

bearing as well as leafy stems were exhibited in the collection of Mr. R. T. Mackintosh, at the last July Show of the Highland and Agricultural Society of Scotland; and others were shown by its introducer, Mr. Robert Brown, at the meeting of the Largo Field Naturalists' Society which was held last August at Elie, in Fife. This plant presented a thick, tender, leafy growth, of about 3 ft. in height in the last week of April, when it decidedly surpassed, in bulk of crop, the grass then growing in the neighbouring famed sewage-irrigated meadows of Edinburgh. So that, as a highly productive, early cutting grass, it ranks far before any other known kind. A plentiful crop of ripe seeds was reaped from the fertile stems in the first week of September, by which time several of a thick intermingled growth of leafy or barren stems had attained to about the same height as the seed bearing ones, while the others of these were of various intermediate heights. All the stems, as well as foliage, changed from a greenish to a brown withered-like colour by the second week of November.

The following analyses of both the seed-bearing and leafy stems have been made by Professor Anderson, analytical chemist, for the Highland and Agricultural Society of Scotland, who stated in an accompanying note:—

"I enclose analyses of the two samples of Bunch Grass. They have not so high a nutritive value as good ordinary hay, which contains twice as much nitrogenous matter and rather more oil.

	Leaf-bearing stalks.	Seed-bearing stalks.
Water.....	14.84	18.29
Oil.....	1.71	1.36
Albuminous compounds....	4.44	3.62
Mucilage, gum, &c....	48.21	41.92
Fibre.....	26.61	30.65
Ash.....	4.19	4.15
	100.00	100.00

Nitrogen.....	.71	.58
The ash contains—		
Phosphates.....	.29	.15
Phosphoric acid combined with alkalis.....	.91	.19
Sand.....	2.15	1.95

I am, yours truly,
THOMAS ANDERSON."

Although the above analyses do not show so high a nutritive value as that of good ordinary hay, this must not be deemed deprecatory of this Bunch Grass, seeing that both samples were cut in October, fully a month after the seeds were ripened; whereas grasses generally contain most nutriment when cut immediately after flowering.

In cultivating the British Columbian Bunch Grass, we would recommend sowing it in drills or beds, allowing it to grow there for at least one season, and then transplanting it in well-cleaned and drained land, at distances of 12 to 15 inches apart. The seedlings make but little growth, and never run to seed in the first season. Hoeing or weeding will

therefore be requisite throughout the first summer and autumn after transplantation; but afterwards the plants will be sufficiently strong to overpower most kinds of weeds. And they will seemingly grow on in full vigour for a long series of years.

Subsequent to our fore-mentioned notice of this Bunch Grass, we have received the following particulars regarding it in its native habitats. In a paper on the Flora of Alaska—formerly known as Russian-America—which appeared in the *Smithsonian Report* for 1867, the writer, Dr Rothrock, states that the high grounds in the vicinity of Fort St. James (lat 54° 1' N.) afford the Bunch Grass (*Elymus*) of the packers. So nutritious is this, that, even when apparently dead and dry, stock will become fat on it, and remain so under hard work for long periods, if this be plentifully supplied. In a recent Californian newspaper, a correspondent mentions that in the vicinity of Boise Basin, in Idaho Territory, "the Blue-top Bunch Grass" covers the hills, and is as good as hay, some even approaching, in its nutritive qualities, to grain. There may, however, be some doubts whether one of the other Bunch Grasses formerly referred to, and not the *Elymus condensatus*, may be that here noticed. But the most recent reliable and important information regarding it is contained in the following letter to Mr. Robert Brown, of the British Columbian Botanical Expedition, from a friend who lived for many years in the Bunch Grass country:—

"LYNEAL, ELLESMERE,
9th Sept., 1869."

"Dear Sir,—You ask my opinion of the Bunch Grass of the central plateau or table-lands of British Columbia—*Elymus condensatus*, as I believe you botanists call it. After a five years' experience of that country, I can bear testimony to the nutritious and fattening properties of this grass, far surpassing, I believe, those of any other known herb. A few facts will abundantly illustrate this.

"In the early years of the colony, before oats or barley had been imported, this Bunch Grass was the only (as it is still the principal) food of the trains of mules and horses which, heavily laden with provisions and goods, followed the gold diggers into the mines, over the roughest possible trails: I have ridden hundreds of miles on horses whose sole support was this Bunch Grass. Turned loose at sunset, when the camping-ground was reached, to feed, they were found next morning as fresh and gay as ever. Indeed, on such a journey, if not ridden too hard, they would rather gain flesh than lose it.

"In my *Essay on British Columbia*, page 40, I have spoken of the marvellous increase of stock in that part of the

country, an increase, owing, I believe, mainly to the amount of vital energy imparted by this herb.

"Then, as you are aware, the droves of cattle which supplied beef to the mines of Cariboo, had been driven 600 miles from Oregon, yet they were in excellent condition on their arrival, owing to the excellent pasturage, which refreshed them each night after the journey of the day.

"Finally, both horses and cattle used to survive winters of great severity; so long as there was not too much snow for them to paw aside, they could subsist on what tufts of Bunch Grass they could reach. It must have been hard times for them, but they managed to survive.

"I am rejoiced to hear that the experiment of trying this grass near Edinburgh has succeeded so admirably; and I trust agriculturists may be induced to try it on a larger scale, as I am convinced farmers and cattle-breeders would soon learn to appreciate its muscle-making and fattening properties—Believe me, dear sir, yours very faithfully,

R. C. LUNDIN BROWN,
Vicar of Lyneal, Salop."

A very distinct variety has been raised in the Edinburgh Royal Botanic Gardens, which may be named *Elymus condensatus compactus*, from its spikes or ears being much shorter and broader than those of the original form; bearing, in fact, the same relation to the latter that the ears of the *Triticum compactum*, or Ducks-bill wheat, does to those of the common beardless wheats.—*The Farmer*.

Communications.

STOCK—RAISING AND FEEDING.

SIR,—It is with all modesty that I bring my own experiences before the public through your *Journal*,—for I have only farmed for very few years—still I have in that time gone through every phase of farming, commencing with regular bush work, so that I cannot be said to speak of what I know nothing—besides which, I wish to provoke outspokening in my brother farmers.

It strikes me that we farmers do not study our farms sufficiently in what we produce on them; we do not consider their capacity and locality as much as we should do. In England, and I believe elsewhere, certain districts breed stock—others purchase the animals when nearly full grown, and fatten them for the butcher. Here the main boast of every farmer is that he winters so many head of cattle, young stock, cows and beef oxen. Should we not be wiser to follow the home custom? Surely our rich farming districts