THE BRITISH FARMER'S
PLANT PORTFOLIO

MILNE

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THE BRITISH FARMER'S
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Specimens of the
Principal British Grasses, Forage Plants
and Weeds

WITH FULL DESCRIPTIONS

BY

JOHN MILNE & SONS
MONTROSE, N.B.

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ON THE STUDY OF PASTURE PLANTS.

IN the pursuit of any science the first step is to know the actual things with which the science concerns itself, and in the study of British pasture plants the first essential to the student's progress is to know by sight and by name the different pasture and forage plants themselves.

The ability to analyse the composition of a pasture field—that is, to give the name and tell the agricultural value of the individual plants which make up the interwoven mass of herbage—is an accomplishment which, although very valuable, is, unfortunately, rather rare. At the present time the possession of such an accomplishment is practically confined to professional experts, for Grasses have not in past days received from farmers the degree of attention which their place in agriculture merits. In the palmy days of grain-growing—that golden age of agriculture when the price of wheat was reckoned in sovereigns—it was natural that cereal crops should claim and receive an amount of attention which quite overshadowed the interest attaching to forage crops. The consequence was, that during the years in which the practice of grain-growing grew scientific, and made rapid progress to perfection, the methods of laying down land to grass remained primitive, and the study of forage plants was unduly neglected. Land was often allowed to “go to grass”—that is to say, that instead of sowing seeds for a grass crop, the farmer simply left the ground bare, and gave Nature a free hand to cover it with a miscellany of her own. The farmer, meanwhile, had a nebulous perception of the fact that grasses were of many kinds, but he made no serious effort to arrive at their names, their properties, and their worth. If the fields were only green, that to him was “grass,” and it sufficed; and he pursued his tranquil way, untroubled by the modern spirit of inquiry, and ungalled by the pressure of competition which at the present day is transforming an occupation once regulated by tradition into one demanding a knowledge of many sciences.

This former lack of knowledge regarding forage plants did not, however, arise solely from the more engrossing claims to attention of other crops. The recognition and identification of Grasses are a study which is attended with some little difficulty in its first steps. The practical farmer felt, and often yet feels, that his way to an intelligent study of these plants, and to a clear understanding of what he reads about them, is blocked and hindered by the want of a simple key which would enable him to know the Grasses, and to distinguish them by name on seeing them. It was to furnish such a guide that we published, a short time ago, the first edition of *The British Farmer's Plant Portfolio*. Its rapid absorption by the public, as well as of a second edition which followed it, and a continuance of the demand, have shown us how much the need for such a work is felt, and how great an increase of attention is now being given to forage plants.

At the present time there is an area of more than twenty million acres of permanent and rotation grass lands in Britain, and, immense as this area is, the tendency to convert land from tillage to stock-raising still continues. The study of forage plants is, therefore, one which is not likely to decline. It will, on the contrary, rather advance, until not only the ability to identify all pasture plants, but also a full acquaintance with their life-history, will be deemed indispensable and essential parts of agricultural training. In the present volume we have aimed at producing an agricultural work, not a botanical one. It is meant to serve as a key to the identification of pasture plants, by which land-owners and farmers will be able, without any tedious botanical studies, to analyse the composition of their pasture fields, and form thereby clearer ideas on the formation, the maintenance, utilisation, and improvement of grass lands. It is a fact that much *could* be done to improve British pastures, and to make them fit to carry a larger quantity of stock. The best pastures are those which are grown from seed, and they must be considered as purely artificial creations. Those formed by Nature with the aboriginal herbs and grasses which are the native vegetation of the district, fall far below the possibilities attainable by the application of intelligent culture. Some years ago Mr Carruthers, the well-known expert in Grasses, made an examination of many pastures of high repute in England, and in drawing up a statement of the result of his investigations he remarked that “*not one of the pastures he had visited was so good as it easily might be made.*” Bearing in mind the very large area which is devoted in Britain to pasture fields, and the national importance of having these as good as they possibly can be made, farmers will realise what weighty interests are in this matter confided to their care.

To those who wish to study grass and forage plants in greater detail, we can recommend no finer work than Dr F. G. Stebler's book entitled *The Best Forage Plants*. This magnificent work is *facile princeps* among all works on the subject. Its learned writer, in a most exhaustive way, deals with every forage plant of any consequence, treating of its name, the history of its cultivation, its agricultural value, its botanical description, the varieties of the species, its geographical distribution, its requirements as to climate and soil, its effect upon the soil, its most suitable fertilisers, its habit of growth, its harvesting, yield, and feeding value, its production of seed, and, lastly, the maladies to which it is subject, and their treatment.

In the present work we have limited our observations on the plants it contains to those facts which are of interest to the practical farmer, and its main aim is to render easy the identification, by name and at sight, of the plants which are commonest in British grass fields. Though a large proportion of the plant specimens are weeds, they are none the less worth knowing, for many of the weeds which fill the land to the exclusion of more valuable produce find their way thither through preventable means.

Besides Dr Stebler's *Best Forage Plants*, we can also cordially recommend *British Plants*, by W. Withering; to both of which works, as most useful books of reference in the writing of our descriptive notes, we here beg leave to acknowledge our indebtedness.

FORAGE PLANTS.

1. **LUCERNE.** (*Medicago sativa*, L.) Perennial; flowers in June and July; a very valuable fodder plant.

Lucerne is a native of warm, dry climates, and will not thrive in cold, wet countries. It is sown in the warmer districts of England, and in the south of Europe the Lucerne crop is a very important one.

This plant gives a large yield of produce, three to five cuttings in a season, and is most valuable as green fodder.

It is both healthy and appetising to stock. The most marked feature in regard to its habit of growth is its great development of root, which extends from two to ten or twelve feet. Like Sainfoin, it needs a loose, deep subsoil in order to thrive.

Lucerne is usually sown pure, and the quantity sown varies from thirty to forty pounds per acre, according to the soil and the method of sowing adopted.

2. **SAINFOIN.** (*Onobrychis sativa*). Perennial; flowers in June; a very valuable hay plant. Sainfoin is one of the oldest fodder plants in cultivation. In France and in the chalky districts of England it is widely cultivated, and is there a most important crop.

The special value of Sainfoin to farmers lies in its adaptation to chalky and sandy soils, and to dry climates where clovers refuse to grow. It gives a large yield of very excellent hay, and is of so perennial a character that it frequently lasts for twenty years. Its roots are long and very deeply penetrating, and for this reason Sainfoin needs a loose, free subsoil. It is sometimes sown pure, sometimes in mixture with grass and clover. Sown pure, an acre requires two bushels of pure seed.

3. **RED CLOVER.** (*Trifolium pratense*, L.) The flower-heads are dense and ovate; the stems ascending, smooth, or pubescent; flowers in June or July. It is perennial, but in cultivation its duration does not generally exceed two to three years.

Red Clover is the best forage plant. It was introduced into England from Flanders in 1633, and its cultivation is now very extensive. It is the plant on which the British farmer principally depends for green fodder, for hay (in combination with grass), and also as an important ingredient in pastures. It is in some respects a sensitive plant, and its requirement as to soil and climate must be complied with to ensure successful cultivation. It likes a heavy soil, such as moist clays, clay loams, and rich black land, but it is not suited for dry, thin, or sandy soils.

