

in favor of plants raised from seed obtained in the above manner.

In reviewing Darwin's book, the *Gardener's Chronicle* said: "It is certain that these practical results will be a long time filtering into the minds of those who will eventually profit most by them."

The results, so far, fully accord with the prophetic statement above quoted; the people are slow, very slow, to profit by the experiments.

CHAPTER XIV.

GRASSES FOR THE LAWN, THE GARDEN, AND FOR DECORATION.

The Lawn.—"Grass is the most lowly, the simplest, and the loveliest element to be used in the adornment of home. A smooth, closely shaven surface of grass is by far the most essential element of beauty on the grounds of a suburban home."—(F. J. Scott.)

"It would be a great gain to horticulture if ten out of every twelve 'flowerbeds' in Europe were blotted out with fresh green grass."—(Robinson's Parks of Paris.)

"A lawn is the *ground work* of a landscape-garden."—(H. W. Sargent.)

Listen to A. J. Downing: "The great elements of landscape gardening are trees and grass. For this purpose we do not look upon grass with the eyes of the farmer who raises three tons to the acre. We have no patience with the tall and gigantic *fodder*, by this name, that grows in the fertile bottoms of the West, so tall that the largest Durham is lost to view while walking through it. No, we love the soft turf which is thrown like a smooth natural carpet over the swelling outline of the smiling earth.

“Fine lawns are possible in all the northern half of the Union, although an American summer does not, like that of Britain, ever moist and humid, naturally favor the condition of fine lawns. The necessary conditions for a good lawn are *deep soil, the proper kinds of grasses, and frequent mowing*. Let the whole area to be laid down be thoroughly moved and broken up two feet deep. Let the surface be raked smooth and entirely cleared of even the smallest stone. The object of a lawn is not to obtain a heavy crop of hay, but simply to maintain perpetual verdure. *Rich* soil would defeat our object by causing a rank growth and coarse stalks, when we wish a short growth and soft herbage. Let the soil, therefore, be good, but not rich; depth, and the power of retaining moisture, are the truly needful qualities.

“Now for the sowing; and here a farmer would advise you to ‘seed down with oats,’ or some such established agricultural precept. Do not listen to him for a moment. Do not suppose you are going to assist a weak growing plant by sowing along with it a coarser growing one to starve it.”

Owing to the difficulty of learning to recognize the seeds, the purchaser is usually at the mercy of the dealer, whose interest it is to enshroud in mystery the whole subject of grasses for the lawn.

Many of the leading seedsmen of our country are advertising extensively and appear to be selling large quantities of “mixtures” of lawn grass seeds for which there is quite a variety of attractive names.

The writer has frequently examined these mixtures and has watched the success of several of them in various portions of the Northern States. For the benefit of my readers I present the results of a careful “analysis” of some samples of seeds of mixed lawn grass.

In former years, the vitality of the rarer grass seeds has uni-

versally been found to be very low, while the germinating power of the common sorts, such as are raised in this and neighboring States, has been satisfactory.

CHICAGO PARKS MIXTURE.

Sold by — — Chicago, Illinois.

The table shows the relative proportion of the different kinds of seeds found:

June Grass, or Kentucky Blue Grass, <i>Poa pratensis</i> , L., in the chaff	1740
White Clover, <i>Trifolium repens</i> , L., clean	90
Sweet Vernal, <i>Anthoxanthum odoratum</i> , L., in chaff	37
Perennial Rye Grass, <i>Lolium perenne</i> , L., in chaff	35
Orchard Grass, Cock's Foot, <i>Dactylis glomerata</i> , L., in chaff	30
Red Top, Brown or Creeping Bent, <i>Agrostis</i> , in chaff	16
Timothy, <i>Phleum pratense</i> , L., clean	6
Mixed and containing traces of the following	15

Velvet Grass, *Holcus lanatus*, L., in chaff (a weed).

Sedge, *Carex* (worthless).

(Narrow ?) Dock, *Rumex* (a weed).

