on the edges; stipulæ large and long.——The word 'effusus' is not inaptly given to this Millet-grass, as the abundance of its seed sufficiently bears witness, and from its quantity it merits some attention: domestic poultry might perhaps thrive upon it; or it might be given with advantage to swine, and tend to diminish the consumption of bread corn; a desideratum that defective seasons have rendered too often distressingly necessary.——When dry, or a little withered, the foliage has a pleasant smell like that of Anthoxanthum odoratum.

A, part of a Branch enlarged.
B, the Calyx.
C, the Corolla.
D, the Germin, &c.

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* When young, the valves of the calyx have some minute spines sprinkled over them, but become perfectly smooth as the plant advances to maturity.

Agrostis Spica-venti

R.P. Nodder Sculp.t

PLATE XX.

AGROSTIS.

Gene. Char. Calyx with two sharp-pointed valves, one of which, or both, serrated on the keel; corolla of two unequal valves, one in each calyx.

AGROSTIS SPICA-VENTI. { *Spec. Plant.*

Long-awned Bent.

Spec. Char. Calyx both valves partially serrated; arista three or four times as long as the corolla.

There are none of the genera of our British grasses which have been so little understood as the genus Agrostis, as we have assuredly no race of plants which form such mutual concessions as this, melting down in the union almost all distinction, at best but faint, and weakly marked, and every soil shades to a variety; and such are the versatile habits of almost every species that compose the genus, that investigation seems to have been confounded. From the acquirements of the earlier botanists we gain nothing, as they gleaned the regions they passed through with a suspicious hand, and the mists of doubt hovering over all, they rejected none, but elevated to the rank of species the innumerable varieties of seasons, soils, and stations. Under these circumstances we cannot expect to afford general satisfaction in the delineations of a genus so capricious as Agrostis, but those plants which we have represented are the only ones which appeared to us to have sufficient claim to a permanent station, or that would bear the scrutiny of comparison: yet in certain exclusions let it not be thought that we sweep with a promiscuous besom, but that our conduct has been the result of some attention, not the mere offspring of fancy and caprice; never soaring at infallibility, we hope not to sink deserving of contempt. To those who have paid only a general attention to this genus, or who have marked it with a superficial eye, we may reasonably expect to appear concise and unsatisfactory; but those who have looked deeper, and are aware of the delusory character of Agrostis, will perhaps admit the difficulties attending the definition of such a genus.——Of all the species of which this genus is composed the Spica-venti is one of the few in the identity of which all authors have agreed, being one whose characters are striking and permanent, and, from the singular length of the aristæ,* can never be confounded with the associates of its genus; and it invariably preserves its individual habits without wandering or degenerating into varieties.——Leaves broadish, rough on both sides, and at the edges; membrane long. This species at times becomes very luxuriant, acquiring in moist situations the height of three feet, and even in wheat fields becomes often as tall as the corn, and with a panicle the length of a foot, or more, clustered with florets, and should each of them produce a fertile seed, the prolificacy of A. spica-venti would not be exceeded by any plant that we possess: the panicle, upon its first bursting from the sheathing, is of a pale green colour, and has a handsome crinited appearance, but advancing in age, it becomes more divaricated, and the florets a little tinted with pink.——This Bent-grass is in many parts of England a very rare plant, but is not uncommon in some places in Kent, and in the chalky parts of Essex.

A, the Calyx.
B, the Corolla.

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* The utility of the arista, attached to the corolla of some plants, are for the most part unknown to us: in the genera of Avena, Anthoxanthum, Geranium, and some few others, their designation is obvious, and their mechanism wonderful! detaching by their wreathings and contortions the seeds from the calyx, and depositing them in situations favourable for germination. In other instances perhaps the arista is designed as a weapon, to guard the seeds from the depredations of birds and insects: but yet there remains a very large number of plants furnished with aristæ, whose fabrication seems not calculated for these purposes, and the Agrostis before us admits of much room for conjecture; the aristæ of which are of so singular a length, and so slender and weak, that they appear by no means fitted for the annoyance of animals who might seek to pillage the corolla of its seed; nor do they seem to possess the power of contortion, to elevate or remove the seed from the calyx. Were the minute spines that are found upon almost all aristæ pointed downwards, we might conjecture them thus designed, to catch and adhere to the coats of passing animals (as do the seeds of Arctium and Cynoglossum), and thus be dispersed and removed from an individual station.——The antennæ of insects and the aristæ of some plants may deserve discussion, and hereafter perhaps reward, by the discovery of their purport, the application bestowed upon them.

Agrostis canina

J.Hibbert Bath Sculp^t

PLATE XXI.

AGROSTIS CANINA.

Spec. Plant.
AGROS. VINEALIS, *Wither.*

Bog Bent.

SPEC. CHAR. Calyx coloured, outer valve serrated the whole way; corolla notched,* with an arista twice its length.

THIS elegant plant is observed perhaps the earliest of the genus, being generally in perfection about the end of June; the foliage is of a pale green colour, very delicate and fine, and the edges are a little rough; sheathing roughish; the base of the straw throws out joints, which seem to be the rudiments of roots, as from them the suckers spring after the flowering of the plant; but this is not peculiar to Agros: canina, as many other species afford stoles, especially when in moist situations: the inner valve of the corolla is very small, and in many cases is with difficulty found.——This pretty plant delights in damp situations, particularly in boggy meadows, and generally grows in clusters, by which means it becomes very conspicuous: it attains sometimes the height of two feet, but is always slender and attenuated. Though its delight is spongy meadows, we not uncommonly find it on dry heaths, but it then loses the elegant colour of its panicle, and acquires a dark red green. We again observe it in deep boggy ditches, in which situation it assumes a size and altitude unknown in its general habitations, and upon the same plant the valves of the calyx will be either both serrated (one entirely, the other partially), or have one valve without any spines: in this state it probably constitutes the A. palustris of Dr. Withering; the circumstance of having both valves occasionally with spines possibly induced him to consider it allied to A. alba, which plant properly can have no arista.

A, the Calyx.
B, the valves of the Corolla.

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* In forming specific characters our aims should rest upon the prominent features of the individual, that he who runs may read, and by availing ourselves of leading and permanent characteristics, we in many instances supersede the necessity of farther description; but brevity, though a beauty in some, may be a defect in others, and in several of the species of the genus Agrostis, would be manifestly imperfect, as few of them possess those decided characters that fix them in the eye of the passing botanist, but we are necessitated to resort to distinctions microscopic and minute.

Agrostis littoralis

R. P. Nodder Sculpt.

PLATE XXII.

AGROSTIS LITTORALIS. { *Withering's Bot. Arrang.*

Marine Bent-grass.

Spec. Char. Panicle branched, and expanding but little; calyx, both valves furnished with an arista of about the length of the valve; corolla of two unequal valves, the larger with an arista of full its own length; panicle coloured.

Perhaps we have few of our British grasses become more rare or less noticed than Agrostis littoralis. It was first introduced into our Flora by Dr. Withering, in his Botanical Arrangements, as being found at Wells, in Norfolk; since which time we understood it has disappeared from that station: others are said to have observed it at Cley, in the same neighbourhood, where several have sought it in vain: we are enabled however to give a decided habitat (and perhaps the only English one known) to this elegant Agrostis, it having been found at Erith, in Kent, by Mr. Howarth, which gentleman was kind enough to communicate such information to us, that though we apprehend we failed in meeting with his identical situation, yet by that means we found it in another.*——Dr. Withering once considered this Agrostis and Alopecurus monspeliensis of the Spec. Plant. (Phleum crinitum of Schreber) as the same species, and though he rejected this idea in his last edition, yet still some confusion remains; he observes of Agrostis littoralis, 'awns three times as long as the calyx husks, blossom awnless!' The length of the aristæ is partly just, had he been describing Alop. monspel. but by no means so when we regard Agros. littor.——This species of Agrostis is very strongly marked, and, like Spica-venti, cannot be confounded with any other of the genus, and the calyx being furnished with an arista to each valve, of about their own length, is an infallible criterion. Plant trailing, and abundantly stoloniferous (we speak of it as a marsh plant, where alone we have seen it indigenous). Panicle closed, and spike-like, when young, but the branches become a little expanded at the time of the appearance of the antheræ, and in both states it is tinted with a dusky purple hue, changing in age to a dirty straw colour. Leaves and sheathing rough.——Agrostis littoralis has not been apparently noticed by the continental botanists, at least we know of no representation of it in any foreign publication, yet it is certainly produced in other countries than Britain, as we have seen specimens from the ballast hills, Sunderland (see Elymus geniculatus), where this plant has been conveyed from a distant shore, and vegetated in that station. Agrostis littoralis, in places where it does not become profusely stoloniferous, may produce and mature its seed, but in our plants, though we could find the germin in the flowering specimens, we could obtain no seed from the aged panicles perfected for vegetation.

A, the Calyx.
B, the Corolla.
C, the Corolla more enlarged.

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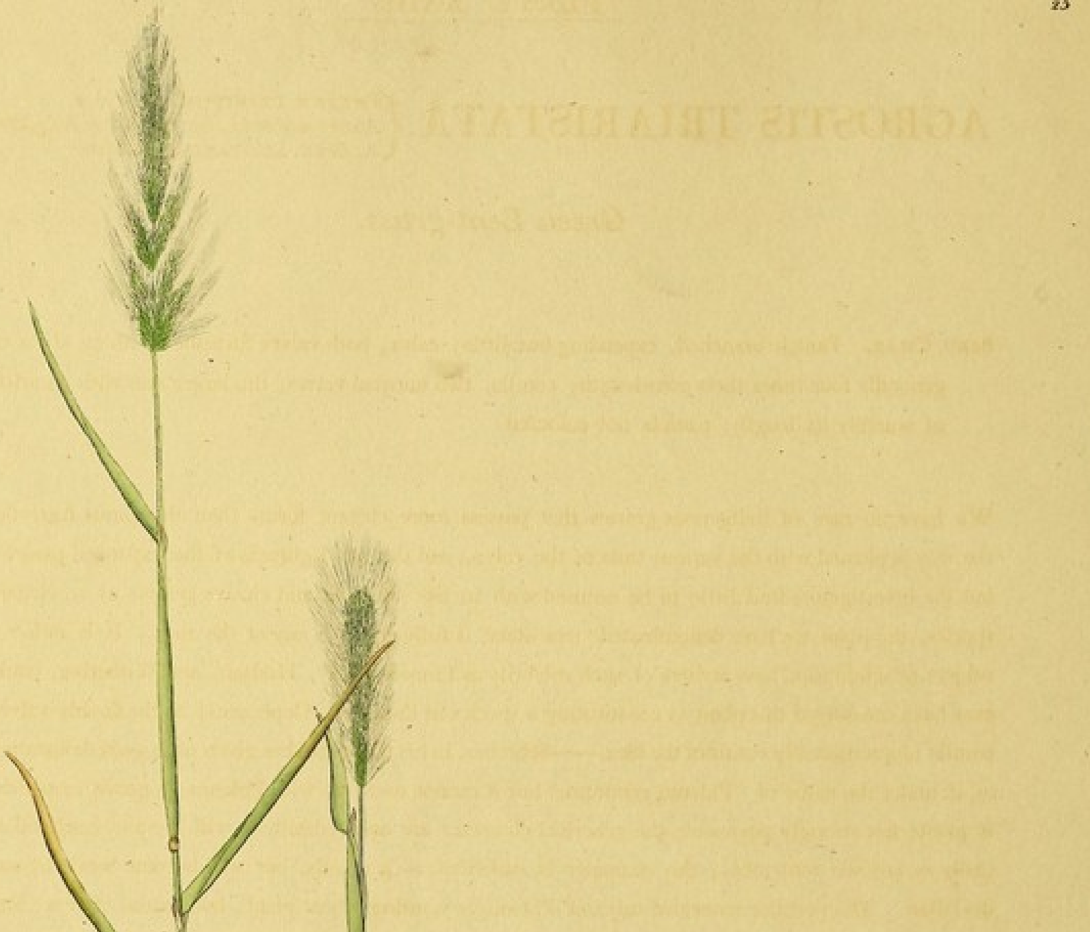
* Perhaps we may not be censured for pointing out exactly the station of this rare plant, as we spent three days in the search for it. In a grassy field in which the magazine stands will be found a morassy place, filled with the Aster tripolium; at the edge of this morass, on the side next the high bank of the ditch (which divides it from another fenny meadow), we found, rather plentifully, A. littoralis.



Agrostis triaristata

R.P. Nodder Sculpt.

PLATE XXIII.

AGROSTIS TRIARISTATA.

Phleum crinitum, *Schreber.*
Alop. monspel. *Sp. Pl. Withering, &c.*
Alopec. aristatus, *Hudson.*

Green Bent-grass.

Spec. Char. Panicle branched, expanding but little; calyx, both valves furnished with an arista of generally four times their own length; corolla, two unequal valves, the larger one with an arista of scarcely its length; panicle not coloured.

We have no race of indigenous grasses that possess more elegant forms than the genus Agrostis; the eye is pleased with the various tints of the calyx, and the airy lightness of the expanded panicle; but the investigators find little to be amused with in this mutable and elusive genus: as an elegant species, the plant we have denominated 'triaristata' is fully equal to any of the race. It is rather a subject of admiration how writers of such celebrity as Linnæus, Ray, Hudson, and Withering, could ever have considered this plant as constituting a species in the genus Alopecurus! as the double-valved corolla unquestionably confutes the idea.——Schreber, in his Gramina, has given us a good delineation of it under the name of 'Phleum crinitum,' but it cannot associate with Phleum; a genus in which, if plants not strongly possessing the generical character are once admitted, will become confused as easily as any we remember; the character is sufficient as it stands, but will become weak by any deviation. The peculiar truncated calyx of Phleum is wanting in our plant, but instead of it we find the valves acute, as are those of Agrostis, with which genus it appears fully to accord.——Leaves slender and weak, rough on the inner side, smooth on the outer; all of them furnished with long stipulæ: leaves commonly bent downwards. Calyx, each valve with an arista of three or four times its length: the corolla has a small arista on its larger valve of scarcely its own length.——Dr. Withering, in the 2d edition of Bot. Arrang. considers this our Agrostis triaristata and Agros. littoralis as the same species; a great similarity certainly exists between them, though they preserve a separate character to the eye, and perhaps a sufficient specific distinction; yet if we divest them of their aristæ, and efface the colour of the panicle (neither of which should be ever botanical characteristics), how little remains as a manifestation of their difference!——This plant has always been considered as a rare species, yet several places are mentioned by Hudson and Ray as producing it: at Purfleet, the habitat of this last writer, we sought it without success: we observed five or six plants (but so small a number deserves not the mention of a station) in a damp place in the marshes of Erith.

A, the Calyx.
B, the Corolla.
C, the back of the larger Valve.

Agrostis setacea

R.P. Nodder Sculp.t

PLATE XXIV.

AGROSTIS SETACEA.

Flora Lond. Curtis.
AGROS. ALPINA, *Withering.*
AGROS. CANINA, *2d var. Hudson?*

Bristle-leaved Bent.

SPEC. CHAR. Calyx with both valves serrated in the upper part; corolla with an arista, and hairy at the base; leaves like bristles.

AGROSTIS setacea possesses such strong characteristics, that it is the most readily distinguished of any of the genus, and enables us to form a good specific character. The leaves are singularly fine, and in dry seasons have a very glaucous hue, and are harsh and rough, arising in tufts from the root, about one-fourth the height of the straw, but growing among bushes, they often attain to about half the height of the plant: towards autumn trailing branches are sometimes thrown out from the base.——As animal food the bristly Bent claims a very low rank, growing in dry and heathy places (though very far from being universal), it supplies a portion of provender to the nibbling sheep that frequent its stations, but by its rigid nature is not welcome to them; yet the animals which browse on the scanty vegetation of the arid heaths in some parts of Devonshire,* where this Agrostis abounds, crop it promiscuously, perhaps more from necessity than inclination.——We have no grass that forms naturally so delightful a turf as Agrostis setacea; its peculiar green may not perhaps be admired, but to the feet nothing is more pleasing, and it seems invariably to keep itself neat, nor requires the constant attention of the gardener; but we are apprehensive that it would not be eligible as a garden turf; the scythe, if there should be occasion to use it, would hardly touch the leaves, and if mown too close, its brown sheathing would be disagreeable to the eye.

A, the Calyx.
B, valves of the Corolla.
C, the larger valve of the Corolla enlarged, representing its notches.

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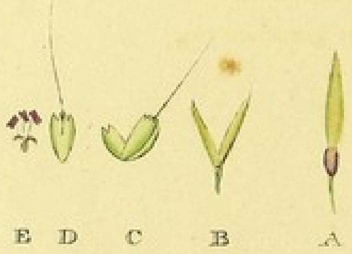
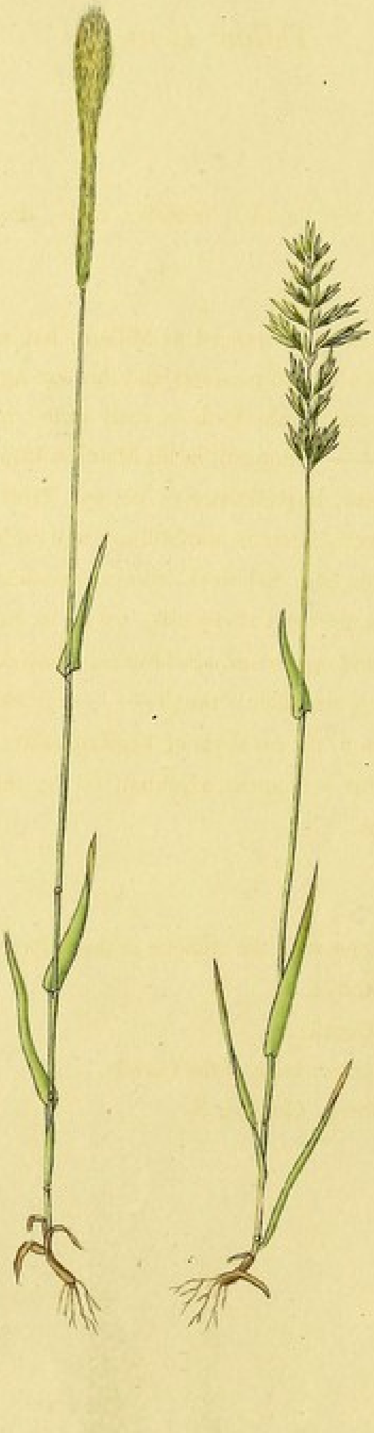
* On all the heathy furzy land about Dawlish, and Teignmouth, it is plentiful.





Agrostis ventricosa

J. Hibbert Bath Sculpt

PLATE XXV.

AGROSTIS VENTRICOSA.

Mantissa Plant. Gouan. Hort.
MILIUM LENDIG. *Sp. Plant.*
Withering, &c.

Yellow Bent.

SPEC. CHAR. Panicle spike-like; branches short; florets with aristæ.

WE shall find this plant in several authors arranged as Milium, but nothing can be more different than the only species of Millet which Britain possesses and this our Agrostis; and their habits are as dissimilar as their characters; the one breaks forth in early spring in woodlands, the other peeps inconspicuous among corn in July.———Linnæus, in his Mantissa Plant. ranks this plant as Agrostis, and by following him in this instance, in preference to the Spe. Plant. we presume the difficulty of forming a generical distinction between Agrostis and Millium will no longer exist.———The yellow Bent is easily known by its pale green hue, and sleek, compact panicle before it flowers, as it then is expanded, but it again becomes compressed afterwards; we find it from three inches to a foot high: the base of the corolla is bulbous, and appears of a reddish hue from the colour of the antheræ which it contains: the leaves and sheathing are slightly rough.———Agrostis ventricosa is far from being a general plant, but is not uncommon in the oat fields of Pembrokeshire.———Mr. Hudson's arrangement with Alopecurus cannot be for a moment admitted, as the characters of that genus are too decided to allow of any equivocation.

A, a Floret with the antheræ in the bulbous base.
B, the Calyx.
C, the Corolla.
D, the larger valve of the Corolla.
E, Antheræ, Germin, &c.

Agrostis vulgaris

J.Hibbert Bath Sculpt.

PLATE XXVI.

AGROSTIS VULGARIS. { *Bot. Arrang. Withering.*

Common Bent.

Spec. Char. Calyx with one valve serrated in the upper part, the other smooth; branches bare at the base.

The Agrostis vulgaris inhabits our dry and sandy sheep pastures almost invariably, and in those places is observable by its fine and hair-like panicle branches: the florets are highly coloured, a circumstance common to this genus, and to grasses growing in arid situations, and all the gradations of pink and purple seem to be acquired by those of an unsucculent nature upon their advance to maturity. This Agrostis is often found existing in elevated and stony places, or on dry heathy land, possessing in a very dwarf state all the characters of the taller plant, and has been arranged as a species under the name of Agrostis pumila (Fig. 2): this diminutive plant furnishes an abundance of seed, which to the eye appear plump and healthy, and fitting for germination, but upon examination will be found to be blighted, and filled with a black infertile powder; this variety is not simply the effect of drought, as the same situations in all respects produce healthy plants, but is probably occasioned by some injury the plant has received in a young state, or by the puncture of an insect when more advanced in age. ——The leaves of A. vulgaris are commonly finer and more slender than any other species of the genus excepting A. setacea, and in moist places, or in rainy seasons, and even in dry stations towards autumn, we find the roots covered with numerous attenuated pale green leaves, giving a very delicate appearance to the whole plant, and in this state is probably the Agrostis tenuis of the Flora Oxon.

This common Bent-grass is perhaps of little value in the first stages of its growth, but towards the end of summer, and in the autumnal months, it furnishes much sweet herbage, and becomes partially stoloniferous, affording in those seasons a welcome and palatable pasturage to the close nibbling sheep.

A, the Calyx Valves.
B, the Corolla.
C, the Seed of A. pumila.

(See supplementary Plates.)

FIG. 2d.

Agrostis stolonifera

R.P. Nodder Sculp.t

PLATE XXVII.

AGROSTIS STOLONIFERA. { *Spec. Plant.*

Small clustered Bent.

Spec. Char. Panicle branched; secondary branches clustered with florets at their base, primary ones bare at the base; calyx valves, one with spines on the keel, the other smooth.

Agrostis stolonifera is one of the latest flowering of the genus, generally inhabiting moist places in a clayey or retentive soil: leaves rough on both sides, sheathing roughish: to the eye of an indifferent observer the branches of this Agrostis appear quite crowded with florets from their insertion in the main stem to their termination, but it will be found that the smaller ones only are clustered, and that the larger branches are naked near their base, which being covered by the smaller or secondary ones, gives the whole panicle an uniform and dense appearance. A blight occasionally infects this Agrostis, the whole of the branches then become perfectly dense with florets in every part, the panicle assuming the appearance of a spike (Fig. 2), but the corolla will be found to be infertile, and filled with a black powder.——Agrostis stolonifera produces several varieties, and by intermediate stages forms such a connection with A. vulgaris that the distinctions of the two are lost in the union: these varieties however form an herbage that is locally valuable, and in deep spongy meadows often constitute the chief part of the crop, becoming towards autumn stoloniferous, covering the ground with luxuriant runners: we find them at the base and in the descents of high hills, but though in those situations not producing very abundant suckers, yet they afford the prime pasturage of the sheep, and by vegetating late become in perfection towards the end of August and September, constituting a great portion of the autumn shoot, affording then a welcome pasturage, which is readily cropped down by the flocks that browse on those eminences.

A, the Calyx.
B, the Corolla.

(See the supplementary Plates.)

PLATE XVII.

AGROSTIS STOLONIFERA.{var. [illegible]

Small clustered Bent.

Spec. Char.—Panicle lanceolate; [illegible] branches [illegible] at their base, [illegible] at the base; [illegible] spines on the keel; the other smooth.

Agrostis stolonifera is one of the latest flowering of the genus, generally inhabiting moist places in a clayey or a loamy soil. [illegible] Agrostis, the whole of the branches [illegible] with flowers in every part, the panicle assuming the appearance of a spike [illegible]

A. the Calyx.
B. the Corolla.

[illegible]

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Agrostis mutabilis

R P Nodder sculp.

PLATE XXVIII.

AGROSTIS MUTABILIS. { AGROSTIS ALBA, *Spec. Plant.?*

Serrated Bent.

SPEC. CHAR. Panicle expanding; secondary branches clustered with florets to their base, primary ones bare at their base; calyx, both valves serrated, one entirely, the other partially.

OF all the British grasses which have come under our consideration we have met with none which we speak of with so much hesitation as the plant before us. The descriptions given us by Linnæus, and other writers of Agrostis alba, are so concise, or confused, that we do little more than guess at their meaning. Dr. Withering, who seems to have bestowed most attention upon this intricate genus, refers to the A. alba of the Flora Herbornensis, saying that Leers's plate is an exact representation of his plant. From Mr. Hudson we gain nothing.——The plant here represented we think comes nearer the general characters of Agrostis alba than any other we have met with, yet as the word Alba is so delusive, and has created so much confusion, the application of another trivial name will not we trust meet with serious disapprobation.——Straw of various heights, as it meets with moist or dry situations, at times attaining an altitude of three or four feet, with the foliage proportionably enlarged. Leaves rather broad, and long, rough on both sides, and at their edges; sheathing smooth; stipulæ long; panicle composed of branches of various lengths, shorter ones crowded with florets to the main stem; long ones naked at their base, but, until they are separated, have the appearance of being clustered with florets to their insertion in the stem: calyx, one valve serrated from the apex to the base, the other only partially: valves of the corolla knotched at their summits: after flowering the panicle collapses into a spike-like form, and becomes of a yellow brown hue: panicle variously coloured, white, green, brown, or purple.——This Agrostis partakes fully of the versatile habits of its congeners, deviating from its general characters from a variety of causes; at one time we find only one valve serrated, then approaching Agrostis stolonifera; at others, all the branches are bare at the base.——The capricious tendencies of three or four species of this genus have been the occasion of that mist of obscurity which rests upon the Bent grasses, nor is there any probability that that obscurity will be removed, displaying to universal satisfaction the specific undeviating character of each individual of the genus Agrostis: cultivation of each species would avail us nothing, as many of their characters are lost by this method, and those shades of distinction which are hourly found in indigenous plants, and which arise from local circumstances, could not exist in the uniformity of a garden. The delineation of each variety would be subject to an unlimited representation, * without its being possible for the pencil to seize the exact trait characteristic of each: and thus in delineating the British Agrostides we have been fully sensible of the difficulties and impediments attending it, but have by no means felt a conviction in the result that could afford us any grounds for a decided satisfaction.

A, the Calyx.
B, the Corolla.

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* We had once shewn us in the collection of a very superior botanist upwards of twenty varieties of A. alba, A. stolonifera, A. vulgaris, and A. canina; each varying to the eye, without any decisive character indicative of the individual.

The twelve species of this genus, described in the botanical arrangements, we think may be thus reduced:

Agrostis spica-venti	A. spica-venti.
Agrostis canina Agrostis palustris Agrostis pallida Agrostis vinealis	A. canina.
Agrostis alpina	A. setacea.
Agrostis littoralis	A. littoralis.
Agrostis stolonifera Agrostis maritima	A. stonifera.
Agrostis vulgaris Agrostis nigra	A. vulgaris.
Agrostis alba	A. mutabilis.

Aira aquatica

R.P. Nodder Sculp^t.

PLATE XXIX.

AIRA.

Gene. Char. Calyx with two valves, containing two florets, without any terminating abortive floret. *Gen. Plant.*

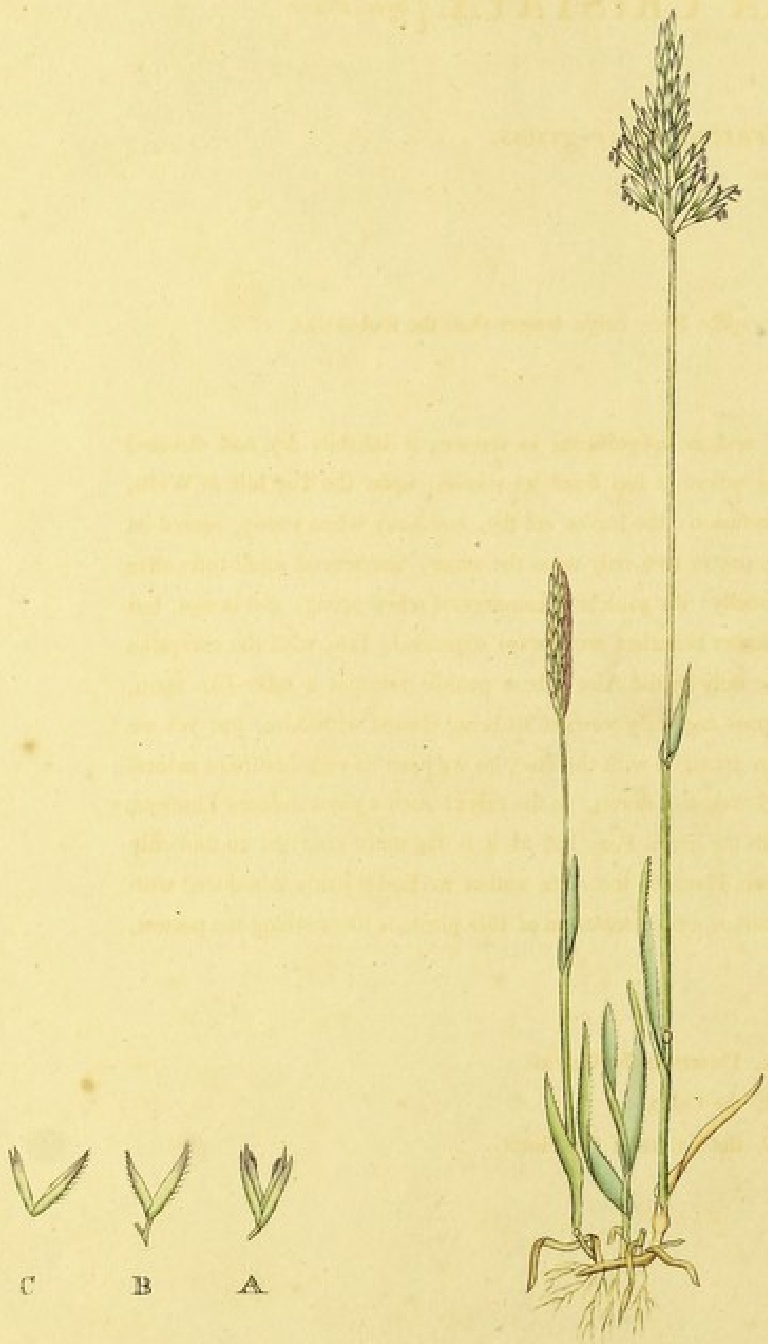
AIRA AQUATICA. { *Spec. Plant.*

Water Hair-grass.

Spec. Char. Panicle expanding; florets without arista; leaves broad.