There are conditions of exhaustion in soils which produce a disease called clover-sickness, and when sown in such soil Red Clover dies out, if not in the first, then in the second season, and the crop is a failure. The cause of clover sickness has been much disputed, but it doubtless arises from the absence in the soil of some ingredient essential to the growth of the plant, and the deficiency may be caused by cultivating clover or other plant of the same family (*Leguminosæ*), such as peas, beans, or vetches, on the same land at too short intervals.

In commerce there are two principal varieties of Red Clover current—Broad Red and Cowgrass or Perennial Red. Commercially, the first name is applied by some to clovers of foreign growth, while the second is used to denote the finer strains of seed grown in England. Others, more correctly, reserve the name Cowgrass for *Trifolium pratense perenne*—a more durable form of Red Clover. In botany the term Cowgrass is more properly applied to Wild Red Clover, which is found growing in old pastures, and which has several distinct points of difference distinguishing it from the Red Clover of commerce.

English-grown seed is the best; American and French are weak, and produce diminutive plants.

4. **WHITE CLOVER.** (*Trifolium repens*, L.) The flower-heads are stalked, globular; the flowers on short pedicels. The stems are creeping, and vary from six to sixteen inches in length. The flowers are white and sweet-scented. Root, fibrous. Perennial, and flowers from May to September.

This clover has been cultivated for a very long period, and is a most useful plant in pastures. It does not attain sufficient height to rank as a hay clover, but a little White Clover is sometimes included in a hay prescription to form bottom herbage. Its best value is realised, not in hay, but in pastures. It is sweet and nutritious. Sheep and cattle are fond of it, and it stands depasturing better than Red or Alsike. It grows best in damp situations, but is hardier than Red Clover and less exacting than it in regard to soil and climate.

The best seed is that grown in England. The samples grown on the Continent are often very foul with weeds; and a great many noxious plants, such as chickweed, sorrel, daisies, and chrysanthemums, reach the farm through the medium of impure White Clover.

One pound of White Clover will seed as great an area as will two pounds of Red.

5. **ALSIKE, OR SWEDISH CLOVER.** (*Trifolium hybridum*, L.) The flower-heads are spherical in shape and of mixed red and white colour. The stem is smooth, tubular, and ascending, and twelve to thirty inches in height. It is perennial, and grows abundantly in damp pastures. In cultivation its duration averages three to four years. The botanical name of Alsike (*Trifolium hybridum*) signifies hybrid clover, and was given to it by Linnaeus, the great Swedish botanist, in reference to its supposed origin from the union of white and red clover.

Alsike was brought to Britain from Sweden in 1834, and it has been a very great boon to farmers, especially to those whose land does not answer for the growing of Red Clover.

While Red Clover is the undisputed king of the clover tribe, Alsike in some respects does not fall very far short of it, and in the two important points of duration and hardiness it surpasses it. In yield and nutritious properties it is nearly as good as Red Clover, but it is bitter and less appetising to cattle.

Alsike withstands cold well, and succeeds even in very bleak situations. The best results of its use are got on moist clays. For alternate leys and permanent pasture one half to two pounds of Alsike should always be included in the seed prescription. The best seed is that which comes from England and Canada.

Alsike is the name of a small village in Sweden, near to which this clover was originally grown—whence the name.

6. **YELLOW CLOVER, OR TREFOIL.** (*Medicago lupulina*, L.) The flower-heads are spherical, the flowers very diminutive. The stems are procumbent, from one to two feet in length. The taproot descends eight to sixteen inches into the soil. It is annual or biennial, and flowers from June to September.

This plant has been in common cultivation in Britain for a long time. The agricultural uses to which it is put are akin to those to which White Clover is applied. It is a plant for grazing, not for hay. Its habit of growth is procumbent and spreading, and, consequently, it is not suited for cutting, and in a hay crop its presence would be obstructive to the growth of the larger plants. It is a useful plant in sheep pastures, and gives a fair yield of nutritious herbage, which becomes available considerably in advance of the other clovers. It is considered to give a fine flavour and colour to butter. Its greatest merit is that it grows very well on poor soils which are not suited to the larger and finer clovers, and its use should, unless

in very small quantities, be confined to land of this description. It is always sown in mixture with other plants.

One pound of Yellow Clover contains about the same number of seeds as one pound of Red Clover.

- 7. TUFTED VETCH.** (*Vicia cracca*, L.) Perennial; flowers in July and August; an excellent and nutritious plant.

Tufted Vetch grows naturally in old pastures, by waysides, and in woods. It is not in cultivation at present, but its excellent feeding properties and its hardiness make it well worthy of attention.

- 8. BIRDSFOOT TREFOIL.** (*Lotus corniculatus*, L.) Perennial; pasture plant; flowers in June and July.

This plant has long been recognised as a very valuable pasture plant. It is not much cultivated, the high price of the seed being against its liberal use. It occurs naturally on almost all soils, from mountain heights to the seaside. Considerable patches of it occur on the Montrose Links; and all along the coast, on similar sandy stretches of ground, its pretty red-streaked yellow flower is to be seen. It forms excellent bottom herbage in temporary or permanent pastures, and is especially valuable on soils and in climates which are not suitable for the growth of Red Clover. The use of Birdsfoot Trefoil will, doubtless, increase by and by.

- 9. NARROW-LEAVED EVERLASTING PEA.** (*Lathyrus sylvestris*.) Perennial; flowers in August. It has been found growing in Scotland (near the Redhead Promontory in Forfarshire), but it is not common. In England it is of more frequent occurrence. It is an excellent forage plant, of very trailing habit of growth, not suited for sowing along with other plants. The stems are four to six feet long.

Lathyrus sylvestris has, during the past few years, had

"greatness thrust upon it" by the advertisements of a syndicate formed to introduce it into cultivation in Britain. It has not as yet been much cultivated anywhere, and whether or not it will gain any attention in this country remains to be seen. As yet the efforts made to give it popularity have had little success. Its close relation, *Lathyrus pratensis*, or Tare Everlasting, was similarly recommended to agricultural experimenters more than fifty years ago, but was not able to establish any claims to general adoption. It is a plant of strongly bitter taste.

- 10. ZIG-ZAG CLOVER.** (*Trifolium medium*.) Perennial; flowers in June and July; a valuable plant in natural pastures. Its name has reference to its zig-zag stems. In botany this plant is also termed "Cowgrass." We have referred to this in our notes on Red Clover.

Zig-Zag Clover is not in cultivation, but is of common occurrence in old pastures and by waysides. It is distinguished from cultivated red by its stems and by the stalk which separates the flower-head from the uppermost involucreal leaves.

- 11. KIDNEY VETCH.** (*Anthyllis vulneraria*, L.) Perennial; flowers in July; a valuable pasture plant.

Kidney Vetch has not been in cultivation for any great time, but is well worthy of a place in an enumeration of our best pasture plants. It is very nutritious, and sheep and cattle relish it (horses are said not to like it). It is hardy, growing on soils where clovers fail, and it is a decided boon to farmers who have warm, sandy soils to deal with. Its duration is from three to four years, and the plant is useful either in short leys or for permanent pastures.

It is always sown in mixture with other plants. One pound of seed is in sowing capacity equivalent to about one pound of Red Clover.

GRASSES.

- 12. PERENNIAL RYEGRASS.** (*Lolium perenne*, L.) The inflorescence is a spike composed of one terminal and two rows of lateral spikelets. The culm is smooth, round, and stiff, and varies from twelve to thirty inches in height. The root is fibrous.