Panic Grass, *Panicum* (worthless).

Chickweed, *Stellaria* (a weed).

This mixture is advertised as *especially adapted to the inland and western States*, and costs 25 cents per quart or \$4.00 per bushel.

As will be seen, it consists mainly of June grass, which the same house offers at \$1.50 per bushel; and the latter, if pure and sowed alone, is far preferable for a lawn to this mixture. Besides those marked weeds, the others which are most objectionable are orchard grass, a coarse, bunchy grass, Timothy, which is too coarse and short lived, perennial rye grass, which just takes the cream of the soil for a few years and then dies out.

FINE MIXED LAWN GRASS.

Sold in bulk by — — Detroit, Mich.

Table showing the proportions:

June Grass, or Kentucky Blue Grass, <i>Poa pratensis</i> , L., in chaff	627
Perennial Rye Grass, <i>Lolium perenne</i> , L., in chaff	470

Timothy, <i>Phleum pratense</i> , L., clean.....	340
White Clover, <i>Trifolium pratense</i> , L., clean.....	220
Red Top, Brown or Creeping Bent, <i>Agrostis</i> , in chaff.....	217
Mixed and containing traces of the following.....	15

Velvet Grass, *Holcus lanatus*, L., in chaff (a weed).

Orchard Grass, Cock's Foot, *Dactylis glomerata*, L., in chaff.

Chess, *Bromus*, some species (a weed).

Crowfoot, *Ranunculus bulbosus* (a weed).

Dock, *Rumex* (a weed).

Lance-leaved Plantain, *Plantago lanceolata*, L., (a weed).

Shepherd's Purse, *Capsella Bursa-pastoris*, Moench (a weed).

This mixture is sold at 50 cents per pound, or \$4 per bushel, and is not so good as the Chicago parks mixture noticed above, because it contains a much smaller proportion of June grass and a much larger proportion of perennial rye grass and Timothy.

FLINT'S LAWN GRASS.

Sold by — — — Detroit, Mich.

Table showing the proportions:

Perennial Rye Grass, <i>Lolium perenne</i> , L., in chaff.....	526
Sheep's Fescue and Hard Fescue, seeds much alike, <i>Festuca ovina</i> and var. <i>duriuscula</i> , L.....	295
June Grass, or Kentucky Blue Grass, <i>Poa pratensis</i> , L., in chaff....	255
White Clover, <i>Trifolium repens</i> , L., clean.....	227
Red or Mammoth Clover, <i>Trifolium pratense</i> or <i>medium</i> , L., clean.....	130
Timothy, <i>Phleum pratense</i> , L., clean.....	105
Meadow Foxtail, <i>Alopecurus pratensis</i> , L., in chaff.....	103
Italian Rye Grass, <i>Lolium perenne</i> , var. <i>Italicum</i> , in chaff.....	47
Sweet Vernal, <i>Anthoxanthum odoratum</i> , L., in chaff.....	35
Hair Grass, <i>Aira flexuosa</i> , L., in chaff (a weed).....	25
Chaff.....	80
Mixed seeds containing traces of the following.....	30
Chess, <i>Bromus</i> (a weed).	
Fescue (species?)	
Velvet Grass (a weed).	
Self Heal, <i>Brunella</i> (a weed).	
Sorrel, <i>Rumex</i> (a weed).	

Ribbed Grass *Plantago lanceolata* L. (a weed).

Chickweed (a weed).

Nonesuch, *Medicago lupulina* L.

A sedge, *Carex*.

Two or three others not recognized.

This mixture is sold at ---- per quart or per bushel.

In addition to the objections made to the two former mixtures are the following:

Sheep's fescue and hard fescue grow in tufts or bunches and will not produce a lawn of even appearance. The red or mammoth clover will also produce a coarse patchy lawn, and the former will die out in two or three years. Italian rye grass will kill out the first winter. Hair grass is a weed substituted for crested dog's tail, which is a feeble grass of no value in this country.