Few of our British natives differ more from the companions of its genus than the Water Hair-grass; all the Airæ of our flora, with exception of this, and the A. cæspitosa, being remarkable for a delicate slender foliage, but this aquatica, vegetating in humid and richer soils, acquires a size far beyond its less useful and poorer fraternity.——Calyx, when young, of a dirty yellow, but latterly it changes to a fine purple colour: straw thick, reedy, and hollow: the whole plant is free from hairs.——The epithets bestowed upon this plant by Bauhin and Merret, of 'paniculatum dulce,' and 'suavis saporis,' well express the sweet liquorice taste that the straw and florets have when masticated. It is perhaps the only one of its genus that can furnish substance for animal food, and where the soil is deep, permitting the roots to creep along, it acquires great luxuriance of foliage: in very dry situations it yet manifests a tendency to throw out ample foliage, but the whole plant then becomes of a deep purple hue: its situation and leaves at first remind us, as it mantles the little rills, of Poa fluitans, but the panicle and coloured calyx soon indicate the plant.——With diffidence and hesitation we speak of, and much more cautiously pronounce upon the actual virtues and importance of plants in agricultural points of view, yet we cannot forbear mentioning the apparent value of this Aira, the luxuriance, sweetness, and succulency of the whole plant are indications of its utility not to be overlooked: upon the margins of little rivulets, and where the overflow of brooks, &c. has naturally irrigated the vicinity, we have seen it abound, and flourish to the manifest superiority of the neighbouring grasses.——Aira aquatica is occasionally found with the branches of the panicle retroflexed or bent down to the main straw.

A, the Calyx with its Florets.
B, the Calyx.
C, the Corolla.



Aira cristata

Hibbert Bath Sculp.

AIRA CRISTATA. { *Spec. Plant.*

Crested Hair-grass.

Spec. Char. Panicle spike-like; calyx longer than the foot-stalks.

A plant of little note as to utility, and as insignificant in stature; it inhabits dry and elevated places, generally local, but abounding where it has fixed its station: upon the Tor hill at Wells, Somersetshire, it is found in great profusion: the leaves are flat, and hairy when young, scored on the inner side, and of a glaucous hue; one or two only upon the straw, but several small tufts arise from the roots: sheathing long and woolly: the panicle is compressed when young, and in age, but when the antheræ are projected, the lower branches are always expanded; this, with the exception of A. canescens and A. precox, is the only British Aira whose panicle assumes a spike-like form. ——The general habits of this Hair-grass assuredly warrant its being classed with Aira, but yet we cannot much wonder at its having been arranged with the Poæ, as we have in very luxuriant natural specimens found occasionally four, and even five florets, in the calyx! such a plant induced Linnæus, in the Syst. Natura, to associate it with the genus Poa; but as it is far more common to find only two florets within the calyx, in the Spec. Plant. of the same author we find it justly introduced with the Airæ.——The figure in Leers, meant as a representation of this plant, is like nothing we possess, but more like a Festucæ.

A, Florets in the Calyx.
B, the Calyx.
C, the Valves of the Floret.

Aira flexuosa

J. Hibbert Bath Sculp.t

PLATE XXXI.

AIRA FLEXUOSA. { *Spec. Plant.*

Long-leaved Hair-grass.

SPEC. CHAR. Panicle expanding; branches in pairs; leaves long, hair-like, and smooth.

THIS Aira is a lover of high and elevated situations, both in woods and open places, where it is easily distinguished by possessing characters so very different from its congeners. Leaves very fine, and at times above half the length of the straw, arising from scaly pencil-like tufts at the root: straw coloured, changing in age to a deep unpleasant red, smooth, but rough on the panicle: branches generally in pairs, and alternate.——The situations in which this Aira delights are seldom productive of much herbage, and hence the cattle which frequent those places in search of food crop every green thing that is applicable to that end, and thus the long and slender foliage of this plant is eaten by them, but by no means appears to be selected; its fine leaves can supply but a pitiful food, and its dry unsucculent nature renders it an unwelcome one.——This Aira is occasionally found with three florets in the calyx, particularly in the upper part of the panicle.

A, the Calyx and its Florets.
B, the Valves of the Calyx.
C, the Corolla of the upper Floret with its hairy peduncle.

Aira scabro setacea

J. Hibbert Bath Sculp.

PLATE XXXII.

AIRA SCABRO-SETACEA.

Bristly-leaved Hair-grass.

Spec. Char. Leaves short, bristle-like, and rough; stipulæ long; calyx with spines on the keel.

This Aira which we now describe was pointed out to us growing in pits of water on Forfar-heath, by Mr. G. Don, a botanist whose intrinsic merits are too little known, and whose friendship we must ever esteem. This hair-grass possesses constitutional habits the reverse of the preceding plant, which fixes its station and thrives in dry and arid places, whereas the A. scabro-setacea grows in little hollows and low places where water has been lodged, and as the fluid exhales the plant fades, and upon the waters being dried up the Aira dies away. It is usually the case with plants whose general habits are to vegetate in dry situations, when they by any casualty become fixed in aquatic places, that they lose a considerable portion of the harshness they may possess, and become meliorated by the influence of the water; but, on the contrary, this plant in moisture (which is essential to its existence) preserves a rigidity unknown to A. flexuosa in drowth.——Panicle branches weak and flexile, and we generally observed three to issue from the lower stage. Leaves rather short, setaceous, and rough, scaly and membranaceous at their base; sheathing smooth, all the leaves, radical and cauline, furnished with stipulæ; both valves of the calyx with spines.———The unnecessary creation of species from trivial variations cannot be too much discountenanced, as pernicious in its consequence, and false to the true principles of science, but we trust that the plant before us is something more than a casual deviation, possessing permanent characteristics to entitle it to specific distinction.

A, the valves of the Calyx.
B, the upper Floret, with its hairy peduncle.
C, a radical Leaf, rough, and setaceous.

Aira cæspitosa

R.P. Nodder Sculp^{t}

PLATE XXXIII.

AIRA CÆSPITOSA. {*Spec. Plant.*

Turfy Hair-grass.

Spec. Char. Panicle tall, and expanding; leaves very rigid, and armed; florets hairy at the base.

Amid all our harsh grasses this Aira claims a primal station, and only necessity compels the hard fed animal to taste it as food, and even then it is but sparingly cropped, and chiefly the younger and less pungent shoots.——The leaves are seldom quite flat, but are twisted, or at least have a tendency thereto, and are transparent when held to the light, excepting where they are rendered opake by the strong ribs which project from the inner surface: the florets having tufts of hair at their base, is an excellent criterion of the species to the microscopic botanist.

Aira cæspitosa is generally to be considered as a water-loving plant, being most commonly found in those hollows where water is retained after the winter rains, but it is likewise to be met with on the dryest hills.——Nature seems to have armed the Turfy Hair-grass for reasons unknown to us: were its virtues such that it might serve for the pasturage of an animal, it would claim some esteem, as the foliage is abundant, and it commonly is the only vegetable that has escaped being destroyed by the long stagnation of water in pits and hollows.——To the industrious of another day this cause may be disclosed, and why a plant applicable to no known purpose, and possessing no obvious virtue, should be so extensively spread abroad, and so inviolably armed! We observed no plant so universal to all situations in Scotland as this Aira.

A, part of a Leaf ribbed on the inner side, and serrated on the edges.
B, the Calyx.
C, the two Corollæ.

Aira canescens

PLATE XXXIV.

AIRA CANESCENS. { *Spec. Plant.*

Jointed Hair-grass.

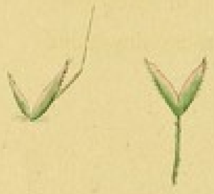
Spec. Char. Leaves very short, and setaceous; panicle rarely expanding; aristæ enclosed within the calyx.

An humble plant of little note, and but a very partial inhabitant with us, nor have we observed it elsewhere than on the Denes at Yarmouth, not conspicuous from its size, but from vegetating in tufts, and from the red hue universal to the sheathing, it becomes manifest to the eye. Leaves short, bristle-like, and rough; stipulæ long; straw weak, and with several joints.

This Aira differs from every other grass of British growth by the very remarkable construction of the arista; an appendage like the rowel of a spur is fixed about the middle of the arista, but faintly visible to the naked eye, and serves for a purpose of which we are ignorant.

Aira canescens has fixed its station and is able to exist in the dryest sands of the sea coast, a circumstance not very remarkable when one observes the singular length of its numerous roots, which are often longer than the plant itself, the fibres thus drawing moisture from depths not exhaled by the heats of summer, and enables the plant to subsist amid surrounding drought.——In its indigenous situation the panicle rarely expands; by cultivation almost all the natural characters of this plant are lost, every part becomes enlarged, and the panicle diffuse and spreading, and it is probable that the figure in the Flora Danica was delineated from a garden specimen.

A, the Calyx with a set of florets.
B, the Florets detached.
C, the Corolla of the upper floret.
D, the Arista, and its rowel-like appendage.



Aira caryophyllea

PLATE XXXV.

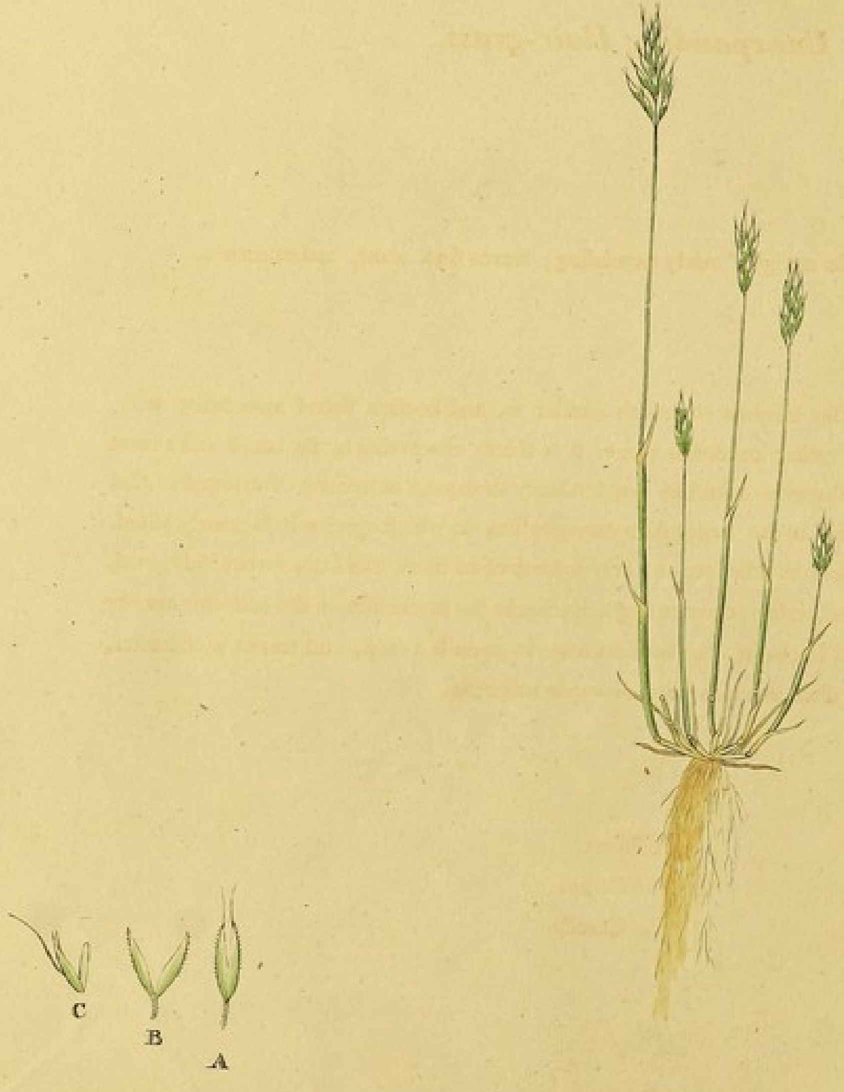
AIRA CARYOPHYLLEA. { *Spec. Plant.*

Expanding Silvery Hair-grass.

SPEC. CHAR. Panicle expanding; leaves short, fine, and bristly.

THIS humble inhabitant of our dry heaths and sandy commons seems unimportant in the scale of vegetation; its herbage is insignificant, and its delicate and slender structure gives it no claim or admission with our pasture grasses.——By its light and silvery panicle it is rendered conspicuous, which it otherwise would not be to any but the searching eye of the botanist.———Nature has formed the Silver Hair-grass to occupy a particular situation, but the object is hidden from us; the dryest sand affords it nutriment; it sometimes is found in better soils, and much enlarged, but even in that state assumes no importance: we will not guess in what its virtues reside, as science is but little aided by conjecture, when fancy is alone our guide; and in attempting to investigate the latent properties of minute creation, we find nothing to direct the imagination to any important result.

A, the Calyx.
B, the valves of the Corolla.



Aira præcox

PLATE XXXVI.

AIRA PRÆCOX. {*Spec. Plant.*

Unexpanding Hair-grass.

SPEC. CHAR. Panicle upright, rarely expanding; leaves fine, short, and setaceous.

THIS our most diminutive Aira inhabits situations similar to, and is often found associating with, the preceding species, but is rather an earlier plant: it is chiefly observable by its small and almost spike-like panicle, which hardly ever manifests any tendency to expand or become divaricated in that ternate manner, so remarkable in the larger Aira caryophyllea, to which species it is nearly allied. ———Of any utility at present attached to, or likely to be derived from, this little vernal Hair-grass, we are perfectly ignorant, and perhaps constituting a species in the herbarium of the collector may be the only notice it is calculated to obtain: the botanist bestows upon it a rank, and marks a character, that it can but slightly claim from intrinsic value or apparent virtue.

A, a Floret.
B, the Calyx.
C, the Corolla.

Holcus lanatus

J Hibbert Bath Sculp^t.

PLATE XXXVII.

HOLCUS.

Gene. Char. Calyx containing two or three florets; florets with stamina and styles in each, or stamina and styles in one, and only stamina in the other.

HOLCUS LANATUS. { *Spec. Plant.*

Short-awned Holcus.

Spec. Char. Calyx valves hairy; florets two, lower one with stamina and styles, the uppermost with stamina only; arista not longer than the valve.

Holcus lanatus is a very common grass in most pastures, especially in those which are low and moist; it delights likewise in woods and shady places, but in peaty soils it becomes enlarged far beyond the common growth of the pastures, and by the constant nutriment it there finds, remains with little alteration throughout the summer: it is a handsome plant, and the soft appearance of the foliage, and pinky tinge that the panicle generally assumes (except when blanched in the shade), point it out amidst the pasture grasses.——Regarding this Holcus, in an agricultural view, it appears to be a deceitful grass, promising from its plenteous product of foliage, to be very valuable to the farmer, but its herbage is not sufficiently succulent to be nutritious food, and the woolly clothing of the whole is unpleasant to cattle, probably by reason that this laniferous plant requires to moisten it, and fit it for the stomach, more mastication and saliva from the animal (having but little sap itself) than an hungry beast is inclined to bestow upon it: yet, though not recommended to form a crop by itself, it is certainly, when mixed with other grasses, valuable to the grazier, from the quantity of its foliage, and plentiful winter provender, when made into hay that it affords, and if cut as chaff, that unpleasant woolly quality would perhaps be nearly got rid of, or at least be rendered less disagreeable to the mouths of cattle.

A, the Calyx.

B, a set of Florets, the upper one with an arista, and with only stamina, and the lowermost with stamina and styles.

Holcus mollis

J. Hibbert Bath Sculp^t.

PLATE XXXVIII.

HOLCUS MOLLIS. { *Spec. Plant.*

Long-awned Holcus.

Spec. Char. Calyx containing two florets; florets both perfect, having stamina and styles; arista protruding beyond the calyx; root repent.

Holcus mollis is much less seldom found than the preceding species, but is by no means a rare plant; its delight is in little shady groves and copses, never intruding into the meadow, or associating with H. lanatus, excepting in woody places, where both are promiscuously found. The colour of the panicle is generally of a dirty white green; leaves and sheathing not woolly, but the joints of the straw are remarkably so: it is a much more slender and elegant plant than the former species, from which it is immediately known by the length of its aristæ, which are twice as long as the valves of the calyx. Holcus mollis is occasionally found in patches among corn, and is then an injurious weed. The long-awned Holcus is probably applicable to no agricultural purpose, yet it possesses virtues that are unknown in the former and cultivated species; being free from the woolly habit of that plant, it might be more grateful to the mouths of cattle, and its repent roots would be less injured by severe frosts than the fibrous one of Holcus lanatus is known to be.——The Linnæan arrangement, which classes Holcus under Polygamia monœcia, is judicious as far as regards H. lanatus, and the latter introduced plant H. avenaceus, but defective when we include H. mollis, yet the general habits of the two plants (mollis, and lanatus) require that they should not be separated, though they differ so greatly in their internal structure.——It is rather singular that a plant so well known as H. mollis is, that two opinions regarding its internal formation should subsist: Linnæus, and other foreign writers, describe the upper floret as having stamens only! and most of our English authors, excepting however Dr. Withering, and Mr. Curtis, express themselves to the same purpose: our examinations of this plant have been extended to the productions of several counties, and both florets, in all the specimens, appeared to us to be invariably perfect.

A, the Calyx.
B, a set of Florets.

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Holcus avenaceus

J. Hibbert Bath Sculp.t

PLATE XXXIX.

HOLCUS AVENACEUS.

Gmelin, Syst. Veg.
Avena elatior, *Sp. Plant.*

Oat-like Holcus.

Spec. Char. Calyx valves smooth; arista longer than the florets; root bulbous.

This grass is a tall and conspicuous plant, delighting in woods, hedges, and shady places, being common to all counties, and is remarkable for the bulbous nodes that are found at the base of the straw, particularly when the plant is advanced in age.——Leaves, inner surface a little hairy, and rough; joints woolly, wool pointing downwards.——The removal of this plant from the genus Avena, where stationed by Linnæus, was adopted by Gmelin, from the conformity of the florets with those of Holcus lanatus, and its total disagreement with any Avena in internal structure. In none of the genera of British grasses are the species so badly allied by natural characters as those arranged in the genus Holcus; H. mollis has much similitude of appearance to H. lanatus, but is in character an Aira; H. avenaceus agrees in structure with the lanatus, but in general habits comes nearer Avena, and is in fact a plant that hovers between the two, but associates so indifferently with either, that it might be almost advisable to give it a generic character, and arrange it by itself.——The oat-like Holcus is a very coarse plant, applicable to no agricultural purpose whatever, but often intrudes amidst corn to the material injury of the crop, and though associating with the pasture grasses, its absence is more to be desired than its presence; in humid stations it becomes less reedy, and something softer in its nature, and in a young state is cropped by animals, but is of so little consequence that it might be perhaps perfectly eradicated, and the agriculturist not be sensible of it, or lament its loss.

A, the Calyx.
B, a set of Florets.
C, the barren Floret.
D, the upper and fertile Floret.

Melica cœrulea

R.P. Nodder Sculp^t

PLATE XL.

MELICA.

GENE. CHAR. Calyx with two valves, containing two florets, and an unfertile one between them. *Gen. Plant.*

MELICA CÆRULEA. { *Mantissa Plant.* / AIRA CÆRULEA, *Flora Ang.*

Purple Melic.

SPEC. CHAR. Panicle with many florets, expanding but little; straw with only one joint.

OUR Purple Melic delights in the deep spongy soils of bogs and turbaries, but is not peculiar to such places, and it varies greatly in appearance according to the situation in which it vegetates: in woods and shady places it becomes tall and slender, with long flaccid leaves, and generally with only two perfect florets in each calyx; but in open and exposed situations the leaves are broad and sheathing, with a few long hairs on the inner side towards the base, and the calyx contains, not uncommonly, from two to six florets.——Calyx of a deep red purple colour; base of the straw club-shaped, with strong fibrous roots; the panicle is often obscured by the deep purple antheræ of the florets: this is the only British grass, with the exception of Panicum, whose stigmata partake of the colour of the antheræ.———Melica cærulea is one of our latest grasses, or at least, with Aira cæspitosa, is found in perfection till the end of September, and hence Ray calls it 'gramen serotinum.' Some little use is attached to this Purple Melic; its strong and long straw, with only one joint, furnishes not an inelegant substitute for the Indian rush, and in some counties it is bound in bundles and used in lieu of hair brooms; it is likewise occasionally twisted into twine, from which netting is made, said to be highly in request by the continental fishermen, as it has the advantage of being little injured by water, and of enduring longer than those made of hemp; but it can scarcely possess the flexibility or strength of the netting in common use, and may be resorted to as a cheap, rather than a serviceable article. ———Although Melica cærulea strongly retains the generical character, yet it seems to have been variously arranged; as

Aira, *Lin. Syst. Nat. Gmelin, Flo. Sib. Gouan Illust. Leers.*
Arundo! *Haller.*
Agrostis, *Scopoli.*

And indeed the occasional deviation of the florets from one to six might, without the abortive floret, have almost justified its arrangement with Poa.

A, the Calyx.
B, a set of Florets.
C, the Corolla.
D, the Germin, Antheræ, &c.

Melica uniflora

Long branched Melic graſs

PLATE XLI.

MELICA UNIFLORA.

{ *Retzius's Botanical Observ:*
{ MELICA NUTANS, *Hudson's Flora Ang.*

Long-branched Melic.

SPEC. CHAR. Panicle with few spiculæ, and expanding; footstalks many times longer than the calyx; calyx with only one fertile floret.

THIS pretty sylvan plant delights in the deep dark lanes of various parts of England, in woods and copses, particularly in the neighbourhood of beech trees, but seldom advances to the full glare of day; its spiculæ appear very early, and remain but little varied to the eye through the lapse of several months, excepting the greater expansion of the calyx, and divarication of the branches, towards the approach of summer. Leaves of a yellow-green colour, a little woolly on the inner side, and minutely serrated on the edges.——Melica uniflora is perhaps the earliest of our grasses; the florets will, in favourable springs, be seen peeping from the cradle of their sheathing in the first warm days of April. An elegant form seems almost every thing that our Long-branched Melic can boast; the stations it delights in, and its natural habits, are obstacles to its utility in agriculture, or rural economy: the sparing hand with which the spiculæ are scattered, to the prejudice of its increase by seed, is amply remedied by the numerous scions its slender and creeping roots give rise to.——Melica uniflora has been recommended by some French writer as an useful plant to ornament with verdure those places in parks, and pleasure-grounds, which the sombre shade of trees has rendered barren and unsightly, and where scarcely any other grass but this Melic will vegetate.

A, the Calyx.
B, the Corolla and abortive Floret.
C, the abortive Floret detached.
D, the Stamens, Styles, and conical Nectarium.

Melica nutans

J. Hibbert Bath Sculpt.

PLATE XLII.

MELICA NUTANS.

{ *Spec. Plant.*
{ MELICA MONTANA, *Flo. Ang.*

Short-branched Melic.

SPEC. CHAR. Panicle inclining; footstalks as long, or twice as long, as the calyx; calyx with two florets.

MELICA nutans is a much rarer plant than the preceding species, at least in the southern regions, and it appears chiefly to delight in the northern counties; almost all the high mountains in Scotland produce it, and it flourishes luxuriantly in that fine botanic station the Helks, at Ingleton, Yorkshire; and we hear it is found in the woods at Malvern, Worcestershire.——Leaves rather short, and upright; straw and sheathing roughish, and tetragonal; peduncles very short, seldom above twice as long as the calyx they support; the lower ones have commonly two or three spiculæ issuing from them.——It is generally found that the inner valve of the corolla, in most of our grasses, acts in conjunction with the outer one, only to wrap up or cradle the infant germ, but in these two last species of Melica the inner valve acts in a double capacity, by the edges bending back, and forming a receptacle in which the abortive floret resides, and which has thus the security of a double calyx.

A, the Calyx.
B, a set of Florets.
C, the inner valve of the Corolla bending back at the edges, and inclosing the unfertile rudiment.
D, a Seed.

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Sesléria cærulea

J. Hibbert Bath Sculpt.

PLATE XLIII.

SESLERIA.

Gene. Char. Calyx with two valves, containing from one to three florets; corolla, the larger valve with three teeth, the smaller one notched.

SESLERIA CÆRULEA.

Scopoli, Carniolia.
Cynosurus cæruleus, *Sp. Plant.*
Aira varia, *Jacquin.*

Rock-grass.

Spec. Char. One British species only.

Sesleria cærulea is a resident of rocky stations, but not particularly courting the most elevated places; it is found (but rather sparingly) on all the Scotch alps towards their summits, in profusion about Settle, in Yorkshire, and on the lower parts of the mountain Ingleborough, yet we lose it before we gain the middle of the hill.——Straw without a joint, and sheathed with a single leaf about half way up. Leaves minutely serrated on the edges, and with a tendency to roll up: florets constituting a spike, the lower ones are disposed in sets of three or four; when young the florets are green, then change to a purple blue, and finally become of a pale brown colour.——The light spiked head of this plant, placed at the end of a long flexile stalk, fits it for constant motion, and in its alpine stations it seems the sport of every wind that blows.——The epithet 'cærulea' is but a poor appellation for this plant, viewed as a native of Britain; in continental specimens it is more apposite; the leaves have no shading of blue on them, and the little azure hue of the corolla cannot well deserve to characterize a species.—This grass remained for some time arranged with Cynosurus, till Scopoli removed it from that improper association, elevating it to the rank of a genus species, which he named after his learned Venetian friend, Dr. Leonard Seslero.

A, a Floret detached.
B, the Calyx.
C, the Corolla.
D, the Style.

Poa aquatica

Reed Poa

PLATE XLIV.

POA.

Gene. Char. Calyx with two valves, and several florets; spiculæ rounded at the base; corolla with two valves, ovate, pointed, and without aristæ. *Flo. Brit.*

POA AQUATICA. { *Spec. Plant.*

Large Water Poa.

Spec. Char. Straw very tall; panicle branched; calyx with six or more florets; florets not woolly at the base.

Poa aquatica is the largest of its genus, and in deep marshy ditches occasionally attains the height of five or six feet, associating with Arundo, Juncus, and Sparganium, but its tall expanding panicle renders it sufficiently obvious; it remains till late in the autumn.——Sheathing roughish, spines pointing upwards, leaves ending abruptly in a point; sheathing marked at the termination with two acute triangular spots, of a paler green than the leaf; the calyx contains from five to ten florets; the inner valve of the corolla is notched when young, but that mark is lost in age.——We cannot apply the word valuable to this grass, but it is certainly useful in some instances; it is sweet and nutritious, and much relished by cattle: in aquatic lands, which produce little but flags and rushes, one cannot do better than promote the growth of this water Poa, as a constant succession of edible herbage is produced, and at times the luxuriance of the crop is amazing. Cut and dried as hay, it makes a very excellent material for packing of various articles; and in rural economy it furnishes a warm and cheap substitute for straw, as thatching for cottages and outhouses.——The leaves of this Poa are affected in a peculiar manner by disease, attached to them in a very early age, and continuing, with no sensible alteration, till the decay of the plant, filling the veins of the leaves with a black and impalpable powder, which appears by a microscope (with very great powers) to consist wholly of transparent globular bodies.

A, a Spiket.
B, the Calyx.
C, the valves of the Floret.
D, the inner valve, in age, having lost the notch.

Poa fluitans

J.Hibbert Bath Sculp^t.

PLATE XLV.

POA FLUITANS.

{ *Hortus Clifford:*
FESTUCA FLUITANS, *Sp. Plant.*

Floating Poa.

SPEC. CHAR. Panicle branched; spikets long, and cylindrical, containing many florets; calyx smooth.

As an harbinger of better days, the floating Poa first strikes our attention, mantling the water with its long and handsome foliage, vegetating amid the chilling airs of our retiring winters, and we frequently see the shallow pools and stagnant waters margined with its luxuriant foliage, when the surrounding fields are destitute of food. This grass stands in the Species Plantarum as Festuca, but in the Hortus Cliffordiensis is associated with Poa. Haller, whose thirst for innovation (or sometimes perhaps pointed deviation from his early friend Linnæus) often induced him to assign a station for plants, which his better judgment would have known to have been erroneous in another, has however with propriety ranked this plant with the Poæ, the formation of the calyx justifying his arrangement. ——This sweet and nutritious grass is a temptation to the poor hungry beast scarcely to be resisted, and we see bullocks, and the field-fed horse, wading deep with much danger to obtain this early delicacy: swine are likewise very fond of it, and will gratify their appetites when they are able.—— Perhaps none of our grasses point out so obviously the advantages of irrigation, when practicable, as this plant, the grand desideratum being early food: our springs are frequently late, 'winter lingers in the lap of May,' and a black spring is mortality; * Lolium perenne (graſſes) is looked up to, and justly, but it comes not sufficiently early; whereas the floating Poa, by natural irrigation, affords much herbage even in the winter months, and in some places where circumstances have permitted this grass and Aira aquatica to increase, they have been so abundant, that an idea has often suggested itself that it might have been mown with advantage as soiling, and conveyed to the firmer grass lands for cattle to eat: but how far it may be possible to render it subservient to this purpose, practice, combined with judgment, can best determine: but, at any rate, encouraging the growth of Poa fluitans in marshy places, cannot but be attended with advantage, in enabling waste and idle land to produce an early and valuable food.

The seeds of this plant are made use of in some places on the continent as a nutritious addition to soups, &c. under the name of Manna seeds. It has been a received opinion that the seeds of Poa fluitans, although plump and healthy, by some defect or another were not productive of their species; this idea however is not justly adopted, as the germinating powers are equally perfect in them as in any of our grasses, and, by the earth being kept perfectly moist, they will vegetate and become plants.

A, the Calyx.

B, the Corolla.

C, the cup-ſhaped Nectarium, and Germin.

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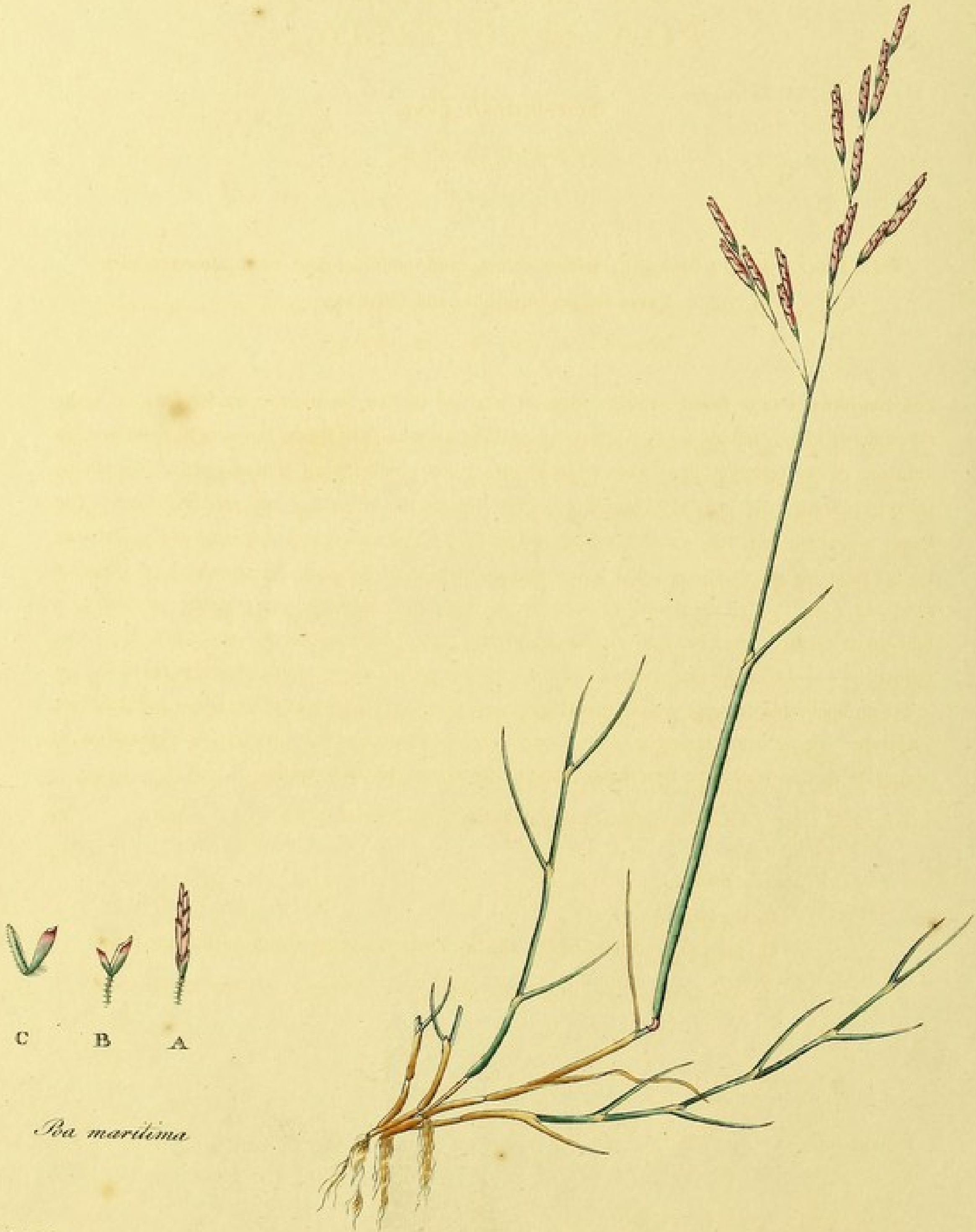
* We knew a Norfolk farmer, in the well remembered spring of 1799 (after the severe winter had exhausted his turnips), who was necessitated to destroy above 300 lambs, the ewes being too weak from want of food to support their young ones.