The cultivation of Perennial Ryegrass originated in England more than two centuries ago, and at the present time it is the most extensively cultivated of all the grasses.

British farmers are so well acquainted with this grass that details of its uses and properties are almost superfluous. Its principal merits are its adaptation to almost any soil (though it prefers such as are moist and tenacious), its early and abundant growth, its attractiveness to stock, and the low price of the seed. Its drawbacks are its tendency on some soils to disappear after the second year and its shallow rooting system, which greatly exhausts and impoverishes the surface of the soil.

Perennial Ryegrass is as good a grass as can be sown for a hay crop or for one or two years' pasture; for a period exceeding this it should always have mixed with it a liberal proportion of more truly perennial grasses. Regarding its use in permanent pastures there has been and still is much controversy. Mr Faunce de Laune has, through the Royal Agricultural Society's Journal, made fierce war against its use for this purpose, and in his crusade he has had the support of numerous writers less well known. The contention against it is, that in the first year or two of a newly-sown field's history, Ryegrass, with its rapid growth, monopolises the space, and starves out the slower true perennials; then, after a brief duration, itself disappears, leaving the place it once occupied to be filled with weeds. Unless, however, an excessive proportion of Ryegrass is sown, we do not think this result need be

feared. Only let the Ryegrass be *thoroughly clean*, and it will, in a moderate proportion, be found a very useful adjunct in a seed mixture for this purpose. It helps greatly to make the first and second year's crops, and furnishes protection to the other grasses. Italian Ryegrass should, however, be strictly excluded from a field intended for permanent pasture. Its power of overmastering other grasses is undoubted.

For permanent pasture sow per acre eight to ten pounds of thoroughly clean Ryegrass, along with other plants; for temporary grass sow thirty pounds per acre if no other grass is used, diminishing this quantity in proportion as other varieties are included.

- 13. ITALIAN RYEGRASS, or BEARDED RYEGRASS.** (*Lolium italicum*, Br.) The flower-head is a spike, bearing spikelets arranged in the same way as in Perennial Ryegrass. The culm varies from two to four feet in height. The seeds are awned. The plant is larger in all its parts than Perennial Ryegrass, and is also softer and more succulent. It is commonly described as biennial, its duration being from one to three years.

Italian Ryegrass was introduced into Britain fifty years ago by Mr Lawson of Edinburgh. It is now very extensively cultivated, and its uses and properties are familiar to the British farmer.

For cutting green it is the best grass that can be sown. Its produce is early, large, and of good quality, and it gives a greater number of cuttings in one season than can be got from any other grass. It is also extensively used in combination with Perennial Ryegrass, to form temporary leys of one to three years' duration. In such leys its earliness is a valuable feature, and the weight of produce reaped from a combination of the two grasses is

greatly in excess of what could be reaped from Perennial Ryegrass alone. For green cutting Italian Ryegrass can either be sown pure or mixed with Red Clover. Its rapid and luxuriant growth is, however, against the prosperity of the clover, and the latter often all but disappears beneath it. In one or two years' ley of grass Italian Ryegrass may form a very liberal proportion of the seed prescription—say five pounds to ten pounds an acre; for longer periods than this it should not be used, as in the first season it overwhelms and sometimes literally blots the more slowly-growing true perennial grasses, while its own lack of persisting power unsuits it for the purposes of permanent pasture.

The best seed is that which is obtained from France. This gives a larger yield than such as is home-saved. It comes from the French growers very foul with various weeds (especially Ox-Eyed Daisies), and careful re-cleaning is absolutely necessary.

14. MEADOW FESCUE. (*Festuca pratensis*.) The panicle is nearly erect and branched; the culm round, smooth, and from two to three feet high. It is perennial, flowers in June and July, and is found abundantly in pastures where the soil is good.

Meadow Fescue has been cultivated in Britain for about seventy years. At the present time it is making rapid headway into popular favour, rivalling Cocksfoot in this respect. As it answers equally well the purposes of hay and pasture, gives a heavy yield, and is very nutritious, it is entitled to rank as one of the best grasses known.

Meadow Fescue should form a main ingredient of a seed mixture for permanent pasture where the soil is moist and strong, and in the case of rotation grass which is to lie three years or more, the inclusion of three to five pounds of Meadow Fescue seed per acre in the seed mixture will be found very beneficial, and will give a good return for the outlay.

The seed at a superficial glance is very similar in appearance to the seed of Perennial Ryegrass, and this similarity has enabled some seedsmen—some fraudulent, others ignorant—to pass off Ryegrass as Meadow Fescue. In 1883 the Botanist to the Royal Agricultural Society reported that of the samples of Meadow Fescue submitted to him in that year, only 29 per cent. were free of Ryegrass, while 12 per cent. contained it to the extent of one-half. The distinction between the two seeds is easily made by a practised eye, the seed-stalk furnishing an infallible guide to identification. All seed merchants of good standing will be ready to give a distinct guarantee of genuineness with the Meadow Fescue they sell. As regards seeding capacity, Meadow Fescue is almost the same as Perennial Ryegrass.

15. TALL FESCUE. (*Festuca clatior*, L. *Festuca arundinacea* Schreb.) This grass corresponds so closely in its general character with Meadow Fescue that Withering remarks of it that "individual plants are met which might be referred to either *Festuca pratensis* or *Festuca clatior*."

Tall Fescue, however, is generally twice the size of Meadow Fescue, and, as will readily be conceived, so large a plant is necessarily coarse. It is early and extremely productive, but is liable to be attacked by ergot, and the seed is often abortive. As in the case of Fiorin, the method of parting the roots and planting them has been recommended for propagating the plant. Tall Fescue is not of such frequent occurrence naturally as Meadow Fescue; still it is a common enough grass in damp meadows and by the sides of rivers and ponds.

Although the plant is warmly recommended by Mr Faunce de Laune and others, we think Meadow Fescue will answer the same purposes and be found more satisfactory.

16. HARD FESCUE. (*Festuca ovina duriuscula*, L.) The panicle is spreading and unilateral; the culms from one to two feet high. It is perennial, flowers in May and June, and grows abundantly in pastures.

This grass has been grown extensively in Germany for more than half a century; its use in Britain has not been so extensive, and is of more recent date.

There is a difficulty in getting grass to grow on dry, sandy ground, and the particular merit of Hard Fescue is that it thrives readily on soil of this description. It withstands successfully very severe weather, and keeps fresh and green until late in the year. Its produce is only moderate in quantity, and, as the name implies, it is somewhat rough and hard. For these reasons it should not be sown on soils capable of growing Meadow Fescue and similar succulent grasses, excepting in the case of a permanent pasture ley, where a small quantity may be sown as a bottom grass. It grows well enough on good soil, but its proper sphere of use is as an ingredient for permanent pasture, or a three years' ley, on dry, poor soil where better grasses will not grow. In Highland glens it forms a large part of the herbage at the foot of the hills. Sheep eat it readily, and thrive on it. In laying down dry, sandy soil on high-lying ground to pasture, sow three to five pounds of Hard Fescue along with other plants, such as Blue Grass, Sheep Fescue, Timothy, and White Clover; on good soils, sow not more than one to one and a half pound of it to form bottom herbage.

In seeding capacity one pound of Hard Fescue is equal to about two and a half pounds of Ryegrass.

Fescue is from the Latin *festuca*, which signifies the shoot of an herb.

