

PLANTS USEFUL IN AGRICULTURE.

SECT. I.—GRASSES.

1. *ANTHOXANTHUM odoratum*. SWEET-SCENTED VERNAL-GRASS.—

This is found frequently in all our best meadows, to which it is of great benefit. It is an early, though not the most productive grass, and is much relished by all kinds of cattle. It is highly odoriferous; if bruised it communicates its agreeable scent to the fingers, and when dry perfumes the hay. It will grow in almost any soil or situation. About three pounds of seed should be sown with other grasses for an acre of land.

2. *ALOPECURUS pratensis*. MEADOW FOX-TAIL-GRASS.—

One of our most productive plants of this tribe: it grows best in a moist soil, is very early, being often fit for the scythe by the middle of May. About two bushels of seed will sow an acre, with a proportionate quantity of Clover; which see.

3. *ALOPECURUS geniculatus*. FLOTE FOX-TAIL-GRASS.—

Is very good in water meadows, being nutritive, and cattle in general are fond of it. We do not know if the cultivation of this plant has as yet been attempted.

4. *AGROSTIS capillaris*. FINE BENT-GRASS.—

Dr. Walker, in his History of the Hebrides, speaks very favourably of this grass. I have therefore noticed it here, but I do not think it so good as many others. It grows on the sandy hills near Combe Wood in Surrey, and forms the principal part of the pasturage; but it is neither very productive, nor are cattle observed to thrive on it. The seeds are very small; one peck would sow an acre.

5. *AGROSTIS pyramidalis*. FIORIN *-GRASS.—

No plant has engaged the attention of the farmer more than this grass, none ever produced more disputes, and none is perhaps so little understood. It is perfectly distinct from any species of *Agrostis* indigenous to this country: it is a native of the north-west of Ireland, whence it was some years ago introduced by Dr. Richardson, and to that gentleman's extraordinary account of it we are indebted for numerous mistakes that have been made respecting it. It is an amphibious plant, thriving only in water or wet soils, is very productive, and the stalks after a summer's growth secrete a large quantity of sugar. It has the power, when the stalks are ripe, of resisting putrefaction, and will become blanched and more

* *Fiorin* is the Irish name of butter.

nutritious by being cut and laid in heaps in the winter season, at which time only it is useful. The cultivator of this plant must not expect to graze his land, but allow all the growth to be husbanded as above; and although it will not be found generally advantageous on this account, it nevertheless may be grown to very great advantage either in wet soils, or where land can be flooded at pleasure.

The seeds are often barren; and the only mode is to plant the shoots or strings in drills at nine inches apart, laying them lengthways along the drills, the ends of one touching the other.

6. *AIRA aquatica*. WATER HAIR-GRASS.—This is an aquatic, and very much relished by cattle, but cannot be propagated for fodder. Water-fowl are very fond of the young sweet shoots, as also of the seeds; it may therefore be introduced into decoys and other places with good effect. Pulling up the plants and throwing them into the water with a weight tied to them, is the best mode of introducing it.

7. *ARUNDO arenaria*. SEA-SIDE REED-GRASS.—This is also of no value as fodder, but it possesses the property of forming by its thick and wiry roots considerable hillocks on the shores where it naturally grows: hence its value on all new embankments. If it be planted in a sandy place, during its growth in the summer the loose soil will be collected in the herbage, and the grass continues to grow and form roots in it; and thus is the hillock increased. Local acts of parliament have been passed, and now exist, for preventing its destruction on the sea-coast in some parts of Great Britain, on this account.

8. *ARUNDO Phragmites*. COMMON REED.—Is useful for thatching, and making slight fences; it grows best in ponds and near streams of water; it does not often seed, but it could easily be introduced to such places by planting its roots in spring: it is a large-growing plant; and where herbage may be wanted either for beauty or shelter for water-fowl, nothing can be more suitable, and the reeds are of great value.