Poa maritima

J. Hibbert Bath Sculpt

PLATE XLVI.

POA MARITIMA. { *Flora Angl.*

Sea-marsh Poa.

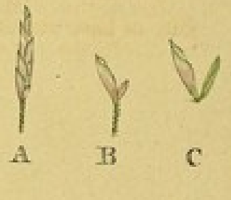
SPEC. CHAR. Panicle branched; spikets oblong, and roundish; four to six florets in each; leaves forked, rush-like, and rolled up.

POA maritima is to be found upon the edges of pits and ditches, in marshes by the sea, and upon the banks of all our muddy sea-rivers, seldom making a conspicuous figure unless removed from the influence of the common tides, when it sometimes attains the height of sixteen inches: it is almost always reclining, and generally covered with the filth of the river, and obscured with dirt. The leaves at the root are fine, rolled inwards, and forked, which alone gives a distinguishing character to this Poa; the panicle bears a slight resemblance to that of the preceding species.——Marine situations seem to give to almost all plants a particular hue, and this grass generally partakes of a blue-green colour: when luxuriant, it expands greatly, and the lower branches of the panicle become reflexed.——In the general situations of Poa maritima we are unacquainted with any immediate use it can be applicable to, and even in particular places where its larger growth attracts some attention, under the idea of contributing to animal pasturage, it is so obscured with dirt, or the exuviæ of spring tides, that it must be unwelcome, and ultimately prejudicial to cattle.

A, a Spiket.

B, the Calyx.

C, the valves of the Corolla, the inner one projecting a little beyond the outer.



Poa distans

R. P. Nodder Sculp.

PLATE XLVII.

POA DISTANS.

{ *Mantissa Plant.*
{ Aira aquatica, *Flo. Ang.* β

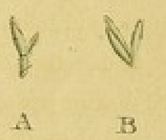
Retroflexed Poa.

Spec. Char. Panicle branched, several branches issuing from one stage, and bending downward in maturity; leaves broadish and flat.

This plant was first introduced into our system by Mr. Hudson as Aira, to which genus it can in no sense belong: Mr. Curtis then figured it, giving it the name of Poa retroflexa, an epithet sufficiently apposite, but that of Linnæus claims priority.——Poa distans is found in all our maritime counties, and occasionally far removed from the sea; it is abundant in many places in the interior of Lincoln and Yorkshire; about Hartlepool, in Durham, we find it at every step. This grass commonly inhabits the same situations as Poa maritima, and at times much similarity subsists between the two plants, but the general habits of distans are often sufficient to distinguish the species: the spiculæ of P. maritima are four or five times larger than those of P. distans; the straw in the panicle of P. maritima is smooth, but in P. distans it is beset with spines; in P. maritima we rarely find more than two branches issue from one stage, which are strong, and somewhat rigid, but those of P. distans are weak and flexile, and several proceed from one point; the leaves of the retroflexed Poa are broad and open, those of the sea-marsh Poa are narrow and rolled up, and the terminations of the shoots are always forked. These are general habits, and commonly will be a sufficient criterion, but there are situations in which the two plants are found wherein the characters of the individual are almost lost, and they assume so great a similarity that it is with much difficulty we can discover any specific distinction, consequently with hesitation attempt to point out any permanent character.——It is not uncommon for the branches of several of the species of gramina to be bent downwards, and in that case the base, near its insertion in the main stem, becomes bulbous, with the projection upwards, which expansion seems to influence the retroflexed tendency of the branches: these nodes are very obvious in the plant before us, in a young state, but they become enlarged as the plant acquires age, and when the retroflexion commences.——To speak of this grass, regarding its agricultural virtues, might be premature, but we can nevertheless conjecture it would be a valuable introduction into low and humid stations; we have seen it in some situations, where it has had the advantage of water, and occasional irrigation, assume a luxuriancy, and produce as abundant foliage as Poa trivialis, pratensis, or the most esteemed grasses of our pastures; and though it has undoubtedly an attachment to all saline earths, yet it vegetates with luxuriance in soils that can possess but a very minute portion of salt, or have remotely been manured.

A, a Spiket.
B, the Calyx.
C, the Corolla.

It may be that the P. distans of Dr. Withering is our plant, but the plate is so wretchedly executed that nothing in regard to it can be relied upon; the branches have no bulbous terminations, and the corolla is represented with one valve serrated.



Poa rigida

R.P. Nodder Sculp.t

PLATE XLVIII.

POA RIGIDA. { *Spec. Plant.*

Harsh Poa.

SPEC. CHAR. Panicle spear-shaped; branches solitary, rigid, and alternate on each side of a marginated rachis.

HARSH Poa is one of those plants which seems to evade the ideas of man in regard to its utility; the scantiness and poverty of its herbage renders it totally unfit for the useful food of any animal, even could its rigidity be disregarded: its delight is the most arid places, walls, and dry ditch banks: its weak and short roots seem not to be calculated to ameliorate the soil for the reception of better plants (as is observable in many other instances), nor does there reside in it an apparent virtue, fitting it for any purpose that we know of.——Early in spring the seed of the preceding autumn vegetates, and throws out weak and simple leaves, which during the rains of that season retain their verdure, but when the moisture ceases, it withers away, and the flowering spike appears; its weak roots seem hardly competent to furnish nutriment to both at the same time.

Our knowledge in regard to the application and utility of the good works of creation is more limited and confined than superficial observation is aware of, nor is it probable that the lapse of ages will so far augment our information as to render many of them convertible to the uses of man: nor are we certain that their designation is of that immediate importance as some have supposed, but that in their obscure state they fill exactly the space allotted them, and operate collaterally and distinctly in the great chain of nature, without its being of importance to man to discover or indicate their absolute utility.

A, the Calyx.
B, the Corolla.

L

Poa procumbens

PLATE XLIX.

POA PROCUMBENS. { *Flora Lond. Curtis.* POA RUPESTRIS, *Withering.*

Procumbent Poa.

SPEC. CHAR. Panicle spear-shaped, branches alternate, and in pairs; straw procumbent at the base.

POA procumbens is one of our scarcer plants, or at least a grass whose habits not rendering it very conspicuous, it remained long unnoticed, nor was it observed even by Ray! a man with whom Nature seemed to reside; not simply flitting by, but associating with her favourite son of science, led him through all her solitary and retired walks: in a distant day we wonder at his exertions, and posterity will testify his unbiassed veracity; but the pious humility of this good man will be the admiration of all ages till time shall be no more. Of late years the study of botany has been pursued with an ardour that has not only augmented the species, but enlightening the science with such a lustre, that with conscious pride we view, thus gaily decorated, the varied and scientific vest of our British Flora.—— The inner surface of the leaves of procumbent Poa are roughish, the outer smooth; sheathing smooth; valves of the calyx unequal, each with three roughish ribs, two shorter. The sheathing seems to attend the flowering panicle in this species longer than in any other of the genus, but in time the straw becomes elongated. The natural habits of this Poa are to be recumbent, but the flowering heads invariably tend upwards from the higher joint, whilst the lower part yet retains its inclination downwards: this character is very obvious even in the young flowering heads; when hardly peeping from the cradle of their sheathing (which is prostrate), they assume an elevated tendency, and bend from the upper joint, in imitation of their elder fraternity.——In dry situations procumbent Poa acquires about the height of four inches, but in moist places it assumes a greater altitude. It is abundant at Pill, below the Bristol hot wells, and upon the margins of the marsh ditches we have seen it a foot high, with that luxuriance of foliage that water enables almost all the species to acquire.——This plant was first figured by Mr. Curtis under the name of Procumbens, an epithet infinitely more significant than that of Dr. Withering, as this Poa, though perhaps occasionally found in rough and stony places, yet never courts elevated and rocky situations, as the name Rupestris seems to imply.

Poa procumbens has a remarkable attachment to saline earths, and will exist in situations wherein scarcely any other plant could: at Hartlepool, on the coast of Durham, the poor people collect the various species of Fuci, thrown on their shores, to burn; obtaining from them an alkaline salt, used in the allum works at Whitby: these blocks of crude ash are piled up in heaps, and the little yards wherein these stacks are made we see, after heavy showers of rain, floating with an alkaline lixivium, destroying every germ of vegetation, excepting Poa procumbens, which we find very sparingly in other places, but which is there in abundance, and luxuriates in this corrosive fluid.

A, the Calyx.
B, the valves of the Corolla.

Poa alpina

R.P. Nodder Sculp^t.

PLATE L.

POA ALPINA. { *Spec. Plant.*

Broad-leaved Alpine Poa.

Spec. Char. Panicle bending; spiculæ almost cordate; leaves broadish, rounded at the end, and terminating in a small point.

There are few of our smaller grasses whose peculiar habits more engage our attention in their native situations than Poa alpina; the deep red colour of the calyx, and the inclining tendency of the panicle, are unusual features, and are readily observed in places wild and solitary, such as this plant inhabits, where one notices every green thing, and prys into every recess, urged by the hopes of discovery.——Several leaves arise from the root, sheathing each other, giving the base of the straw a thick and clumsy appearance: leaves broad, and usually terminating in a thorn-like point: florets about three in each calyx.——There is an uncommon tendency in this Poa to become viviparous, at least it was very observable the summer in which we visited Scotland, as we scarcely noticed one plant in twenty without the terminating floret having germinated. It will be found on Craig Hallech, above Killen, Ben Ledi, above Callender, and several of the higher mountains.

Poa alpina appears to be a lover of the keen gales and snows of the Caledonian alps, vegetating almost entirely on the damp and humid ledges which project from the great scars on the northern sides of the mountains.

A, a Spicula.
B, the Calyx.
C, the Corolla.

(See a variety in the supplementary Plates.)

Poa flexuosa

R.P. Nodder Sculp^{t}.

PLATE LI.

POA FLEXUOSA. { *Smith's Flora Brit.*

Narrow-leaved Alpine Poa.

Spec. Char. Panicle upright, and expanding; spiculæ consisting of about three florets; leaves slender, and inclining upwards.

To the alpine regions of Scotland we must again resort for Poa flexuosa, but it is a much scarcer species than the preceding alpina, chiefly inhabiting Ben Nivis, in Inverness, from whence our plants were gathered by Mr. G. Don; the inclemency of the season in which we visited Scotland rendering all our attempts to approach the summit of that mountain useless.*——This species approaches nearer P. annua than any other of the genus, but yet is perhaps distinct from that plant. Keel of the calyx and larger valve of the corolla beset with spines on the upper part; straw furnished with several narrow slender leaves, rough at the edges; radical leaves few, ascending, not prostrate as in P. annua; the whole plant with a slight glaucous hue.——Mr. Don has supplied us likewise with plants which we consider as only varieties of this species, from Loch-ne-gar, a vast mountain in Aberdeenshire (Fig. 2); they differ from the plant of Ben Nivis in being taller, with only two florets in the spicula, and the spines on the corolla appeared to us to point downwards; the stipulæ were likewise more elongated. The whole of our plants from Aberdeenshire were viviparous, and Mr. Don informed us that he never found them but in that state.———Those gentlemen who are curious in collecting native specimens will perhaps not think it impertinent, if we here point out a tolerably certain method of distinguishing plants of the alpine regions of Scotland from those which have been propagated in a garden. A very considerable portion of the soil of the Highlands, both of the bogs and firm land, seems to consist of micaceous earth, and upon the mountains, the little soil which is found between the fissures of the rocks (in which the various plants we find chiefly exist) is formed of so large a portion of this fossil, that the roots and lower leaves are most commonly found glittering with minute specks of mica, a circumstance that will not be observable in plants from cultivation. So general is the diffusion of micaceous earth through Scotland, that we have found the roots of Isoetes lacustris, from the bottom of Loch Lomond, partaking in an inferior degree of this glittering soil.

A, a Spicula.
B, the Calyx.
C, the Corolla.
D, a Spicula of Fig. 2.
E, a Corolla of Fig. 2.

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* Perhaps there are none of the Scotch mountains less accessible than Ben Nivis; Mr. Stuart, the worthy minister of Luss, informed us that for two summers he attempted to ascend this giant, but could not succeed in his endeavours.

Poa annua

J. Hibbert Bath. Sculpt

POA ANNUA. { *Spec. Plant.*

Common Poa.

Spec. Char. Panicle upright; branches in pairs; leaves flat, reclining, and wrinkled.

This is the grass that makes its appearance so often, and so unwelcomed, in our gardens and gravel walks, and insinuates itself so plentifully in the pavements of our courts and streets, much to the annoyance of our neat and tidy citizens: we often remark that although seemingly every vestige is eradicated from our pavements in spring, and which is afterwards exposed to the broiling of a summer's sun, yet that the succeeding spring produces an abundant crop! this would not be the case perhaps with any other grass; but as Poa annua reposes not, but vegetates during the severity of winter, its seed ripens, and is shed by the latter end of March, and even before the weeding commences; and probably during eight months in the year it ripens, and deposits its seed.——Perhaps amid the number of grasses selected as fitting for pasturage, none are more valuable than this common Poa, as a feeding, not a cutting grass; its herbage is too short, nor has it bent enough for that purpose, but seems well adapted for every other end; it is very productive,* and one of our sweetest and tenderest grasses.——In laying down a field, it would perhaps be advisable to have a large portion of the seed of Poa annua mixed with the other grasses, because it vegetates nearly at all seasons of the year; and the number of its fibrous roots enables it not only to draw continual nourishment from the soil, but at the same time hold it so firmly in the earth that no frost detaches it (which we believe to be the case with several other grasses less firmly held, and which are then killed from the pastures by the bleak winds of spring), and it thus becomes a support to its needful neighbour in winter, and by its plentiful foliage preserves a certain degree of humidity during the exhalations of summer: the common Poa not being perennial is of little moment, in regard to the uses here hinted at, as its seeds being shed at various periods, it supplies a constant progeny of all ages.

This Poa may be called almost an universal plant, as no situation or soil is exempt from it, a circumstance that can hardly be claimed by any other plant; were its seeds furnished with alæ (winged), or calculated to be conveyed by the air more than those of other grasses, it would not be so remarkable; but when we see it insinuate itself between the hardly perceptible crevices of walls, flagged pavements, &c. or wherever the smallest portion of earth is found, it is not unworthy of some comment.———The panicle in autumn and winter is generally tinted with pink, but in the spring and summer months it assumes a brown unpleasant hue: the foliage is generally wrinkled and puckered, a singularity not observable in any other species of this genus.

A, a Spiket.
B, the valves of the Calyx.
C, the Corolla.

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* It appears by experiments in the Gramina Pascua of Mr. Swayne, that P. annua maintains a very conspicuous rank in regard to product, even when contrasted with its Titanic neighbours of the field.

Poa Bulbosa

J.Hibbert Bath sculp!

PLATE LIII.

POA BULBOSA. { *Spec. Plant.*

Bulbous-rooted Poa.

Spec. Char. Panicle pointing in one direction; root bulbous.

Long unknown as was this plant in England, we now find it not uncommonly on several of our sea coasts: our first specimens were sent us by Dawson Turner, Esq. and we afterwards found it plentifully on the Denes at Yarmouth.——Panicle, branches short, compact, and inclining in one direction, but by transplantation the plant becomes enlarged, the branches expand, and the original distinctions cease. Poa bulbosa flowers early in spring, and is perhaps of shorter duration than any other of our grasses; its fine purple spiculæ soon fade, and by the beginning of June nothing is visible but a dry brown panicle. Each bulb seems to consist of successive folds of sheathing, which are dry, and apparently sapless, yet they will again vegetate freely in moist earth, when all powers of resuscitation seem annihilated.——Poa bulbosa, in all the situations with which we are acquainted, inhabits dry and arenaceous places on our sea shores; Mr. Hudson gives for the habitat of this plant ' meadows and pastures!' There is a variety which seems to hold an intermediate station between this P. bulbosa and the P. annua, in which the roots trail to considerable length, throwing out numerous fibres, each fibre producing a variety of little bulbs of different forms; and in this singularity it alone varies from P. annua: it inhabits the sandy commons in the vicinity of the sea on several of our coasts. Fig. 2.

A, a Spicula.
B, the Calyx.
C, the Corolla.

Poa trivialis

J. Hibbert Bath Sculpt

PLATE LIV.

POA TRIVIALIS. { *Spec. Plant.*

Rough-stalked Poa.

SPEC. CHAR. Panicle spreading; spikets with about three florets in each; straw occasionally rough; membrane of the leaf pointed.

MUCH similarity exists between this Poa and the next species, but yet there is an undefinable habit peculiar to each that very often manifests the plant, but the botanist requires a feature strong and permanent; this Mr. Hudson * has most happily noticed, and by attention to his directions we shall rarely err: the stipula, or membrane that arises from the leaf, and partly sheaths the straw, in this species, is long and pointed (Fig. A). The less certain distinctions are the greater luxuriance of the Poa trivialis, and the sheathing being somewhat angular, and roughish in the hand; but yet this plant growing in aquatic places, loses much of that roughness, and assimilates the softness of the water grasses.——This Poa is nearly one of the best of our pasture grasses, it throws out numerous shoots, and produces an abundance of sweet and nutritious herbage; but low lands and meadows are its delight, nor does it assume these valuable characters to advantage but in such situations.

A, part of the leaf, shewing the acute membrane.
B, the valves of the Calyx.
C, the Corolla.

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* Most highly as we esteem the botanical erudition of the late Mr. Curtis, to whom this excellent distinction is usually attributed, yet in justice to the author of the Flora Anglica, we cannot help mentioning that the merit of pointing out the distinguishing character between these species (the P. pratensis and P. trivialis) is undoubtedly due to Mr. Hudson: of the P. trivialis he says 'stipula acuminata;' of the P. pratensis he observes 'stipula obtusa;' yet we are convinced that Mr. Curtis did not arrogantly assume this merit to himself, but overlooked the distinctions marked by Hudson; a solitary instance perhaps of inattention in that excellent botanist!

Poa pratensis

R.P. Nodder Sculp^t

PLATE LV.

POA PRATENSIS. { *Spec Plant.*

Smooth-stalked Poa.

Spec. Char. Panicle spreading; spikets with three or four florets in each; straw smooth; membrane of the leaf obtuse.

There seems in this species a general tendency to become obtuse, as there is an inclination in the preceding one to acuteness; the leaves of the P. pratensis are not so sharp in their termination, but the blunt and ovate membrane to the leaf (Fig. A) is the best distinction of the species.——As an useful grass its merits are but little inferior to the foregoing trivialis, and like that, it becomes very luxuriant in aquatic places, but will vegetate with infinitely more advantage to the farmer in uplands than the trivialis will: of these two species so much has been said by all writers upon agricultural subjects, that information better than we can give must be in the hands of every one, nor could we expect to labour with any utility in a field so parsimoniously harvested.——These two species of grass, in very rich and moist situations, flourish with singular luxuriance, and in the famous meadow at Orcheston St. Mary,* Wilts, they constitute a full proportion of the crop, and become geniculated and stoloniferous.

A, part of the Leaf, shewing the ovate membrane.
B, the valves of the Calyx.
C, the valves of the Corolla.

(See a variety in the supplementary Plates.)

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* This meadow contains about two acres and a half, producing no peculiar species of grass different from meadows in general; but in that situation they are remarkably luxuriant, from a cause not exactly ascertained: this little spot of land has produced in the two cuttings (which it annually undergoes) ten tons of hay! and the tythe has been let for 5l!

PLATE XV.

POA PRATENSIS {[illegible]

[illegible] of Poa.

Wm. Curtis. Panicle spreading; [illegible] with the [illegible] or four florets in each, [illegible]
[illegible] of the [illegible].

There seems in this species a general tendency to become villous, as there is an inclination in the preceding one to roughness; the leaves of the [illegible] are not so [illegible] in their [illegible], but the [illegible] and [illegible] to the [illegible]. A [illegible] in the species.—As an [illegible] grass [illegible] or [illegible] to the [illegible], any [illegible], it becomes very [illegible] to [illegible] with [illegible] advantage to the [illegible] than the [illegible] of these two species [illegible] agricultural [illegible], that [illegible] and [illegible] in the [illegible], [illegible] be [illegible] to [illegible] a [illegible].—These two species of grass, [illegible] with [illegible], and [illegible] of the [illegible] and [illegible] and [illegible].

a. Part of the leaf, showing the [illegible] membrane.
b. [illegible] of the [illegible].
c. The [illegible] of the Panicle.

[illegible] in the [illegible].

[illegible]

Poa cæsia

J. Hibbert Bath Sculp.

PLATE LVI.

POA CÆSIA. { *Smith's Flora Britan.*

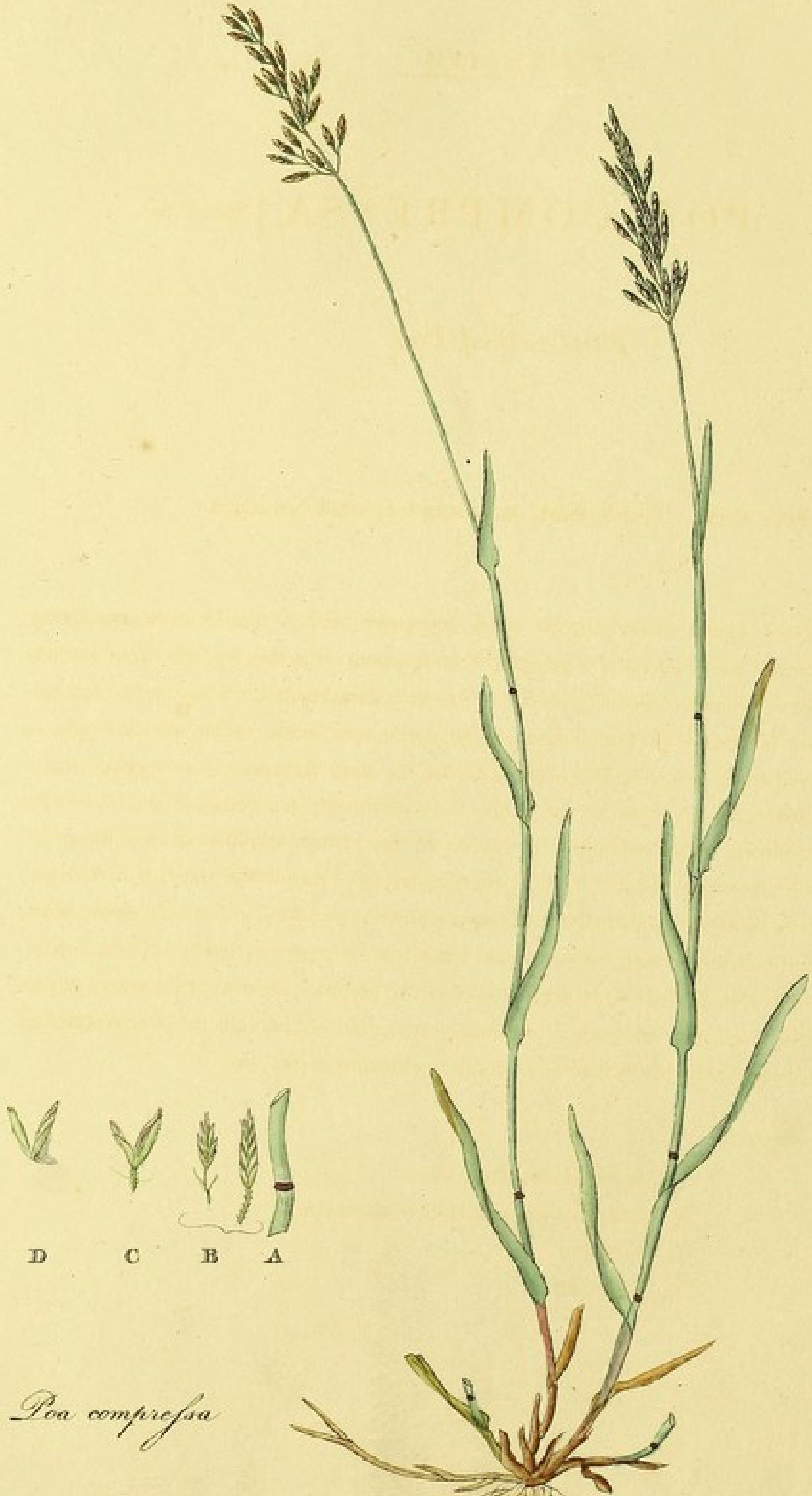
Blue Alpine Poa.

Spec. Char. Panicle expanding; peduncles frequently supporting a single spicula; corolla with little wool at the base; terminating joint of the straw very long.

This beautiful plant is found on a few of the highest mountains of North Britain, on Ben Lawers, and sparingly on Craig Hallech, selecting for its residence the cold damp crevices of the precipitous scars on the northern sides of the hills, where its singular blue colour at once arrests our attention: it is these crags which preserve the rare plants that exist in alpine regions, by being inaccessible to the animals which browse on the mountains, nibbling down every germ of vegetation; and thus they remain uninjured to cheer the few whose botanical ardour conveys them to these regions of peril and wonder.——Radical leaves short, a little rough on the edges; cauline leaves longer, and rough on the inner surface; upper joint of the straw very long, bearing a single leaf at the base; straw rough, very sensibly so when dry; panicle branches at times supporting four or five spikets, but very generally the panicle consists (often entirely) of long peduncles, supporting a single spicula.——Poa cæsia is not abandoned by its colour upon introduction into our gardens, still retaining its remarkable hue nearly as strong as in its native stations, but becomes more enlarged and luxuriant in its growth. Our knowledge of these alpine plants is very limited and confined; the situations they inhabit are never visited but by the foot of the wandering shepherd or inquisitive botanist; we know little more than their existence, their uses and peculiarities are hidden from observation.

P. cæsia, in many of its characters, bears a near resemblance to weak plants of P. nemoralis; the straw of P. nemoralis having several joints, is one of the first features that mark their difference.

A, a Spicula.
B, the Calyx.
C, the Corolla.



Poa compreſsa

Hibbart Bath Sculpt

PLATE LVII.

POA COMPRESSA. { *Spec. Plant.*

Flat-stalked Poa.

SPEC. CHAR. Panicle short, and contracted; straw two-edged.

THE flat-stalked Poa is a plant rather singular in its appearance, and its slender straw terminating with a short compressed panicle renders it particularly conspicuous: it makes its little show towards the middle and end of summer, generally inhabiting the earth found upon dry walls, yet is not uncommonly observed in patches of some extent in the dryest corn fields, visible after the crop is removed: the circumstance attending this plant in having its straw flattened, is so singular that it can hardly be mistaken for any other of the genus; it is commonly of a glaucous hue, but varies much in different stations: when cultivated, it acquires an appearance very different from its natural character, the panicle becomes enlarged, and the spiculæ produce a considerable number of florets.

In a catalogue of agricultural plants Poa compressa will never be found, it is a tardy grass, flowering late, and remaining till autumn, and at a time when there is in general plenty of keep, which would render it, even if its product was more abundant, of no moment: in corn fields, where patches of it are found after harvesting the grain, it is usually among the last herbage that is consumed by the cattle, which are generally then turned in to glean the remnants of the crop.

A, part of the flattened Straw.
B, Spicula of plants in different situations.
C, the Calyx.
D, the Corolla.

Poa nemoralis

R.P.Nodder Sculp^t

PLATE LVIII.

POA NEMORALIS. { *Spec. Plant.*

Wood Poa.

Spec. Char. Panicle with feeble branches; spikets with two or three florets; straw slender and inclining; leaves attenuated.

Of all our British Poæ this is the only one which inhabits woods, others of the genus are occasionally found there, but the nemoralis vegetates almost entirely in sylvan and shady places; it is rather an elegant plant, and more easy to be distinguished by the eye than by description; the branches constituting the panicle are very slender and weak, supporting but few spikets, compressed at the first, but expanding much when in maturity; the straw is feeble, slender, and inclining.

If Poa nemoralis possesses any virtues, they are wholly unknown in their present state, but as it is one among the few grasses that thrive in glooms and shades, it might be attended with some profit to encourage the growth of it in open groves, where cattle are permitted to stray, or where they retire from the irritation of flies, that they may at those periods find food, and eat it unmolested; but it promises not much, its straw is of no importance, nor is the foliage abundant.———In open and exposed situations Poa nemoralis becomes much altered in appearance, the spiculæ are larger, the panicle less expanded, and the whole plant less feeble and attenuated. Fig. 2.

A, Spikets of plants in different stations.
B, the Calyx.
C, the Corolla.
D, a Seed.

Poa decumbens

J. Hibbert Bath Sculp^{t}.

PLATE LIX.

POA DECUMBENS.

Bot. Arrang.
FESTUCA DECUMBENS, *Sp. Plant.*
Hudson, &c.

Inclining Poa.

SPEC. CHAR. Panicle unexpanding; footstalks short, supporting one or two spiculæ; valves of the calyx nearly enclosing the florets.

INCLINING Poa * vegetates in very dry situations, and in spongy meadows, where the large size of the spiculæ renders it observable, and readily distinguishes it from the other species of the genus.——If the British grasses were to be arranged according to their natural stations, Poa decumbens would hardly occupy the station it now does, as it bears little similarity to the general character of Poa, though it essentially accords with that genus, but rather approaches in habit the genus Melica: but if natural arrangement was to obtain the preeminence of internal construction, the system would be subjected to the versatile caprice of individual opinion, and the species disposed in such genera as fancy would alone suggest.——The straw of this Poa is seldom prostrate, but inclining always; leaves and sheathing clothed with fine hairs, and the termination of the sheathing encircled with a tuft of hair; spiculæ few; the calyx is of a length peculiar to this species, being generally extended so far as to wholly wrap up the florets.——The alteration, except in particular instances, of the well established specific names of plants is by no means warrantable, those epithets having become by general usage public property, unalienable by individual caprice or innovating fancy; or this plant might receive perhaps a more pertinent trivial name, that of 'pauciflora,' as it is not commonly decumbent, and the small number of its spiculæ is a permanent and invariable criterion.———In agricultural utility this Poa claims no rank, and though it may occasionally be found associating with the herbage of the meadow, yet it is in such places where the better grasses vegetate but sparingly, never intruding where the soil is good, or occupied by more valuable herbage.

A, the Calyx, coloured as in maturity.
B, the valves of the Corolla, fringed with hair.
C, a Seed.