The reason of its application to this species of grass is not clear.

17. SHEEP'S FESCUE. (*Festuca ovina vulgaris genuina*.) The panicle is unilateral and somewhat close; culms eight to twelve inches high; leaves short and tufted; the plant frequently tinged with red. It is perennial, and flowers in June and July.

This plant is simply a diminutive form of Hard Fescue, or, to state it otherwise, Hard Fescue is a robust and vigorous variety of Sheep's Fescue.

What has been said in regard to the uses and properties of Hard Fescue applies in the main equally to Sheep's Fescue. Neither of these grasses is adapted for hay, but both are extremely useful for forming pasture on poor, dry soils. In mixture with Crested Dogtail they make excellent lawns. In the higher hill pastures Sheep's Fescue is a plant of very frequent occurrence.

18. ROUGH-STALKED MEADOW GRASS. (*Poa trivialis*, L.) The panicle is spreading; culm ascending, roughish, and two to four feet high; root fibrous. It is perennial, and flowers in June and July.

On a superficial examination this grass much resembles Smooth-Stalked Meadow Grass, and the two plants are sometimes confounded with each other. The roughness under the flower-head is occasionally not sufficiently pronounced to furnish a certain means of identifying the rough-stalked variety from the smooth-stalked; but the different habits of growth serve to distinguish them clearly. In the case of the smooth-stalked variety, there is a large development of stolons lying *underground*, whereas in the case of the plant under description there are none such; the horizontal branches produced by it creep on the *surface* of the soil always.

Poa trivialis is the most valuable of the poas. It occurs abundantly in natural pastures where the soil is rich and moist and the climate mild. It prefers sheltered situations.

Its special purposes in agriculture may be described as the same as those of *Poa pratensis*, with this important difference, that while the latter is suited for dry, light soil,

the first-named needs soil which is rich and moist. All authorities are agreed that for irrigated meadows Rough-Stalked Meadow Grass is one of the best grasses that can be sown. For permanent pasture, on a suitable soil, sow one pound per acre along with other plants. The best seed comes from Denmark, and is rather expensive.

The generic name *poa* is a Greek word meaning an herb fit for the use of cattle.

- 19. BLUE GRASS, or SMOOTH-STALKED MEADOW GRASS.** (*Poa pratensis*, L.) The panicle is spreading; culm smooth, ten to fifteen inches in height; root creeping. It is perennial, and flowers in May and June.

Blue Grass is one of the most frequently occurring grasses in natural pastures and by roadsides, and is the main constituent of many of the prairies of America. Its cultivation in Britain is now somewhat extensive, but is not of long standing. Blue Grass is not large, and in mixed herbage it ranks as only a bottom plant. It is early; its produce after the first year is considerable in quantity; and the leaves are tender and relished by cattle. The aftermath is small. It has a large root development, and sends out long underground stolons, which, when the plant is present in too great abundance, have a tendency to interfere with the growth of the other plants present in the pasture.

The true place of Blue Grass in agriculture is as a constituent in permanent pastures on dry, loose soils, where the larger grasses, such as Meadow Foxtail and Meadow Fescue, would not succeed. It may also be used to form bottom grass in leys of three or more years' duration; but in this case the quantity sown (of pure germinating seed) should not be large—say one pound per acre. For the purposes of permanent pasture, two pounds per acre may be sown, in mixture with other plants. Excellent lawns can be made by sowing pure Blue Grass.

The seed of this grass is considered to germinate better in the light than when covered with soil; but we may add that in trials we have made both methods gave very similar results. It is the fact that Blue Grass is somewhat fickle in regard to germinating, and sometimes fails to "catch" the ground.

- 20. CRESTED DOGSTAIL GRASS.** (*Cynosurus cristatus*, L.) The panicle is spicate and unilateral; the culm is stiff, smooth, and varies from one to two feet in height. It is perennial, and flowers in the months of June and July. The root development is considerable.

Crested Dogtail has been in cultivation (in a small way) for upwards of a century. It grows abundantly by nature in elevated pasture lands, and sometimes covers 30 per cent. of the area of land so situated.

In Scotland it is used for high-lying pastures, for forming bottom grass in all permanent pasture fields, and for lawns and other ornamental grounds. It is not a hay grass. The yield of produce is not large, but the nutritious quality is high. The wiry character of the stems has caused some writers on grasses to deprecate its use; but in its proper sphere, and sown in moderate quantity, it is a very useful grass.

It is of an aggressive character, and has a tendency to spread by self-sowing. This, together with the fact that the seed is high in price, suggests that for ordinary purposes only a small quantity of it should be used, say half to one pound per acre. It is never sown alone, unless for forming lawns, bowling greens, or cricket grounds. In such grounds Crested Dogtail requires longer time than Ryegrass to cover the ground, but the patience of the sower will be amply rewarded by the beautifully fine turf which results. One pound of Dogtail in seeding capacity is equal to about three pounds of Ryegrass.

The generic name is derived from the Greek *kuon*, a dog, and *oura*, a tail; the spike resembling a dog's tail.

- 21. MEADOW FOXTAIL.** (*Alopecurus pratensis*, L.) The panicle is spiked and cylindrical; root fibrous; culms two to three feet high, erect and smooth. It is perennial, and flowers in May. There are five or six kinds of Foxtail, but the variety *pratensis* is the only one which is of agricultural value.

The cultivation of Foxtail is of recent date, and is not nearly so extensive as the good qualities of the plant merit. In suitable soils it is one of the best grasses a farmer can sow.

It is sweet and nutritious, its yield of produce is large, its aftermath is abundant, and all kinds of stock eat it with evident relish. It is also hardy of constitution, resisting alike cold and strong heat of sun, and grows well even under the shade of trees. One of its principal features is its earliness. By the end of April there is a large growth of juicy leaves, and a month later the plant is in flower. Another feature of no less value is its truly perennial character, in virtue of which it holds its place in a pasture for many years. It requires two or three seasons to reach its full development, and is, consequently, not a suitable grass for one or two years' ley. For a three to four years' ley, and for permanent pasture, it is an indispensable ingredient. Note, however, that it needs for its successful cultivation rich, moist soil. On dry, thin ground it is stunted in growth, and tends to disappear.

Foxtail seed is somewhat expensive, but the constantly augmenting demand will encourage increased production, and tend, as it has done in the case of many other grass seeds, to eventually cheapen the price. The best seed comes from Russia, and the recent improvement in respect of greater purity and increased germinating power is very gratifying.

One pound of Foxtail will seed as great an area as will three pounds of Ryegrass. Sow two pounds an acre in mixture with other grasses.

The generic name *alopecurus* is a combination of the Greek equivalents for tail.

- 22. TIMOTHY GRASS, or MEADOW CATTAIL.** (*Phleum pratense*, L.) The panicle is spiked and cylindrical; the culm two to four feet high; the root is fibrous. It grows luxuriantly in meadows and damp pastures; on dry soils it becomes small and bulbous-rooted. It is perennial, but in a state of cultivation it tends to disappear after a duration of three years.

Timothy has been in cultivation for a long time. It was introduced into Britain from the United States of America many years ago, and its use is now very extensive. In the United States it is a favourite grass for hay, and it derives its popular name from an American cultivator.

