them; yet I think the spiky roller would be a means of destroying them.

The grubs, on which my experiments were made, are, when full grown, about an inch and half long, and a quarter of an inch in diameter.—They are of a bluish colour, and of the moth tribe. This was ascertained by laying their chrysalids upon soil, in a glass covered with thin gause. I have already stated, that on the 30th of October, the second and final transformation took place: the grey moth that was produced measured seven-eighths of an inch in length.—It had two large dim eyes, very near to its mouth, and a feathered like top on its head, resembling an owl. One of these months lived in the glass seven days *without food.*

It is said, that "all caterpillars of the phalænæ tribe after having several times cast their slough, spin their cod, in which "they are transformed into chrysalids:" but the cod of the St. Helena grub is substituted by a crust formed of soil, and the excretions of the insect. Heat, or cold, evidently contributes to forward, or retard, the final metamorphosis. It has been shewn that the two changes were effected in seven weeks—that is, between the 10th of September and 30th of October. In colder climates, however, they are said to require a much longer time; and that the greater part do not come forth until the ensuing year.

The phalænæ, or insects, sprung from those chrysalids, do not possess the brilliance of butterflies; but what I imagine to be the male moth is more brilliant and active than the female. There is, indeed, a great difference in their form and colour. The wings of the one are wrapped up or folded round the body; and those of the other are more spread, and in shape resemble a delta. Some authors have given the moth the name of "night butterflies;"—and there seems to be a sort of analogy similar to that

between birds of day and of night. Moths are known to be fond of light, and get into rooms when attracted by it. I have observed many of the species that produces the grub, fluttering around candles, and destroying themselves. It may, therefore, be inferred that great numbers of the parent of grubs might be annihilated, by placing fires of dry furze, or straw, or torches, in the fields during the night, at the times they are observed to have undergone this final transformation.

There seems to be also another method of destroying the grub, and preventing its propagation. It has been usually remarked that, at certain times, and more especially at night, it remains upon, or near the surface. I therefore conceive that, by means of a red-hot roller, or a perforated hollow cylinder filled with burning charcoal, and moved slowly along a field, many of them might be destroyed.

Mr. Hale, in page 478, vol. iii. observes, that "the grub is the "worm produced by *the egg of the beetle*. There is one parti- "cular kind more destructive than the rest, and when the grub "is mentioned, without any distinction, this kind is meant. It "is a thick, short, whitish worm, with a hard red head, and six "short legs. It is found among the roots of corn, and does pro- "digious mischief; it feeds on the sweet matter of corn, which "is, at that time, a kind of pap, like cream."

However correct this may be in the United Kingdoms, it does not apply to St. Helena. "This creature," says Mr. Hale, "is "the produce of the cockchaffer:"—but certainly the most destructive grub here is what is called "the black grub," which is the same as I have described; and its parent is undoubtedly a moth.

Mr. Hale's description corresponds, however, in some degree, to a white maggot ("hog-worm," as it is here named, from hogs

being extremely fond of it) which is found in great numbers in old grass lands, when newly broken up. These have not hitherto been injurious to potatoes, or crops of corn: yet they are very destructive to pasture lands. I knew not, until lately, the cause of the barren appearance I had observed in many parts of the pastures. I had been told it proceeded from shallowness of soil, or from barren clays under the soil:—but, upon breaking up some old lays, it was discovered that, under these *apparently* barren spots, this "large white grub, with a red head, six short "legs, and nine breathing holes in each side, and measuring "from an inch to an inch and a half in length," had been at work, and had absolutely separated the sward, for an inch or more, from the sub-soil. I have examined many spots, where the verdure had disappeared, and invariably have found this destructive maggot. I have seen some taken out at 12 or 15 inches under the surface; and, at other times, have caught them destructively employed within a few inches of the grass, feeding on its roots, and occasioning the mischief. It seems to me, unless the lands, on which they have taken up their abode, are dug up, or ploughed, that the most serious consequences may be apprehended. Mr. Thomas Greentree, the other day, informed me that, on his lands, this species of insect did not appear until last year.—Already it has spread over several acres; and unless it is checked, it is impossible to foresee to what extent those depredations may be committed. It is not merely at Mr. Greentree's, but on Church-ground, at Mrs. Harper's, and to the southward of Mr. Defountain's, and many other places, that the ravages of this insect may be discovered. In the year 1751 an insect of the same description, but seemingly of a different species (for at St. Helena I believe the maggot becomes a brown cricket,) made its appearance in the county of Norfolk. So much did it multiply,

To guard, as much as possible, against such formidable attacks, it seems advisable to sow corn towards the end of June or December; at which times, the rainy seasons may be supposed to be near at hand—for, whilst the rains continue, the grub cannot be hatched—and if accidentally they should come forth when the corn has been well advanced in growth (a circumstance also unfavourable to their generation, owing to the natural moisture in the corn, and the shade it affords the land) the young grubs would be in a manner deprived of their *natural food;* for, if the corn have attained strength, and have lost that sweetness it possesses when young, numbers would die for want of nourishment; and the corn, by setting forth numerous shoots, would be placed beyond the reach of the feeble attempts of young insects, and be less liable to injury from those that are full grown.

10*th December*, 1811.

that not only the verdure of the pastures was destroyed, but the roots of all sorts of vegetables were attacked—and their devastations were so great, that they had nearly ruined many of the farmers in one of the most fertile counties in England.

It was the want of potatoe seed that led to the experiment of oats, upon newly broken up land. I was aware of the hazard to which the crop might be exposed: but as the adjoining field, treated in the same manner, and planted with potatoes, has yielded a good crop, it proves clearly that there is little or no risk in beginning, newly broken up land, with potatoes. The mode of planting here, is also favourable—for by using the small whole potatoe as seed, there are many shoots: wherefore if even a few escape the grub, the crop will succeed: and this is the reason why potatoe crops are seldom seriously affected by the depredations of that insect. Repeated cropping and stirring the land, I have also found an effectual remedy; for in some that was at first greatly infested, there is not now a grub to be seen.