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* In the English epithets of this genus we have made use of the word Poa, in preference to that of Meadow-grass, which words, though perfectly applicable to some of the species, could not with propriety be extended to all, as nemoralis, compressa, rigida, &c.

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Briza media

R.P. Nodder Sculp^t.

PLATE LX.

BRIZA.

GENE. CHAR. Calyx with two valves, and several florets; spiculæ two-rowed, cordated; valves obtusely heart-shaped. *Gen. Plant.*

BRIZA MEDIA. { *Spec. Plant.*

Common Quaking-grass.

SPEC. CHAR. Spiculæ ovate; calyx shorter than the florets; straw smooth.

THIS elegant little plant is a lover of our climate, and a favourite with us on account of its beauty, but we cannot defend it as an agricultural grass, and, as it possesses no virtue that the grazier requires, it is more permitted to exist than approved of, and should it be eradicated from our pastures, its loss would be perceived by the botanist alone; yet it intrudes on none, but vegetates on spots where other grasses are sparingly found, and perhaps the vicinity and dripping of its taller neighbours are unwelcome to it, or the free growth of the others expels it.——Briza media seems to prefer damp situations, but is commonly found in the dryest, not promiscuously dispersed, but in patches of no great extent. We have no indigenous plant more universally known than Briza, the Quaking-grass is in the hands of every child, and the peculiar simplicity of its habit, and elegant manner in which the spiculæ are disposed, 'trembling at Zephyr's whisp'ring breath,' render it not unfrequently an associated ornament in the bouquet.

A, the Calyx.
B, the valves of the Corolla

Briza aspera

JHibbert Bath Sculp^{t}

PLATE LXI.

BRIZA ASPERA. { BRIZA MINOR, *Spec. Plant.*

Green Quaking-grass.

SPEC. CHAR. Stipula long; straw and peduncles beset with small spines.

THERE are times when the alteration of an established specific epithet may be permitted, and even approved, and we trust that in this deviation from our almost general rule we shall not wander from propriety. The name of 'minor,' given to this grass, conveys only the delusive idea of its being a small plant, whereas it is as tall, or taller, than the other British species, nor does it intimate any peculiar feature.——The first of our botanical writers who arranged this grass as a British species was Mr. Hudson; Ray mentions it as growing in Jersey; in England we believe it is entirely confined to the neighbourhood of Penzance in Cornwall; from whence we received our plants through the kindness of Dr. Penneck.——The pale green colour of the spiculæ first arrests our attention, and the length of the membrane in the bosom of the leaves will generally identify the species, but we cannot be mistaken if we pass the fingers gently up the straw, which is rough with minute spines pointing downwards. In Briza media the culm is perfectly smooth, and we generally observe that even the peduncles which support the spiculæ are free from any roughness; but in this species, the whole are beset with thorny points.——The representation is from a plant in rather a young state, that the proportion of the calyx to the florets may be noticed, and in a still younger state the 'calyce floscule longiore' of Linnæus will be more clearly seen.——The seeds of these Brizæ are very minute, and yet it is recorded * that the successive plant which is to arise from the germinating of this seed is to be observed within them, coiled up with its spiculæ, by dissection in a microscope!

A, part of the Culm and Peduncles with their spiculæ.
B, the Calyx.
C, the larger Valve of the Corolla, with the seed in its recess.
D, the inner Valve; the cleft at the apex, as mentioned by Dr. Withering, is not always observable.
E, a front view of the larger Valve of the Corolla.

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* Baker on the microscope.

Dactylis glomerata

R.P. Nodder Sculp^t.

PLATE LXII.

DACTYLIS.

GENE. CHAR. Calyx with two valves, keeled, and compressed, the upper valve the largest. *Gen. Plant.*

DACTYLIS GLOMERATA. { *Spec. Plant.*

Clustered Cock's-foot.

SPEC. CHAR. Panicle clustered, lower branch expanding.

ALMOST all places, uplands and lowlands, woods and thickets, produce this grass, which though coarse, yet is one of the most productive: its attachments are singular; it courts hedges and shady places, and the drippings of large trees, which are pernicious to most other pasture grasses, are grateful to this. Though the Cock's-foot-grass * may not be a favourite in the good pasture lands, nor perhaps be relished by the finer-mouthed cattle, yet surely would be eagerly devoured by the poor beast one sees perambulating the exhausted fences, and lowing for food, during the severity of the winter and spring months. One often sees a field of the finer grasses swept with the scythe, when the crop can hardly repay the labour, whereas were the Cock's-foot encouraged round hedges, fences, or shady places, a full swath might be almost ensured.——There is no grass which we admit into our pastures which bears mowing so well as this Dactylis, nor which produces so abundant an after crop, and if a field is examined after the scythe has passed over it, the first grass that springs again, even in the dryest season, will be found to be the Cock's-foot: its increase in wet seasons is amazing, and its shade-loving habits would secure a crop when many other grasses in dry summers fail; and none but pampered cattle would refuse the hay, especially if mixed with a small portion of our finer grasses.——It is not to be wished that the herbage of our fine meadow lands should be supplanted by the Cock's-foot, but that its growth should be encouraged in places where the exhausted turf yields little or nothing, as surely coarse food is preferable to none. Keep is pretty generally exhausted towards the end of April, or the beginning of May, whereas by a larger supply (though not perhaps a marketable grass) it would last till the fields again could furnish food.———Though many an agriculturist may smile at theoretical projections, yet how often has practice, when study has been directed to the walks of nature, reaped the benefit of its suggestions! and though perfection is not aimed at, improvement may be attained; and if by such means one idea subservient to public welfare, or individual advantage, can be produced, surely that man has not laboured in vain.

A, the Calyx.
B, the Corolla.

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* The name of Cock's-foot, by which this grass is known, is not wholly inapplicable, for by inverting the flowering heads, some idea is given of the animal's foot, with the lower branch projecting like a spur.

Dactylis stricta

R.P.Nodder Sculp!

PLATE LXIII.

DACTYLIS STRICTA. { *Hort. Kewen.* DACT. CYNOSUROIDES, *Flo. Ang.*

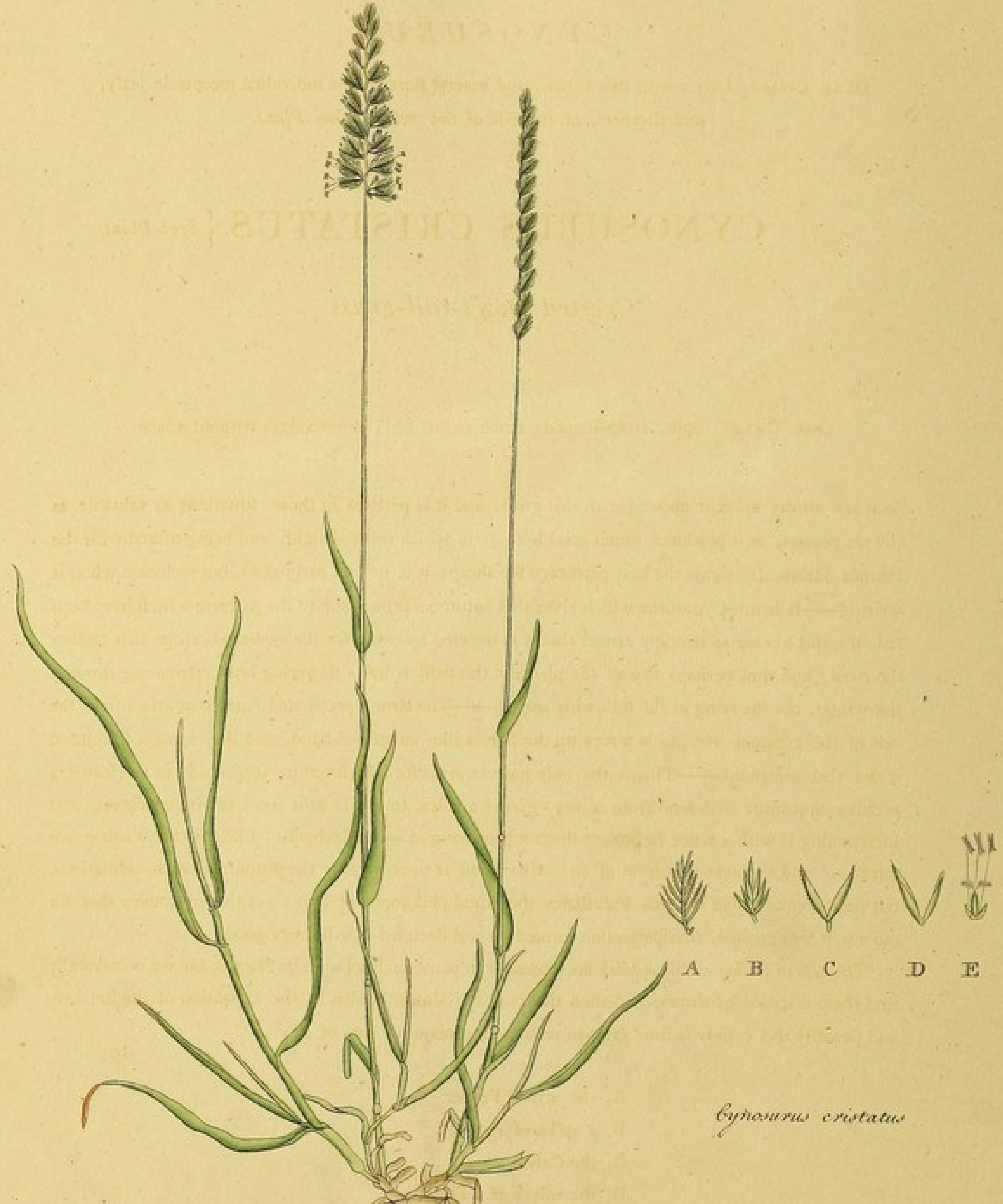
Sea Cock's-foot.

SPEC. CHAR. Spike upright, and forked into two or three branches; spiculæ alternate, sitting on a serpentine rachis.

DACTYLIS stricta is one of our rarer plants, inhabiting but a small range of our sea coast, nor do we know that it has been found without the limits of Aldborough in Suffolk, and Margate in Kent; in the isle of Sheppey it is abundant. Entirely a maritime plant, it inhabits the deep muddy ditches impregnated with salt water from the floods of the spring tides, or the fosses of meadows originally gained from the sea. The lower part of the plant is sheathed with the remnants of decayed leaves, and obscured with the mud and exuviæ of the impure water wherein its situation has been fixed.

The Sea Cock's-foot is a plant of note to the botanist only, and its value is enhanced by its locality; it holds no rank in the estimation of the agriculturist, but may be placed in the scale of utility with Carex, Scirpus, and Sparganium.——Nothing can be more discordant to the ideas of the patrons of natural arrangement than the association of this plant with Dactylis; and perhaps we have no two plants united in one genus whose internal formation so indifferently accord as D. stricta and D. glomerata. The unnecessary extension of our present genera is subject to many disadvantages, or this plant possesses perhaps sufficient character to constitute a new genus, or at any rate it would probably associate better with Triticum than remain in its present unsightly arrangement with Dactylis.

A, part of a Branch.
B, the Calyx.
C, the Corolla.
D, the Stamina and Styles.



Cynosurus cristatus

R. P. Nodder Sculp^t.

PLATE LXIV.

CYNOSURUS.

GENE. CHAR. Calyx with two valves, and several florets; the individual receptacle leafy, and alternate, on the side of the rachis. *Gen. Plant.*

CYNOSURUS CRISTATUS. { *Spec. Plant.*

Crested Dog's-tail-grass.

SPEC. CHAR. Spike strap-shaped; fence pinnatified; floret valves without aristæ.

ALMOST all dry uplands abound with this grass, and it is perhaps in those situations as valuable as any we possess, as it produces much good herbage in which cattle delight, and being mixed with the Festuca duriuscula, forms the best pasturage for sheep; it is not an early grass, but welcome when it arrives.——It is this Cynosurus which gives that autumnal brown hue to the pastures which have been fed, the spike being so strongly armed that it is rejected by cattle for the sweeter herbage that clothes the roots; and thus perhaps to half the plants in the field is left a flowering head, remaining through the winter, but decaying in the following spring.——The strong pectinated fence that arises from the side of the common receptacle wraps up the florets like an armed hand, and they remain uninjured under that safeguard.——This is the only pasture grass for which nature seems to have fabricated a peculiar apparatus to defend from injury, giving a calyx to cradle as it were the infant florets, and surrounding it with a fence to protect them when matured.——Mechanism like this must cause admiration! and the next transition of an active mind is to conjecture the purport of such ordinations, but most frequently in the end humiliates the proud philosophy of man; yet this we know, that for our use it was created, that perfection formed it, and declared it to be very good.

The sets of florets in this species are generally in pairs, each set with its bractea, but we occasionally find them disposed by threes, and then the rachis is almost hidden by the expansion of the bracteæ; and possibly this variety is the 'gramen cristatum gradatum,' &c. of Ray.

A, the armed Fence.
B, a spike of Florets.
C, the Calyx.
D, the valves of a Floret.
E, the Germin, Nectarium, &c.

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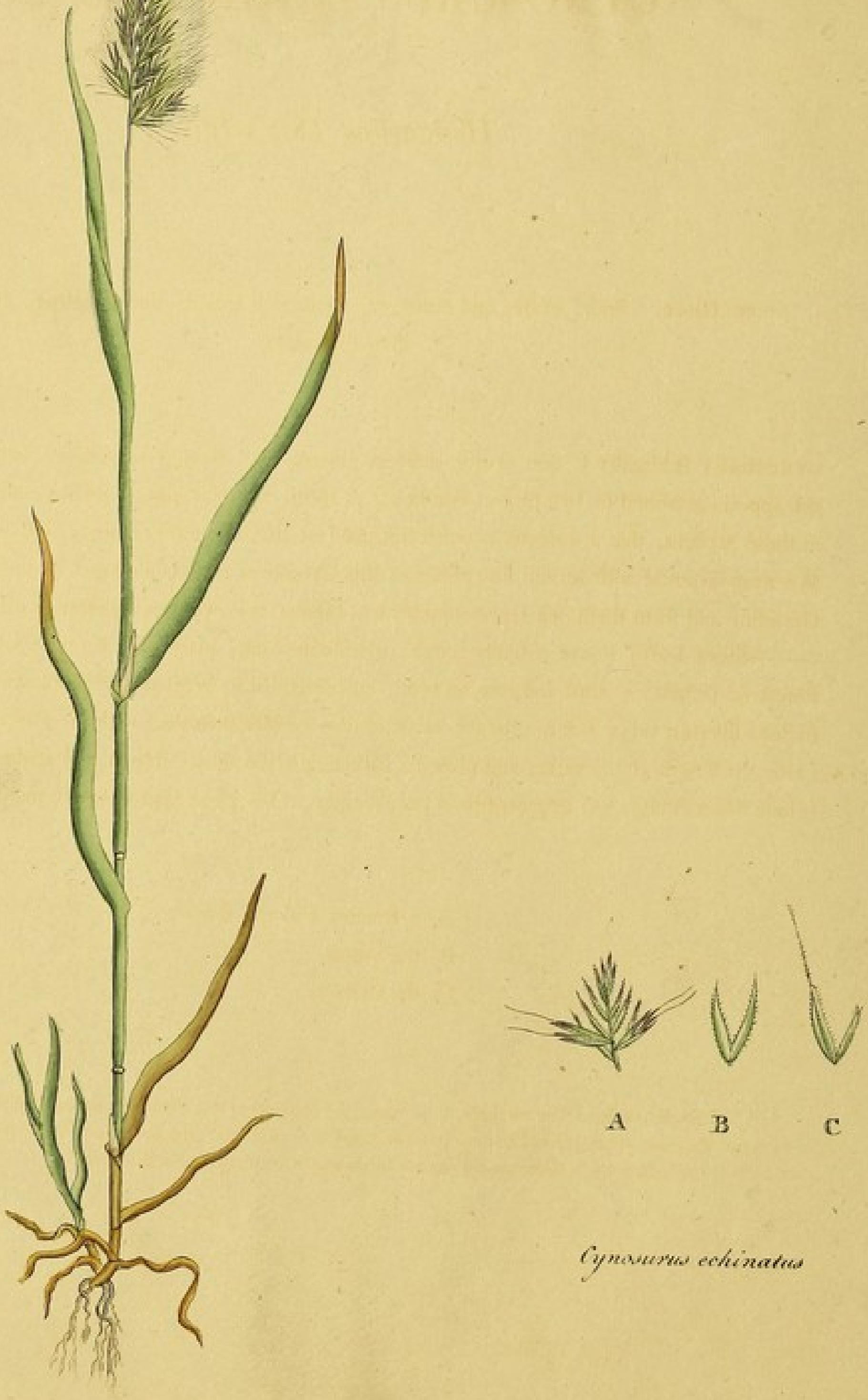

Cynosurus echinatus

R. P. Nodder Sculp^t

PLATE LXV.

CYNOSURUS ECHINATUS. { *Spec. Plant.*

Hedge-hog Dog's-tail.

Spec. Char. Spike ovate, and clustered; fence pinnatified; florets with an arista longer than the valves.

Cynosurus echinatus is one of our scarcest grasses, and though certainly a native of England, yet appears confined to two places, Sandwich in Kent, and Hastings in Sussex; and is even so rare in those stations, that a resident botanist informed us that he never obtained indigenous specimens. We were favoured with several fine plants of this Cynosurus from Guernsey,* by the kindness of Mr. Gosselin, and from them our representation was taken; it is even an uncommon plant in that island. ——Straw leafy; leaves scarcely rough; membrane long; plant from six inches to two feet high; florets on peduncles, clustered into an head, and defended by bracteæ, each bractea guards from one to four florets; calyx skinny; larger valve of the corolla furnished with an arista, which is often twice the length of the valve, and placed a little below the apex; florets and aristæ of a pale green colour when young, but they assume a purple tinge as the plant approaches to maturity.

A, a Bractea and two florets.
B, the Calyx.
C, the Corolla.

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* It will not be imagined that we mean to introduce the products of this island among our British indigenous grasses; if such was the case, we might add to our catalogue Lagurus ovatus, and (the wrongly arranged plant) Phalaris utriculata), but we only resorted to Guernsey for natural specimens of an unattainable British native.

N° 66

Festuca Ovina

R.P. Nodder Sculp^t.

PLATE LXVI.

FESTUCA.

Gene. Char. Calyx with two valves; spiculæ rounded, and oblong; glumes pointed. *Gen. Plant.*

FESTUCA OVINA. { *Spec. Plant.?*

Sheep's Fescue-grass.

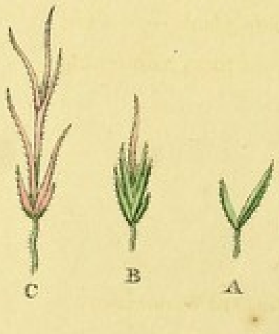
Spec. Char. Panicle with few spiculæ, expanding but little; spiculæ with or without aristæ; leaves short, setaceous, and rough.

Perhaps none of the specific distinctions of Linnæus afford a less certain criterion for detecting the individual than that attached to Festuca ovina; the square straw which he notes exists but very obscurely in any of our British species, nor have we found that the inner valve of the corolla has been invariably smooth, but more or less beset with short hairs. Some botanists have entertained an opinion that the Sheep's Fescue-grass was only a dwarf variety of the F. duriuscula, and that by cultivation it would reassume the characters lost by vegetating in alpine or rocky stations; but we have seen this plant, after a cultivation of many years, retain its original characteristics.——F. ovina may be known by being drawn through the hand, when it sensibly manifests a harshness not observable in F. duriuscula, and the leaves and sheathing, with a glass, will be observed to be furnished with minute spines; a circumstance we fancy not found to exist in the F. duriuscula; though the leaves of the duriuscula may be occasionally a little rough, yet they are never so decidedly beset with spines as those of the F. ovina.——Although F. ovina delights in dry and stony regions, it is not alone found in arid stations, but likewise vegetates in bogs and swampy places, in several parts of England and Wales, where it forms an independent plant, seldom producing more than one flowering straw, of a very slender and attenuated habit, and occasionally attains the height of a foot (Fig. 2), and in this state we find it in that noble collection of Sherard's preserved at Oxford, under the character of 'gramen loliaceum minimum folialis junceis,' &c.

Festuca ovina has been called the 'ovibus gratissimum pabulum,' the favourite food of sheep, but it is not probably this plant which is in peculiar request by that animal, but the general sweet herbage of high pasture lands, where many of the lowland grasses are humbled in size, but exalted in flavour. An idea was once prevalent, and perhaps not yet entirely abandoned, that the excellence of the Spanish wool was to be attributed to the abundance of this Fescue-grass in the plains where the sheep feed; that notion is however probably fallacious; almost all the high downs and chalky hills of England produce this plant, and if food alone gave virtue to the wool, the sheep roving over the alpine regions of northern Britain would produce as fine a fleece as any from the Segovian pastures.——The exact temperature of the climate which the animal lives in (great heat making wool hairy, and cold giving it a coarseness), and possibly something added for peculiar treatment, are perhaps the existing reasons that give that high estimation to the Spanish wool. During the heat of summer the sheep feed upon the mountains of Asturias, Arragon, &c. in the northern provinces; towards the approach of winter they are driven to the milder regions of Andalusia, Estramadura, &c. in the southern provinces, and hence enjoy an atmosphere undisturbed by the bleak airs of winter, or fired by the torrid heats of summer; to obtain this, many of the flocks are driven between four and five hundred miles.

It is further to be remarked that the animal which remains for the use of the butcher, and does not journey to the south, but winters in the cold provinces, acquires, according to the established ordination of nature, a coarse fleece, which does not sell for above half the price of that of the migrating animal.

A, the Calyx.
B, the Corolla.
C, a Leaf with its spines.



Festuca vivipara

J.Hibbert Bath Sculp.t

PLATE LXVII.

FESTUCA VIVIPARA.

Smith's Flora Brit.
FESTUCA OVINA, *var. Hudson, &c.*

Viviparous Fescue.

SPEC. CHAR. Florets permanently viviparous.

FROM the peculiarities attending this plant, it certainly deserves a station separate from the preceding species, but whether it will be universally considered as entitled to specific distinction we cannot say. It inhabits alpine stations in the north of England,[*] and is found in perfection in Scotland, on dry walls, as well as the moist crevices of dripping rocks.——The seeds of many of our pasture grasses will commonly germinate in their husks by the successive gleams and glooms of autumn, and especially those which spring up amidst the crags on the summits of mountains, rarely and transiently visited by a sunny beam to perfect their seeds, by an express ordination of Nature become locally viviparous, when the seed, already vegetated to a plant, falls from the parent stem and takes root in the earth, an immediate plant, not a tardy germinating seed; and thus anticipates the economy of Nature. But the plant before us must not be considered as simply viviparous by local or casual circumstances, but we find it yet retaining these habits in all altitudes and seasons, and still preserving its singularities after the cultivation of twenty years[†] in southern Britain; and thus seems to manifest that its habits arise from constitutional mechanism. In a very early age the terminating floret springs out and forms a leader, and in that state has three or four valves wrapping it up at the base, but in succession each valve becomes elongated (an inch or more), and forms leaves to the leader, till all have shot out, excepting the calyx, which remains unaltered; roots then occasionally spring out, the sprout afterwards drops from the calyx, becomes rooted in the earth, constituting a separate and independent plant.——Nature appears to have designed what we call the corolla, in grasses, to act as a cradle to sheath and guard the immatured germin, giving it two leaves, that each offspring of the family might be preserved distinct; but in the Festuca vivipara, where there are no stamens or pistils, it would not be required, and consequently we find here the corolla to consist only of an outer, and no inner valve, and it is this inner valve that germinates and forms the radical leaves of the infant plant.——The leaves of the Viviparous Fescue are fine and setaceous, but we have never perceived them manifesting any roughness, as is observable in F. ovina.

A, the Calyx.
B, the Spicula in an early state.
C, the Spicula advanced in age.

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[*] About the falls of Lowdore, and Ambleside, and all the little mountain rills in Cumberland and Westmoreland, it is produced in perfection.

[†] Observing a plant of F. vivipara in the garden of the late Mr. Sole, of Bath, he told us that he brought it from Snowdon thirty years before, and that it had been in every season invariably viviparous. This circumstance is not peculiar to F. vivipara, for we have noted it as attendant upon Poa alpina, Aira cæspitosa, and almost all our grasses, which having once become viviparous, by transplantation do not lose that faculty, and produce seed; for as the construction of the corolla would be required to be different for a seminiferous plant, removal alone will not probably effect the necessary alteration.

Festuca duriuscula

R.P. Nodder Sculp^t

PLATE LXVIII.

FESTUCA DURIUSCULA. { *Spec. Plant.*

Hard Fescue-grass.

Spec. Char. Panicle diffuse, branched; floret valves with or without aristæ; straw upright; leaves bristle-shaped, and smooth.

Festuca duriuscula is to be found in most pastures, but especially in those which are upland or dry; we meet with it in the crevices of walls, and in the fissures of rocks: growing in maritime situations, or within the influence of the sea air, it becomes towards autumn of a blue green hue, and is then probably the variety known under the name of F. glauca.——As an upland pasture grass, perhaps we have few superior to the hard Fescue; though its produce is not abundant, yet in dry seasons its foliage is less injured and wasted than any of our grasses: sheep eat it with a marked avidity, and it abounding in what the grazier calls 'proof,' a smaller quantity of it will perhaps continue existence longer than any other of our grasses. In low lands and meadows it will not be serviceable, as in those situations it is comparatively insignificant compared with the luxuriant vegetation of such places.——Much as this grass will be esteemed vegetating in its required stations, yet in arable lands it is often a most pernicious weed: in newly broken-up soil, or after a foul tilth, it springs up with the corn, of a deep green colour, distinguished by the name of Black-grass, and often in very considerable patches overpowers the corn, or at least robs it of that nutriment which it requires, and the spikes consequently become unhealthy in their look, thin in quantity, and the grain poor in quality.

A, the valves of the Calyx.
B, the valves of the Corolla.

(See the supplementary Plates.)

Festuca bromoides

R. P. Nodder Sculp^t.

PLATE LXIX.

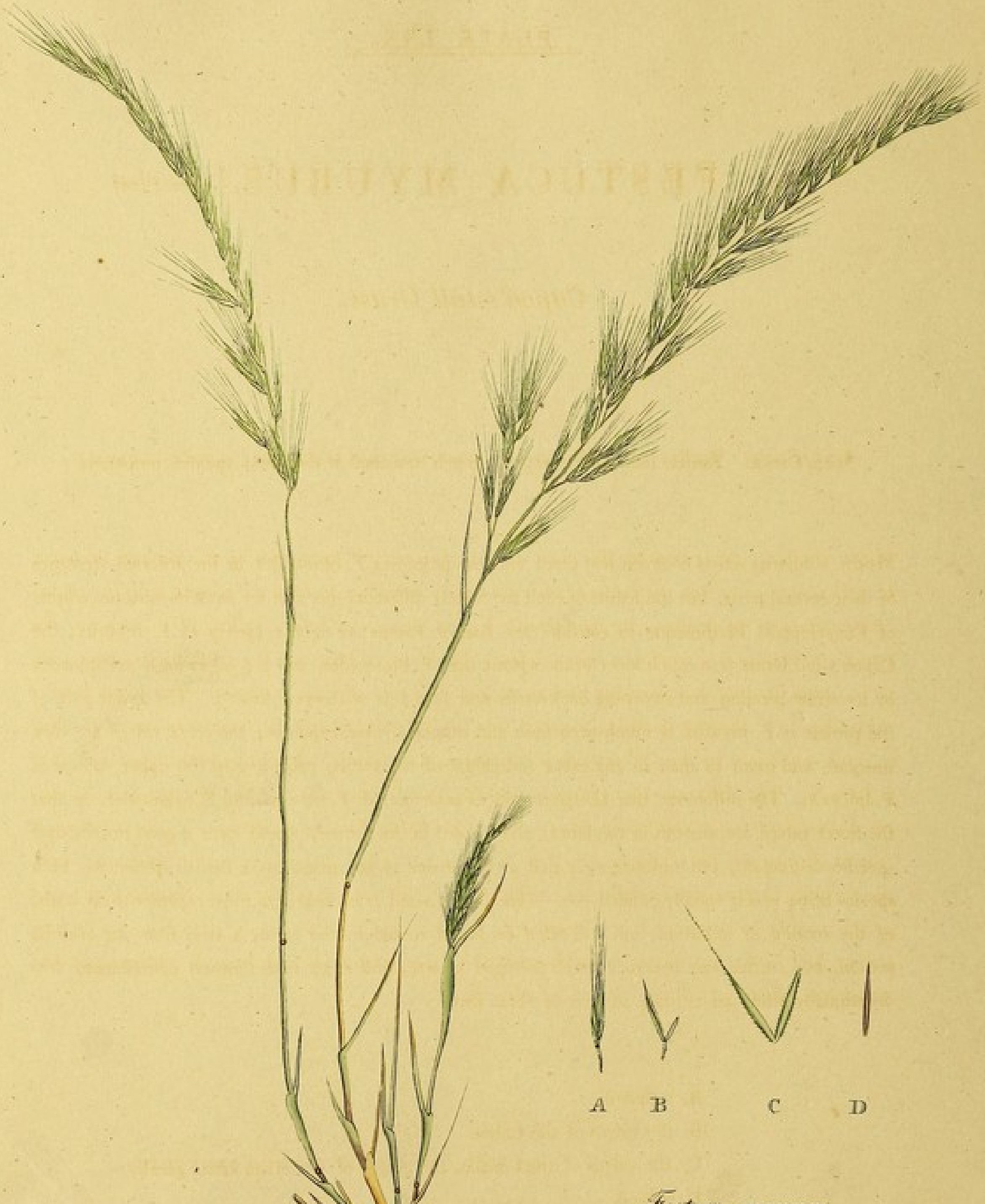
FESTUCA BROMOIDES. { *Spec. Plant.*

Earlier Fescue.

Spec. Char. Panicle short, and generally bowed; spikets pointing in one direction, and inclining upwards; arista as long or longer than the floret valve.

Festuca bromoides is far from being an uncommon plant, but is most generally found in sandy soils, or in dry rocky stations, where its usual stature is six or seven inches, but if the soil be moist, or contain any quantity of richer earth, its altitude is much increased, it then often attaining the height of nearly two feet. The leaves are generally (as is customary with plants vegetating in dry situations) rolled up, and a little scored on the inner side: the lower part of the spike is branched, with three or four spiculæ on the footstalk, and generally expanded, but the upper part, consisting of two rows of spikets, remains compact, diverging but little, and inclining upwards.——The first sunny days of spring warming the thin soil in which this Fescue delights to vegetate, brings it forward about the end of May, but its existence is of no long duration, and it fades away, or only partially remains in the beginning of July.

A, a Spiket.
B, the Calyx.
C, the valves of the Floret.



Festuca myurus

R.P Nodder Sculp^{t}

PLATE LXX.

FESTUCA MYURUS. { *Spec. Plant.*

Capon's-tail Grass.

Spec. Char. Panicle long and sweeping, much branched at the base; spiculæ numerous.