In British husbandry, Timothy is very generally used as a constituent in leys of one year's hay followed by two years' pasture; it is also used to a moderate extent in prescriptions for permanent pasture. The abundance of stems it produces signalises it as a grass for hay rather than a grass for pasture.

The produce is very large, and in respect of nutritious value, Timothy ranks high among the grasses. While in regard to weight of produce it greatly surpasses Ryegrass, it is much harder and more wiry, and where farmers intend their hay not for home use, but for sale, Timothy should not be sown save in very limited proportion. By cutting early, before the stems harden, the produce will be secured in its most useful condition. Sheep and horses manifest a special preference for it.

Timothy resists successfully cold and wet, and gives its best results on damp, stiff soils.

Sow one pound to one and a half pound per acre. The best seed comes from Saxony. The United States also export large quantities of it.

- 23. ROUGH COCKSFOOT GRASS.** (*Daactylis glomerata*, L.) The panicle is branched and unilateral; the flowers in dense tufts; the culm erect, and two to three feet high; the root

system is much branched, and descends, where soil is suitable, to a depth of ten to twenty-six inches. The botanical name is derived from *dactylus*, a finger, and the English name "Cocksfoot" is applied to it on account of the form of the panicle. In America it is often termed "Orehard Grass," in allusion to its occurrence under the shade of trees. It is perennial, and flowers in June and July.

The cultivation of Cocksfoot in England dates back a hundred years, but it was only on a small scale, until fifteen or twenty years ago. Since then the many admirable qualities of the plant have gained wide recognition, and its use in England and Scotland is now very extensive, and is still on the increase.

Its good qualities are its adaptation to almost any soil (except sand), its power of resisting drought, its exceptionally large yield of produce, and its highly nutritious properties. All kinds of stock show a marked preference for it, but it should be cut before flowering, and, when in pasture, kept closely cropped, as otherwise the stems become harsh and uneatable. The aftermath is rapid and very abundant.

The proper sphere of use for Cocksfoot in Scotch husbandry is in fields for permanent pasture, and in rotation grass-land. It grows when of two or more years' duration in cushion-like tufts or clumps, which do not closely cover the ground, and for this reason it should never be sown alone, but always in mixture with other plants.

Sow two to four pounds an acre. One pound of Cocksfoot will seed as great an area as fully two pounds of Ryegrass. The difference in the price of these grasses, it will therefore be observed, is not nearly so much actually as it is nominally.

The best seed comes from New Zealand and North America. We have found these in our trial plots to give yields fully equal to European Cocksfoot, and they have this advantage over the latter, that the New Zealand and American seeds are always much cleaner than European samples.

24. YELLOW OATGRASS. (*Avena flavescens*, L.) The panicle is erect, and when come to maturity spreading and much branched. The culm is erect, and two to three feet high, but the latter height is reached only where the soil and climate are specially favourable. It is perennial, and flowers in July and August.

This excellent grass is found growing naturally in almost all good English pastures. It has not as yet been much cultivated, owing to the very high price of the seed; but there is reason to anticipate that this grass has a much greater degree of popularity in store for it in the future than it at present enjoys, and that more extensive production will eventually bring the price to a reasonable level.

Yellow Oatgrass is not suited to stiff clay land or to wet situations, but it thrives well on all medium soils. Sown along with other grasses, it produces a very considerable quantity of nutritious fodder, to which cattle and sheep are very partial. It is not nearly so rank and coarse as Tall Oatgrass. The fine quality of the produce, its attractiveness to stock, together with its comparative lateness, unite to make Yellow Oatgrass a very desirable constituent in permanent pastures.

The high price of the seed often leads foreign collectors to tamper with its purity, and this variety of grass seed must always be procured under a guarantee of genuineness.

25. SWEET VERNAL GRASS, or SWEET-SCENTED SPRING GRASS. (*Anthoxanthum odoratum*, L.) The panicle is spiked and cylindrical; the culms erect, smooth, and about a foot high. It is perennial, and flowers early in May.

Sweet Vernal is a small early grass which thrives on any soil, even on those which are driest and thinnest. It

has no great agricultural importance, and its use is almost restricted to the small quantity which is included in seed prescriptions for the sake of the fragrance which the plant gives to hay when drying. Its earliness and its power of existing in very poor, dry soils can be pleaded on behalf of its use in pastures of long duration on secondary soil; but it has been noted by many observers that Sweet Vernal is not readily eaten by either cattle or sheep. Its agreeable perfume exercises no appetising effect on them, and so far as they are concerned appears to be "wasted on the desert air." This, taken in connection with the facts that the produce of the plant is scanty and the price of true seed very high, excludes the grass from any, save a very subordinate, place in agriculture. If the money spent on Sweet Vernal were devoted to the purchase of true Yellow Oatgrass, much greater profit would result from the investment.

The seed of Sweet Vernal is gathered by hand, hence the high price, which, as in the case of other expensive grasses, sometimes induces unscrupulous dealers to offer fraudulent substitutes.

Sow half a pound per acre along with other plants.

26. FIORIN, or MARSH BENT GRASS. (*Agrostis alba*; var. *stolonifera*.) The panicle is spreading, with rough branches; culm oblique, smooth, one to two feet high. The root and stems are ereeping, and send out long prostrate shoots, sometimes subterranean, sometimes above ground. The flowers are of a whitish colour, tinged with purple. It is perennial, and flowers in June and July.

This grass has been known under a variety of names, and is now generally termed Fiorin. Its cultivation has been carried on in a fitful and intermittent kind of way for a long period. In its actual results it has not proved itself worthy of the claims to cultivation which have been put forward for it by some writers.

The natural habitat of Fiorin is on boggy moorland, on peaty soils, and in wet meadows; and in such situations its presence will be welcome enough. Unfortunately for those who have such soils to deal with, and wish to use Fiorin for them, there is a double difficulty connected with the sowing of this grass—firstly, true Fiorin seed is difficult to get; and secondly, when got it is very difficult to get to grow. It grows very readily, however, from cuttings of its stolons (or underground stems), and in some districts these stolons are collected from broken-up grass land, cut into sections, and planted under a shallow covering of earth. This method of growing Fiorin is more successful than seed sowing.

These said stolons make Fiorin an entirely objectionable plant in rotation grass, as it is almost impossible to get rid of them when the land is ploughed up.

There are three or four other kinds of *Agrostis*, and some of them only too abundant in pastures; but they are wiry, worthless grasses, and must be included in the category of weeds.

Agrostis is from the Greek *Agros*, a field, in allusion to the common occurrence of this grass therein.

27. MEADOW SOFT GRASS. (*Holcus lanatus*.)

It is needless to name soils or places which are specially favourable to the growth of this grass, for it is at home everywhere and in most objectionable abundance.

As the name implies, it is a soft spongy grass, and whether in its natural state, or made into hay, is thoroughly disliked by cattle and horses.

It has been pointed out that the grasses which are most liked by cattle are those which have a slightly saline taste. The grass in question has a flavour which suggests sugar.

Holcus is difficult of extirpation, and, being of an aggressive habit of growth, it tends to spread over a pasture where it once obtains a footing.

It is a plant against whose entrance into his fields the stockbreeder should guard by every possible means. It is useless as fodder and only fills the soil to the exclusion of more valuable produce.

The Greeks applied the name *olkos* to a kind of wild barley, but the reason of its application to this grass is not clear.