"Grubs feed on the sweet matter of corn, which is a kind of "pap, like cream." This property it evidently possesses at the time the plants are very young and tender—but, when they attain size and strength, the juices lose that sweetness, and are therefore, much less adapted to the nourishment of the young grubs; which are, indeed, the most to be apprehended.

The crop of oats that was destroyed, was sown, perhaps, too early—that is, on the 4th of June; and consequently about four weeks before the expected rains.—These, however, this year, in a great degree, failed—and the few showers that did fall, were immediately evaporated by the sun's heat. It was during this dry weather that the eggs of the grub were hatched; and that the young grubs came forth just in time to feed on the tender corn, that had been considerably retarded by the dry weather.

yields as much sustenance as any ten or twelve acres of the best of the grass lands; and at the time the grass is low, an acre of green corn is worth at least fifty acres of such grass.

The following experiments will illustrate these observations.

Barley Experiment, 1808-9.

September 13th, 1808—Sown.

November 22d—Ears appearing.

January 19th, 1809—First cutting yielded 55¼ bushels per acre—the grain full and better than the English seed; for on the 14th March, when perfectly dried, 100 St. Helena barley-corns weighed 71½ grains, Apothecary's weight; and a hundred of the English seed barley-corns weighed no more than 62 grains.

March 1st—Again in ear.

March 13th—Second cutting, green in ear for fodder.

May 8th—A third time in ear.

May 9th—Third cutting, green in ear for fodder.

Hence, one crop of corn, and three crops of straw or fodder, were produced from the same seed, and roots, in less than eight months from the day on which the seed was sown. It may therefore be inferred, that one crop of corn, and three or four crops of fodder (which I understand have been obtained) may be produced from the same seed in twelve months.*

Barley Experiments, 1810.

March 15th, 1810—Sowed an acre with a bushel and half of Cape barley.

March 20th—Already come up, 1½ to 2 inches long.

May 16th—The crop is very luxuriant, a good many ears appeared.

* This was two-headed barley.—The hexagonal barley does not reproduce in the same manner.

SECTION XIII.

Notes of Experiments in the Culture of Wheat, Barley, and Oats—green Crops of Fodder recommended—Suggestions for the Improvement of the Pasture Lands—Evil Effects of Feeding a Population—Comparison of Exports from the Farms in 1789 *and* 1809.—*Plans suggested for improving the Island.**

EXPERIMENTS at Plantation-house Farm, and at Long Wood, have not merely decided the practicability of raising all kinds of corn at St. Helena; but have proved that the introduction of agriculture would be highly advantageous to the land-holders. Their wheat and barley would be in constant demand for baking and brewing; their oats for feeding horses, poultry, &c.; and whilst their lands are producing these necessary supplies, the large quantities of straw from the first crops, as well as from after-cuttings, would be an acceptable and nutritious fodder for cattle, especially at those times when the grass is low—or when a disappointment in rain has happened. It is therefore evident that the idea which has been long entertained by many persons "that agriculture in St. Helena would diminish the sustenance for cattle," is very erroneous. So far from decreasing, it will be found that it would be the very best means of augmenting that sustenance—and, consequently, this island might be made to support a much greater number of cattle than has ever been upon it—for experiments have proved, that a single acre of wheat, barley, or oats, throughout the year, if used as a green fodder,

* This paper was printed for the information of the landholders, in the month of November 1810.

July 19th—A good deal is now ripe: a few fine days would ripen the whole.

August 14th—Ripe part (on the poorest land,) cut; yielded, when well dried, at the rate of 90cwt. 1qr. 13lb. per acre of straw and ears.

August 15—The remainder of the acre cut down. It was in a mixed state, of ripe and unripe corn: at this rainy and unfavourable season of the year, there could be no hope of ripening.

September 1st—That part of the crop which was ripe, consisting of 52 sheaves) was this day threshed. It was the produce of 5286 square links, weighed 162 pounds of clean corn: this is at the rate of 63¼ bushels (of 48 pounds) per acre.

The straw, after threshing, weighed 278 pounds; or at the rate of 5259 pounds; but as a good deal was wasted in carrying it several times from the field under cover, on account of the rains, the produce may be very fairly taken at 65 bushels, and the straw at 2½ tons per acre. The land was good; but the above experiments are wholly without manure.

Wheat Experiment, 1810.

March 15th—Sown.

March 20th—Already come up, 1½ to 2 inches long.

May 31st—Although not yet in ear, the crop has a very luxuriant appearance.

June 14th—A few ears appear—remarkably promising crop.

July 19th—Still green.—Ears long, but not filled.

August 14th—Cut two square rods as green fodder; produce weighed 294 pounds, say 300, including gleanings, would be 24,000 pounds, or more than 10 tons per acre.

This wheat and the preceding barley experiment were sown at the most unfavourable season of the year: for there could be little

hope of its arriving at maturity; but in making experiments with a view of acquiring knowledge, all seasons should be tried. The proper season, however, for sowing is about July or the middle of August, as the crop would arrive at maturity in December, when the weather is usually dry and warm; but if intended to be cut as a green fodder, to meet the low state of the grass lands in the month of March, I should prefer sowing about the beginning of November, and cutting it whilst green, which would secure the after crops; because if cut in the dry season of the year, when in a perfect state of ripeness, the sap in the stems, being wholly evaporated, it would require a considerable deal of rain to carry on the process of further vegetation.

The following extract from my journal was written at the moment I was under this impression; it relates to another experiment.

February 28th, 1810—"The wheat sown on the 9th of November is now in full ear, both in the seed-bed and in the adjoining plot, to which some had been transplanted on the 20th of December. This experiment is very satisfactory; it proves how very advantageous, at this dry season, it would be to have green crops of wheat, barley, and oats, with a view of averting the fatal consequences of a dry season. The grass at present is much burnt up; and the cattle begin to feel the effect of the drought. Fodder of wheat, barley, or oats, would be very serviceable; and might be had in succession, by sowing the seed during the months of October and November."