9. *AVENA flavescens*. YELLOW OAT-GRASS.—Is much eaten by cattle, and forms a good bottom. It has the property of throwing up flowerstalks all the summer; hence its produce is considerable, and it appears to be well adapted to pasture. The seeds of this grass are not to be obtained separately; hence it is not in cultivation. It is however worthy of attention, as the seeds are produced very abundantly in its native places of growth. It will grow either in wet or dry soils.

10. *AVENA pubescens*. ROUGH OAT-GRASS.—This appears to have some merits, but the foliage is extremely bitter. It grows in dry soils.

11. *AVENA elatior*. TALL OAT-GRASS.—From the good appearance of this grass some persons have recommended it as likely to be useful for forming meadows; but it is excessively bitter, and is not liked

by cattle generally, though when half starved they are sometimes observed to eat of it. There is a variety of it with knobby roots which is found to be a most troublesome and noxious weed in arable lands, particularly in some parts of the coast of Hampshire where it abounds. This variety was some years ago introduced into the island of St. Kitts, and it has since taken such firm possession of the land as to render a large district quite useless. Persons should be cautious how they speculate with weeds from appearances only.

12. *BRIZA media*. QUAKING-GRASS.—Is common in meadow land, and helps to make a thick bottom; it does not however appear to be worth the trouble of select culture. It is bitter to the taste.

13. *BROMUS mollis*. SOFT BROME-GRASS.—Mr. Curtis has given a very clear account of this grass, which he says predominates much in the meadows near London, but that the seeds are usually ripe and the grass dried up before the hay time: hence it is lost; and he in consequence considered it only in the light of a weed. It has seldom occurred to me to differ in opinion from this gentleman, who certainly has given us, as far as it goes, a most perfect description of our useful grasses: but experience has convinced me that the Soft Brome-Grass, which seeds and springs up so early, makes the chief bulk of most of our meadows in March and April; and although it is ripe and over, or nearly so, by the hay harvest, yet the food it yields at this early season is of the greatest moment, as little else is found fit for the food of cattle before the meadow is shut up for hay, and this plant being eaten down at that season is not any loss to the hay crop. Whoever examines the seeds of this grass will be led to admire how wonderfully it is fitted to make its way into the soil at the season of its ripening, when the land is thus covered with the whole produce of a meadow. I notice this curious piece of mechanism, * not that it is altogether peculiar to this plant, but to show that Nature has provided it means of succeeding in burying itself in the ground, when all the endeavours of man could not sow the land with any other to answer a similar purpose. If the seeds of this grass were collected and introduced in some meadows where it is not common, I am sure the early feeding would be thereby improved.

The seeds are sometimes mixed with those of Rye-grass at market, and it is known by the name of Cocks: it has the effect of reducing such samples in value, but I should not hesitate in preferring such to any other. If any one should be inclined to make the above experiment, two pecks of the seed sown on an acre will be sufficient.—See *Treatise on Brit. Grasses* by Mr. Curtis, edit. 5.

* Many seeds of the grasses are provided with awns which curl up in dry weather and relax with moisture. Thus by change of atmosphere a continued motion is occasioned, which enables the seeds to find their way through the foliage to the soil, where it buries itself in a short time in a very curious manner.

14. *CYNOSURUS cristatus*. CRESTED DOG'S-TAIL-GRASS.—A very fine herbage, and much relished by sheep, &c.; it grows best in fine upland loam, where it is found to be a most excellent plant both for grazing and hay. The seeds are to be purchased sometimes at the seedshops. About twelve pounds will sow an acre.—See *Observations on laying Land to Grass*, in the Appendix to this work.

15. *CYNOSURUS cæruleus*. BLUE DOG'S-TAIL-GRASS.—Dr. Walker states this plant to be remarkably agreeable to cattle, and that it grows nearly three feet high in mountainous situations and very exposed places. As this grass does not grow wild in this part of the country, we have no opportunity of considering its merits. In our Botanic Garden it seldom exceeds the height of ten inches or a foot.

It is the earliest grass of all our British species, being often in bloom in February.