28. SOFT BROME GRASS. (*Bromus mollis*.)

This is the commonest of the Brome Grasses and is a plant much disliked by farmers. In cornfields it is a troublesome weed and in pastures it is of little value. Cattle only eat it when pressed by hunger. Its seed is one of the principal impurities in the grass seeds cul-

tivated in Britain. Fields are to be seen here and there where it is present in quantity equal to the ryegrass. This generally results from sowing "hay seed," a term applied by farmers to the sweepings of hay lofts; but *Bromus* is also one of the aboriginal grasses of Scotland, native to the soil and ever tending, as opportunity offers, to assert itself. The seed of this grass is provided with an awn by means of which it is enabled to make its way into the soil through other herbage. This forcing of a way through other plants seems to be the function which awns fulfil.

The awns are very susceptible to heat and moisture. Contracting in heat and relaxing with damp, they occasion thereby a motion which enables the seed to work its way through the surface of grass and reach the soil.

WEEDS.

29. DOVE'S FOOT CRANE'S-BILL. (*Geranium Pyrenaicum*.)

Crane's-Bill is of frequent occurrence in dry pastures, where it is often introduced through the medium of impure clover seeds. There is an almost endless number of its different varieties. Of all colours—blue, black, violet, red, purple, white, and striped—they all resemble each other in the elongated "style," which resembles the beak of a Crane—whence the name of Crane's-Bill. Some varieties of the plant produce large and beautiful blossoms, and are cultivated as garden plants. All of them share to some extent in the beauty of the family, and they are excellent ornaments in rockeries. As pasture plants they are objectionable, and are mere weeds. The generic name *Geranium* is derived from the Greek *Geranos*, a crane.

30. SOFT CRANE'S-BILL. (*Geranium molle*.)

The general characteristics of the genus *Geranium* have already been given under the heading of Dove's Foot Crane's-Bill. The Soft Crane's-Bill is another plant of the same family, and is of frequent occurrence in cornfields, meadows, and in dry pastures. The blossoms are usually much smaller than those of Dove's Foot Crane's-Bill, and are sometimes of a reddish purple, sometimes white. Its seed is often present in considerable quantity in inferior White Clover Seed.

31. DEVIL'S-BIT SCABIUS. (*Scabiosa succisa*.)

This plant, some of the varieties of which are well adapted for cultivation as garden flowers, is a frequent weed in fields and pastures. It derives its name from the supposition of its curative properties in the disease of *Scabies*. The popular qualification of "Devil's-Bit Scabius" has reference to its oblong and abruptly ending root—"bitten off by the Adversary"—according to plant lore—"for envy of its imaginary benefit to mankind." Sheep and goats eat it; horses and cows are not fond of it.

32. RIB GRASS. (*Plantago lanceolata*.)

Rib Grass is perennial, and is one of the commonest weeds which occur in British pastures. Its seeds are found in great abundance in inferior grass and clover seeds. Sheep and goats eat it, but cattle and horses refuse it. The ass, which seems to have a preference for most weeds, is seen to neglect every other herb in the pasture if this plant is obtainable. Rib Grass is sometimes sown with a mixture of clover and grass. It is, however, a poor pasture plant, and if it is eaten by cattle it is not for its own merits, but simply because it is mixed with other herbage. It is a great and lasting nuisance in lawns.

33. GRASS OF PARNASSUS. (*Parnassia palustris*.)

This is one of our most graceful marsh plants. It is quite improperly termed a grass, and is not clearly ascer-

tained to be the plant to which the name "Grass of Parnassus" was originally given. Though it occurs most frequently in moist meadows and in marshes, it is also found on lofty elevations. Moisture is essential to it, and in the fact that the clouds perpetuate moisture on the hill tops, just as fogs do in the meadows, is found the explanation of the same species of plant growing either at high elevations or in low situations. It derives its name from Mount Parnassus, the fabled abode of the Muses.

34. COMMON ELECAMPANE. (*Pulicaria dysenterica*.)

The Elecampane inhabits moist meadows and pastures, river banks, and other watery places. It has a peculiar scent, which resembles the smell of soap. It is reputed to possess medicinal properties, and was much in request among the medicine men of the Middle Ages. As a pasture plant it is of no value, and is generally left untouched by all domestic animals.

35. BURNET. (*Poterium sanguisorba*.)

Burnet is usually classed as a weed, from its occurrence where it is not wanted; but it possesses considerable nutritive properties, and in some parts of England is cultivated as a food for cattle. On some English sheepwalks it forms a considerable portion of the herbage, and it is observed that the sheep keep it well eaten down. It may, therefore, be considered a valuable plant in hard stocked sheep pastures. The cattle do not seem to care for it when it is thoroughly grown. The name *Poterium* is a derivative from the Greek word for a cup, the plant having been formerly used as an ingredient in cooling drinks.

36. HEDGE CALAMINT. (*Calamintha clinopodium*.)

The Hedge Calamint is a common plant throughout England and Scotland. It has a preference for dry ground and for lofty situations. It may be looked for by hedge sides and in thickets. Its stems attain a height of fourteen or eighteen inches, and these, as well as the leaves, are clothed with soft hair. The flowers are purple of a light shade. The Calamint, like many of the other weed plants we have been describing, was largely dealt in by the botanists of earlier times, if one may be allowed to dignify by the name of "botanists" professors of a science which bore the same relation to botany as astrology did to astronomy. The plant was fabled by them to have the power of driving away snakes and other poisonous reptiles.

37. WORM-WOOD, SOUTHERN-WOOD, OR MUGWORT. (*Artemisia*.)

This weed is of common occurrence on roadsides, stony places, and on rubbish. It is one of those domestic plants which, like plantains, docks, and hemlock, seem to follow the footsteps of man, and which are to be found thriving

on rubbish heaps wherever a cottar or a crofter has made a home. "The constant appearance of these weeds about towns and villages is a curious and unexplainable phenomenon, for no one ever cultivated such plants for utility, much less for ornament." (The North American Indians have observed this curious fact in connection with the plantain, which they say appears wherever the white man settles, and they have named it "the white man's foot-step.") *Artemisia* is refused by cattle. The name is derived from *Artemis*, one of the designations of *Diana*.

38. WHITE GOOSE FOOT. (*Chenopodium album*.)

There are several varieties of Goose Foot, that here given being one of the commonest. It occurs in cornfields, by waysides, and in neglected gardens. It is a plant of no beauty and of no agricultural utility, although it is asserted that pigs are extremely fond of it. In some parts of England it is known by the name of Fat-Hen, and is said to have been used in former times in Scotland as a pot herb. The generic name is a combination of the Greek equivalents for *goose* and *foot*.

39. MEADOW SAGE, OR CLARY. (*Salvia pratensis*.)

Meadow Sage derives its generic name of *Salvia* from the Latin *salvere*, to heal, the plant having been considered to possess healing properties for the eye. The English name of Clary has its root in the same belief—namely, the plant's power of clarifying the eyesight. Meadow Sage is common in England. It is two to three feet in height. The blossom is of a purple colour, tinged with blue.

40. HAIRY WATER MINT. (*Mentha aquatica*.)

This plant is of frequent occurrence in marshy land. It is one of many varieties of mint—Spearmint and Peppermint are the best known—all of which are of considerable general utility. They are in use for culinary and also for medical purposes at the present day, and in earlier times were much prized by the monks, the physicians of their period. The name is derived from the Greek *Minthe*, a favourite of Pluto, and whom Prosperina, instigated, as the poets tell, by jealousy, transformed into this fragrant herb.