In the course of my observations upon the opinions of the landholders respecting the extermination of the goats, as well as in a minute, and some notes published in the Laws and Ordinances, I have given such hints for the improvement of the island as I can with confidence recommend, because they are the result of

more than two years experience in the culture of corn of all sorts, of esculents, and a variety of trees, shrubs, &c. &c.

It is indeed not to be wondered at if some of my notions upon improvements, may be by some considered as chimerical, particularly by persons who have never in their lives seen a field of corn, and who have not even had the curiosity to look at the luxuriant crops which have been already raised on the Plantation-house and Long Wood farms. Such persons assert that the best modes of cultivation must be those which their own experience and that of their forefathers have taught them ; and they add, that what may do well in England, cannot succeed in this island, on account of dry seasons, a want of labouring population, and such like excuses, for adhering to a system of management, which has been, and ever will be, if continued, most ruinous, both to themselves and to the Honourable Company.

If what I have recorded in the above-mentioned papers had been merely matter of opinion and judgment, there might have then been some plea for opposing new plans. Is it wise, or reasonable, pertinaciously to persist in their old modes of husbandry, when it has been incontestibly proved, from facts, that an entire change of system would not only be of the most important benefit to this place, but would also save the planters, in future, such losses in cattle, as they have hitherto sustained in seasons of drought, as well, as at those times when the rains have only in a partial degree failed ?

Being extremely anxious to impress on the minds of the planters, the infinite advantage which would proceed from a spirit of exertion and industry being once excited, I have already taken a general view of the effects that might be expected to result, in pages 30, 31, and 32 of the Laws and Ordinances. I shall, therefore, confine my present observations to a subject which

they themselves have always considered equally important to their own interests, as it is to the original intention of maintaining this establishment.

At the present moment the summer heats have burnt up all the pastures to the eastward of the island.* I went yesterday and inspected those at Long Wood, and was astonished to find them so exhausted and bare. It is, however, by no means difficult to explain the causes; for those grasses are as old as the island; where they are eaten down there is no appearance, at present, of re-production; and where cattle have for many months been excluded, the old wire-grass is become tufted, and as dry as thatch, with naked intervals between; moreover many places are mossy; and the whole extent of the pastures is hide-bound.

In some part of what is called the *Gut*† (where the ground had been loosened and stirred) even, at this dry time of the year, are most luxuriant patches of fine, young and tender grass.—The same may be seen at Plantation-house. Thus nature points out a very simple process for improving any of the pasture lands in this island.

The best writers on agriculture have most clearly demonstrated the fertilizing effect which is produced by the atmosphere, upon lands prepared to admit its influence. The earth in its natural and compact state can receive no benefit of this kind; for if the rains are copious, particularly on the declining surfaces of St. Helena, they run off as fast as they fall, and if not, the compactness of the surface prevents their sinking more than an inch deep; so that they are exhaled by the first hot sun—and consequently they can leave little or no improvement. If, however, the soil were loosened to the depth of nine or ten inches by the plough, it is

November 29, 1810.

† The low ground which formed the lower garden at Long Wood.

evident that the rains, or moisture, from the atmosphere, would generally penetrate beyond the reach of the powerful heats. Thus a sufficiency of moisture would be secured for the purposes of vegetation; and when young grass, or any other crop, shall have covered this surface of the soil, it would be a further security and protection in retaining the moisture.

It is evident therefore, that ploughing the old pastures, and raking out the old roots, or tufted grass, and burning them, and then harrowing the lands, will be a vast improvement, particularly in those parts of the island which are the soonest affected by the absence of rains.

This mode of improvement, which could not be costly, after a little practice in ploughing, would evidently be the best means of securing good crops of grass, and thereby averting the effects of seasons of drought.

In confirmation of what I have already stated, in pages 24 to 28 of the Laws and Ordinances, upon the advantages of raising green corn crops for feeding cattle, I will here relate the complete success which has attended Colonel Broughton's experiment at Long Wood.

About ten acres of oats were sown on the 1st of August, 1810, and although there has been very little rain since that time, the crop is green and beautiful; whilst all the pastures have been severely afflicted by the heats. The corn is now about three or four feet high, very thick and just coming into ear. Colonel Broughton, Mr. Porteous, and myself, had yesterday in our presence cut down a square rod (that is, a square 16½ feet). This produce of exceeding fine fodder weighed 227 pounds, which multiplied by 160 (the number of square rods in an acre), gives 36,320 pounds, or 16 tons and a quarter per acre. The whole of the crop in its present green state, is immediately to be cut

down, hayed and stacked, and given to the cattle; and I have every reason to believe, from several experiments I have made, that in six or eight weeks there may be a second crop, not much inferior to the first: but supposing it to be a half, this would be, in six months from the day the seed was sown, not less than twenty-four tons of fodder from one acre! and let any planter compare this with the produce of his grass lands, and duly consider all I have already stated on this important subject, and he cannot fail to admit, if he will allow his reason to operate, that eminent and great advantages would infallibly result from the introduction of agriculture on this island. It is the unanimous opinion of Colonel Broughton, Mr. Porteous, and myself, that an acre of this green fodder will yield in nourishment for cattle, more than any hundred acres of the Long Wood pastures in their present condition.

It must be evident, from the foregoing experiments and observations, that agriculture at St. Helena would be eminently successful. Its importance was early foreseen by the Court of Directors; but the obstacles which long opposed its general introduction (I mean the want of proper enclosures and the perpetual trespasses of goats and sheep) have been suffered to remain, and no extensive encouragement has ever yet been held out to the cultivators. They were told to feed themselves and not to depend upon England for provisions; and, whilst they were strongly urged upon these points, their efforts soon relaxed in proportion as they were afforded an easy means of purchasing every necessary of life from the Company's stores, at prices much under those at which they could raise them.