FINE MIXED LAWN GRASS.

Sold by — — Rochester, New York.

Table showing the proportions:

June Grass, Kentucky Blue Grass, <i>Poa pretensis</i> , L., in chaff.....	995
Perennial Rye Grass, <i>Lolium perenne</i> , L., in chaff.....	373
Orchard Grass, Cock's Foot, <i>Dactylis glomerata</i> , L., in chaff.....	327
Red Top, Brown or Creeping Bent, <i>Agrostis</i> , in chaff.....	212
Velvet Grass, <i>Holcus lanatus</i> , L., in chaff (a weed).....	22

Mixed and containing traces of the following:

Chess, *Bromus*, Sp. (?) (a weed).

Lance-leaved Plantain, Ribbed Grass, *Plantago lanceolata*, L. (a weed).

Dock or Sorrel, *Rumex* (a weed).

White Clover, *Trifolium repens*, L.

Timothy, *Phleum pratense*, L.

Crowfoot, *Ranunculus bulbosus*, L. (?) (a weed).

Shepherd's Purse, *Capsella Bursa-pastoris*, Moench (a weed).

The above is sold at \$4 per bushel.

For objections to some of these ingredients consult the comments inserted in connection with the former mixtures.

Sold in bulk by — — — New York.

Table showing the proportions:

June Grass, or Kentucky Blue Grass, <i>Poa pratensis</i> , L., in chaff...	648
Red Top, Brown or Creeping Bent, <i>Agrostis</i>	528
White Clover, <i>Trifolium repens</i> L., clean.....	158
Timothy, <i>Phleum pratense</i> , L., clean.....	38
Ergot of <i>Agrostis</i> , or Red Top, (infested with fungus).....	10

Mixed and containing traces of the following:

Eggs of insects.

Dung of insects.

Dead insects.

Panic Grass, *Panicum* (a weed).

Chickweed.

Shepherd's Purse, *Capsella Bursa-pastoris*, Moench (a weed).

Dock, *Rumex* (a weed).

Orchard Grass or Cock's Foot, *Dactylis glomerata*, L.

Eleocharis, a rush or grass-like plant (a weed).

Round Leaved Mallow, *Malva rotundifolia*, L. (a weed).

This is sold for \$5 per bushel, and is a good mixture, omitting the seed of Timothy and the weeds. The house claims to have sold 70,000 packages in 1885. The same house offers June grass for \$2.25, and Bent grass for \$4 per bushel.

THE "HENDERSON" LAWN GRASS SEED.

Sold by — — — New York.

Table showing the proportions:

Brown or Creeping Bent or Red Top, <i>Agrostis</i> , in chaff.....	880
June Grass or Kentucky Blue Grass, <i>Poa pratensis</i> , L., in chaff....	715
White Clover, <i>Trifolium repens</i> , L., clean.....	120
Sheep's or Hard Fescue, <i>Festuca ovina</i> or var. <i>duriuscula</i> , L., in chaff	110
Perennial Rye Grass, <i>Lolium perenne</i> , L., in chaff.....	95
Sweet Vernal, <i>Anthoxanthum odoratum</i> , L., var. <i>Puelli</i> , in chaff...	17
Timothy, <i>Phleum pratense</i> , L., clean.....	10

A few seeds of Chickweed, some *Panicum*, Mallow, *Malva rotundifolia*, L., (a weed), Ergot, some other weeds not recognized.

This is much like the Central Park lawn grass previously noticed. This one contains some seeds of small fescues apparently

mixed, a little perennial rye grass, which is no benefit to it, and a very little Timothy, which would be better to omit, and a small amount of sweet vernal, which apparently is the annual variety and of no value. The three leading ingredients are the June grass, bent grass, and white clover.

It was the freest from weeds of any mixture examined. It is sold for 25 cents per quart or \$5.50 per bushel. The same house sells June grass for \$2.25 per bushel, bent grass for \$4.00 per bushel, white clover for 40 cents per pound.