Much similarity exists between this plant and the preceding F. bromoides in the internal structure of their several parts, but the habits of each are widely different; nor can we consent with the editors of Encyclopèdiè Methodique to consider the Earlier Fescue as only a variety of F. myurus: the Capon's-tail Grass is a much less common plant than F. bromoides, and it renders itself conspicuous by its straw bending and sweeping backwards and forwards with every breeze. The lower part of the panicle in F. myurus is much branched, and supports several spiculæ; the calyx valves are very unequal, and more so than in any other individual of the genus, excepting in the upper spikets of F. loliacea. The difference that Linnæus notices between this F. myurus and F. bromoides, in that the floret valves are smooth in the latter, and fringed in the former, would form a good microscopic specific distinction, but unfortunately that circumstance is not manifest in British specimens, both species being nearly equally ciliated.——The Capon's-tail grass vegetates most commonly on walls, or the roofing of buildings, but will often be found rooted in the earth, a stray from an original station, and in that case becomes much enlarged in size, and from such unusual nourishment will occasionally attain an altitude of two or three feet.

A, a Spicula.
B, the valves of the Calyx.
C, the valves of the Corolla, the length of the arista varies greatly.
D, a Seed.

Festuca uniglumis

R.P. Nodder Sculp^t.

PLATE LXXI.

FESTUCA UNIGLUMIS.

Hortus Kewensis.
Lolium bromoides, *Hudson, Withering, &c.*

Single-husked Fescue.

Spec. Char. Straw erect; panicle broad, pointing one way, but inclining upwards; calyx with one glume.

There is a particular character in this plant (however different it may essentially be) that reminds one of a marine variety of Festuca bromoides, and will often be passed by as such. The straw is strong, stiff, and upright; florets close, compact, and pointing upwards, forming a spike: the calyx consists of one valve, terminating in an arista of about one third of its length; at the base of the inner side of the floret will be found a minute scale, not essential in any manner as a fence, nor can we dignify it with the appellation of a valve: the larger floret valve is terminated with an arista, occasionally twice the length of the valve, but nothing is less to be depended on than the aristæ of grasses; the footstalks generally support a single spiket, but the larger plants are branched at the base, with two or three spiculæ on each; the upper florets are usually abortive.——The very appropriate appellation of 'uniglumis,' applied to this Festuca in the Hortus Kewensis, is so apposite, that it cannot fail to be universally made use of, in preference to that of 'Lolium bromoides,' to which genus it can have no affinity, but in the solitary circumstance of having one valve to the calyx, a character alone too weak to justify an arrangement with Lolium. This single-glumed Fescue will be found plentifully near the rocks, upon the warren at Tenby, in Pembrokeshire,* where it lends its numerous fibrous roots as a feeble aid, in conjunction with Arundo, Triticum, Carex, and Statice, to attach the drifts of minute sand, and curb the inundations of that destructive body.——We are by no means certain that Linnæus was acquainted with this Festuca.

A, the single valve of the Calyx.
B, a Floret, the upper ones being detached.
C, the Scale at the base.
D, a Seed.

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* Should a botanic visitor to this coast require F. uniglumis, perhaps he may be gratified by finding it and Cheiranthus sinuatus growing together upon the hill of sand at Fresh-water-east, near Pembroke. The naturalist and conchologist will survey with pleasure that singular stratum of timber trees upon the shore between Sanders-foot and Llangham-marsh, in which are embedded myriads of those beautiful multivalve shells, Pholas parvus and P. dactylus; the curious manner in which this Ascidia increases its mansion, as it enlarges its size, is worthy some attention; it revolves round and round, and by aid of the spines it is furnished with, abrades away the inner surface of the hole in which it resides; and in fact, when confined, the animal has only to turn round and be comfortable.

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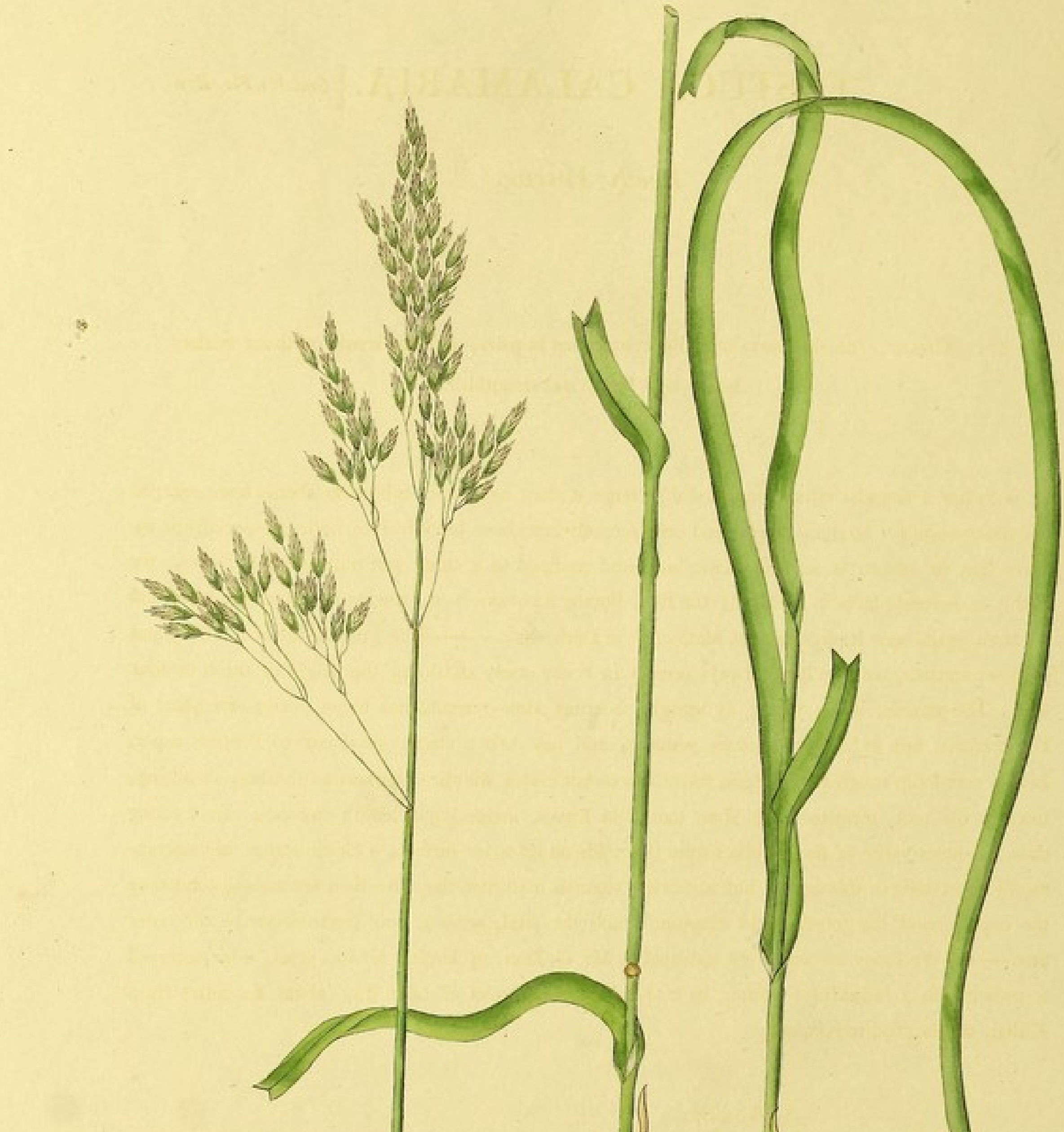

Festuca calamaria

J. Hibbert Bath Sculp^t.

PLATE LXXII.

FESTUCA CALAMARIA. { *Smith's Flo. Brit.*

Reedy Fescue.

Spec. Char. Panicle erect, branched; branches in pairs; spiculæ small, without aristæ; leaves very long, and smoothish.

It is rather a singular circumstance that so large a plant as Festuca calamaria should have escaped the observation for so many years, and only recently have been brought into notice, especially as we know that its station is far from being local and confined to a small and unfrequented district; we find it in several places in Scotland; the Eng. Botany mentions it as growing in Worcestershire, and we have again seen it plentifully at Matlock,* in Derbyshire.——This grass delights in woody and shadowy stations, and we have always seen it in rocky ones; obtaining the height of three or four feet. The panicle, when young, is upright, bearing some resemblance to an overgrown plant of Poa trivialis, but in age it becomes pendent, and has then a strong similarity to Bromus asper. Leaves very long, rough at the edges, smoothish on both sides, and the outer surface shining; sheathing, towards the root, terminating in short tooth-like leaves, increasing in length upwards. In a young state the inner valve of the corolla forms two folds on its outer surface, a circumstance not uncommonly observable in this genus, but advancing towards maturity, the valve then becomes distended by the expansion of the germin, and wrapping round the seed, bears a near resemblance to the outer one.——We fancy we were first indebted to Mr. G. Don, of Forfar, for this grass, who observed it growing in a beautiful situation, in a wood, on the banks of Loch Tay, about six miles from Killen, on the road to Kenmore.

A, the Calyx.
B, the Corolla.
C, the Corolla in maturity, enfolding the seed.

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* It will be found in the wood opposite the old Baths; landing from the boat, keep the lower left-hand walk on the edge of the river, and near the seat where the walk terminates will be found F. calamaria.

Festuca pratensis

R.P. Nodder Sculp^t

PLATE LXXIII.

FESTUCA PRATENSIS.

Hudson's Flora Ang.
Curtis's Flora Lond.
FESTUCA ELATIOR, *Sp. Plant.*

Meadow Fescue.

SPEC. CHAR. Panicle expanding, branched; florets without arista; leaves broad, and rough.

FESTUCA pratensis, though found in most low lands, yet chiefly delights in soils inclining to be boggy or peaty; its panicle appears towards the end of summer, and continues till destroyed by the frosts of winter, rendering itself conspicuous by its size, overtopping the companions of its growth. The panicle is generally expanded, and much coloured; the inner valve of the corolla is usually extended a little beyond the outer one; the foliage in dry seasons rolls inwards.——The Meadow Fescue at times becomes very luxuriant, and attains a large size, nor in those circumstances are the valves of the corolla much coloured, and we often find it with ten or more florets in each spicula; in that state it is possibly the variety known under the name of Festuca elatior.

Meadow Fescue is a harsh coarse grass, and though very productive in radical herbage, yet from the roughness of its foliage is disliked by cattle, or eaten only in the deficiency of the better grasses: in low lands which have been drained or ameliorated, it becomes something improved; and loses a little of its roughness, and in those cases alone is perhaps not an unuseful grass, where quantity is required, and quality little heeded; in very dry seasons it retains its verdure, and continues to vegetate when the pasture grasses have been crisped up, or ceased to grow.——This grass was assuredly not introduced into cultivation, but is an intruder in our meadow lands, or perhaps is the remains of the original herbage which the soil produced before it was reclaimed from the first possessing variety of vegetation, and, from the deep hold its strong roots secured in the earth, yet retains its station.

There is a variety of this plant, but not commonly found, in which a very fine arista arises from the larger valve of the corolla, about half its length, and the valve with about five ribs: it seems to hold an intermediate station between the Bromus giganteus (Festuca gigan. Lin. Tran.) and the Festuca pratensis (E, the Corolla and its larger valve).——The larger radical leaves of F. pratensis are divided by a prominent mid-rib, visible only on the outer surface, one side of which is perfectly smooth, and a considerable portion of the other rough! (D)

A, the Calyx.
B, the Corolla.
C, the inner valve of the Corolla enlarged, to shew the edges bending back.

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Festuca loliacea

R. P. Nodder Sculp.

FESTUCA LOLIACEA. { *Hudson's Flora Ang.*

Spiked Fescue.

Spec. Char. Stipulæ several, sitting, and without aristæ; calyx valves very unequal, acute, and ribbed.

This spiked Fescue-grass will be found, though not universally, in the moist and rich soils both of uplands and meadows, from the middle of summer till autumn, but without attention will occasionally be passed over as a luxuriant plant of Lolium perenne, but the length of the lower spiculæ, and the shortness of the upper ones, will generally arrest the attention: the number of florets in each spicula is very uncertain, from eight to twenty; leaves shining on the outside, and smooth; on the inner, scored, and a little rough, and the margins minutely serrated: straw knee-bent at the base, as observable in the preceding species ——This plant was known to Mr. Hudson, but by him considered as a variety of the Poa fluitans, which by cultivation changed the first year to F. loliacea, and the second into F. pratensis—a most singular transformation!! Erroneous as this idea probably was, yet there are reasons to believe that our Festuca is a compound plant, manifesting great similarity to Lolium and Festuca in the spike, and to Festuca pratensis in the foliage and lower parts, equally dividing the nature of each parent.——Festuca loliacea we believe, as is usual with hybrid plants, rarely perfects its seed, but the valves of the corolla at times appear distended, as containing a well matured germin, protruding ultimately a large black and unprolific grain; the race however is continued by the fibrous perennial root detaching abundant suckers, and the lower joints of the culm, in moist seasons, take root and become distinct plants.

We have very few of our pasture grasses that afford herbage equal to this spiked Fescue; the abundant foliage of the Festuca pratensis is produced, meliorated and rendered grateful to cattle, by its admixture with the Ray-grass. If the soil is moist, and the staple deep and rich, the after-grass (which to many is the most important part of the crop) is singularly abundant; but our difficulty consists in the introduction of this plant into the pasture, which, as furnishing no fertile seed, must be propagated by sets; a mode that will hardly be attempted, the labour and expence being immediate, the profit very uncertain and remote. We occasionally find this Festuca producing branched spikets at the base, and at other times the larger valve of the corolla becomes elongated, assuming the form of leaves, giving the spike the appearance of being viviparous.

A, the Calyx.
B, the outer valve of the Calyx enlarged.
C, the Corolla.

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Festuca pinnata

J. Hibbert Bath Sculp^t

PLATE LXXV.

FESTUCA PINNATA. { *Hudson's Flora Ang.* BROMUS PINNATUS, *Sp. Plant.*

Heath Fescue.

SPEC. CHAR. Spike erect, and with aristæ; arista shorter than the floret valve.

FESTUCA pinnata is an inhabitant of dry, calcareous, and stony counties, abounding where any exists, but otherwise it is nearly a local plant: on that extent of road between Oxford and Cirencester it is in profusion; Cotsford-common, between Buckingham and Middleton-stony, is covered with it: numerous leaves issue from the roots, a little roughish, and the younger ones are beset with fine hairs at the edges; the sheathing is generally hairy, as well as the inner surface of the leaves, but this is not universally the case; there are generally six or seven florets in each spiket, but that number is occasionally far exceeded; its aristæ are very short, about half the length of the valve of the corolla, and usually are longest upon the upper part of the spikets: the difference between this Heath Fescue and the next species is immediately manifested by the length of their aristæ, which for a specific criterion can seldom be relied upon, but in this instance is permanent.——Festuca pinnata is a coarse harsh grass, applicable to no agricultural purpose, but in all instances is the product of a lean and hungry soil; it retires from cultivation, and is poisoned by manure.

The figure given in the Flora Danica, under the name of this plant, is Festuca sylvatica.

There is a curious variety of this plant (the product of luxuriance), in which a short peduncle arises from the lower stage, elevating from four to five spiculæ.

A, Spiket.
B, the Calyx.
C, the valves of the Corolla.

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Festuca sylvatica

R P Nodder Sculp^t

PLATE LXXVI.

FESTUCA SYLVATICA. { *Hudson's Flora Ang.* BROMUS SYLVAT. *Trans. Lin. Soc.*

Wood Fescue.

SPEC. CHAR. Spike drooping, and with aristæ; arista as long or longer than the floret valve.

IN the first mild days of spring we see the foliage of Festuca sylvatica peeping out from the bottoms of hedges and sunny-ditch banks, remarkable for a pale yellow green colour, and being fringed with silvery hair; and in that season is cropped (more perhaps from necessity than choice) by the hungry animal who gleans his variety of food from the uncultured waste, but as vegetation increases the Wood Fescue is totally rejected. Universal as this plant is amid rough and rude stations, yet it never intrudes in good land, to the prejudice of its worthier kindred.——The spike is generally inclining, a character which readily distinguishes this Fescue from the upright Pinnata.——There are species of vegetables which would be valuable, did the fostering hand of man support their claims, or encourage their virtues, and the inducements to exert our influence are abundant; the mind receives amusement, and the rewards are frequent; * but Festuca sylvatica has no pretensions to it, it is coarse and harsh, partaking of the rudeness of the station it delights in, which probably cultivation would not meliorate, or refine to the rank of a pasture grass.

A, the Calyx.
B, the Corolla.
C, the Nectarium, Germin, &c.

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* No instance occurs to our memory of rewards attending upon cultivation so singular as in the Pyrus malus, and the Pyrus communis, the Crab-tree, and the wild stone Pear; from which species, undoubtedly, all those highly esteemed and endless varieties of apples and pears have proceeded, and the ennobled Nonpareil, Ribstone, and Golden-pippin, with the Beurrè and Burgundy-pear, derive their origin from those plebeian parents; and although, as Mr. Marshall observes, (Gloucestershire) Nature permits man to improve, yet it is with limitation, and without continued artificial propagation she reverts to her original state: the old fruits are now lost, or are so far on their decline as to be deemed irrecoverable; the Red-streak is given up, the Shire-apple is going off, the Squash-pear can no longer be made to flourish, the Golden-pippin orchards in Devonshire will not now succeed, the stocks become cankered, and are unproductive; Nature seems to have set bounds to the improvements of man, and to have numbered the years of his art.

Bromus mollis

R. P Nodder Sculpt.

PLATE LXXVII.

BROMUS.

Gene. Char. Calyx with two valves; spikets oblong, cylindrical, and two-rowed; arista beneath the point. *Gen. Plant.*

BROMUS MOLLIS. { *Spec. Plant.*

Soft Broom-grass.

Spec. Char. Panicle upright, or drooping; floret valves obtuse; calyx ribbed, and clothed with soft hair.

The soft Broom-grass is one of the earlier plants, and in warm and sheltered situations is among the first that peeps through the shades of winter, and continues for some months; it is a pasture grass almost every where, and in some counties constitutes a very considerable part of the crop destined for hay; but its virtues in that capacity admit of some doubt, as its associates in the field are chiefly of a after growth, and by the time that they are in season, and the crop cut, the maturity of the Broom-grass has passed, the straw turned brown, and the panicle dry and husky; nor is the foliage very important: a simple glance at a field where this grass abounds, before the admission of the scythe, will shew how much useless vegetation a crop of grass commonly contains, and consequently how considerable a portion of hay is deficient in the nutriment required.——The universal woolliness of the straw, foliage, calyx, and florets, sufficiently indicate the species, but perhaps we have no plant that varies more, and assumes such different appearances as this Bromus, and some of these variations have been elevated into the rank of species, for which station they have been indebted to local circumstances, and not sufficient permanent specific characteristics. Bromus mollis will be found with spikets ovate, and acutely ovate, containing from six to sixteen florets in the spicula.——The confusion which so long enveloped this genus not only originated from the delusions of the various varieties which this species runs into, but from the synonyms which authors referred us to, being perfectly misunderstood and confounded, and the exuberance of a garden plant having often been compared with the product of an hungry soil: under these circumstances it would have been singular if in such a genus, errors could have been avoided; to the labours of my learned friend Dr. Smith we are indebted for an exposition of this intricate race, and profiting by his illustrations we have been enabled to attempt the exhibition of the British Brooms.———In Dumfries, Lanerk, and some of the southern counties of Scotland, Bromus mollis is cultivated as Ray-grass is in England, either sown by itself, or with clover, and it produces a plentiful crop.

A, the Calyx.

B, the Floret Valves, the inner one sometimes notched.

C, the Germin towards maturity.

PLATE LXXXII.

BROMUS.

Gen. Char. Calyx with two valves, spikelet oblong, cylindrical, and two-ranked; awns beneath the point. [illegible]

BROMUS MOLLIS, [illegible]

Soft Brome-grass.

Spec. Char. Panicle upright, or drooping; [illegible] with soft hair.

The soft Brome-grass is one of the earlier [illegible] grass that [illegible] almost every where, and in some counties constitutes a very considerable portion of the crop destined for hay; but its virtues in that capacity [illegible] after growth, and by the time that they are in season, and the [illegible] of the Brome-grass has passed, the [illegible] brown, [illegible] a simple glance of a field where [illegible] will shew how much [illegible] a crop of grass [illegible] considerable a portion of hay is deficient in the [illegible] The [illegible] [illegible]

[illegible]

[illegible] a., the Calyx.
b. the [illegible]
c. the [illegible]

Bromus racemosus

J. Hibbert Bath Sculp.t

PLATE LXXVIII.

BROMUS RACEMOSUS. { *Smith in Linnæan Trans.?* B. POLYMORPHUS, *Withering, var.* 4.

Slender Broom.

SPEC. CHAR. Calyx and floret valves smooth, with a few serratures on the upper part of the keel; footstalks with generally one upright spicula; branches only two, from the lower stage.

BROMUS racemosus is perfectly distinct from the preceding B. mollis, and though associating with it, and bearing a certain relationship, is yet sufficiently different, and easily known by a much more slender and upright panicle, and when a little aged, by the brown hue of the spiculæ, not the woolly whiteness that is observable in the foregoing species. Leaves a little hairy; footstalks with minute spines, not woolly, supporting usually a single spiket, containing about six smooth florets. In age the florets become extended by the swelling of the seed, and by their increased weight the spiculæ are then pendent (C). We sometimes find Bromus racemosus, but not frequently, with several peduncles issuing from the lower stage, and in luxuriant plants two or more spiculæ are observed on the branches; the corolla likewise becomes a little coloured, and in this state bears much resemblance to B. arvensis.

Although it is not a general opinion, yet some botanists consider Bromus racemosus as approaching very near to B. arvensis, if not a variety only of that plant: there are at times, when influenced by local circumstances, assuredly much similitude between them, yet we must think that their characters, though faint, are distinct and permanent: in some of our midland counties B. racemosus is commonly found, yet we have never observed in those situations B. arvensis; nor have we seen the racemosus where the arvensis abounds.——The slender Broom-grass is a delicate plant, appearing early in May, and is conspicuous above its meadow companions then in their infant state. As an agricultural grass it will probably never assume much importance, for though produced early, its herbage is too small and sparing to select attention, and it dries and withers away as the pasture grasses increase.

A, the Calyx.
B, the Corolla.
C, a Spicula in age.

PLATE LXXIII.

BROMUS RACEMOSUS. {Smith's Linnæan Trans. [illegible]

Slender Brome.

Spec. Char. Calyx and florets smooth, with a few [illegible] on the upper part of the keel. Footstalks with generally one [illegible] spikelet. [illegible] only [illegible] than the flower [illegible].

Bromus racemosus is perfectly distinct from the preceding B. mollis, and though associating with it, and bearing a certain relationship, it is sufficiently different, and easily known by a much more slender and upright panicle, and when in flower, by the brown hue of the spikelet, not the woolly whiteness that is observable in the foregoing species. Leaves a little hairy; footstalks with minute spines, not woolly, supporting usually a single spikelet, composing about six smooth florets. In age the florets become cramped by the swelling of the seed, and by their increased weight the spikelets are then pendent (C). We sometimes find Bromus racemosus, but not frequently, with several peduncles arising from the lower whorl, and in luxuriant plants two or more spikelets are observed on the branches; the corolla likewise becomes a little pubescent, and in this state bears much resemblance to B. arvensis.

Although it is not a general opinion, yet some botanists consider Bromus racemosus as approaching very near to B. arvensis, if not a variety only of that plant: there are instances, when influenced by local circumstances, naturally much similitude between them, yet we must think that their characters, though near, are distinct and permanent. In some of our midland counties B. racemosus is commonly found, yet we have never observed in those localities B. arvensis, nor have we seen the racemosus where the arvensis abounds.——The slender Brome grass is a delicate plant, appearing early in May, and is conspicuous above its meadow companions then in their infant state. As an agricultural grass it will probably never assume much importance, for though produced early, its herbage is but small and ceasing to solicit attention, and it dries and withers away as the pasture grasses increase.

A. the Calyx.
B. the Florets.
C. Spikelet in age.

Bromus secalinus

J.Hibbert Bath Sculpt.

PLATE LXXIX.

BROMUS SECALINUS. { *Spec. Plant.* *Leers. tab.* 11, *fig.* 2.

Corn Broom-grass.

Spec. Char. Several branches issuing from a stage, supporting one or several spiculæ; spiculæ with eight or twelve florets, greatly expanded in maturity; calyx and corolla smooth in age.

Bromus secalinus is a plant as strongly marked as any in the genus, and yet has by no means been rightly understood; in a young state it may admit of some hesitation, but in maturity it is easily detected. Straw with several joints; leaves a little hairy on the inner side, and often with a slight portion of wool on the outer, which soon wears off, and the leaf is left smooth and shining. Panicle erect when young, and the spiculæ lanceolate and closed, but in maturity it becomes pendent, and the florets are so much expanded that the rachis of the spicula is rendered visible. There is a great similarity in their young state between Bromus secalinus and B. arvensis, but in maturity the similitude ceases: a botanist acquainted with the habits of the two plants easily distinguishes them, but a good criterion will be found in the leaves; in B. arvensis the foliage is woolly on both sides, in B. secalinus the under side is nearly smooth: the calyx and corolla of the arvensis being coloured, will likewise often indicate the plant, but this is far from being an invariable distinction; the calyx of B. secalinus, when young, as well as the corolla, are rough, and the keel of both of them have some spines towards the summit; and we have often observed the spiculæ instead of being straight, as in the other species of the genus, are frequently bent, or assuming a kind of crescent-like form.——It is probable that Mr. Hudson saw this B. secalinus in an advanced state, and then considered it as the B. squarrosus of Linnæus, which species we fancy has not been found indigenous in England.——This Bromus is an inhabitant of corn fields, preferring those in a light or stony soil, and it seems more particularly to attach itself to wheat: it often attains the height of four feet, which stature, and its heavy loaded panicle, are sufficient to render it manifest.——It is singular that so little attention should have been paid to this species, as to induce Mr. Hudson and Dr. Withering to consider B. secalinus as a variety only of B. mollis! and the editors of that great work the Encyclopèdiè Methodique continue some observations on B. mollis, by saying, 'Nous ne craignons pas d'assurer, d'apres nos propres observations, que le B. secalinus, et le B. mollis, de Linnè sont des varieties, d'une seule espèce, quoiqu'il soit souvent facile de les distinguer.'

A, the Calyx.
B, the rachis of a Spicula.
C, the Corolla.
D, a Seed.

Bromus multiflorus

J. Hibbert Bath Sculp^t

PLATE LXXX.

BROMUS MULTIFLORUS. { *Trans. Lin. Soc.?*

Many-flowered Broom-grass.

Spec. Char. Panicle upright, but inclining; peduncle supporting a single spicula, containing from twelve to eighteen florets.

The genus Bromus has been so little attended to, or botanists so partially understood each other, that several of the species have been considered rarer than in reality they are, but as our knowledge of them becomes more extended, they will perhaps no longer be considered as confined to an individual station, but similar soils in different counties be found to produce them: of these scarce species B. multiflorus has been little known, and certainly has been confounded with B. secalinus. The panicle consists of only a few spiculæ, from four to seven; the peduncles support one, or very rarely two spiculæ; each spicula containing from twelve to sixteen or eighteen florets; florets ribbed, roughish, but not woolly: leaves hairy on the inner side, woolly on the outer; sheathing with hairs pointing downwards: the plant attains the height of a foot, or a foot and an half.——We sometimes find a variety of this Bromus in which the peduncles, corolla, and calyx, have a considerable degree of pubescence, but in that case the florets in the spicula have been fewer in number than in the smooth species.——We have seen this plant about Maudsley, in the county of Lanerk, and plentifully in a lucern field near Thorp Arch, Yorkshire.

A, the Calyx.
B, the Corolla.
C, D, the Calyx and Corolla of the pubescent variety.

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R.P. Nodder Sculp.

Bromus spiculi tenuata

PLATE LXXXI.

BROMUS SPICULI TENUATA.

Long-awned pendent Broom.

SPEC. CHAR. Panicle branched, and drooping; branches supporting one or several spiculæ; spiculæ acutely lanceolate; florets smooth.

WE apprehend that the species before us has not hitherto been observed, or at least, not being able to find any description suitable to our plant, we have applied to it the name of 'spiculi tenuata,' indicative of the slender formation of the spiculæ.——There is some affinity between this plant and the Bromus arvensis, but yet they appear to us to be manifestly distinct. Straw from one foot to three feet high; when of a low stature the branches support one or two spiculæ, which droop but little; in its more elevated state the branches are very long, upright when young, flexile and pendent in maturity, bearing at times ten or more spiculæ: spiculæ acutely lanceolate, with about eight florets: calyx smooth, with four ribs, and serrated on the keel; corolla smooth, but with some small spines on the back: both the calyx and corolla are tinted with pink: straw in the panicle without any woolliness, as is observable in B. mollis. Upon the panicle rising from the sheathing of the upper leaf the lower stage of branches will be found supported by two bracteæ, a singularity perhaps attending this Bromus only, which though not universal, is yet a very general appendage; these bracteæ soon afterwards drop off.———There is a specimen of Bromus, in the Sherardian herbarium at Oxford, which appears to us to be very similar to our plant, but in a rather more luxuriant state than we ever observed it, there being as many as fifteen spiculæ on some of the branches: it was found by Sherard near Southampton. We gathered our plants near Seaton, on the coast of Durham, but they were in no abundance there.———Bromus spiculi tenuata is very tardy in advancing to maturity, nor does the panicle expand till influenced by the warmth of August and September.

A, part of the straw, when young, representing the Bracteæ.
B, a Spicula of the natural size.
C, the Calyx.
D, the Corolla.
E, the Corolla more enlarged.

Bromus arvensis

R. P. Nodder Sculp^t.

BROMUS ARVENSIS. { *Spec. Plant.*

Branched Broom.

Spec. Char. Panicle branched, and expanding; branches supporting one or more spiculæ; spiculæ obovate or lanceolate; florets harsh and rough, without any woolly covering.

Perhaps few of our grasses have been less decidedly understood than Bromus arvensis, and upon which subject opinions have so much varied, nor has probably the vague delusive word 'arvensis' been wanting in lending its aid to assist in the confusion that has invested this species: we have occasionally seen it in fields, but not exclusively, but as commonly in waste and untilled places.——This plant often attains the height of three or four feet; leaves rather broad, and woolly on both sides; straw, when young, woolly, but it becomes smooth as the plant advances in age; panicle branched, branches supporting one or several spiculæ; spiculæ with from eight to twelve florets; spiculæ in general ovato lanceolate, on long rough stipes, and several branches proceeding from a stage: calyx and outer valve of the corolla not woolly, but harsh and rough to the touch, and they become tinted towards their summits with a brownish hue, as the plant advances to maturity, and we have commonly observed that the keel of the calyx, especially in the larger specimens, has been terminated with a short arista.———This Bromus, in a weak state, bears some similarity to a luxuriant plant of B. racemosus, but the calyx and corolla of racemosus are only serrated in their upper part, and the slender formation of the spiculæ will generally decide the species, independent of the other botanical deviations. It again, in a young state, approaches B. spiculi tenuata, but the remarkable acute spikets of this latter plant will always be a decided distinction. The panicle of Bromus arvensis is in maturity about the middle or latter end of June and July.——We have seen this plant on the Dike banks of the marsh at Tenby, and plentifully about the West India docks at Limehouse, and near Deptford. ——The number of florets are in particular stations considerably augmented, and we have observed this plant in rich moist places with fourteen and even sixteen florets in the spiculæ.

A, the Calyx.
B, the Corolla.
C, one side of the Calyx.

Bromus diandrus

R.P. Nodder Sculp.t

PLATE LXXXIII.

BROMUS DIANDRUS.

Curtis's Flora Lond.
BROM. MADRITENSIS, *Sp. Plant.*

Short-stalked Broom.