The above intelligent gentleman, who seems to have studied the British Gramina to a considerable extent, says that the following kinds give considerable food to sheep and cattle in such situations; I shall therefore mention their names, as being with us of little esteem and similar to the above.

Phleum alpinum.

Eriophorum polystachion.

Festuca decumbens.

Carex flavescent.

Carex gigantea, probably *Pseudocyperus*.

Carex trigona, probably *vulpina*.

Carex elata, probably *atrata*.

Carex nemorosa, probably *pendula*. And he is of opinion that the seeds may be sown to advantage. Be this as it may, the observation can only apply to situations in the north of Britain, where he has seen them wild; in this part of the island we have a number of kinds much better adapted to soil, climate, and fodder.

16. *DACTYLIS glomeratus*. ROUGH COCK'S-FOOT-GRASS.—Has a remarkably rough coarse foliage, and is of little account as a grass for the hay-stack; but from its early growth and great produce it is now found to be a useful plant, and is the only grass at this time known that will fill up the dearth experienced by graziers from the time turnips are over until the meadows are fit for grazing. Every sheep-farm should be provided with a due portion of this on the land; but no more should be grown than is wanted for early feed, and what can be kept closely eaten down all the season. If it is left to get up it forms large tufts, and renders the fields unsightly, and scarcely any animal will eat it when grown old or when dried in the form of hay. The seed is to be bought; two bushels per acre is sown usually alone.

17. *FESTUCA elatior*. TALL FESCUE-GRASS.—This in its wild state has been considered as a productive and nutritive grass; it grows best

in moist places; but the seeds have been found in general abortive, and the grass consequently only to be propagated by planting the roots, a trouble by far too great to succeed to any extent.—See *Poa aquatica*.

18. *FESTUCA duriuscula*. HARD FESCUE-GRASS.—A very excellent grass both for green fodder and hay, and would be well worth cultivating; but the seeds have not hitherto been saved in any quantity.

I have seen a meadow near Bognor where it formed the principal part of the herbage; and it was represented to me by the owner as the best meadow in the neighbourhood, and the hay excellent*.

The seeds of this grass are small, and about one bushel would sow an acre of ground.

19. *FESTUCA rubra*. RED OR CREEPING FESCUE-GRASS.—A fine grass, very like *duriuscula*; but it is not common in this part of the country; it grows plentifully on the mountains in Wales.

It does not produce fertile seeds with us in the garden.

20. *FESTUCA pratensis*. MEADOW FESCUE-GRASS.—No plant whatever deserves so much the attention of the grazier as this grass. It has been justly esteemed by Mr. Curtis and all other persons practically acquainted with the produce of our meadows. It will grow in almost any soil that is capable of sustaining a vegetable, from the banks of rivulets to the top of the thin-soiled calcareous hills, where it produces herbage equal to any other plant of the kind; and all descriptions of cattle eat it, and are nourished by the food. The plant is of easy culture, as it yields seeds very abundantly, and they grow very readily. I have made some excellent meadows with this seed, which after a trial of ten years are now equal to any in the kingdom. The culture of the seed selected is now nearly lost, which is a misfortune, I had almost ventured to say a disgrace, to our agriculture.

If the farmer could get his land fit for meadow laid down with one bushel of this seed, one bushel of *Alopecurus pratensis*, three pounds of *Anthoxanthum*, and a little *Bromus mollis*, with Clover, I will venture to predict experience will induce him to say, "I will seek no farther."

21. *FESTUCA ovina*.—SHEEP'S FESCUE-GRASS.—This is very highly spoken of in all the dissertations that have hitherto been written on the merits of our grasses; but its value must be confined to alpine situations, for its diminutive size added to its slow growth renders it in my opinion very inferior to the *duriuscula*. In fact, I am of opinion that these are often confounded together, and the merits of the former ap-

* Mr. Curtis observes that this grass grows thin on the ground after a time. I have sometimes observed this to be the case in the Botanic Garden, but it is otherwise in its native state of growth. Nothing stands the dry weather better, or makes a more firm sward.

plied to this, although they are different in many respects. Those who wish to obtain more of its history may consult *Stillingfleet's Observations on Grasses*, p. 384.