The preceding tables and the remarks below each should be studied in connection with what follows.

At the Agricultural College, numerous plats in various seasons and soils, mixed and separate, have been tried, and those grasses of most value are June grass and a small red top. White clover often thrives well with these, but it varies much with the change of seasons. Sod taken from a rich old pasture or the roadside usually makes excellent lawn as soon as laid, but it is too expensive for a large plat. The main grasses making such a turf are those last mentioned, June grass and red top, with perhaps some white clover.

In making a lawn too little stress is usually placed on thorough trenching or subsoiling and enriching the land. The surface should be harrowed and hand-raked till it is in the finest condition.

With the writer's experience, having tested for some years over two hundred kinds of grasses and clovers, both native and foreign, for Michigan and places with similar climates, he would sow about two bushels of seeds (in the chaff) of June grass, *Poa pratensis*, L., and two bushels of some small bent grass, known as Rhode Island Bent, Brown Bent, or Creeping Bent, or as red top. The latter grasses vary much and are usually much mixed, as they were in all the samples above examined.

A few ounces of white clover may be added, if the owner pre-

fers, but it is by no means very important. Each one of these two or three kinds of plants will appear to cover the ground all over, so it will look uniform.

To the farmer who is accustomed to sow coarse seeds for a meadow or pasture the above quantity of seeds appears to be enormous. But the aim is to secure many very fine stalks instead of a few large coarse ones.

If a little sweet vernal and a little perennial rye grass are used a careful observer, at certain seasons of the year, will see that the lawn looks "patchy." Especially in early spring, or in very dry weather, some of these and others often recommended, will grow faster than the rest and assume different shades of green. For a lawn *never* use any Timothy, orchard grass, tall oat grass, red clover, meadow fescue or other large grass or clover, but only the finest perennial grasses or clovers. Sow the seeds in September or in March or April, without any "sprinkling" of oats or wheat, and as soon as the grasses get up a little and the straggling weeds get up still higher, mow them, and keep mowing every week or two all summer.

Avoid purchasing mixtures advertised in seed catalogues, as it will be much cheaper and safer to buy each sort separately, and only one or two or three sorts are desirable. The rarer grasses are mostly imported, and up to the present time, as was said, have been found to possess very low vitality; besides, bad foreign weeds are very commonly mixed with these grass seeds. There are good reasons, then, for buying common sorts, and, if possible, those raised and cleaned in a careful manner.

James Hunter, of England, in his manual of grasses, says: "Careful analysis of the mixed lawn grass seeds sold by some large seed houses at high prices prove them to consist of from 40 to 50 per cent. of rye grass, whereas not a single seed of rye grass should be included in any mixture for producing a lawn."

The Royal Agricultural Society of England employs a con-

sulting botanist, Wm. Caruthers, who, for small fees, tests the seeds for its members. He finds it best to avoid purchasing mixtures for lawn, pasture or meadow.

The editor of the *Gardner's Monthly* echoes the sentiments of our best judges in this matter when he advises for lawn to sow June grass or red top either one alone or both mixed.

E. S. Carman, one of the editors of the *Rural New Yorker*, and manager of a fine homestead and an experimental farm, writes: "Thirteen years ago we sowed on different parts of an acre of lawn blue grass, red top, Rhode Island bent and the 'lawn mixtures' sold by seedsmen. To-day the red top presents the finest and brightest appearance, while the lawn mixture' portion has since been re sown with red top and blue grass."

In conclusion, if not so already, make the soil strong, drain thoroughly, deeply pulverize, harrow and hand-rake the surface carefully. In early spring, or in early autumn if not dry, sow, without any wheat or oats, three or four bushels to the acre of June grass or red top, either one or a mixture of both in any proportion.

Ornamental Grasses.—Although grasses rank among the lowest of the flowering plants, and very few have anything like gaily colored blossoms, yet no order possesses plants which surpass some of them in grace and elegance. For beauty, grasses rely mainly upon their forms and pleasing shades of green color. A few have brilliant colored anthers, or their spikelets are covered with white hairs.