The Planters are not aware that a want of industry, and this mode of supply are the very causes that exhaust their substance; and that the import of any sorts of provisions, however low in

price, which can be raised on the farms, is an evil which operates against their best interests. The labour of their slaves and servants is never fully exerted: much of their time is squandered between the farms and James's Valley, where they acquire habits of vice and idleness; and the attention of the master has been, from the causes above stated, unwarily withdrawn from those pursuits which could alone improve his condition: and particularly in a place where there is neither commerce nor manufacture.

The extent of cultivation has hitherto been barely sufficient for a scanty supply of refreshments to the shipping; and this has been far less than in former times. In 1789, the quantity of fresh provisions and vegetables furnished to the shipping, was about three times more than in 1809, because the prices were moderate, and not more than about one-third of those of the present time.* The total value of exported produce to the shipping, in 1789, was £6569..1..11. and in 1809, £6346..10..6. Hence it is proved that the Planters receive less than they did twenty years ago; whilst the rest of the community and the shipping are exposed to great inconvenience and expence, proceeding from this limited scale of cultivation, and from the decline of industry at the farms.

It is not in the nature of things, that if the value of the annual produce of the farms be less than that of provisions purchased by

Comparative Prices of the following Articles, sold from the Farms in 1789, *and* 1811.

	1789.		1811.	
	L. s. d.	*L. s. d.*	*L. s. d.*	*L. s. d.*
Beef, per lb. -	0 0 6		0 1 2	
Pork, per lb. -	0 0 6		0 1 3	
Sheep, each -	1 1 0		2 0 0	to 3 0 0
Turkies, each -	0 5 0	to 0 8 0	1 12 0	to 2 2 0
Geese, each -	0 6 0		1 1 0	to 1 5 0
Ducks and Fowls, each	0 1 6	to 0 2 0	0 7 6	to 0 12 0

the planters, that there can be any balance at the end of the year in favour of the farms. That this must be the fact, appears from a view of the annual purchase of provisions from the stores. In 1809, £3540. was paid for beef and pork; about £5000. for flour; and £3000. for rice and paddy; in all, £11,540. (exclusive of spirits and other articles.) I have before stated that the exported produce of the lands was only £6346.

Now, if the above sum of £11,540. could be diverted into the hands of the planters, (and that it is possible, by means of common industry, cannot be questioned) what an improvement would it make in their condition, as well as that of other individuals on this island? But even much more than this might be done, by favouring and encouraging agriculture. Every one admits that the soil in many places, is excellent; and the climate is such, that the powers of vegetation seem never at rest. What then is wanting to make the lands productive but industry and a skilful direction of the labour of the island? One hundred and twenty acres would furnish the island breweries with about 700 quarters of malt, which, according to an estimate in my possession from one of the brewers, would cost, if imported from England, about 6 or £7000. One hundred and thirty acres of wheat, rating the produce at 35 bushels per acre, would yield 4550 bushels, equivalent to 204,750 pounds of flower, and 68,250 pounds of pollards. The value of these at the English prices of what are sent here, may be fairly rated at £4000.; and, supposing that no more than 120,000 pounds of fresh pork were to be annually supplied to the garrison from the farms, this, at one shilling a pound for the dead weight, would be £6000. and the whole of these sums would create an addition of £28,040. to the present exported produce; making a total of about £34,000. a year, for products that might be in constant demand from the farms of St.

Helena whenever they shall be able to supply the articles above enumerated.

Moreover, the quantity of straw produced from 250 acres of corn may be rated at 500 tons, which would not only be a valuable acquisition of fodder, but would also afford large quantities of manure for the improvement of the lands. For both these purposes it would be extremely valuable, where the price of hay has been from £10. to £12. a ton.

Here, I have supposed no more than 250 acres annually in the cultivation of corn. This is only one acre in twenty-four of the 6000 acres of free and lease lands, and could be no very arduous task to cultivate, if a proper spirit of industry were once excited amongst the Planters, and if the labour of their slaves and servants were properly directed.

If lucerne, Guinea grass, silla, mangel wurzel, were added to the above supplies of corn, together with a more extensive culture of yams and potatoes, it must be evident that the greatest improvement might be expected, and that the whole together would soon render St. Helena abundantly productive of those necessaries of life for which the inhabitants have been, during the last 60 or 70 years, almost wholly dependant on other countries, a dependence which has cost the Honourable Company many hundred thousand pounds; whilst the planters, so far from having derived the smallest benefit, have lost sight of their real interests; and by relying upon the certainty of provision, they naturally became less industrious, because the necessity of labour no longer existed.

20th September, 1810.

SECTION XIV

Observations upon the Rainy Seasons, from the year 1711 *to* 1811—*Notices on the Fall of heavy Rains, fine Showers, and drizzling Rain, from the* 1*st of January*, 1806, *to the* 31*st December*, 1811—*erroneous Notions upon the Effects of heavy Rains at St. Helena; sometimes damage the low Grounds, but always favourable to cultivated and pasture Lands. Abstract of the Fall of Rain from February* 1811 *to February* 1812.

It is generally believed by the oldest inhabitants of St. Helena, that rain of late years, has fallen in less quantity than in former times: and the cause is imputed to the diminution in the number of trees. This is no doubt a plausible conjecture; since it is admitted that trees have a power of attracting clouds, as well as moisture from the atmosphere: but whether any change has actually taken place is a point that cannot now be ascertained; because there is no record whatever of the fall of rain.

There are, however, upon the consultations, and in letters from the Governments of St. Helena to the Court of Directors, several passages that tend to throw some light on the periods at which the rainy seasons formerly set in, as well as some notices of unusual falls of heavy rain; both during the seasons of rain, as well as in the dryest months of the year.

The following are the passages and notices I have selected.

1711. January 23d.—"This is deemed the proper season for planting."

1714. November 12th.—"On the 3d February, 1713, the floods carried away part of the west curtain, and damaged other places."