22. *FESTUCA vivipara*. VIVIPAROUS FESCUE-GRASS.—This affords a striking instance of the protection that Nature has contrived for keeping up the regular produce of the different species of plants; as when the *Festuca ovina* is found in very high mountainous situations, places not congenial to the ripening seeds of so light a nature, the panicle is found to become viviparous, i. e. producing perfect plants, which being beaten down with heavy rains in the autumn, readily strike root in the ground.

This plant was introduced into our garden many years ago, and still preserves this difference; otherwise it is in all respects the same as the *Festuca ovina*.

23. *FESTUCA pinnata*. SPIKED FESCUE-GRASS.—I have observed this near the Thames side to be the principal grass in some of the most abundant meadows; and as the seeds are very plentiful, I am of opinion it might be very easily propagated: it is, however, not in cultivation at present.

24. *FESTUCA loliacea*. DARNEL FESCUE-GRASS.—This in appearance is very like the *Lolium perenne*, but is a more lasting plant in the ground. Where I have seen it wild, it is certainly very good; but it is liable to the objection of *Festuca elatior*, the seeds grow but sparingly.

25. *HOLCUS lanatus*. YORKSHIRE GRASS, OR MEADOW SOFT-GRASS.—This has been much recommended as fit for meadow land. I am not an advocate for it. It is late in blooming, and consequently not fit for the scythe at the time other grasses are; and I find the lower foliage where it occurs in meadows to be generally yellow and in a state of decay, from its tendency to mat and lie prostrate. I hear it has been cultivated in Yorkshire; hence probably its name. Two bushels of the seed would sow an acre; and it is sometimes met with in our seed-shops. It will grow in any soil, but thrives best in a moist loam.

26. *HOLCUS mollis*. CREEPING SOFT-GRASS.—Mr. Curtis in the third edition of his *Treatise on Grasses* says, he is induced to have a better opinion than formerly of this grass, and that Mr. Dorset also thinks it may be cultivated to advantage in dry sandy soils. I have never seen it exhibit any appearance that has indicated any such thing, and do not recommend it.

27. *HORDEUM pratense*. MEADOW BARLEY-GRASS.—This is productive, and forms a good bottom in Battersea meadows; but although I have heard it highly recommended, I should fear it was much infe-

rior to many others. One species of Barley-grass, which grows very commonly in our sea-marshes, the *Hordeum maritimum*, is apt to render cattle diseased in the mouth, from chewing the seeds, which are armed with a strong bristly awn not dissimilar to the spike of this grass.

28. *LOLIUM perenne*. RAY- or RYE-GRASS.—This has been long in cultivation, and is usually sown with Clover under a crop of spring corn. It forms in the succeeding autumn a good stock of herbage, and the summer following it is commonly mown for hay, or the seed saved for market, after which the land is usually ploughed and fallowed, to clear it of weeds, or as a preparation for Wheat, by sowing a crop of Winter Tares or Turnips. The seed is about six or eight pecks per acre, and ten pounds of Clover mixt as the land best suits. Although this is a very advantageous culture for such purposes, and when the land is not to remain in constant pasture; yet it is by no means a fit grass for permanent meadow, as it exhausts the soil, and presently goes into a state of decay for want of nourishment, when other plants natural to the soil are apt to overpower it. There are several varieties of this grass. Some I have seen with the flowers double, others with branched panicles; some that grow very luxuriantly, and others that are little better than annuals; and there is also a variety in cultivation called PACEY'S Rye-grass, much sought for. But I am of opinion that nothing but a fine rich soil will produce a good crop, and that the principal difference, after all, is owing more to cultivation or change of soil, than to any real difference in the plant itself.

29. *MELICA cœrulea*. BLUE MELIC-GRASS.—This is common on all our heaths; it appears coarse, and not a grass likely to be useful. Yet this kind is spoken of by Dr. Walker under the name of Fly-bent, who says it is one of the most productive and best grasses for sheep-feed in the Highlands of Scotland, where it grows to the height of three feet, a size to which it never attains in this part of the country. It is found in all soils, both in dry sands and boggy places.