From simple, rigid heads or spikes to the most graceful of delicate, drooping panicles there are all grades of pleasing forms.

We have considered the surpassing beauty of a green velvet lawn, but who can fail to admire the glory of the meadow or the pasture on the plain or the hill-side spotted with fat cattle or "bunchy" sheep?

There is much to admire when grasses are crowded together in

large masses, whether they are kept closely shorn or cropped, or whether they grow to uniform height and are viewed at various stages of their growth as the clouds drift over the fields or "they wave their fairy tassels in the wind."

Occasionally, near springs and streams, the frost deposits on the panicles a covering which is indescribably beautiful.

Within a few years, florists have given considerable attention to the grasses for winter bouquets and for other decorative purposes. Our enterprising growers and dealers offer the seeds of quite a long list of the best for these purposes.

In one other respect the grasses have not yet begun to assume the prominence their merits demand. The writer has grown a large number of our native and foreign grasses, and has studied them where each kind grew by itself in isolated bunches or patches, and he is free to say that in no other place does a grass appear to better advantage. Here is an almost endless variety, as exhibited in form, texture and color of the leaves. The culms also, and the spikes, racemes or panicles reveal their peculiarities in a manner which is most varied and pleasing.

Such bunches of many kinds of grasses are well worthy of a place among the ornamental plats of our lawns and gardens.

Where so many are fine it is difficult to discriminate. Those advertised by the florists are all good, including those with striped leaves.

Mays, sugar cane, *Sorghum*, bamboo, *Arundo donax*, *Zizania aquatica*, *Phragmites communis*, and other tall species with broad leaves are valuable for the sub-tropical garden. The two latter are excellent for growing in the shallow margins of ponds.

For plumes and bouquets the following are much used, for accounts of which consult the text elsewhere: *Briza maxima*, *B. media*, *B. gracilis*, *Bromus asper*, *Lagurus ovatus*, *Polypogon monspeliensis*, *Deschampsia cespitosa*, *Phragmites communis*, many species of *Festuca*, *Elymus arenarius*, *Agrostis elgans*, *A. nebu-*

losa, *A. scabra*, *Panicum capillare*, *P. virgatum*, *Pennisetum longistylum*, *Asprella hystrix*, *Erianthus ravennæ*, *Coix lachryma*, *Gynerium argenteum*, *Arundo conspicua*, *Chloris radiata*, *Stipa pennata*, *Hordeum jubatum*.

There is scarcely a genus of grasses of any size which does not possess one or more species of special value for ornamental purposes. To the botanist, the artist or the florist it is hardly necessary to mention the following genera, viz: *Panicum*, *Setaria*, *Spartina*, *Andropogon*, *Phalaris*, *Alopecurus*, *Phleum*, *Milium*, *Muhlenbergia*, *Holcus*, *Avena*, *Cynodon*, *Bouteloua*, *Eleusine*, *Eatonia*, *Graphephorum*, *Eragrostis*, *Melica*, *Poa*, *Glyceria*, *Festuca*, *Bromus*, *Elymus*, *Triticum*, *Lolium*, and many others. We hardly know where to stop giving names for this purpose.

With reference to collecting and the use of grasses, A. Hassard in *The Garden* for 1875 has the following: "Not even the most delicate fern will give the same airy look to a vase of flowers that a few spikes of wild grasses will impart. In cutting grasses for use they must be selected before they are old enough to fall to pieces when dried. Each variety should be tied in separate bunches, and care should be taken that they are not bruised together, for, if this is the case, when the bunch is opened each spike will be found to have dried in its crushed position, and its form will be thus quite spoiled. All grasses should be dried in an upright position, particularly those of a drooping character. Oats, while still green, are also very pretty in large arrangements. A free use of grasses and sedges enables you to dispense with many flowers. The bloom of ribbon grass is very useful for this purpose, as it has a silver-like lustre, or a rose-pink tint, which is very pretty."