SPEC. CHAR. Panicle upright or drooping; footstalks shorter than the spiculæ; florets with only two stamina.

A YOUNG botanist, not fully acquainted with the habits of Bromus diandrus, will occasionally pass it over as a dwarf plant of B. sterilis, to which it bears a certain similitude; but a simple observance of the length of the footstalk will immediately distinguish them: in the species before us the stipes are rarely the length of the spikets, and support from one to seven spiculæ; in the B. sterilis the stipes are longer than the spiket, and seldom sustain more than one spicula. B. diandrus acquires the height of twelve or fourteen inches, and selects as its favourite station ruins and old walls.——Much as the botanist must ever disapprove of any alteration in the well established specific names of plants, creating endless confusion in the science, yet so obvious were the defects of the former ones attached to this Bromus, that we must admit the propriety of Mr. Curtis's deviation in this case, as being both happy and scientific; the singular circumstance of always finding only two stamina in the florets makes his name of 'diandrus' perfectly apposite; the former distinction of Linnæus (Madritensis) is applicable to a local Spanish plant, but does not indicate any peculiar habit, which should assuredly be the aim of every specific epithet: and the appellation of Mr. Hudson (Muralis) is equally suiting to B. sterilis.——B. diandrus is a scarce species of this genus, but locally is plentiful; in Pembrokeshire it is frequent, and often expels its congener and waste-loving Bromus sterilis: a visitor in S. Wales will not fail of finding it at Carew-castle, and at Lamphey, near Pembroke.———In dismissing the Bromus diandrus, let an insignificant mortal breathe one sigh of gratitude for infinite information to the memory of the late Mr. Curtis, a king in a realm of botanists! amidst my various rambles through the regions of the vegetable world, wherever I have found the traces of his footsteps, so have I invariably seen them accompanied by judgment, learning, and accuracy: his delineations and illustrations of the British Flora are a national honour. To the botanical arrangements of the truly lamented Withering, and the various publications of Mr. Curtis, I think may be attributed much of the present diffusion of the system of Linnæus, and the consequent creation of an host of botanists to the united labours of those learned men:—peaceful be your rest, lamented, lost associates!

> 'Around their graves may sweetest florets spring,
> Bedew'd with sympathizing pity's tear;
> Let Zephyr, from his undulating wing,
> For ever shed delightful fragrance there.'

A, the Calyx.

B, the valves of the Corolla.

C, Nectarium, Germin, &c.

D, the Seed, with Stigmata and two Stamina; the antheræ in the genus Bromus and Avena remain attached for a length of time to the filaments.

Bromus sterilis

R. P. Nodder Sculp.t

PLATE LXXXIV.

BROMUS STERILIS. {*Spec. Plant.*

Drooping Broom.

Spec. Char. Panicle pendent; footstalks longer than the spiket; spiculæ generally solitary.

This common, conspicuous, and not inelegant Bromus, frequents hedges and rude uncultivated places; its spikets are generally tinted with red, and towards maturity acquire a black purple hue: sheathing woolly and soft when young; leaves hairy; arista about twice the length of the floret valve.——— Mankind have not yet discovered any use to which they may apply the Bromus sterilis, even in a remote degree, nor is it probable that their inventive faculties will ever convert it to any immediate benefit; wild and uncultivated stations are its delight; it does not intrude on the vegetation of the pasture, nor force itself an unwelcome guest on the labours of the farmer. The appellation of 'sterilis' was probably given to this grass, not by reason of the plants being considered as unprolific, but from its inhabiting chiefly sterile and infertile places; an epithet by no means peculiarly indicative of this species, but applicable to several others of the genus.

A, the Calyx.
B, the valves of the Corolla.

Bromus asper

R. P. Nodder Sculp^t.

PLATE LXXXV.

BROMUS ASPER.

Withering's Bot. Arrang.
Bromus nemoralis,
Bromus-ramosus, *Hudson.*

Short-awned pendent Broom.

Spec. Char. Panicle drooping; arista shorter than the floret valve; hairs of the sheathing pointing downwards.

Some little likeness exists between the B. asper and the preceding sterilis, but a very slight inspection suffices to distinguish them: the aristæ in the B. asper are always very short, and the leaves and sheathing furnished with hair, those on the sheathing directed downwards; the larger floret valve has a few short hairs lying close; the inner valve is fringed, but less so than generally observable in this species.

Bromus asper is a prominent instance of the impropriety of altering, according to versatile fancy, the once established trivial names of plants, and of the extent that such alterations may be carried when once the evil practice has commenced; this Bromus bearing no less than eight specific names!

One cannot but admire the singular manner in which Nature has armed the straw of this Bromus by pointing the hair downwards, possibly with a design to prevent insects creeping up the stem, and consuming its tender and immatured germin; and the pendent form it always assumes leads us to conjecture that that disposition was chosen by infinite wisdom to guard the infant offspring from the noxious dripping of trees, or the elevated plants among which its station is fixed: in a more advanced age, when that germ is matured, the pendent habit is yet continued, lest the seeds should by moisture vegetate in the husks and become abortive.——If the limited faculties of human nature may, without presumption, hazard inferences from the mechanism of the works of Nature, surely she would not have bestowed so much wisdom for its preservation upon this Bromus, to fit it only to occupy the humble and inutile rank it now holds in our estimation! wonderous in all her walks, to one race, to one age, she does not unveil her inexhaustible stores, but metes them out to employ the mind, and reward the industry of man through all successive generations, till time shall be no more.

A, the Calyx.
B, the valves of the Floret.

The base of the leaves are furnished with claviculæ or hooks for clasping the straw.

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Bromus erectus

R.P. Nodder Sculp.t

PLATE LXXXVI.

BROMUS ERECTUS. { *Withering's Bot. Arrang.* *Trans. Lin. Soc.*

Upright Broom.

Spec. Char. Panicle upright; arista about one third or half the length of the valve; root leaves narrower than those of the straw.

Bromus erectus is far from being a general plant, but is not uncommon in some places; upon the dry stony hills and in the rough fields of Wiltshire and Somerset it is frequently to be met with, and when young catches the eye by the purple colour of the aristæ, and the edges of the calyx, but advancing towards maturity that colour fades away.——The leaves upon the stem are twice or thrice as broad as those of the root; sheathing and leaves hairy; peduncles supporting commonly only one spiket, but we sometimes find the lower ones with two or three, each containing about six florets; calyx, edges coloured with purple, rough, and the larger valve with two ribs and a keel; larger floret valve rough, and the edges coloured, a short arista arises from the back, about one third or half the length of the valve.——The harshness of the upright Broom makes it always to be rejected by cattle, which consume the herbage in its neighbourhood, and leave this plant solitary and untouched; the stations it delights in are almost always dry and stony, and it acquires the hardness and roughness commonly attendant upon plants vegetating in those situations.

A, the Calyx.
B, the Floret Valves.

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Bromus giganteus

R.P. Nodder Sculp.

PLATE LXXXVII.

BROMUS GIGANTEUS. { *Spec. Plant.* FESTUCA GIGANTEA, *Flo. Brit.*

Tall smooth-stalked Broom.

SPEC. CHAR. Panicle drooping, branched, with about four florets in the spiket; aristæ long, and very fine.

THIS Bromus attains almost an unlimited height, in dry situations we see it a foot high, and in a deep soil, or boggy woods we find it six or seven. We have no species of this genus more decidedly marked than the giganteus; its straw and sheathing are perfectly smooth and shining; the joints are coloured, as well as the base of the leaves, which clasp round and embrace the stem, otherwise perhaps such broad foliage would by its own weight, or by the agitation of winds, be stripped from the plant: the aristæ are twice or four times the length of the floret valves, and finer than a hair; the inner valve of the floret is minutely fringed, and full as long as the outer one. Bromus giganteus is the largest of the genus, with the smallest florets.——Considering the genus Bromus with the eye of an agriculturist, we pass it over without any satisfaction, as the whole race, excepting perhaps one species, afford little sustenance to animal life; chiefly confined to wild and uncultured stations, they injure not the labours of the farmer, nor do they obviously promote the concerns of rural economy: were our observations limited to the pasture grasses, or those of manifest utility, our numbers would be greatly abridged, and our superficial knowledge of the remainder humiliatingly displayed; but surveying them as a botanist, we collect the species, without attempting to pry into those arcana which Nature perhaps reserves to herself.

A, part of a Leaf, shewing the claspers at the base, generally shrivelled and imperfect, excepting when young.
B, the Calyx.
C, the Floret Valves.

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R. P. Nodder Sculpt.

Stipa pennata

PLATE LXXXVIII.

STIPA.

Gene. Char. Calyx with two valves and one floret; outer valve of the corolla terminated by a very long arista, jointed towards the base. *Gen. Plant.*

STIPA PENNATA.{ *Spec. Plant.*

Feather Grass.

Spec. Char. One species only.

For the possession of this most elegant plant Britain has now no pretensions, and we fear it was originally admitted into our Flora upon the foundation of supposition only. Its first introduction was in the Synopsis of Ray, not as being found by that faithful investigator himself, but by other persons.* Mr. Hudson did not find it himself, but upon this authority admitted it into the Flora Anglica. In the Botanical Arrangements it is mentioned as having been found by Mr. Alderson near Kendal, but that gentleman, we are informed, obtained his specimens from a garden, and the owner alone was his authority for its growing in Long-sledale, near Kendal. To obtain native specimens of this feathered beauty, has been the ambition of all botanists since the days of Ray, and our attempting to find it, after the failure of Mr. Curtis, betrays an arrogance that can alone be vindicated by the avidity of our wishes to discover an authority, to arrange Stipa pennata amidst the British grasses.—— Our rarer plants, and the beautiful race of persecuted Orchideæ, may by the avarice of collectors become fugitives from their original stations, and succeeding generations seek in vain for well established natives; but Stipa could not possibly have been eradicated by the discoveries in the time of Ray, and none since have any pretensions to such injurious spoliations. An unlimited admission of dubious plants into any Flora cannot be defended, but it is assuredly less detrimental to associate an equivocal few, than fastidiously reject an individual that may have a claim, though but remotely.——A native of Bohemia, and other parts of the Austrian dominions, it has long since found its way into our botanical collections, and its elegance has obtained it a station in our gardens.

A, the Calyx.
B, the Corolla, &c.
C, part of a Leaf enlarged.

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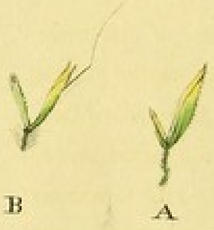
* By Dr. Richardson and Thomas Lawson, at Long-sledale, near Kendal: the authority of Dr. Richardson is considerably weakened, by knowing how open to imposition this enthusiastic botanist was. Epimedium alpinum is said to have been found in Bingley woods by Dr. Richardson, and by him communicated to Blackstone: not a vestige of this plant we fancy will now be found in that neighbourhood, and those who are acquainted with Epimedium know it is a plant scarcely less easy to eradicate than Triticum repens. A tale traditional in the neighbourhood informs us, that his gardener (perhaps T. Lawson) conveyed plants from his borders to a peculiar station in the vicinity, and after wearying the good Dr. for many hours, at last popped upon the place where this supposed indigenous Epimedium was discovered!——It was T. Lawson who communicated to Ray Echinophora spinosa, from Rosebeck, where none have since been able to find it.



Avena flavescens

Yellow Oat-graſs

PLATE LXXXIX.

AVENA.

Gene. Char. Calyx with two valves, and with several florets; arista from the back of the blossom, and twisted. *Gen. Plant.*

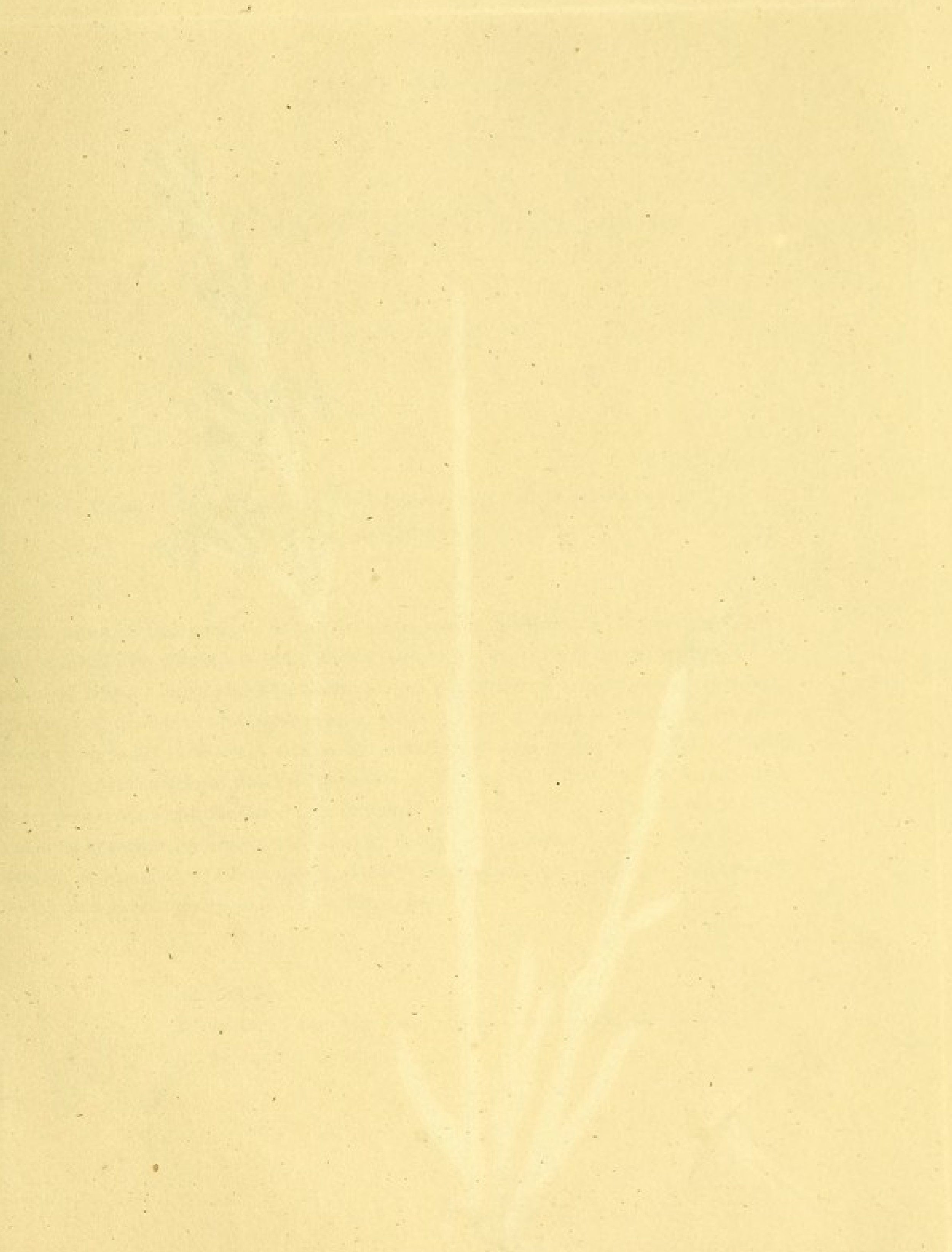
AVENA FLAVESCENS. { *Spec. Plant.*

Yellow Oat-grass.

Spec. Char. Panicle expanding; spikets very small, not pendent; florets about three in each calyx, with aristæ.

Avena flavescens is a very universal plant, but more especially in fields which are of a stony or sandy nature; its pale green foliage and yellow panicle render it observable: when young the panicle is closed and drooping, but afterwards it is upright and fully expanded, assuming a riper yellow hue, but finally changes to an unpleasant brown.——Our British plants, classed under the genus Avena, are not the most profitable, nor are they held in much estimation by the grazier; yet the flavescens has some claim to our favour, and the only one which we could not spare from our pastures; its product is not so large as that of some of its companions, but it affords sufficient foliage to render it useful, and, by being in perfection when the other grasses are usually cut for hay, we receive the full benefit of its herbage, which we by no means do of the whole number of those admitted as pasture grasses; and although Avena flavescens cannot certainly be received into the first ranks of favour, yet it may be placed among those of an inferior or secondary order.

A, the Calyx.
B, the valves of a Floret.



Avena pubescens

R. P. Nodder Sculp^t

PLATE XC.

AVENA PUBESCENS. { *Spec. Plant.*

Hairy-leaved Oat-grass.

Spec. Char. Branches, several proceeding from a stage; all the spiculæ on footstalks; leaves short and hairy.

Avena pubescens will readily be observed in the dry pastures it frequents by its shining and silvery panicle, tinted with purple, and by its scanty foliage, which gives it a poverty of appearance: the leaves are short and hairy; panicle somewhat drooping; the florets are upright: the calyx is skinny; the valves of the florets are membranaceous, the longer one of which is attended by an arista almost as long again as the valve; each floret is furnished with a tuft of long white hairs at the base. ——The Avena pubescens makes its appearance at the latter end of May, and can in no instance be regarded as of utility to the farmer; the little herbage it boasts of is dry, and unwelcome to cattle, and its husky panicle deters them from eating it: it may in every point of view be considered as an intruder; it inhabits dry and stony uplands, though it is occasionally found in rich good pasturage, but the luxuriant meadow grasses expel it from their society.

A, the Calyx.
B, the three Florets from the calyx; we commonly find only two in it.
C, the valves of the Floret.

No 91

Avena Pratensis

R.P. Nodder Sculpt.

PLATE XCI.

AVENA PRATENSIS. { *Spec. Plant.*

Many-flowered Oat-grass.

Spec. Char. Lower spiculæ on footstalks, and in alternate pairs; upper ones solitary and sitting.

Avena pratensis will be found plentifully on all the dry, heathy, and limestone soils of our eastern and northern counties, where it cannot be mistaken for the preceding plant, if the slightest attention is paid to the specific character; which will perhaps afford a sufficient distinction, and render a fuller one unnecessary. The number of florets in each spicula is very variable, and therefore can form no certain character, and it will be found in very dry situations to contain three florets, and in moist places six: in very luxuriant plants we have seen two spiculæ on one of the lower peduncles, but never more than two branches proceeding from a stage.——It is difficult to say for what reason the epithet 'pratensis' was bestowed upon this plant, as we fancy it is never found in meadow land, or in decidedly aquatic situations; it is rather an alpine grass; we find it rooted in the crevices of rocks on all the northern mountains, where it attains a stature rarely observable in humbler situations, occasionally acquiring the height of four feet.——It is probable that the agriculturist will ever consider Avena pratensis as a weed only in his herbage, as it can afford but a miserable aid towards the sustenance of animal life; its straw is harsh, and not nutritious, and its foliage is sparing in quantity and dwarfish in stature.

A, the Calyx.
B, the Rachis of the spicula, with one corolla left on it, and two stripped off, shewing the hair at their base.
C, a Spicula.

Avena strigosa

J. Hibbert Bath Sculp.

PLATE XCII.

AVENA STRIGOSA. { *Schreber.* *Withering's Bot. Arrang.*

Triple-awned Oat.

Spec. Char. Calyx with two florets, each floret with three aristæ, two short ones terminating, and one long one from the back.

Avena strigosa is a plant that has been so little noticed, that we fancy it has been represented by no author excepting Host, tab. 56; it is slightly described by Retzius, and in the Spicilegium of Schreber: the A. dubia of Leers, though not our plant, is a little like it.——The eye by the slightest glance is struck with the appearance of this Avena: each footstalk supports one, but seldom more than two spikets; calyx long, with about eight coloured ribs; florets two in each calyx, with the rudiment of an abortive one at the base of the upper floret, like a club-shaped arista; each floret has three aristæ, two of which are final, and scarlet, and the other longer, and dorsal, of a darker colour; a few hairs surround the base of the arista from the back: leaves and lower sheathing hairy and coloured: these observations are chiefly to be found just, only in a young state: it is generally a solitary plant, not clustered at the base, but only producing one straw; in maturity the floret valves, which wrap up the seed, become of a deep black brown, with five ribs of a lighter colour.

Little observed as this Avena has been, yet it may probably prove less rare than conjectured; it is common in Scotland, and in S. Wales we have not unfrequently met with it, particularly about Tenby: the agriculturist perhaps will deem its existence of no moment, as it will not probably be cultivated with profit; the general Avenæ of the field will maintain the preeminence they have obtained, when placed in competition with our scarcer strigosa, whose thin and starveling seed will afford but little nutriment to the animal, or flour to the miller; the botanist alone will appreciate this restoration or confirmed addition to the British Flora.

A, the Calyx with its coloured ribs, as when young.
B, the valves of the Corolla.
C, a set of matured Florets; they are at times almost white.

Avena fatua

J. E. Gibbons Bath Sculp^{t}.

PLATE XCIII.

AVENA FATUA. { *Spec. Plant.*

Hairy Black Oat.

Spec. Char. Spiculæ with two or three hairy florets, each with an arista; seed, when ripe, black.

The hairy Black Oat is the largest of the genus inhabiting with us, and when an individual plant has vegetated in a field, it is immediately discovered by its superior altitude: it is a coarse and rude plant, and the bristles that surround the valves of the corolla render it remarkable; these hairs, when the germin is tender, lie close to the valves, but upon the advance towards maturity, they expand, and prevent the seed falling from the calyx: it is probable that Avena fatua will not be admitted to cultivation, or this circumstance would convey considerable advantages with it: in some seasons the corn ripens before the farmer can spare hands to cut it, and sheds as soon as ripe, and even after some attention has been bestowed upon it, is housed with much loss; but Avena fatua would admit of less exactitude, and being more retentive of its grain, would be conveyed to the rick with a loss considerably less.——Nature has bestowed upon some seeds a remarkable quality, enabling them to remain unchanged through a long lapse of years in the bosom of the earth, but upon exposure to the influence of the solar rays, their germinating powers are awakened, and they start to activity uninjured by their long inaction. The soil from the bottoms of canals produces plants unknown in the vicinity, and it is probable that could we obtain earth from the bottoms of mines, never visited by a ray of light since the concussions at the deluge, some vegetation would be produced.

The circumstances regarding the Ligusticum Cornubiense, and several other plants, are too well known to be insisted upon here; but Avena fatua presents us with as remarkable an instance as any, of the inert duration of vegetative power, sealed up and indestructible in the recesses of the earth; we have known old sward, which had been in turf as long as the memory of man could reach to, upon being broken up, produce this Avena! not a simple straggling plant, a wanderer from a neighbouring field, but in an abundance that indubitably indicated its previous existence in the soil.——The time when such seeds were deposited is far from any attempts to guess, as it is hardly reasonable to conjecture that a field would be laid down for grass, in such a foul state as it must have been in, with the ancestors of these plants growing upon it,* but we must look for their origin to another cause, and a more remote period.

A, the Calyx.
B, a set of Florets.
C, the valves of the Floret.

* Observing in Northumberland a fine field of wheat singularly oppressed with this injurious plant, we could not forbear asking the farmer some questions concerning its admission: he informed us that the crop now produced was the first that the field had borne since the breaking up from a turf, which had remained in grass for upwards of sixty years: his father asserted that the crop, previous to the field's having been laid down, was perfectly free from this plant, and the seeds of the grass clean and selected; nor could they offer any reasonable conjecture as to the cause of its appearance in this instance, but considered it as the natural product of the soil.——We have thought A. fatua to prevail more generally in the county of Northumberland than in other places.

No 94

Avena nuda

R.P. Nodder Sculp^t.

PLATE XCIV.

AVENA NUDA. {*Spec. Plant.*

Naked Oat.

SPEC. CHAR. Spiculæ with two or three smooth florets, two only with an arista; seed, when ripe, yellow.

AVENA nuda is a favourite with the farmer; and its full grain and plentiful produce entitle it to a rank in his estimation: the calyx contains sometimes three florets, but more commonly only two, with the abortive rudiments of a third; the valves of the corolla are perfectly smooth, and yellow. The vegetables affording bread corn, and whose application by man are so obviously consistent with the original design of them, were so early made use of, and so generally resorted to, that their primal stations are lost in their universality: of the habitats of Wheat and Barley we are in total darkness, but we are certain they were natives of those parts of the earth where the human race were first planted, and probably conveyed from thence by the migrating bands that sought subsistence or dominion in distant regions, or imported as commerce produced civilization, and not common to all countries, as many parts of the inhabited world even at this day are ignorant of their existence. But the Oat seems to have been found in more places than one, doubtlessly native: the peculiar station mentioned by Mr. Bruce, and the extraordinary size his plants acquired, without the probability of their having ever received the fostering hand or enlarging arts of man, deserve some attention, and merited an introduction to the cultivation of Europe.——Although we find several other species of Avena in Great Britain, all of them are obviously the relicks of cultivation, conveyed by animals, strays from the field, or strays from the barn, and though this nuda is continued in our Flora, it probably is a partiality, sanctified by custom, that we admit it, to the exception of others, when all have perhaps an equal right to insertion.——To most of the species of Avena the corolla adheres closely round the seed, even when fully ripe; by an operation, however, these valves are detached, and the seed in that state is known under the name of Gruauts, Groats, or Grits; the A. nuda is generally selected for this purpose.

A, the Calyx.
B, a set of Florets from the Calyx.
C, the valves of the Corolla.

Arundo phragmites

J.Hibbert Bath Sculp^{t}

PLATE XCV.

ARUNDO.

Gene. Char. Calyx with two valves; florets surrounded with wool at the base. *Gen. Plant.*

ARUNDO PHRAGMITES. { *Spec. Plant.*

Common Reed.

Spec. Char. Panicle spreading; calyx containing five florets.

Arundo Phragmites is a plant universally known, but in a young state (such as the Plate represents) it is with great difficulty made to answer the specific character, as the five florets are then too tender to be separated; but advancing in age the difficulty ceases. Its leaves are slightly serrated, but towards maturity the spines fall off; they are likewise marked in two places with little pits or folds, a singularity observable in no other species of the genus. The floret branches, when young, are surrounded at the joints from whence they issue with minute down, which is to be found only in an infant state.——Arundo Phragmites is a plant that the agriculturist pays no attention to, but for to eradicate; yet in rural economy it justly holds a distinguished rank: in many of the low lands in the counties of Huntingdon, Cambridge, and Lincoln, it constitutes the crop of the soil, and is harvested with considerable care, and from thence is exported and spread through the neighbouring counties, being made use of as a thatch for barns, cottages, and outhouses; which proves to be less expensive, and more durable than other vegetable materials.——The injury that is done towards the end of autumn to this valuable crop by birds is so great, that the farmer of the watery district is necessitated nightly to dispatch boats with fire-arms to scare them away. As the evening begins to close, one sees clouds of Starlings * (Sturnus vulgaris) approaching from various quarters, in numbers that exceed all belief, to pass the night in the reeds, and lighting in myriads, like the locust of the east, upon this flexible plant, crush it to the water, and one sees large patches lodged, and beat down like grain after a storm: though the guns of the boat-men sweep them away by hundreds, the survivors are so drowsy that they remain stationary, or move only a few yards from the bodies of their slaughtered companions, and return on the ensuing evening in numbers not apparently diminished, and with a total oblivion of the carnage of the preceding night.——The panicle of this Arundo continues through the winter, and in the marshes of Erith, in Kent, is resorted to in that season by that very rare bird Parus barbatus, to seek for in them either the minute seeds they may contain, or the insects that have sought an asylum there.

A, a young Branch with the woolly joints and unexpanded florets.

B, the Calyx and six Florets (which it sometimes contains) unexpanded.

C, the Calyx.

D, a Floret detached, shewing the situation of the wool upon the individual receptacle.

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* There is reason to think that the Starling migrates from other countries into England towards the commencement of winter: this kingdom never breeds the myriads that collect to roost on Arundo Phragmites: the farmers of the districts have assured us that they commonly destroy bushels of a night!!—Foxes and other vermin assemble in the reeds, to fatten upon the poor Starling, which they either find asleep, or disabled by the fire of the night-men.

Arundo calamagrostis

J. Hibbert Bath sculp.

PLATE XCVI.

ARUNDO CALAMAGROSTIS.

Spec. Plant.
CALAMAGROSTIS LANCEOLATA,
Withering, edit. 3.

Silky Reed.

SPEC. CHAR. Panicle branched; calyx with one flower; corolla with an arista proceeding from a small cleft at the summit of the larger valve.

OF all our British Arundines this species is certainly the scarcest, yet cannot be considered as a rare plant; it is not uncommon in the eastern counties, and it will probably be observed to be more generally diffused when more distinctly known. It appears in some instances to have been confounded with A. epigejos, but very little of the harshness universal to that plant will be found to exist in A. calamagrostis, whose soft and silky panicle will readily distinguish the species without the microscopic character of the arista.——Straw smooth, but a little rough immediately under the panicle: leaves long, slender, roughish on the outside, and rough and scored on the inner, which surface, in a young state, is beset with very short hairs, which soon fall of: calyx nearly as long again as the corolla. The whole plant is more slender and delicate than the epigejos, and the panicle makes its appearance sooner than in that species.——Of the five British Reeds, two only can be considered as possessing any obvious utility, but if they promote not, they are not injurious to the labours of man; retiring from cultivation, they inhabit stations rude and unproductive, nor obtrude upon soil moistened by the sweat of his brow.

A, the Calyx.
B, the Corolla invested with its wool.
C, the Corolla with the wool detached.

Arundo epigejos

R.P. Nodder Sculp.

PLATE XCVII.

ARUNDO EPIGEJOS.

Spec. Plant.
CALAMAGROSTIS EPIGEJOS,
Withering, edit. 3.

Wood Reed.

SPEC. CHAR. Panicle branched; calyx with one flower; arista from the back of the larger floret valve.

ARUNDO epigejos is by no means an aquatic plant, but it is not uncommonly found in hedges, and on very dry ditch banks; the panicle, when young, is of a dull green, afterwards changing to straw colour, in which state it remains attached to the culm till the winter, or is dispersed by the stormy winds of November: the usual altitude of the Wood Reed is four or five feet, with long narrow leaves, rough at the edges; the down at the base of the floret is abundant, as long as the valves, and so envelope the whole, that it is with some difficulty we distinguish the arista.——A strong rib divides the leaves of this plant, one side of which we find scored and rough, and the other smooth and shining; this circumstance however ceases when the leaves become dry: it is not peculiar to Arundo epigejos, but may be found to exist in another instance, in the broad foliage of Festuca pratensis: when the seed is matured the wool at the base of the florets expands, and encircles them like rays from a shining body.——Universally scattered over the midland counties as is this Arundo, yet we have never observed it in Scotland, and not commonly in the northern parts * of England.

A, part of a Leaf, shewing the rough and smooth parts.
B, the Calyx.
C, the valves of the Corolla.
D, the matured Seed, wrapped in the floret valves, and the wool radiating from the base.

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* Dr. Withering, mentioning the habitations of the small Reed, gives us as one of its stations Castle Eden-dean, Durham; we have seen A. epigejos in several places of those romantic woods, but never found a specimen of A. calamagrostis.

Arundo colorata

J. Hibbert Bath Sculp!

PLATE XCVIII.

ARUNDO COLORATA.

Hortus Kewensis.
PHALARIS ARUND. *Sp. Plant.*
CALAMAGROSTIS VARIEG. *Gmelin.*

Coloured Reed.

SPEC. CHAR. Panicle branched; branches in alternate pairs; florets without an arista.