30. *PANICUM germanicum*.—GERMAN PANIC, or MOHAR.—I notice this plant here, although it is not a native of this country; neither is it in cultivation. It was introduced some years since by Sir Thomas Tyrwhit from Hungary. It is said there to be the best food of all others for horses; and I think it might be cultivated to advantage on high sandy soils, as a late crop of green fodder. The seeds are similar to Millet*.

31. *PANICUM crus galli*. COCK'S-FOOT-PANIC-GRASS.—This plant has, I believe, never been recommended for cultivation; but it possesses qualities which render it worth attention: it will sometimes grow to the height of four feet, is very fine food for cattle, and will no doubt

* The Hungarian horses are remarked for their sleekness, and it is said that it is in consequence of being fed on Mohar.

make excellent hay. It stands dry weather better than most other grasses I know. The seeds will not vegetate before May, and the crop is not in perfection till late in September. In dry soils I think it could be cultivated to advantage if sown among a crop of Tares or Rye in the autumn; and after they are cut in summer, this would spring up and be a valuable acquisition in a dry autumn, as it would seldom fail producing an abundant crop.

It grows thick, and would tend to clear the land as a smothering crop over weeds: it is annual.

32. *PHALARIS arundinacea*. REED CANARY-GRASS.—This is not in cultivation, but grows plentifully on the muddy banks of the Thames; it will also grow very well in a moderately dry soil; and I have observed that cattle eat it when it is young. As it is early and very productive, as well as extremely hardy, I think it might become valuable as early feed. The seeds of this plant do not readily grow, but it might easily be introduced by planting the roots in the spring. The Striped or Ribbon Grass of the flower garden is only a variety of this. See *Poa aquatica*.

33. *PHLEUM pratense*. TIMOTHY-GRASS, or MEADOW CAT'S-TAIL-GRASS.—Is very coarse and late, and consequently not equal to many of our other grasses either for hay or pasture. It has been highly recommended in America, where it may probably have been found to answer better than it has done with us in cultivation. The seed used to be imported from New York, and met with a ready sale; but I believe it is seldom imported at this time. Dr. Walker says the seeds were taken from South Carolina (where it was first cultivated) to that State, by one Timothy Hanson, from whence it acquired its name.

The same gentleman supposes it may be introduced into the Highlands of Scotland with good effect, but is of my opinion as to its utility in England.—*Rural Economy of the Hebrides*, vol. ii. p. 27.

34. *PHLEUM nodosum*. BULBOUS CAT'S-TAIL-GRASS. (*Phleum pratense* var. γ . *Hudson*).—This affects a drier soil than the Timothy-grass: it grows very frequently in dry thin soils, where it maintains itself against the parching sun by its bulbous roots, which lie dormant for a considerable time, but grow again very readily when the wet weather sets in,—a curious circumstance, which gives us an ample proof of the wise contrivance of the great Author of Nature to fertilize all kinds of soil for the benefit of his creatures here below. There is another instance of this in the *Poa bulbosa*, Bulbous Meadow-grass, which grows on the Steine at Brighton, and which I have kept in papers two years out of ground, and it has vegetated afterwards.

35. *POA annua*. ANNUAL MEADOW-GRASS.—This is the most general plant in nature: it grows in almost every situation where there is any vegetation. It has been spoken of as good in cultivation, and has

had the term Suffolk grass applied to it, from its having been grown in that county. I have never seen it in such states, neither can I say I should anticipate much benefit to arise from a plant which is not only an annual, but very diminutive in size.

36. *POA aquatica*. WATER MEADOW-GRASS.—This is quite an aquatic, but is eaten when young by cattle, and is very useful in fenny countries: it is highly ornamental, and might be introduced into ponds for the same purpose as *Arundo Phragmites*: it might also be planted with *Festuca elatior* and *Phalaris arundinacea*, in wet dug out places, where it would be useful as fodder, and form excellent shelter for game.