41. CATCHWEED OR CLEAVERS. (*Galium aparine*.)

The seeds of Catchweed adhere to any woollen stuff which they may chance to touch—hence the name. It occurs frequently in hedges and in cornfields, and is one of the worst weeds in a wheat crop. It is sometimes termed Goose Grass, young geese being fond of it. Horses and cattle also eat it. It is a rapid grower, and generally manages to push its way above anything it is growing with.

42. COW PARSNIP. (*Heracleum sphondylium*.)

In some places Cow Parsnip goes by the name of Hogweed. It is a coarse, rank plant, which thrives well in common soil. Horses and cattle eat the leaves, and the plant possesses nutritive properties which are considerable. It is of common occurrence in Scotland, but is found in much greater abundance in Poland and some parts of Russia. In the last named country the poor people prepare a liquor from the leaves and seeds, which, after fermentation, they drink instead of beer. The botanical name is supposed to be derived from *Heracles*, Hercules, on the supposition that the plant was sacred to him.

43. GENTIAN. (*Gentiana asepadiad*.)

The Gentian plant exists in many varieties. The specimen we give is one of the commonest of them. It is an elegant little plant of a remarkably beautiful deep blue colour. It is of common occurrence on light peaty

soil. It is named after Gentius, a king of Illyria, who first discovered its healing virtues. It is a plant of very bitter taste.

44. KNOT GRASS. (*Polygonum aviculare*.)

Besides the name above given, this plant occasionally goes by that of "Bird's Knot Grass," or "Red Robin," the latter appellations arising from the fact that its seeds afford food to many small birds. A glance at the specimen given in this collection shows that, in spite of its name, it is not a grass; but, as we remark elsewhere in this volume, the farmers of earlier days had a habit of applying the term "grass" to any plant that was green and grew in pasture land. The generic name *Polygonum* is from the Greek *polus*, many; and *gonu*, the knee; in allusion to the numerous joints upon the stem. Cattle and sheep eat *Polygonum*; but it is none the less a weed from a modern farmer's point of view, since it fills space and consumes nourishment which would maintain forage plants much superior to it. It is common in the east of Scotland, and in Northern Europe stubbles may be seen purpled over with it. There are several other varieties of this genus, which are variously named *Persicaria*, or Snake-Weed.

45. SELF HEAL. (*Prunella vulgaris*.)

Self Heal grows freely in moist situations, and from its persistent occurrence in Scotland, where every year it may be seen in rich abundance in hay fields and pastures, would seem to be part of the native vegetation of the land. Its occurrence is usually the sign of rather poor soil. In open sunny situations it grows not above three or four inches in length, but under trees it quits its trailing habit, stands upright, and attains nearly a foot in height. It is of no value as a pasture plant, and must be classed as a weed. The generic name was written *Brunella* by older writers, and was derived from the German *die Breune*, sore throat, the plant having formerly been esteemed a remedy for this.

46. CORN HORSE TAIL. (*Equisetum arvense*.)

This weed is very common in damp cornfields, and in boggy places it is to be seen in great abundance. There are several varieties of *Equisetum*, all of which are injurious to the farmer. The variety under consideration is widespreading in its habit of growth, and is difficult to extirpate, though it may be overcome by draining. It has strong astringent qualities, and, when eaten, is prejudicial to cattle. The name is compounded of *equus*, a horse, and *seta*, hair, in allusion to the likeness it bears to a horse's tail.

47. CREEPING CROWFOOT OR BUTTERCUP. (*Ranunculus repens*.)

This familiar plant is one of the best known wild flowers found on English meadows and pastures. It is fond of moist situations. The stem is creeping, and strikes out roots from joints, a habit which distinguishes it from other varieties of *Ranunculus*. It is as well known on the European Continent as in Britain. The pasture lands of France are sometimes seen golden with its presence, and its seeds are a common impurity among the grasses exported from that country. There are many species of *Ranunculus*, and some of them have been adopted as garden plants. The name is a diminutive of *rana*, a frog, and has been given to it either because several species are found in marshy places, or because the divisions of the leaves bear an imaginary resemblance to the foot of that reptile.

48. UPRIGHT MEADOW CROWFOOT. (*Ranunculus acris*.)

This plant is a common weed in meadows and pastures, where, from a farmer's point of view, it is a very unwell-

come tenant. Horses and cattle leave it untouched, however bare their pasture may be. It is, as its name implies, of a very acrid and corrosive character, inflaming and blistering the skin when it is applied to it. Besides the name of Crowfoot, it shares, along with other varieties of *Ranunculus*, the popular names of Gold-Cups, King's-Cups, and Buttercups.

49. THE OX-EYE DAISY. (*Leucanthemum vulgare.*)

The Ox-Eye Daisy, otherwise known as the White Ox-Eye or the Moon Daisy, suggests reflections to the spectator which differ according to his interest in agriculture. To the farmer it is one of the most troublesome of weeds. To the poet or the artist it is one of the most charming flowers that paint the field. It is one of the commonest features of the cornfields and pasture lands of Europe and Great Britain. It ordinarily grows about eighteen inches high. The stems are wiry, and the whole plant is very unpalatable to cattle. A law anciently prevailed in England compelling tenant farmers, under the penalty of a fine, to weed it out before it came to seed. It is distinguished from its congener, the Corn Marigold, by its white rays. In the latter the disc and the rays alike are yellow. The name is derived from the Greek *leukos*, white, and *Anthos*, a flower. In Scotland it is termed "Horse Gowan," gowan meaning golden.

50. SHEPHERD'S PURSE. (*Capsella bursa pastoris.*)

In cornfields, by roadsides, and on rubbish heaps this plant is to be found throughout Great Britain. It offers a good example of the influence of soil and situation upon the development of a plant. In favourable circumstances it will attain a height of two or three feet, and at other times it will be found perfecting its seed, though not over three inches in height. Farm stock will eat it; but it is, all the same, a very inferior forage plant, and its presence on the farm should not be willingly cultivated.

51. WILD CARROT. (*Daucus carota.*)

This plant is the progenitor of the cultivated or garden Carrot. It is a common weed in cornfields and in pasture land. Anyone who is acquainted with the cultivated variety will easily recognise the plant when they find it growing wild. In its natural state the root is of a pale yellow colour, and is very much smaller than is the case when the plant has been cultivated, but in both circumstances the plant has the same unmistakable smell. The development of the Carrot of cultivation from this wild plant is an excellent illustration of the power of man, by care and attention, to ennoble a plant. Carrots are one of the best and most nutritious foods for all kinds of farmers' stock, and are well worthy of wider cultivation. Horses are especially fond of them, and their owner can provide them with no greater treat than a few pounds of Carrots instead of their usual allowance of hay. Carrots contain a great deal of sugar, although not enough to admit of their competing with Beetroot as raw material for its production. The name is derived from the Greek word *daio*, to make hot, in allusion to the warm carminative quality of the seeds. The popular local cognomen of the wild plant is "Bird's Nest." The seeds of the wild Carrot are a very common impurity in clover seeds of French origin.