ARUNDO colorata is a tall and conspicuous aquatic in many places, appearing at first like a gigantic spike of the Holcus lanatus (which in similar stations acquires occasionally a very large size), and the panicle is frequently as highly coloured: by cultivation the leaves of this Reed-grass become striped in a very handsome manner, and the plant is then known in almost every cottage garden under the name of 'painted Lady-grass,' and in that variegated state is one of the favourite plants of our Welsh peasantry, and with Gnaphalium margaritaceum * is chosen to decorate (in the few places where that amiable and pleasing habit has not faded to neglect) the graves of their departed friends.

The creation of the genus Calamagrostis, by Gmelin, was wholly unnecessary, and pernicious, as he separates the British Arundines, a most natural order, and well according race of plants; all the species of which this genus consists are vested with tufts of wool at the base of the floret, acting as alæ, or wings to the seed, which being matured, the calyx valves fall off, leaving the seed sitting (wrapped up in the corolla) with an expanded cincture of light cottony matter, which being seized by the first vagrant breeze, is detached from the receptacle, and

> 'Plants a race far from their native soil'

Such are the means by which the seeds of four of the species are dispersed; the fifth, Arundo arenaria, though retaining the natural character, has the wool so short that probably it does not serve as a vehicle for conveyance, nor is it required, as A. arenaria is a local plant, and of utility only in peculiar situations; and the soil in which that plant vegetates being light, and always changing its surface with every wind, immediately as the seed drops from the husks, it is covered in an earth particularly adapted to its nature, a soil in which it only can thrive, and the wind that should convey it beyond the drifting sand, would remove it to an inutile station, and ultimate destruction.

A, the Calyx.
B, the Corolla.

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* Perhaps we must consider this plant as a native of S. Wales alone, and confined to a small district, the place where Mr. Ray first discovered it, the banks of the Rymny, in Brecknockshire: in a few places on the road between Merthyr and Caerphilly this pretty 'everlasting' will without difficulty be found by the botanic traveller.

Arundo arenaria

J.Hibbert Bath Sculp^t.

PLATE XCIX.

ARUNDO ARENARIA. { *Spec. Plant.*

Sea Mat-grass.

Spec. Char. Panicle spiked; calyx with one floret; leaves rolled up, and glaucous

This Arundo is entirely a maritime plant, and never found but in loose driving sands, or in such places which were originally of that nature: its characters are so strong that, with a very little attention, it will always be known from every other associating plant.——This Mat-grass is one of those ordinations of nature, the immediate use of which we are permitted to know, and whose virtues are within the level of our comprehension: vegetating in a peculiar situation, it stems the torrent of an inundation of drifting sand, little less destructive than the fury of the sea, and at its roots "the proud waves are stayed;" and whoever has attended to the coasts of the sea, must be fully sensible of what has been saved by this plant. The roots of this Mat-grass being of a woody nature, have been by the dwellers on some of our maritime shores collected for fuel, and the consequences have been ruinous; the wind catches the sand, and finding no impediment, pours it in one continued stream over the adjacent country, and as long as that wind continues, the sand flies, and in dry weather, and during strong gales, even to the endangering of animal life: nearly the whole parish of Furvie, in Aberdeenshire, has thus been destroyed, to the loss of one family of perhaps 300 l. per annum; and at Forres, in the county of Elgin, this inundation has been so great and continued, that houses and trees are buried from the sight: upon one part of the coast of Norfolk it almost alone resists the fury of the German ocean: neither are these solitary instances; and so early was the utility of the Sea Mat-grass known, that in the 27th of Elizabeth an act was passed to prevent the pulling up of this plant, and to encourage its growth; nor did our legislature lose sight of that salutary ordination, but again in the 15th of George the Second prohibited the destroying of Mat-grass.

That this plant was designed entirely as a fetter to the driving sands there is much reason to conjecture: it vegetates and flourishes with vigour in the drifts, and as the sands become fixed, it pines away almost in gradations, or is supplanted from the soil; and when its great and important end is effected, it ceases to be found.——In some places the poor people make use of the foliage of this plant, applying them like rushes to the construction of a coarse kind of matting.

A, the Calyx.
B, the valves of the Corolla.

100

R.P. Nodder Sculpt.

Lolium perenne

PLATE C.

LOLIUM.

Gene. Char. Calyx with one leaf; spiculæ sitting, with several florets. *Gen. Plant.*

LOLIUM PERENNE. { *Spec. Plant.*

Pasture Ray-grass.

Spec. Char. Calyx shorter than the spicula.

Long trial and experience of virtue has rendered the field Ray-grass a favourite with the agriculturist as an early substantial grass; others have been admitted to trial by the experimentalist, but this Lolium seems alone to remain a permanent adoption; partiality may induce us to think that some might be as favourably cherished, and that others have been unjustly rejected, but this opinion does not militate against the established utility of Lolium perenne. Ray-grass, with most of our pasture herbage, thrives infinitely best in damp places; cultivated as it is commonly by itself, under the name of 'grasses,' it does not acquire any proportionable height, as when sown with clover, the foliage of which plant keeping the earth moist, enables Lolium to attain a luxuriance it will not arrive to as an individual plant, unaided by local advantages.——The usual luxuriance of Ray-grass is frequently considerably diminished by cultivation; in rich old pasturage we frequently find it with seven or eight florets in each spicula, but the dryness or poverty of the soil in which it is occasionally sown reduces it to a dwarfish stature, and lessens the number of the florets, necessitating the growers to resort to the old pastures, and obtain seed from plants of undiminished virtue, to sow for spring grass, rejecting that which has been cultivated.*——To a plant so well known, and so variously treated of, as Lolium perenne, little need be added, but we cannot pass by without observing the singular ordination of the outer valve of the corolla of this grass, which is so constructed, and furnished with so much strength, that it projects itself, and forces back the rigid unbending leaf of the calyx, and keeps it thus expanded till the stigmata have received the fertilizing dust of the antheræ, and the design of nature effected, it then collapses to its original station. The contemplative man must always find the laws of nature harmonized to beauty, and if he should explore them with the modesty of true science, he will add strength to his faith, and humility to his knowledge.

Lolium perenne will be found wandering into several varieties;

1. Branched at the base, as represented in the Flora Herborn. of Leers.
2. Fig. A. The Spikets clustered together, with ten or twelve florets, and almost as broad as they are long; it is probably the effect of luxuriance, receiving nourishment so copiously as to throw out spiculæ, without waiting for the elongation of the rachis: this variety constitutes the 'spica lata,' the broad-topped 'gramen loliaceum' of Scheuchzer.
3. Fig. B. In very hungry arid situations it departs from the healthy vigour acquired by plenty, and becomes a pitiful plant, with two or three florets in the spicula, and then constitutes the 'Lolium tenue' of Linnæus. We may say that Figs. A and B are the extremes of vigorous plenty and degenerating poverty.
4. The Corolla terminated by a short arista: and in this state it has been considered as L. arvense, but it holds an intermediate rank between the L. temulentum and L. perenne.

C, back of the Calyx.
D, the Corolla.

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* There is a variety of this plant introduced into cultivation by Mr. Peacy, of Gloucestershire, known by the name of 'lasting Ray-grass;' the cultivators say it is an earlier plant than the common L. perenne, and that it remains longer in the soil. Botanically, there seems little variation.

Lolium temulentum

R.P. Nodder Sculp^t.

PLATE CI.

LOLIUM TEMULENTUM. { *Spec. Plant.*

Awned Rye-grass.[*]

SPEC. CHAR. Calyx longer than the spiket; florets with aristæ; straw rough.

LOLIUM temulentum must be considered as a local plant, plentiful where any is found, but otherwise whole counties may be searched in vain for a single specimen; it is chiefly found in corn fields.—— It sometimes attains the height of four feet; the fence is strongly scored, and longer than the spiket; straw with minute prickles pointing downwards; arista twice or thrice the length of the valve; florets five to eight, the terminating ones are commonly abortive, and not above three or four are matured; leaves shining on the outside, and beset with very small points directed upwards; the lower spiket, in strong plants, has commonly a small inner valve; when matured, the seed attains a large size, and the spikets are thereby much swoln and expanded.—— To inattention and carelessness only can the continued propagation of the Lolium temulentum be attributed, as a plant so large and distinguished might with ease be eradicated from the corn; the effect of the seed in bread, we are told, occasions to the eater violent vomitings, and sometimes consequent death, and when malted with barley it produces intoxication to delirium: Leers tells us it is noxious to all animals.[†] This species, and its congener Arvense, are not uncommon in Pembrokeshire, and it is usual for the farmers to lease it from their corn by the hand, and burn it; but the defect of constant attention to this salutary mode of destruction has contributed to the continuation of this deleterious plant: some few of the Welsh farmers carefully weed their corn, and sow English wheat, and in those cases we never find the L. temulentum; but where the native grown corn has been resown, this Rye-grass generally makes its appearance, and hence the soil is said 'naturally to produce it.'——Perhaps there is no existing instance wherein we might accuse infinite wisdom of superfluity, or lavish expenditure of matter; some formations may be deemed so, but ignorance and conceit only can foster the idea: this thrifty unwasting hand of nature is observable throughout the genius Lolium, in furnishing only one calyx leaf, whereas all the race of Gramina (excepting Festuca uniglumis) are found with two; but by the curious construction of the spike stalk, an inner valve is rendered unnecessary, as the concave space of that part receives the spiket, and defends from external injury the infant florets.

A, the Calyx of the lower Floret, shewing the inner valve; this is not an invariable distinction, but a sport of nature, and makes this genus approach to that of Triticum.

B, the Calyx.

C, the Floret Valves.

D, a swoln and matured Spiket.

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[*] The French writers call this plant Ivraie, probably from the inebriating qualities that it possesses (ivre), and thus by an easy and natural corruption has been acquired our appellation Ray, or Rye.

[†] 'Gramen inter omnia, unicum noxium. Semen temulentos vertiginososque reddit homines; magis adhuc in pane calido, potissimum in potu cerevisia. Etiam equis, canibus, suibus, aliisque animalibus noxium, sæpe letale.' Flo. Herbor.

Lolium arvense

J.Hibbert Bath Sculp^t

PLATE CII.

LOLIUM ARVENSE. { *Withering's Bot. Arrang.*

Awnless Corn Rye-grass.

Spec. Char. Calyx longer than the spiket; florets with or without hair-like aristæ; straw smooth.

Much similarity exists between this species and the preceding temulentum, and they inhabit the same stations, but the floret valve of the arvense is destitute of an awn, and in lieu of an arista, nature, as an effort, produces a short hair, or rudiment of an arista: the straw in this species is smooth.——Lolium arvense is generally considered as a very scarce plant, but it is not uncommon in S. Wales, where, undistinguished from the temulentum, both are called Hever, or Ever; the spike of this species often attains the length of fourteen inches, and the whole plant is of a paler green colour than its associate.——The deleterious effects of Lolium seem to have been known or suspected from the earliest ages, and mankind dreaded its malignancy. Ovid notes it. Virgil[*] twice mentions 'cursed Lolium' as one of the certain attendants upon neglect and bad husbandry. The modern Italians say of those who are afflicted with a depression of spirits, to occasion melancholy insanity,

> 'A mangiato pane con loglio.'
> He has eaten bread with lolium in it.

Whether we may attribute it to the superior state of our agriculture, or that England is unfavourable to its increase, or to both causes, is immaterial; but we know little of Lolium, and happily as little of its effects, and certainly nothing of its fatal malignity.[†]

A, the Corolla with its hair-like arista.
B, a Fence from the lower spicula.
C, a Spiket matured.

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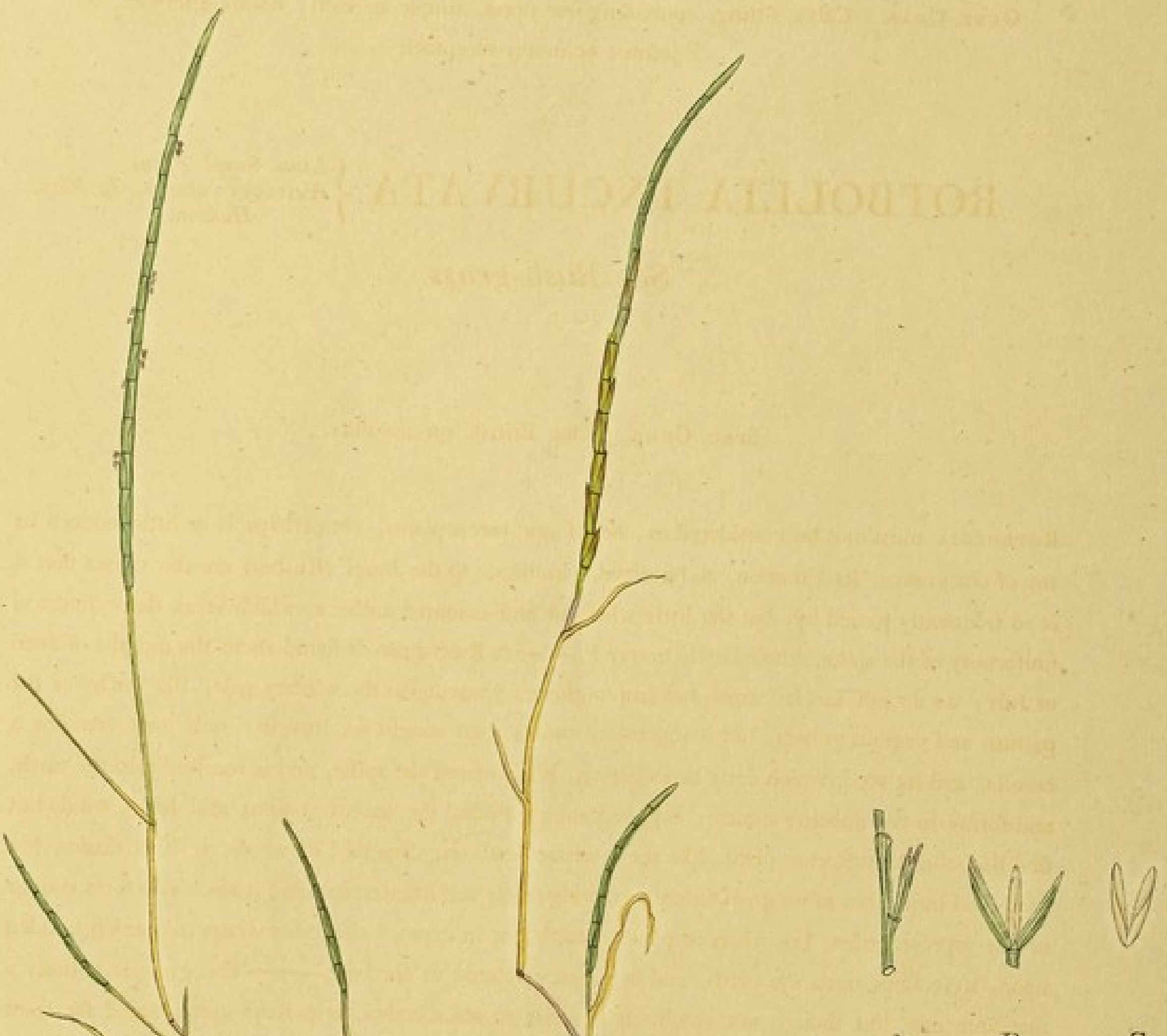
[*] 'Infelix lolium, et sterilis dominantur avenæ.' Eclog. 1. Georg. 5.

[†] Under the head of this Lolium we cannot help suggesting that the Tares, mentioned in St. Matthew's gospel as being sown by an enemy among the corn, were possibly allusive to these Darnel. The supposition that has sometimes been advanced, that the Tares were of the genus Vicia, or Ervum, will not bear a scrutiny, evident from the very expressions, "Let both grow together till the harvest, and in the time of the harvest I will say to the reapers, Gather ye together first the tares, and bind them in bundles to burn them, but gather ye the wheat into my barn:" but neither of the genera above mentioned could be parted from the corn, as they twist round the straw and are inseparable, and they might be weeded from the wheat when young, by the obvious difference of the rising plants; but the similitude of the young Lolium to the blades of corn would render its destruction by that means impossible; and the very manner as recommended by the lord of the harvest is adopted in those places where Darnel is abundant, as, previous to the sickle being put into the corn, the Hever is gathered into bundles and burned.——Our Saviour, in almost all his discourses with his disciples, illustrates his doctrines by beautiful and apposite allegories; parables were given to those whose ears were opened, all drawn from common occurrences, and well known transactions of life; and although the parable above alluded to was only allegorizing the influence of Satan, yet the circumstance of corn being injured by Tares must have been a common and lamented fact, universally familiar to the dwellers in Judea.



Rotbollia incurvata

R.P. Nodder Sculp^t

PLATE CIII.

ROTBOLLIA.

Gene. Char. Calyx sitting, containing one floret, simple or cleft; florets alternate, on a jointed common receptacle.

ROTBOLLIA INCURVATA.

Linn. Suppl. Plant.
Ægilops incurv. *Sp. Plant.*
Hudson.

Sea Rush-grass.

Spec. Char. One British species only.

Rotbollia must not be considered as one of our rarest plants, yet perhaps is as little noticed as any of our grasses, its situation, and a certain similitude to the Junci (Rushes) are the causes that it is so frequently passed by, but the little white or buff-coloured antheræ, which break the cylindrical uniformity of the spike, immediately betray it.——Sea Rush-grass is found about the months of June or July; we do not see its straw and empty glumes 'waving to the wintery gale,' like many of the pasture and vagrant grasses, but it vegetates, and is soon sought for in vain: each joint contains a corolla, and its seed, which early turns brown, breaks from the spike, and is received into the earth, and forms in the ensuing summer a young colony around the parent station; and hence we do not find Rotbollia a wandering plant, like those whose seeds are dispersed by winds, or other causes, but local, and in patches of no great extent; growing freely and uninterruptedly, it assumes a form similar to the representation, but when cropped by cattle, or in exposed situations where it is much trodden upon, it reclines upon the earth, and becomes clustered at the base.——This grass is entirely a maritime one, but though not absolutely peculiar to sea marshes, is perhaps never found far from those stations, within a certain influence of the tide, by which it is occasionally submersed; the yellowness of its foliage is the effect of salt water, not drought; its spike is usually incurved, and the calyx expands when the antheræ are matured, and closes again when the purport of nature has been answered.——This genus was thus named by the younger Linnæus, in compliment to professor Rotboll, of Copenhagen.

A, a part of the Spike.
B, the Calyx expanding, shewing the corolla
C, the Corolla.

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Hordeum murinum

R. P. Nodder Sculpt.

PLATE CIV.

HORDEUM.

Gene. Char. Calyx lateral, with two valves and one floret in each; three together. *Gen. Plant.*

HORDEUM MURINUM. { *Spec. Plant.*

Way-side Barley.

Spec. Char. Lateral florets male, with aristæ; fence of the central floret lanceolate at the base, and fringed with hair.

This common Barley is almost universally to be found near cottages, about the pathways in the streets of villages, and in church-yards, and when once established, will keep possession of its station for a long term of years.——The structure of this genus is very curious, and all our British species form a very natural arrangement, yet sufficiently distinguished from each other by strong and permanent characters: in this species the fences of the male, or lateral florets, are shorter than the arista which terminates those abortive florets.——In some places Hordeum murinum occasionally intrudes in the upland grass fields, and the hay in such cases is almost rejected by cattle, as the sharp spines that constitute the beard attach themselves to the mouth of the beast, causing irritation and pain, and teaze the animal instead of nourishing him: of this disadvantage we are sensible, of its virtues we remain in ignorance, and though it loves the neighbourhood and association with man, yet it seems in no instance deserving his protection.

A, set of Florets taken from the common receptacle.

B, the valves of the central and fertile Floret.

Hordeum pratense

R.P. Nodder Sculp^t

PLATE CV.

HORDEUM PRATENSE.

{ *Hudson's Flora Ang.*
{ Hordeum murinum, β *Sp. Plant.*

Meadow Barley.

Spec. Char. Lateral florets male, with short arista; fence of the central floret bristle-shaped, and rough, without spines.

Low and damp meadows chiefly produce this Hordeum, at once to be distinguished from the preceding plant by its taller and more slender habit, and more plentiful herbage: in this species the fences of the male or lateral floret are longer than the arista which terminates that abortive floret. Of all the species of the genus Hordeum which we possess, this pratense is the only one that vegetates in pastures, but is in no instance a desirable plant, excepting perhaps when in a very young state: in the moist situations in which it delights, it springs up early, and produces some good herbage, but cannot long be considered as a useful plant, for the bristly spikes soon advance, and with them ceases the utility of the meadow Barley, for its foliage will not compensate for the disagreeable qualities of its spines: in low lands, which have been grazed, towards the end of summer we find the straw of this Hordeum remaining untouched, whilst every green leaf at its base has been selected by cattle, nor will hunger seduce them to crop the spike, and risk its irritations.——In some of the midland and western counties of England, Hordeum pratense is far from being a general plant, but only occasionally scattered in the fields; but in many of the maritime meadows in parts of Kent and Essex this 'squirrel tail' abounds in the most unwelcome profusion, often constituting almost the whole 'bent' of the field: the hay in such cases may be eaten by cattle, but they can scarcely relish their food, or thrive in a proportionate degree with those which feed on provender unmixed with the teasing spines of the squirrel tail: antipathies to tastes may by use be conquered, but the irritations occasioned by the spikes of this grass can scarcely by custom become less irksome, but be ever disgusting to native cattle, and intolerable to those from counties not productive of it.——By some writers this species has been considered as a variety of H. murinum, but its characters are too strong seriously to admit of that idea.——The specific character in the Flora Anglica, which mentions the lateral florets as divested of aristæ, must not be attended to, but we will rather consider it as an observation that escaped from the pen, at a moment when not directed with the usual accuracy of Mr. Hudson.

A, a set of Florets.

B, the valves of the centrical and fertile Floret.

Hordeum maritimum

J. Sibbert Bath Sculp^{t}

HORDEUM MARITIMUM. { *Withering's Bot. Arrang.*

Sea Barley.

Spec. Char. Lateral florets male; fences of the male florets, one setaceous, and the other semi-ovate.

This species of Hordeum now before us is the smallest of the genus which Britain possesses, but will in some situations acquire the height of a foot or more; H. murinum will likewise in some places be reduced to the humble stature of the true Sea Barley, but the peculiar form of one of the fences of the lateral floret will invariably detect the species, and it will often be found broader than the floret it defends: in all the other species of Hordeum, which are found with us, these fences are setaceous, or nearly so.——The Sea Barley is found upon several of our coasts, chiefly on the south sides of banks that defend the marshes from the inundations of the sea; at Hartlepool, in Durham, and at Purfleet, in Essex, it is abundant.——The figure in Flora Danica, meant for Hordeum maritimum, is not the true plant, but a dwarf variety of H. murinum; nor is the representation in Host's Gramina the true Hordeum maritimum of Britain.

A, a set of Florets.
B, the male floret, with its setaceous and semi-ovate fence.

Hordeum sylvaticum

J. Sibbert Bath Sculp^t.

PLATE CVII.

HORDEUM SYLVATICUM. { *Hudson's Flora Ang.* / ELYMUS EUROPÆUS, *Mant. Plant.*

Wood Barley.

SPEC. CHAR. Florets all fertile; fences of the central and lateral florets similar; and all lanceolate at the base.

HORDEUM sylvaticum is by no means an universal plant, but chooses for its residence rocky woods or shady groves, in a chalky or limestone soil. In Studley woods near Ripon, and opposite the Baths at Matlock, it will readily be found. Leaves broad and sheathing, a little hairy on the inner side; sheathing hairy; straw rough below the spike, and immediately beneath the joints.——Linnæus arranges this plant as Elymus, to which genus it does not appear to belong; in Elymus a regular calyx wraps up the spicula, as in Triticum, but in the plant before us there is a fence, detached from the florets, placed at the base of the peduncle, not acting as a calyx, but defending it, as in Hordeum, with which genus it seems fully to accord.——We usually find the Wood Barley with its florets solitary, or three in a set, each individual with its fences; but in luxuriant plants they are occasionally in pairs,* or six in a set, each pair with two fences (C), and the peduncle of a third.——Hordeum sylvaticum is a coarse grass, confined to sylvan stations, of no value to the agriculturist, nor is it applicable to any purpose in rural economy.

A, a set of Florets, each floret solitary.
B, the Corolla.
C, a Peduncle with two florets, as in luxuriant plants, and then there are six florets in the set.

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* If this casual formation should appear to necessitate the removal of this plant from an arrangement with Hordeum, it must constitute a new genus, and in no sense will accord with Elymus. Hordeum is a strongly marked genus, and in fact has no calyx, but only a fence: Cynosurus has a calyx, and a fence too.

Elymus arenarius

J. Hibbert, Bath Sculp.t

PLATE CVIII.

ELYMUS.

Gene. Char. Calyx lateral, with two valves, several together, with many florets. *Gen. Plant.*

ELYMUS ARENARIUS. { *Spec. Plant.*

Great Mat-grass.

Spec. Char. Spike upright, but a little bowed; calyx woolly, and shorter than the spicula.

Elymus arenarius is one of the noblest of the British grasses, and presents itself to the observation as strongly as any plant we possess, for independent of its altitude, which is commonly four or five feet, the extraordinary blueness of the inner surface of the leaves renders it manifest at a considerable distance: inhabiting the same situations as Arundo arenaria, it has at times been mistaken for that plant, but, even before a spike is produced, the foliage alone will detect the species. Leaves flat, broadish, not rolled up, and serrated on the edges.——The great and obvious utility of the larger repent arenaceous plants has been shewn under the head of Arundo arenaria, but this Elymus, from the superior strength of its roots, and distance which they trail along the sand, affords a more powerful resistance to the drifting sands than any plant we are possessed of.——This fine Mat-grass is not the promiscuous produce of all our sea shores, but we find it attached only to a very few places, and we may examine an hundred miles of the coast without finding a specimen; we have seen it in Norfolk, and at the mouth of the Tees in Durham (called the snook of Seaton) it abounds, and producing in that situation a larger number of spikes than we have observed in any other.

A, the Calyx and its Florets.
B, the Calyx.
C, the Corolla.

Elymus geniculatus

J. Hibbert Bath Sculp.

PLATE CIX.

ELYMUS GENICULATUS. { *Curtis on Brit. Grasses.* *Smith's Flora Brit.*

Pendent Lyme-grass.

Spec. Char. Spike slender and upright when young, geniculated and pendent towards maturity; calyx free from hairs.

This singular plant is too little known as a British grass to afford us much room for observation, and even its arrangement amidst our native plants is perhaps not sanctioned upon good foundations. Mr. Curtis mentions it in his catalogue of indigenous grasses, but gives us no reasons for its admission.—— Elymus geniculatus is very partially found with us, in a single station only, and we must consider it as a plant of exotic origin, recently introduced on the shore at Gravesend from the ballast of some foreign vessel,* as it is hardly possible to conjecture that a grass of so remarkable a habit should have eluded the notice of early botanical observation.——As an agent for curbing the driving sands, it is inferior in power to the preceding species, its straw and foliage being much weaker, nor do the roots trail so far, or obtain so firm an hold in the soil as the larger E. arenarius.

In a young state the spike is erect, advancing in age it becomes bent about the middle parallel with the horizon, and finally the terminating joints become pendent: a mortification then seems to take place at the geniculations, which turn yellow, perish, and fall off in succession.

A, a Spicula in its Calyx.
B, the Corolla.

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* That foreign plants may be casually introduced, and become naturalized in this kingdom, is obvious from the circumstances attending the Ballast-hills, Sunderland, which are an accumulation of various soils, emptied from foreign vessels which arrive on that shore to load with coals; and thus spring up amid these heaps several of our scarcer plants, and some that were never supposed to be natives of these climes.

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Knappia agrostidea

PLATE CX.

KNAPPIA.

Gene. Char. Calyx containing one floret; florets on short footstalks, alternately placed on a serpentine rachis; corolla of two hairy valves.

KNAPPIA AGROSTIDEA. { *Eng. Bot. tab.* 1127. Agrostis minima, *Sp. Plant.* *Hudson.*

Anglesea Sand-grass.

Spec. Char. One British species only.

To the reverend Hugh Davies, of Beaumaris, we must express our obligations for the nice specimens of this elegant little plant, which he transmitted us in the most perfect state from Anglesea: and it is probable this gentleman was the first person that discovered in England the retirement of this minute beauty. It has been supposed that the excellent Mr. Stillingfleet, 'the object of whose labours were the good of mankind,' in an excursion through Wales, first discovered this plant; a supposition that has arisen perhaps from some mistake,* not easy at this period to be cleared up, but certainly no decided British habitat was given to us, till Mr. Davies pointed out its Anglesea residence.——This plant has hitherto been classed with Agrostis, but accords with that genus in the solitary circumstance of having one floret in the calyx; and varying so essentially from every other grass, justified Dr. Smith's arrangement of it under a new genus; and we wish that the attaching to it the name of an unworthy amateur, could as safely justify the partiality of his friendship.———Plant from half an inch to three inches high; leaves very short, membranaceous, and sheathing at their base; straw a little woolly under the spike; calyx rather unequal; valves of the floret covered with long wool, almost their whole substance being composed of filaments of a woolly nature, which so connect them as to make the corolla appear undivided; styles long, and protruding from the corolla.———The residence of this plant is local, and confined to one corner of our island, in the dry and sandy fields of Anglesea; and it would be a subject of some surprize how so minute and slender a grass could exist and vegetate, even for a week, in the arid and parched situations nature has allotted to it, without our considering that in the very early period in which it makes its appearance (the months of March and April) the earth is sufficiently moist to continue existence unimpaired, but it immediately withers away as the fine warm days and drowth of May exhales the moisture of the sandy soil in which it vegetates.——The utility of such a plant cannot be supposed to be very extensive, and the necessity of its creation may probably never be manifested to us; and to the investigating eye of Science it is alone indebted even for the little and partial notice it has obtained.

A, a part of the Spike enlarged.
B, the Calyx.
C, the valves of the Corolla.
D, the Styles and Stamens.

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* Mr. Stillingfleet, it is said, did not commence his botanical excursion till the middle of June, and not a vestige of the Sand-grass remains by the middle of May! and it is rather unaccountable that even the station it was gathered in should be unknown to Mr. Stillingfleet.——Morrison's figure was probably from a garden plant.

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Triticum repens

R.P. Nodder Sculp^t.

PLATE CXI.

TRITICUM.

Gene. Char. Calyx with two valves; spikets sitting, solitary, and few flowered.

TRITICUM REPENS. { *Spec. Plant.*

Beardless Quitch-grass.

Spec. Char. Florets without aristæ, or with an arista not longer than the floret valve; leaves broad and flat.

Triticum repens is a well known plant under various names, and against which a general anathema seems to have been pronounced: but however injurious it may be when plentiful, it is bad management alone that encourages its growth, or permits its existence when sprung up. In exhausted or neglected fields, and in places where the injudicious habit of liming the land, till it is little less than mortar, is the practice, this Triticum is sure to abound, and immediately pronounced to be the offspring of the soil, and nothing placed to the account of bad management: where the fields have been sufficiently manured, and attentive husbandry shewn, this Quitch is banished to the surrounding hedges, nor intrudes but little upon the crop.——But the eye of the farmer does not alone select this grass as Quitch, but includes under that name whatever grassy root he finds creeping in his fields, and several species of the genus Agrostis, &c. are condemned under that name.———Triticum repens produces several varieties, deviating in the length of the aristæ, and we find it either awnless, or with the arista the length of the floret valve, and from four to eight florets in the spiket: the formation of the roots of this grass is very remarkable, and we frequently find the leading joint so strong and sharp as to pierce potatoes, decayed wood, or any other moderately hard impediment it encounters in its progress.—— Triticum repens, from this formation of the root, is much more easily eradicated than many other plants, as the harrow, rake, and even the hand, can collect its runners, as it propagates not at all by seed, but every joint of the root is the founder of a baneful progeny.———Through the darkness that rests upon the writings of the elder herbalists, we guess with little evidence the medical remedies of the ancient world; yet it is probable that this Triticum constituted the 'graminis radix dulcis' of the simple disciples of the school of Galen; its virtues resided more perhaps in the fancy of the leech, than in the actual energies of the plant; yet its merits seem generally acknowledged as a gentle diuretic and aperitive: but modern constitutions require more potent drugs, and the temper of an European patient would be exhausted, and the skill of a physician suspected, by the lenient and tardy siege of vegetable potions; and the ailments of these days, alone retire before the speedy searchings and rapid assaults of mineral activity.