1719. May 5th.—" Great floods descended from the hills; supposed to have been occasioned by a water spout."

1734. April 3d.—" At this time the rains have ceased."

1735. March 29th.—" We have had a good season: the rains set in on the 1st February."

1736. January 29th.—" The weather still continues very dry."

1737. January 27th.—" Our summer rains began on Christmas day."

1743. February 1st.—" The late rains have damaged the store house."

1747. April 11th.—" Unusual drought for several months past."

1753. August 27th.—" Great damage has been done by the late heavy rains."

1754. February 11th.—" Rupert's and Banks's fortifications have received damage by the late heavy rains."

1756. June 20th.—" A heavy fall of rain on the 19th instant did great damage."

1763. June 6th.—" Great damage to the fortifications, by the late violent rains.

1774. June 25th.—" The rains have done great damage to the fortifications at Sandy Bay."

1781. March 5th.—" The fortifications at Sandy Bay sustained great damage by the late rains.

1787. March 28th.—" The leeward defences suffered greatly by the floods."

1789. March 24th.—" The late flood has damaged the fortifications at Sandy Bay."

1797. April 27th.—" Great damage was done to the fortifications by the floods."

1809. March 4th.—Heavy rains that fell in the short space of one hour, damaged the road upon Ladder hill, overflowed the water course in James's Town, and damaged several houses.

1811. February 22d.—" Heavy rains overflowed the water course in James's Town, and damaged some houses ; as well as some plantations in Sandy Bay."

These passages will shew that the rainy seasons were expected, and usually set in much about the same periods as in later times ; that is in January, or February ; which are called " the summer rains," and in June and July " the winter rains."

So far, therefore, as relates to the times of the rains setting in, there seems to have been no difference: but the floods that happened on the 5th of May, 1719, and on the 6th of June, 1763, are rather remarkable ; for the first was entirely out of season, and the latter was much earlier than the rains usually set in.

In the preceding extracts I have given every record I can find of damages sustained by the heavy rains ; and by those it appears, that the fortifications of James's Town, Rupert's Valley, Banks's, and Sandy Bay, and some plantations in the low grounds, have all occasionally been subject to great damage.

It seemed to me, before I left England, that some vague accounts of these floods, and of the great damage done by them, had gone abroad, and had led to very inaccurate conclusions; for it was a generally received opinion that there would be much risk in loosening the soil of St. Helena, for the purposes of agriculture : as it would be liable to be washed away by such violent torrents of rain as had frequently happened.

But those who entertained such erroneous notions could never have been informed of the real causes of the damages they had heard of: nor could they have known that these damages had been partial, confined merely to the bottoms of valleys or ravines,

and particularly to the mouths of the vallies, where the torrents descending from naked and steep sides of the mountains, had accumulated, and were forcing a passage into the sea. This was evidently the case at all the four places above-mentioned.

At each of those places during those severe floods, the rains that fell upon the upper surface of the ravines, which extend half a mile and upward across, and penetrate from two to four miles inland (and to which many small branches communicate) must have been immense; and the force of the accumulated waters when confined in narrow channels in the low grounds, must have been irresistible. It is to these circumstances that may be justly ascribed the devastations that have taken place: but such evils can never occur upon lands laying upon a gentle declivity, and so situated, as to receive only those rains that fall perpendicularly upon them. Even three or four inches of rain, falling in one day upon fields of this description, (and particularly if they are ploughed) so far from doing injury, would undoubtedly be of the greatest advantage—because the loose soil by readily absorbing every drop of rain, would long retain the moisture—and consequently promote vegetation.

There are betwixt two and three thousand acres of the above description on this island; which I have no hesitation in declaring might be broken up with the greatest safety—and made to yield excellent crops of potatoes, mangel wurzel and corn—from which the supplies of vegetable and animal food, would become abundant—and the inhabitants might very soon be relieved from their present dependence on foreign imports.

Upon an average, the number of days, throughout the year, on which rain falls, is 135. The wettest months are usually January, February, and March; and July and August.

As wet or dry seasons depend on heavy rains and fine showers, the following is a comparison of the six years:

1806,	heavy rains and fine showers,	-	92 days.
1807,	ditto	ditto - -	79 days.
1808,	ditto	ditto - -	58 days.
1809,	ditto	ditto - -	71 days.
1810,	ditto	ditto - -	78 days.
1811,	ditto	ditto - -	60 days.

Now, as my measurement of the fall of rain, from the 22d February 1811, to the 21st of February 1812, inclusive, gave 22,4 inches, and this in one of the driest seasons in the above comparison, it may be presumed that in wetter years the fall of rain at St. Helena exceeds that in London, and in several other places in England.

"Rain falls—At London, being the average of the following years, 1774, 5, 6, 7, 8, 9, 80; 1789, 90, 91, 92 Inches 21.25

" Upminster - - - -	19.125
" Lincolnshire, in medium season - -	18
" Ditto, extreme wet - - -	24
" Liverpool - - - -	34.5
" Townley, in Lancashire - - -	42.5
" Kendal, in Westmoreland - -	61.25
" Dumfries, in Scotland - - -	36.25
" Glasgow, ditto - - - -	31"*

In India, there is a remarkably striking difference between the seasons of rain, and at St. Helena. According to an exact measurement, taken at Madras, by the late Benjamin Roebuck, Esq.

* Vide Philosophical Magazine, p. 79, Vol. XV.

from the year 1791 to 1803, it appears that the fall of rain from the beginning of January to the end of May, is so trifling, as scarcely to affect the rain-gage. Indeed, during the month of March, not a drop of rain fell in the period of thirteen years. There were moderate showers during June, July, August, and September; and heavy rains fell in October, November, and December. But at St. Helena, excepting in very dry seasons, there are usually some heavy rain, fine showers, or drizzling rain in every month of the year.