52. SHEEP'S SORREL. (*Rumex acetosella.*)

The dock family is a fairly numerous one, all of which, from a farmer's point of view, must be classed as weeds. The variety of it here given, as well as common Sorrel, is

distinguished from the others by a powerfully acid taste. *Rumex acetosa* and *Rumex acetosella* are both plants of very common occurrence throughout Great Britain, sandy meadows and dry soils being specially favoured places for their growth. In autumn, pasture lands may be seen where the whole surface is red with their presence. In France the common Sorrel is cultivated for table purposes, and is used as an ingredient in salads, sauces, and soups. In Scotland they are named respectively the "Souroek" and the "Sheep's Souroek." Neither cattle nor horses will eat either of them unless pressed by famine. It is said that the presence of this plant indicates an acid soil requiring lime to cure it. The generic term is derived from the Latin name for a kind of spear used by the Romans, the shape of which bore a close resemblance to the leaf of this plant.

53. COMMON BUGLE. (*Ajuga reptans.*)

The Common Bugle is found in moist meadows, in pastures, and in woods, and is of common occurrence in Scotland. The flower is blue, and the stem varies in height from four to twelve inches. It is perennial, and is in blossom from May to July. Another species of it—the Yellow Bugle or Ground Bine—is found in England. Like many of the other plants described in our notes, the Bugle at one time enjoyed a high reputation as a medicinal herb, and was used as a blister for the wounded and a potion for the sick. The derivation of the generic name is of doubtful origin, and is differently given by different writers.

54. EYEBRIGHT. (*Euphrasia officinalis.*)

Eyebright is of common occurrence throughout Great Britain, especially on dry ground or hilly pastures. The name, which suggests a showy plant, has no reference to the outward appearance it presents, but was given to it on account of its reputed power to restore impaired vision. The botanical name is from the Greek *Euphraino*, joy. Its medicinal qualities are, unfortunately, only a fable, and, though cattle and horses eat it, it is a plant of little worth, and must be classed among the number of those which a farmer should cultivate as little as possible.

55. THE COMMON DAISY. (*Bellis perennis.*)

The Daisy is the plant from which we derive our first impressions of the flower kingdom. It is pre-eminently the flower of childhood. Poetry has never wearied singing its praises. While it is undoubtedly a favourite with man, woman, and child, from the pleasurable associations which it suggests, it is worthless from an agricultural point of view—horses, sheep, and cattle all refusing to eat it. It is fertile, of an aggressive habit of growth, and difficult to eradicate from pastures. When transplanted to richer soil it shows many variations—such as changing its white colour to crimson, and becoming double. In France it is named the Marguerite. The English name Daisy is a corruption of Day's Eye, with reference to the plant opening with the sun. Its botanical name *bellis* comes from *bellus*, pretty, in allusion to the pretty flower.

56. AMBROSIA ARTEMISIÆFOLIA.

This is the only plant in our collection which is not to be found in British fields. It is a weed greatly spread about American clover fields, and found frequently in the American clover seeds. For some occult reason it does not thrive in the Eastern Hemisphere, and though the seed is often planted from its occurrence as an impurity in clover seed from America, it rarely grows.

*Psuedo-
salicaria*

1. LUCERNE. (*Medicago sativa*, L.)

2. SAINFOIN. (*Onobrychis sativa*.)

3. RED CLOVER. (*Trifolium pratense*, L.)

4. WHITE CLOVER. (*Trifolium repens*, L.)

Handwritten signature or mark

5. ALSIKE, OR SWEDISH CLOVER. (*Trifolium hybridum*, L.)

6. YELLOW CLOVER, OR TREFOIL. (*Medicago lupulina*, L.)

7. TUFTED VETCH. (*Vicia cracca*, L.)

8. BIRDSFOOT TREFOIL. (*Lotus corniculatus*, L.)

9. NARROW-LEAVED EVERLASTING PEA. (*Lathyrus sylvestris*.)

Talk out

10. ZIG-ZAG CLOVER. (*Trifolium medium*.)

Handwritten text, possibly a signature or date, oriented diagonally.

11. KIDNEY VETCH. (*Anthyllis vulneraria*, L.)

Bonesi feda feda.

Tuphaa hai grass (small)

12. PERENNIAL RYEGRASS. (*Lolium perenne*, L.)

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13. ITALIAN RYEGRASS, OR BEARDED RYEGRASS. (*Lolium italicum*, Br.)

14. MEADOW FESCUE. (*Festuca pratensis*.)

15. TALL FESCUE. (*Festuca elatior*, L. *Festuca arundinacea* Schreb.)

16. HARD FESCUE. (*Festuca ovina duriuscula*, L.)

Fig.

17. SHEEP'S FESCUE. (*Festuca ovina vulgaris genuina*.)

18. ROUGH-STALKED MEADOW GRASS. (*Poa trivialis*, L.)

19. BLUE GRASS, OR SMOOTH-STALKED MEADOW GRASS. (*Poa pratensis*, L.)

20. CRESTED DOGSTAIL GRASS. (*Cynosurus cristatus*, L.)

21. MEADOW FOXTAIL. (*Alopecurus pratensis*, L.)

22. TIMOTHY GRASS, OR MEADOW CATTAIL. (*Phleum pratense*, L.)

23. ROUGH COCKSFOOT GRASS. (*Dactylis glomerata*, L.)

24. YELLOW OATGRASS. (*Avena flavescens*, L.)

25. SWEET VERNAL GRASS, OR SWEET-SCENTED SPRING GRASS. (*Anthoxanthum odoratum*, L.)

26. FIORIN, OR MARSH BENT GRASS. (*Agrostis alba*; var. *stolonifera*.)

27. MEADOW SOFT GRASS. (*Holcus lanatus*.)

Toll gate.

28. SOFT BROME GRASS. (*Bromus mollis*.)

Brachydesmus fuscus

30. SOFT CRANE'S-BILL. (*Geranium molle.*)

downy cat

31. DEVIL'S-BIT SCABIUS. (*Scabiosa succisa*.)

Field for test

32. RIB GRASS. (*Plantago lanceolata*.)

Glyceria stricta

33. GRASS OF PARNASSUS. (*Parnassia palustris*.)

meadow body

34. COMMON ELECAMPANE. (*Pulicaria dysenterica*.)

35. BURNET. (*Poterium sanguisorba*.)

36. HEDGE CALAMINT. (*Calamintha clinopodium*.)

~~Br. 100~~

37. WORM-WOOD, SOUTHERN-WOOD, OR MUGWORT. (*Artemisia*.)

Brown
man

38. WHITE GOOSE FOOT. (*Chenopodium album*.)

39. MEADOW SAGE, OR CLARY. (*Salvia pratensis*.)

40. HAIRY WATER MINT. (*Mentha aquatica*.)

41. CATCHWEED, OR CLEAVERS. (*Galium aparine*.)

44. KNOT GRASS. (*Polygonum aviculare*.)

45. SELF HEAL. (*Prunella vulgaris*.)

46. CORN HORSE TAIL. (*Equisetum arvense*.)

47. CREEPING CROWFOOT OR BUTTERCUP. (*Ranunculus repens*.)

48. UPRIGHT MEADOW CROWFOOT. (*Ranunculus acris*.)

49. THE OX-EYE DAISY. (*Leucanthemum vulgare*.)

50. SHEPHERD'S PURSE. (*Capsella bursa pastoris*.)

51. WILD CARROT. (*Daucus carota*.)

52. SHEEP'S SORREL. (*Rumex acetosella*.)

53. COMMON BUGLE. (*Ajuga reptans*.)

55. THE COMMON DAISY. (*Bellis perennis*.)

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