37. *POA fluitans*. FLOTE FESCUE-GRASS.—This would be of all others the most nutritive and best plant for feeding cattle; but it thrives only in water. I have noticed it only because it is highly recommended by the editor of Mr. Curtis's *Observations on British Grasses*, 5th edit. The cattle are very fond of it; but it is not to be cultivated, unless it be in ponds, being perfectly aquatic.

Linnaeus speaks of the seeds being collected and sold in Poland and Germany as a dainty for culinary purposes; but I have never seen it used here, neither are the seeds to be collected in great quantities. Stillington, on the authority of a Mr. Dean, speaks highly of its merits in a water-meadow, and also quotes Mr. Ray's account of the famous meadow at Orchiston near Salisbury. There this, as well as *Poa trivialis*, most certainly is in its highest perfection; but the real and general value of grasses or other plants must not be estimated by such very local instances, when our object is to direct the student to a general knowledge of the subject. See Curtis, art. *Poa trivialis*.

38. *POA trivialis*. ROUGH-STALKED MEADOW-GRASS.—Those who have observed this grass in our best watered meadows, and in other low pasture-lands, have naturally been struck with its great produce and fine herbage. In some such places it undoubtedly appears to have every good quality that a plant of this nature can possess; it is a principal grass in the famous Orchiston meadow near Salisbury, and its amazing produce is mentioned in the Bath Agricultural Papers, vol. i. p. 94: but persons should not be altogether caught by such appearances; for I have seen it in some lands, and such as would produce good red Clover, a very diminutive and insignificant plant indeed.

When persons wish to introduce it, they should carefully examine their neighbouring pastures, and see how it thrives in such places. The seeds are small, and six pounds would be sufficient for an acre, with others that affect a similar soil.

39. *POA pratensis*. SMOOTH-STALKED MEADOW-GRASS.—This is also a grass of considerable merit when it suits the soil; it affects a dry situation, and in some such places it is the principal herbage; but I have

cultivated this by itself for seed in tolerably good land, and after some time I found it matted so much by its creeping roots as to become quite unproductive both of herbage and seed. Care should therefore be taken that only a proper portion of this be introduced. The seeds of this and *Poa trivialis* are the same in bulk, and probably the same proportion should be adopted. The seeds of both species hang together by a substance like to cobwebs, when thrashed, and require to be rubbed either in ashes or dry sand to separate them before sowing.

SECT. II.—ARTIFICIAL GRASSES*.

UNDER this term are included such plants as are sown for fodder, either with a view to form permanent pastures when mixed with the grasses, or as intermediate crops on arable land. In those cases they are usually sown with a spring crop of Oats or Barley, and the artificial grasses are protected after the harvest by the stubble left on the ground, affording the succeeding season a valuable crop, either for pasturage or hay.

40. *ACHILLEA Millefolium*. YARROW.—This has been much recommended for sheep feed; but I observe it is frequently left untouched by them if other green herbage is found on the land. It will thrive in almost any soil, but succeeds best in a good loam. The seed used is about twelve pounds per acre.

41. *ANTHYLLIS vulneraria*. KIDNEY VETCH.—This plant is not in cultivation, but it has been noticed that where it grows naturally the cows produce better milk and in greater quantity. It grows best in calcareous soils: the seeds are large, and easily collected. This plant well deserves attention.

42. *CICHORIUM Intybus*. CICHORY, or BLUE SUCCORY.—Much has been said of the good properties of this plant; and if it has them to the full extent mentioned by different authors, I wonder there is not little else than Cichory grown in this country. It is very prolific, and will grow extremely quick after the scythe during the summer months: but I fear, from the observations I have made, that it does not possess the fattening quality it is said to have. The plant is so extremely bitter, that although cattle may be inclined to feed on it early

* This technical term is generally known to farmers. It is applied to Clovers, and such plants as usually grow in pastures, and not strictly Gramina.