The natives of India provide for their dry months, by retaining the monsoon rains in tanks or reservoirs, several miles in length: which serve for their crops until the rainy season returns.

Abstract of Mr. Roebuck's account of Rain which fell at Madras, from 1791 *to* 1803, *inclusive.*

Average fall of Rain in each Month during Thirteen years.

	Inches.		Inches.
January	0.7	July	2.6
February	0.5	August	2.5
March	0.0	September	4.4
April	0.4	October	9.0
May	0.3	November	18.3
June	2.0	December	8.1

The average fall of rain was 49.3 inches per annum. It sometimess happened in the month of November, after unceasing rains, that the quantity which fell during 24 hours, measured 7 inches.

Abstract of the fall of Rain at Plantation-house, from 22d Feb. 1811, to 21st Feb. 1812.

1811.	In. 10ths		In. 10ths
February -	1 5	August - -	1:6
March -	4:6	September -	1:8
April -	0:5	October - -	1:5
May - -	2:4	November -	0:1
June - -	2:2	December -	1:2
July - -	1:6	1812.	
		January - -	0:8
	12:8	Feb. to 21 -	2:6
	9:6		9:6
Inches	22:4 Total fall of rain during 12 months.		

This is less than it actually was—because evaporation is very considerable here—and no allowance is made for what unavoidably took place upon an open surface, 9 inches in diameter. Being now provided with proper apparatus, which receives the rain through a small tube into a bottle, the present year's measurement will be far more accurate. I consider, that if evaporation had been prevented, the last year's measurement (even in what was reckoned a dry year) would have been about 24 inches—instead of 22 : 4.

24th Feb. 1812.

TRACTS ON VARIOUS SUBJECTS,

MONTHS.	Heavy R	Fine Sho	Drizzl Rai	Tota	Heavy R	Fine Sh	Drizzl Rai	Tota	Heavy R	Fine Sh	Drizzl Rai	Tota	Heavy R	Fine Sh	Drizzl Rai	Tota	Heavy T	Fine Sh	Drizz Rai	Tota	Heavy	Fine,Sh	Drizz Ra	To	Total d 6 y	Averag rain pe
	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days	Days
January	2	5	6	13	4	2	2	8	0	4	4	8	3	1	2	6	2	3	6	11	0	4	10	14	60	10
February -	5	4	5	14	4	6	4	14	4	3	2	9	2	2	3	7	1	3	2	6	2	6	6	14	64	10
March -	7	6	6	19	6	7	5	18	4	4	4	12	3	1	3	7	5	6	6	17	5	8	6	19	92	15
April -	3	4	3	10	3	6	3	12	2	6	7	15	1	6	1	8	2	5	3	10	0	2	11	13	68	11
May -	3	5	5	13	2	3	3	8	5	5	5	15	1	3	5	9	8	3	6	17	2	4	9	15	77	13
June -	4	5	5	14	1	0	3	4	0	3	3	6	1	1	5	7	2	3	5	10	2	1	4	7	48	8
Total 6 Months	24	29	30	83	20	24	20	64	15	25	25	65	11	14	19	44	20	23	28	71	11	25	46	82	409	
July -	3	2	2	7	1	3	0	4	1	4	5	10	3	4	1	8	6	2	2	10	1	4	8	13	92	15
August	6	7	6	19	3	5	5	13	4	3	10	17	5	6	4	15	4	5	4	13	2	2	5	9	86	14
September	2	1	3	6	2	8	10	20	0	2	8	10	2	4	8	14	1	3	4	8	1	5	9	15	73	12
October	1	3	2	6	1	5	5	11	0	1	6	7	3	5	9	17	2	3	12	17	1	4	12	17	75	12
November	2	6	8	16	1	3	4	8	0	2	4	6	4	4	3	11	1	4	5	10	0	0	7	7	58	9
December	1	5	5	11	0	3	5	8	0	1	8	9	0	6	6	12	2	2	8	12	2	2	4	8	60	10
Total 6 Months	15	24	26	65	8	27	29	64	5	13	41	59	17	29	31	77	16	19	35	70	7	17	45	69	404	

SECTION XV.

On the Culture of Barley Wheat—Produce, per Acre—The tenth Part of an Acre, dibbled, yielded 405 for 1—Deductions which prove that from $5\frac{1}{3}$ Ounces of Seed, 900 Bushels of Corn might be produced in nine Months at St. Helena—successful Experiment in Malting and Brewing from Island Barley Wheat.

In the St. Helena Register for November, 1811,* I have given the progress, and result at that time, of two experiments in the culture of naked barley, or barley wheat; and in that for December (page 32), are added some further observations upon this excellent corn. On the 17th of December, I superintended the cutting of two square rods of the second crop; the produce of which being 12 sheaves, is at the rate of 960 sheaves per acre.

The remainder of this crop was reaped some days after, and the total number of sheaves was 1100.

To simplify calculations, eleven only (being the 100th of the produce) were thrashed on the 4th January, 1812. They yielded of clean corn 46 pounds, and of straw 45 pounds: but as the operation of thrashing, for want of a barn, was performed in the open air, upon a temporary wooden floor: as a good deal was lost by getting over the thrashing-boards, among the grass; and as the grain was not entirely separated from the straw, it may be fairly reckoned that not less than two pounds of grain were lost: wherefore the produce of clean corn and straw from eleven sheaves should stand thus:

Of clean corn, - - -	48 pounds
Of straw, - - -	45 ditto

* Vide Section XI.

The total produce, at this rate, from 1100 sheaves, would therefore be,

Of clean corn,	- -	4800 pounds
Of straw,	- -	4500 ditto

It will be found upon calculation, that this produce per acre is 4189 pounds of corn,* and 3927 pounds of straw.

This is no more than a return of 35 for one; but it must be observed that this crop was sown broad cast; a good deal was destroyed by the grub, and by canary birds; and many grains, laying on the surface, had not vegetated.