A, B, Spikets with and without aristæ.
C, the Calyx.
D, the valves of the Corolla.

Triticum caninum

J.Sibbers Bath Sculp.

PLATE CXII.

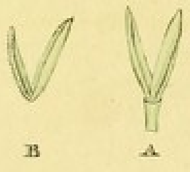
TRITICUM CANINUM. { *Hudson's Flora Ang.* ELYMUS CANINUS, *Sp. Plant.*

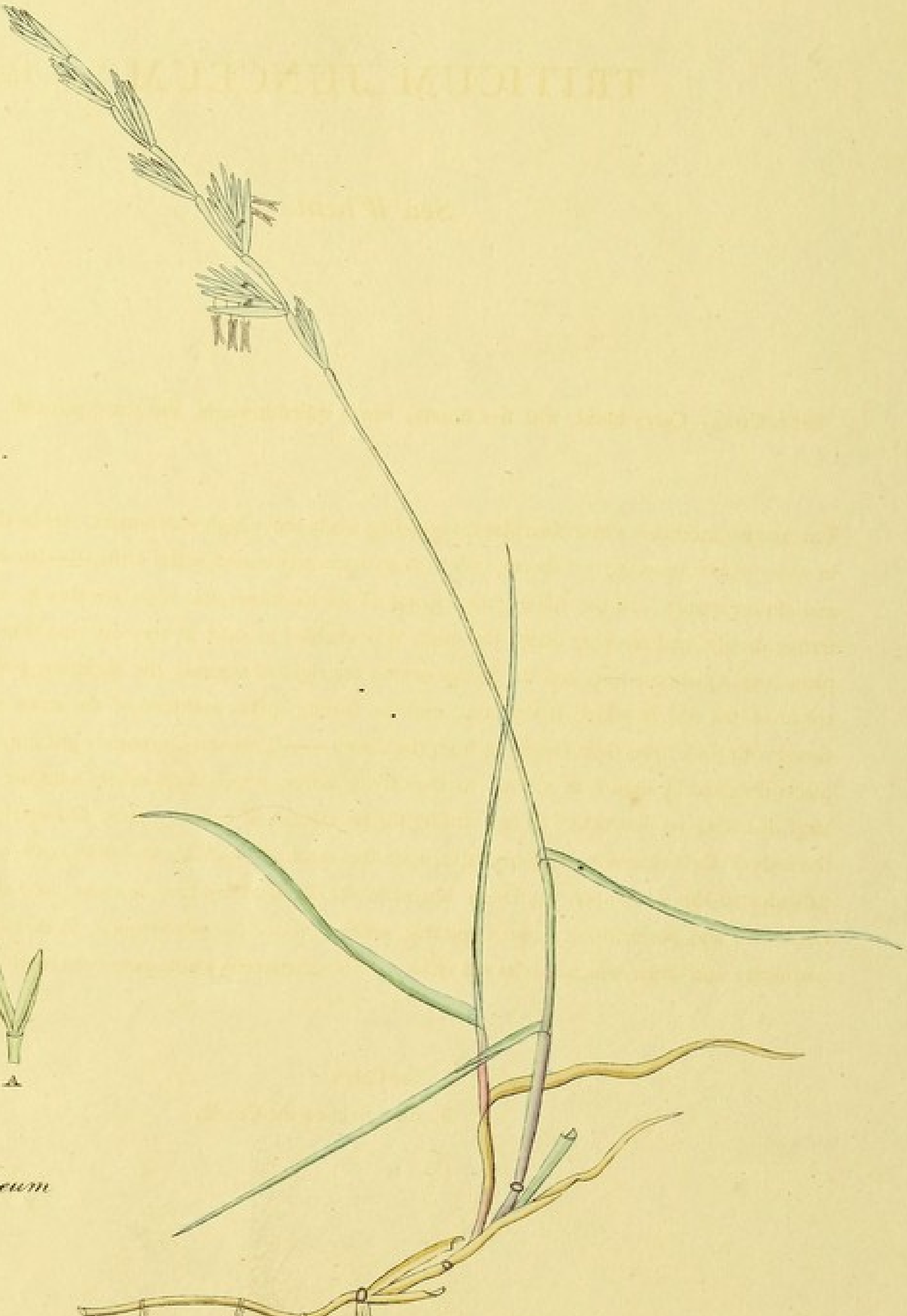
Long-awned Quitch.

SPEC. CHAR. Aristæ longer than the floret valves; root fibrous.

AN observer not sufficiently attentive would conclude the awned variety of the T. repens to be the true T. caninum, but they are perfectly distinct; the T. caninum is a much less common, and a sylvan plant, the aristæ are sometimes above twice the length of the floret, and the inner valve peeping a little beyond the outer and awned one: in T. caninum both surfaces of the leaves are rough, in the repens the outer one is smoothish; the root of the caninum is fibrous, of the T. repens creeping and stoloniferous: T. caninum seems to be a plant that has not been generally understood; it having been arranged with Elymus by some, and considered only as a variety by others, but its characters are constant and decisive.——The appellation of Caninum, or Dog's-grass, to this Quitch, is far from conveying the pertinent distinction which many of the terms of Linnæus so happily express, as from such an epithet one might be led to believe that this plant was in peculiar request by that animal: when the stomach of the dog is oppressed with acid or bile, he resorts promiscuously to any rough-leaved grass, nor does a particular selection seem necessary, the aim perhaps required being only to stimulate or slightly irritate the coats of the stomach, and the discharge that nature requires is consequently effected.——This, and many other singular faculties which the brute creation are endowed with, to remedy occasional necessities, or produce remote effects, are surely, in many instances, above simple instinct, and only below reason!

A, the Calyx.
B, the Floret Valves.





Triticum junceum

J. Hibbert Bath Sculpt

PLATE CXIII.

TRITICUM JUNCEUM. { *Spec. Plant.*

Sea Wheat.

Spec. Char. Calyx blunt, with five florets; leaves rolled inwards, and sharp pointed. *Eng. Bot.*

Triticum junceum is a maritime plant, vegetating freely above high water-mark, amidst the dry sands, in many places upon our sea shores, where it is frequently buried in the drifts.——Its straw is firm, and almost woody, and the foliage participates of its hardness; the roots are strong, and by penetrating deeply, and creeping under the sand, it is enabled to exist in very dry situations; the whole plant is of a glaucous tint, and the foliage seems too rigid to expand; the sheathing partakes of the colour of the soil in which it vegetates, and the issuing spikes and base of the straw generally are tinted with pink upon their emerging from the sheath.——Triticum junceum is probably one of those plants designed by nature as a fetter to the driving sands, which occasionally inundate and destroy large districts; its destructive deluge, during the prevalence of certain winds, fills up rivers, or alters the beds of their channels: at Yarmouth, upon the coast of Norfolk, we have seen the cannon and palisades of the forts upon the Denes buried to the depth of ten feet or more: and though not so efficacious and powerful, it is no despicable auxiliary to the Arundo arenaria, in that important department; and under which species the virtues of the arenaceous plants have been more fully shewn.

A, the Calyx.
B, the valves of the Corolla.

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Triticum loliaceum

R.P. Nodder Sculp^t.

PLATE CXIV.

TRITICUM LOLIACEUM. { *Eng. Botany.* POA LOLIACEA, *Flora Ang.*

Sea Rye-grass.

SPEC. CHAR. Spiculæ, with several florets, sitting upon opposite sides of a rigid serpentine spike stalk.

THIS rigid little plant inhabits the dry sandy cliffs of many of our sea shores, but not universally; it bears a certain resemblance to Poa rigida, but that plant is invariably branched, and doubly branched in the lower part of the panicle; a circumstance that will readily distinguish it from the Sea Rye-grass:* spiculæ alternate on the rachis; ovate, with five, or lanceolate, with twenty florets; the straw is thick, shining, and coloured towards the maturity of the seed.——Mr. Hudson did not sufficiently attend to the characteristics of this plant when he arranged it with the Poæ, as the sessile spiculæ, upon an unbranched spike, obviously mark its station with the genus Triticum.———This little grass exists without having any apparent utility attached to it; the scanty foliage, rigid straw, and puny stature, render it unsuitable for animal food, and its feeble fibrous roots are not adapted to fix and render stationary the particular habitation it delights in.

When secondary causes are the objects of our enquiry, there are few subjects that so completely baffle our investigations as the smaller race of plants, which seem too insignificant to fill any important scale within the range of our comprehension.

They float no perfume on the zephyr's wing,
Nor with their glowing vestments court the eyes
Of man, but in their lowly ranks fulfil
The purpos'd ends of their creation.—
The mighty hand that robed aspiring
Lebanon with Cedar's massy pride, spread
O'er Judea's arid wastes the tow'ring
Palm, and shaded favour'd Britain with her
Guardian Oak—form'd them, important to
Connect his universal chain.

A, the valves of the Calyx.
B, the Corolla.

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* This Triticum however, in certain situations, approaches still nearer P. rigida, but yet the spiculæ are invariably sitting. Fig. 2 is an instance of the singular transformations that plants undergo, and in this variety we with some difficulty trace the original humble Triticum loliaceum.

In finishing this genus, and closing the Gramina Britannica, I must now (though late) offer my warmest acknowledgments to those gentlemen who have assisted my endeavours. Professor Williams, Oxford; Dr. J. E. Smith; Rev. Mr. Stuart, Luss; Thomas Velley, Esq. Rev. R. Relhan; Henry Penneck, Esq. T. J. Woodward, Esq. the late Mr. Sole,[*] Bath; Rev. H. Davies, Beaumaris; Dr. Stokes; Mr. L. Wigg; Mr. E. Robson, Darlington; Mr. Pitchford; Mr. Brunton, jun. Rippon; Rev. Mr. Swayne; Mr. G. Don, Botanic Gardens, Edinburgh; Mr. J. Don, Cambridge; J. Crowe, Esq. Mr. J. Salt, Sheffield; Mr. James Dickson; J. Howarth, Esq. Chelsea; and the Rev. J. Holmes, St. Peter's-college, Cambridge.

I must thank them for their liberality in answering my various enquiries, and for the permission they afforded me to inspect their several collections: and had it not been for such encouragements, the public would never have seen these delineations: whether their incitements have been beneficial, or might have been spared, is not for me to determine.——And finally, to that Supreme Being, whose mercy hath led his unseeing creature through all his various wanderings, be praise and adoration! Whether I have trembled on the faithless bog—hung over the slippery margin of the unfathomed lake—or climbed the precipice of alpine steeps, in all hath his Providence upheld me; under the shadow of his wings have I found protection, and hallowed be his name!

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[*] Of this gentleman I may be permitted in passing, perhaps, to say a few words.—For a certain number of years Mr. Sole was at the head of the botanical department in his vicinity, and his judgment was generally considered as conclusive: but those years were numbered, and as he faded, brighter lights arose: he saw Science smile on him, flit by, and leave him unsolaced in a desert.——Mr. Sole was intimately acquainted with the system of Ray, and the earlier botanists, and with the first edition of Hudson; but his idols were the two Bauhins, writers highly respectable! yet abounding with the errors that are common to mortality in the dawning and infancy of science. The Herbarium of Mr. Sole was replete with varieties, elevated to the rank of species: examining one day with a magnifier the nice distinctions on the calyx valves of a species of Agrostis, which was apparently placed wrong, 'Ah! you botanists of these days,' exclaims the deceased, 'do nothing without your glass; we always knew a plant at sight, without such inspections.' And might not that be a reason, sir, for the many errors?——Of the Linnæan system he knew very little; attached to the opinions imbibed in his earlier days, his inclinations never led him to investigate, unbiassed, those of the Swedish philosopher; and perhaps his partiality to the companions of his happier hours rendered him insensible to the bright light that gleamed around him, or obscured his vision, when perusing the works of Linnæus.—Mr. Sole gave the public a treatise upon that obscure race of plants, the 'Mints of Great Britain,' a work he was cautioned to revise before publication; but here we must in pity tread lightly on the earth of departed science, and the yet glowing embers of genius: and if our spirits, after their escape from this prison of clay, continue any attachments to what engaged them on earth, we trust he is simpling in celestial fields, or at least that he bears with him a specimen of the 'golden branch.'[†]

[†] Æneid. vi.

SUPPLEMENTARY

SUPPLEMENTARY PLATES;

OR REPRESENTATIONS OF

SINGULAR VARIETIES

OF THE PRECEDING SPECIES.

PERHAPS

PERHAPS the representation of remarkable varieties are often as necessary for the illustration of a genus as the true species, and being unwilling to break, by the introduction of them, the connexion of regularly established individuals, we have adopted the mode of throwing into an appendix a few varieties which we have thought essential for the purposes of information; and as many persons may differ from us, considering them as species rather than varieties, it would have been defective wholly to have omitted them. To these supplementary Plates trivial names will be found attached, more from the wish of preventing confusion, than from the idea of their being entitled to a specific epithet.

Perhaps the representation of remarkable varieties are often as necessary for the illustration of a genus as the true species, and being unwilling to break by the introduction of them, the connection of regularly established subdivisions, we have adopted the mode of representing, as an appendix, a few varieties which we have thought essential for the purposes of information; and as many persons may differ from us, considering them as species rather than varieties, it would have been difficult wholly to have omitted them. To these supplementary Plates trivial names will be found attached, more from the wish of preventing confusion, than from the idea of their being entitled to a specific epithet.

Agrostis semi nuda

J. Hibbert Bath Sculp^t

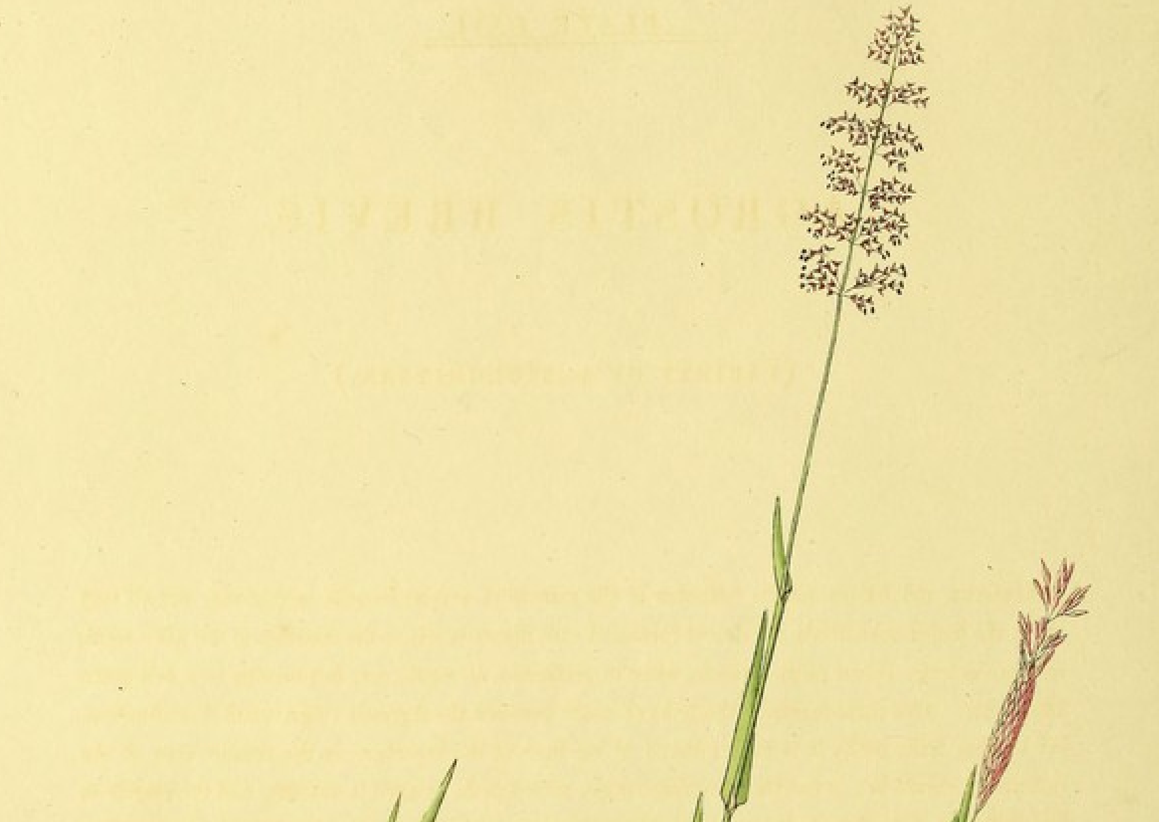
PLATE CXV.

AGROSTIS SEMI-NUDA. { AGROS. CAPILLARIS, *Leers.* AGROS. NIGRA? *Withering.*

(VARIETY OF A. VULGARIS.)

LEAVES long, narrow, and rough; sheathing sometimes with a little roughness; branches bare for a considerable distance from the main stem, often for above half their length, and then some secondary branches proceed, bearing a few scattered florets. Growing in corn, or in tolerably rich earth, this variety becomes very luxuriant; the sheathing is then sensibly rough, and at times nearly twenty branches issue from a stage, and the panicle becomes of a deep black green colour: calyx generally with only one valve serrated, but on the same plant will be found some calyces with a few serratures on the summit of the other. We conjecture that our A. semi-nuda is the A. capillaris of Leers, and possibly the A. nigra of Withering, from the description, as he refers for synonym to the A. stolonifera of the Flora Herborn. We have bestowed upon this plant the epithet of 'semi-nuda,' to denote the naked branches of the panicle.——This variety is by no means rare, and being so strongly marked, will often be observed, and hence requires some mention.——Its delight is moist places at the edges of corn fields, and the margins of ditches.

A, C, the Calyces, as found on one plant.
B, the Corolla.



Agrostis brevis

J. Hibbert Bath Sculp^t

PLATE CXVI.

AGROSTIS BREVIS.

(VARIETY OF A. STOLONIFERA.)

SHEATHING and foliage rough; branches of the panicle of several lengths intermixed, but all very short, the longer ones nearly equal, and furnished with florets nearly to the insertion in the main stem; membrane long; colour of the panicle, when in perfection, of a pale red, but turning to a dull green afterwards. This plant is one of the links of union between the Agrostis vulgaris and A. stolonifera, yet varying from both; it is not clustered at the base of the branches, as the smaller ones of the stolonifera should be; it has the sheathing rough, which in A. vulgaris is smooth, and the panicle is very different from that plant.——It inhabits wet places, and where water has lodged, the margins of furrows in corn fields, and at other times is found in a dwarfish state in very dry places, but may always be known by the long ovate and almost uniform appearance of the panicle when in expansion, and spike-like form before extension. It throws out suckers from the roots, as is observable in all the genus.

A, the Calyx.
B, the Corolla.

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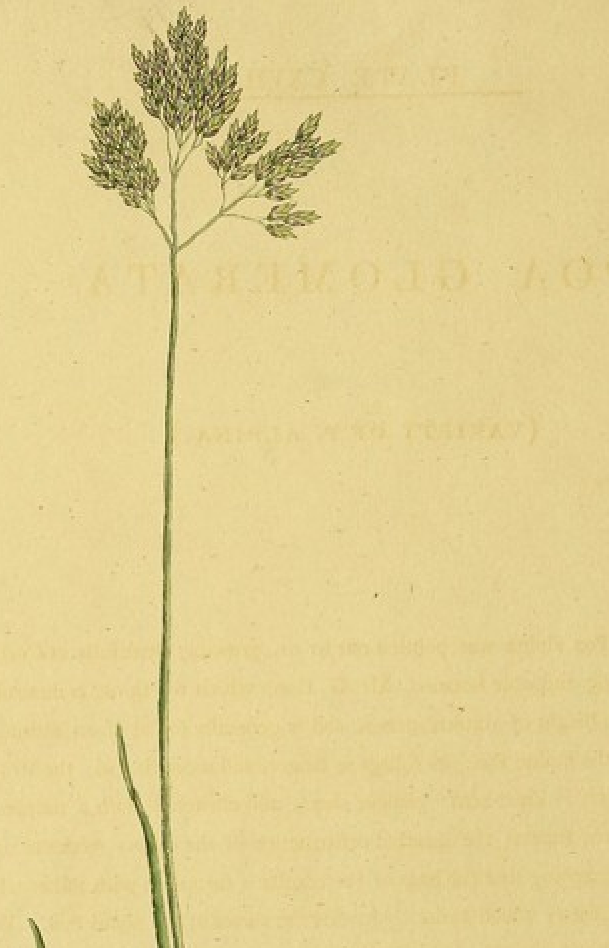

Poa glomerata

R.P Nodder Sculp.

PLATE CXVII.

POA GLOMERATA.

(VARIETY OF P. ALPINA.)

A SINGULAR variety of Poa alpina was pointed out to us, growing plentifully at Corby crags, near Forfar, by that persevering and able botanist, Mr. G. Don, which we think is deserving of notice. Poa glomerata attains the height of sixteen inches, and is generally found of an altitude superior to what is ever obtained by the alpine Poa: its foliage is longer, and more flaccid; the straw has seldom more than one joint, which is knee-bent: panicle short, and clustered, with a number of spiculæ, each containing about three florets: the internal construction of the florets seems to agree perfectly with those of P. alpina, excepting that the base of the corolla is furnished with rather a larger portion of that connecting woolly matter which generally invests the valves of the genus Poa. We sometimes find two short leaves like bracteæ at the base of the panicle, but they are rather an occasional than a general appendage. Clustered as the spiculæ of this plant are, yet they never appear to become viviparous, a circumstance so commonly observable in the alpine species.——The station which this P. glomerata inhabits, far from being high and mountainous, is low, and near the rocky banks of a river. The appearance that this plant presents to the eye is probably effected by situation, which so strongly influences the external characters of vegetables, that we cannot wonder at the singular diversities which are hourly exhibited to us.

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Poa cærula

R.P. Nodder Sculp^t

PLATE CXVIII.

POA CÆRULEA. { POA SUBCÆRULEA, *Eng. Bot.*?

(VARIETY OF P. PRATENSIS.)

We were first favoured with this plant by the Rev. H. Davies, from Anglesea, but we found it afterwards at the entrance of the Helks, at Ingleton, and in several other places in Yorkshire; and in the wood near the fall at Ambleside, Westmoreland. This grass probably constitutes Mr. Hudson's 'Poa pratensis alpina, β,' but it did not appear to us materially to vary from P. pratensis, so as to afford a decided specific character: colour alone can form no feature but to the eye, and its cærulean hue it probably derives from situation, as all the places of its growth were sylvan, or at least influenced by shade. The valves of the calyx, however, in the cærulea, differ from those of pratensis, by being very acute, and form a good distinction for this variety; and we have generally found a larger portion of that woolly matter (attached to almost all the Poæ) at the base of the corolla in the cærulea than in the pratensis. The peduncles of the cærulea are at times perfectly smooth, and at others furnished with minute spines.——We have often found Poa trivialis inhabiting the same stations, and intermixed with the P. cærulea, but never observed it to acquire that blue tint which manifests this plant to the eye.

A, the acute valves of the Calyx.
B, the Corolla.
C, a Spicula.

Festuca repens

R.P. Nodder Sculp.

PLATE CXIX.

FESTUCA REPENS.

Festuca rubra, *Sp. Plant.*
Festuca cambrica, *Hudson.*
Festuca dumetorum, *Sp. Plant.*

Creeping Fescue.

(VARIETY OF F. DURIUSCULA.)

The epithets of colour, when attached to plants, have been the occasion of many erroneous conceptions, and for the Festuca rubra of Linnæus every red variety of F. duriuscula has been collected; and if we attend to the specific names of plants, when they express colour, we shall, in more instances than one, find ourselves the dupes of an evanescent property.——Amidst the loose sands on several of our sea shores we find the Festuca here represented, generally to be distinguished by its long and creeping roots; its colour varies from a glaucous green to dingy red: leaves narrow, flat, and scored on the inner side, and a little woolly, as are the cauline leaves of F. duriuscula. Festuca repens is not however peculiar to the vicinity of the sea, but vegetates in alpine regions; upon the Moffat hills, Dumfries, it is plentiful, agreeing in all respects with the maritime plant, excepting simple deviations, the probable effect of situation, and we have commonly observed this alpine plant to be geniculated at the lower joint. The corolla of the creeping Fescue is at times smooth, and at others, both on the mountains and on the shores, covered with long wool, an accidental occurrence, but possibly constitutes the F. dumetorum of the Spec. Plantarum.

Festuca cambrica, from Snowdon, upon examination, appears not to differ essentially from F. repens, excepting that the stature is more dwarfish, and there is a greater inequality in the valves of the calyx.

Festuca glabra, of Lightfoot, is possibly different from either; the smoothness of the calyx valves, and the small number of florets in the spicula, and other deviations, seem to entitle it to a separate consideration; but we have never seen the plant of Mr. Lightfoot.

Unwilling as we should be to puzzle science, by captiously augmenting, or lightly curtailing, the Flora of our country, yet when we are fully aware of the influence of situation upon plants, we cannot help considering the F. rubra and F. cambrica as only varieties of Festuca duriuscula; differing chiefly in the repent root: we know that vegetables will exert singular powers to maintain existence, and the roots of F. duriuscula may become creeping on the sandy shores, to enable it to draw moisture, and seek subsistence in depths to support life, which could not be obtained by a fibrous-rooted plant. It may become repent likewise on the mountains, from the shallowness of the soil, affording too little nutriment without an extension of the root to collect it from a more enlarged surface.

A, the Calyx.
B, the Corolla.
C, the Corolla of the tomentose variety.
D, the Calyx of F. cambrica.

REGARDING the whole race of British grasses now before us, with an eye to their utility as animal food, we can select but a very small portion that may with propriety be considered as indispensable in our pastures; several of them are not injurious in our fields; existing there, they may contribute what little sustenance they afford, but the farmer can never advantageously cultivate them as provender for his cattle: from the diminished number that we retain as pasture grasses, to derive the full value of them we must assort them to their peculiar stations, and not scatter them with heedless indiscrimination.—Uplands with a dry thin soil, and stony, gravelly, or sandy understratum, it is probable will be rendered most serviceable by appropriating them for the pasturage of sheep, as little dependance can be placed on them for hay; nor indeed will the better hay grasses thrive advantageously in them; we should therefore select for this purpose such grasses as are best fitted for the mouth, that will carry cattle the longest, and enable them to increase and maintain their flesh. Whatsoever may be our assiduity in collecting seeds, and with whatsoever care we may prepare the field for their reception, we cannot insure the vegetating of such seeds only as we have deposited, nature frequently triumphing over our efforts; some soils producing spontaneously what will not even sprout in another, and perhaps neighbouring field; yet we shall always retain a large portion of those which art has introduced: for uplands, such as we have above described, probably there cannot be better grasses made use of than Anthoxanthum odoratum, Lolium perenne, Cynosurus cristatus, Festuca duriuscula, and Poa annua; and many fields containing these, though perhaps promising but little to the eye, will carry their stock longer than those with other grasses of a more showy and specious nature.

1 part Anthoxanthum odoratum.—We mention this grass, because it arrives the most early, and produces nutriment at a period when the ewes require it to increase their milk, and by reason of its affording some tender herbage for the infant lambs; but it continues useful only for a short time, and during the drought of summer it is lost, nor does it return in the autumnal months.

3 parts Lolium perenne.—This is an early and a very substantial grass, lambs and sheep delight in it, and rapidly improve upon it; although this Ray-grass produces much sweet food in the spring months, yet perhaps we find it more valuable for autumn feed, as it revives after the heats of summer, and furnishes tufts of a dark green herbage, very remarkable in the cooler periods of the year.

2 parts Cynosurus cristatus.—This species soon follows the Lolium perenne, and vegetates freely; the arid months of summer check its growth, but it shoots again in autumn, and though not producing in that abundance that the Ray-grass does, yet its herbage is sweet and grateful to cattle.

2 parts Festuca duriuscula.—The peculiar constitution of this grass is a strong motive for our recommendation, as it possesses the power of enduring drought better than any other associating with our pasture herbage; its leaves are slender, and always rolled up, sheltering the foliage from the exsiccations of the sun, when the broader and more expanded surfaces of its congeners are dried away; sheep eat it with a marked avidity, and its virtues, though confined in a small space, are highly estimable, maintaining existence, and increasing flesh, equal probably to any grass that we possess.

2 parts Poa annua.—Our reasons for introducing this species are already detailed under that article; its maintaining the roots of the other grasses in the soil during the bleak winds of spring, preserving, by its foliage lying close upon the earth, some moisture during the exhalations of summer for its thirsty associates, and the excellent food it furnishes in the autumnal and spring months, are qualifications that render the humble Poa annua a valuable introduction into our upland pastures.

Meadows and low lands, with a deep or retentive soil, require a very different selection, nor can we in those stations with much certainty point out the requisite quantity of each species, as various degrees of humidity and richness require various portions of grasses, that the one by annual augmentation should not predominate over its equally useful, but less flourishing associate; as many of our grasses in moist soils become stoloniferous, propagating more by suckers than by their seed, and Poa pratensis and P. trivialis at times, when they enjoy their situations, will increase so as to diminish, and finally to expel, their less stoloniferous neighbours. We resort much to our low lands for hay, and after-provender for the larger cattle, and perhaps we cannot find better grasses for such purposes than Poa pratensis, P. trivialis, Alopecurus pratensis, Dactylis glomerata, Phleum pratense, Holcus lanatus, and Lolium perenne: the six former of which luxuriate in moisture, and the latter improves in it: Dactylis is not a plant selected by cattle, but when sweetened by frost, it furnishes an abundant and substantial food, and when the finer grasses become diminished, it forms a very useful associate with the better herbage of the meadow. Festuca pratensis, when not too luxuriant, is an useful grass, but it very often takes a deep hold in the soil, becoming rampant and coarse, and from the roughness of its foliage is rejected by cattle: we have another excellent lowland grass, the Festuca loliacea, but at present we know not how to introduce it; an offspring probably of Fest. pratensis and Lolium perenne; it produces no fertile seed, and vegetates where nature, unaided by man, has willed its station.—— In the mountainous pastures of England, Scotland, and Wales, Agrostis stolonifera, A. vulgaris, and their varieties, towards autumn, furnish a large portion of the feed produced on those altitudes, throwing out abundance of suckers, which are productive of an herbage in which cattle appear to delight, and in many of our low lands these grasses are commonly to be found the spontaneous product of nature, and not introduced by art; for by their producing little or no seed, the power of encouraging their race, so as to repay the trouble, is perhaps denied to the industry of man. Future observation and experiment may possibly augment the number of our grasses fitting for animal pasturage, but it is probable that at present, for that purpose, we are not obviously benefited by more than twenty species; some are serviceable in various branches of rural economy, and others, by the slow operations of time, prepare an useless and sterile soil for the reception of a valuable vegetation, and many spring up, flourish, and decay, of whose utility we are inattentive and ignorant; we wait not their arrival with anxiety, nor do we sorrow at the season of their departure.

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