The value of the above crop, rating the barley wheat at twopence per pound, and the straw at £5. per ton, is £43..4..2. per acre, which is inferior to a potatoe crop at 8*s*. per bushel; because 200 bushels at one crop would be £80.: yet if potatoes be rated at 4 shillings, and if the advantage of obtaining manure be considered, the barley wheat crop will be found equivalent to that of potatoes.

The small experiment which preceded this crop was *dibbled* on the 16th of March, 1811; and gave a much greater return: five and one-third ounces was the quantity of seed. After the produce was reaped, I inspected the stubble, and it appeared that not a single grain of the seed had failed. The produce from those five and one-third ounces was 135 pounds, or 2160 ounces, which is 405 for one. If therefore these 2160 ounces had also been dibbled, and with the same success as in the first experiment, the result would have been $2160 \times 405 = 874800$ ounces, which divided by five one-third ounces (the first seed,) gives a return from the two crops of 164127 for one. Hence it is not impossible, under the circumstances of the first crop, from the five one-third ounces of seed dibbled on the 16th March 1811:

* Because if 11 sheaves yield 48 pounds of grain, 960 sheaves should yield 4189 pounds.

supposing its produce had also been dibbled, instead of broadcast, on the 3d August, that from the second crop about the middle of December, there might have been a return of 54675 pounds, equivalent to about 900 bushels, from not more than three common sized wine glass full of seed grain: and this within the short period of nine months, that is, from sowing the first to the reaping of the second crop.

Nothing can tend more to develope the capabilities of this soil and climate, than investigations of this nature. Let these deductions be carefully examined; and every one may satisfy himself whether or not they are consonant to fair reasoning, and let it be considered that the first experiment, on which these deductions are founded, was on land unmanured, and the natural inference must be, that it is practicable at St. Helena (although not in any country in Europe), by due care and attention, to effect even a larger produce from barley wheat, than what has been deduced from the line of argument I have pursued.

I have peculiar satisfaction in adding, that the barley wheat of the December crop has yielded an uncommonly sweet and high flavoured malt, from which Mr. John Onions (who well understands Shropshire brewing) has made some ale, equal in quality to the best I ever tasted in that country. His success is indeed the more surprising, as he laboured under the disadvantages of malting upon a very small scale, and with a temporary apparatus for drying. Wherefore from all that has been stated, I trust it has been distinctly proved, that by means of the common practice of husbandry in England, the island breweries here might be supplied (I will venture to say) with island malt, of a fresher and superior quality, and at a much less expense, than that which is imported from England.

23d March, 1812.

SECTION XVI.

General Observations on Green-fodder Crops—would prevent Losses of Cattle in Seasons of Drought—One Acre equivalent to Fourteen Acres of the best Pastures—Indian Corn, or Maize, cultivated in France, and at the Cape of Good Hope, as Cattle Fodder—Its produce at St. Helena, in less than Four Months from the Period of Sowing, was Thirty Tons per Acre. Remarks on the Culture of Kidney Beans—Green-fodder Crops of these recommended.

THE introduction on this island of green crops of fodder, for the sustenance of cattle of all kinds, is a subject I have frequently adverted to in several papers that have been issued from the St. Helena press. I have there shewn the great advantages that would be derived from imitating a practice—which has been long and successfully established in almost all countries in the world—but which, until lately, had never found its way to this island.

I shall not recapitulate what may be found in those papers—it is indeed unnecessary: for the facts I am now to relate, without any reference whatever to my former statements, ought to be sufficient to impress on every unbiassed mind, the importance of green-fodder crops, which I trust every cattle breeder here will duly consider: their introduction upon an enlarged scale would undoubtedly be the very best means of securing his own interest and of promoting the general welfare of the island.

By the introduction of cattle crops, I have formerly shewn how easily those evils which had frequently occurred, might have been

alleviated—if not wholly prevented. It is well known what heavy losses in cattle have been sometimes sustained in seasons of drought: but, as it has been ascertained, that corn, when once fairly established (even during unseasonable or scanty rains) soon covers and shades the soil from the sun's heat, and from the drying winds—and that it advances to maturity, even in the driest weather; it would be absurd to say that the common precautions used in other countries to provide food for cattle, and to avert calamities among them when the pastures fail, would *not* succeed equally here as elsewhere. Nay, I have no hesitation in declaring my opinion that this species of husbandry, as well as every other would succeed; and prove even more profitable to St. Helena cultivators than it is to English farmers—who can have only one crop in the year: because, as vegetation here is never obstructed by frost and severe winters, two certain crops may be secured annually, if due attention be paid to the proper seasons of putting them in the ground.

Confident as I feel in those opinions, which are founded upon the basis of the most accurate experiments, I have been not a little astonished at the pains which I find have been lately taken to impress on the minds of several gentlemen in the direction for the affairs of the East India Company, the total impossibility of introducing agriculture at St. Helena. Those who have declared such sentiments could have known but little of the ample returns, and unexampled profits, which have been derived here, from lands brought into cultivation. There are now in England two gentlemen (Lieutenant Colonel Greentree and Mr. Dunn), who can readily correct such erroneous assertions. They have both had considerable experience in improving their lands—and they assured me, as I stated, in a letter to the Court of Directors, dated the 10th of October 1809—" that in bringing land into

cultivation they have been always reimbursed the whole expense by the first year's produce."

Is it possible to imagine, in any country, a greater incitement to industry, and to extensive agriculture?—Or can there possibly be a stronger proof of the fertility of the soil, and of the certain advantages that are within the reach of every industrious landholder? It has long been my belief that nothing but common exertion, and a proper system of farming, are wanting to make St Helena productive of almost every necessary of life for its inhabitants. There are at least two or three thousand acres of excellent land capable of the highest degree of improvement, which might be appropriated to this laudable purpose; and as I have already observed, that two crops a year are attainable from those lands, they would be in fact equivalent to almost *double* that extent in the northern climates. The following detail of experiments will tend to illustrate these observations.

Green Fodder from Oats.

On the 5th of February last, some oats of a long thin sort, received from the Cape of Good Hope, which weighed no more than 31 pounds per bushel, were ploughed in upon about two acres of some good land at Plantation-house, at the rate of two bushels per acre. They were later in coming up than usual, on account of there having been very little rain—for it was not until the 20th that a good many of the young plants appeared. Some fine showers however, early in March, succeeded by heavy rains during the remainder of that month, speedily gave the crop a very exuberant appearance:—By the 6th of April a few ears were seen; and on that day, after a lapse of two months from putting the seed in the ground, we began to cut the crop for the purpose of green fodder. Mr. Breame, an experienced Norfolk farmer,

many hours necessary in vainly attempting to fill himself on parched and bare pasture lands. In the first case the animal would soon be satisfied, and might go to sleep: but in the second he must necessarily waste the whole day in wandering over many acres, until he is wearied—and after all he must lay down almost famished: this is the fate of many poor neglected animals on St. Helena; who are left to provide for their own wants; and of which but too many indeed often perish for want of assistance, and sufficient sustenance.

Indian Corn, or Maize.

It appears by the *Statistique générale et particulière de la France*, that this grain is cultivated in several of the departments with a view to fodder the cattle—and, when ripened, it is used for feeding poultry, &c. Lord Caledon informed me, when he visited this island in July 1811, that he always used it at the Cape of Good Hope for his carriage horses, and had found it to be extremely nourishing. At that time I had a small patch, measuring 44 by 33 feet, which was then grown to the height of about eight feet—and in seed. It had been dibbled three inches deep, and three seeds in each hole (as many of the seeds were bad) on the 6th of April 1811. On the 17th it had come up well, and afterwards grew luxuriantly. On the 30th of July I ascertained the produce of one square rod to be 425 pounds, which is 68,000 pounds, or 30 tons per acre. The seed had been 115 days in the soil; and although the lower parts of the stems were at this age rather hard, the whole was greedily devoured in the hoggery. But, as a green fodder for horses, or cattle, or for hogs, it would be better to cut it after two or three months from the time of sowing—when the stems will be soft, and more tender and juicy. In this state it would prove a very nutricious fodder—and I

who manages the Company's farms here, declares he never beheld in so short a time after sowing, so weighty a crop. It was my intention to have ascertained the weight at *two months*; but on account of drizzling rains, which would have added to the weight, I postponed it until the 9th of April; when the crop was dry: and in presence of Doctor Baildon, Mr. Breame, and some others, a square rod was accurately marked out—the produce of which weighed exactly 200 pounds avoirdupoise; this is at the rate of 32,000 pounds, or 14¼ tons of fine green fodder per acre. This, in the short period of 64 days from sowing the seed, is a large produce; although probably not so much as it may weigh when farther advanced. It is my intention to ascertain the weight of the produce of this crop of green fodder, at three and at four months growth, conceiving that such trials might lead to useful deductions.

In order to form a comparison with the produce of grass land at the present time (and immediately after the most favourable rains since my arrival in 1808) I marked out a square rod on the lawn in front of the Plantation-house, which is as good as most of the best pastures, and had the grass mowed—the produce weighed only 12½ pounds—or at the rate of 2000 pounds, or less than one ton per acre. Consequently one acre of green fodder corn *in 64 days from the seed,* is equal to the produce of 14 acres of the best pastures.* But this is not all—a crop of green fodder may be *secured* almost at any season; whereas, it sometimes happens, in the months of November and December, our driest and hottest season, that one hundred acres of pasture lands would not yield a single ton of grass. Compare also the short time required, for a beast to take his full feed of green corn, with the

* Colonel Broughton's Experiment at Long Wood, in November 1810, yielded 16¾ tons per acre. See Section XIII.

should suppose the produce might then be betwixt 20 and 25 tons per acre.

Black speckled Kidney Beans.

St. Helena formerly abounded with "bean grounds," of which traces are still to be seen: but of late years they have occupied only a place in the gardens. Their culture appears to me worthy of attention. Their growth is rapid—they are not liable to be infested with vermin of any kind—they thrive in almost all soils. In their young state they yield a very thick foliage, but not exceeding 18 or 20 inches in height from the ground—and they have abundance of long pods, fit for table use, or for cattle, hogs, &c. When ripe the bean produce is very great—exceeding ninety bushels per acre.

On the 31st of October last, observing that some black speckled beans, in the Plantation-house garden, (which the gardener had left for seed) had an extraordinary number of pods, I was induced to ascertain what might be the actual produce of an acre from such a crop, if sown in rows at one foot asunder. Accordingly on that day, 33 feet of rows were measured, and the beans carefully gathered, and taken out of the pods. I kept them in a dry place until the 20th December; when they were weighed; the 33 feet of rows yielded sixty six and one half ounces.

Now as an acre planted in the above manner, would contain 43560 feet of rows, the extent of 33 feet is the 1320th part—consequently this sum multiplied by $66\frac{1}{2}$ ounces gives the produce 87780 ounces, or 5486 pounds, per acre.

Having found a jug, that held $30\frac{3}{4}$ ounces of wheat, to contain exactly 30 ounces of beans, the weight of a bushel of those beans may be rated at 59 pounds; by which dividing the 5486 pounds, the produce thus deduced is 93 bushels per acre.

days earlier—and treated according to the old practice here of crowding the seeds in the rows, and having wider intervals.

This new mode succeeded beyond my expectation. The crop in 42 days after sowing completely covered the soil, and was in excellent condition as a fodder for cattle. That cattle and horses and hogs will eat it has been ascertained—and it may be inferred they are even fond of it: for some cattle having lately broken into an inclosure, at Long Wood, devoured the *whole* of a small crop of this sort of bean.

On the 13th of March it is noted in my Journal "that many of the kidney beans sown on the 9th of January are now fit for gathering." At this age (about two months) they resemble French beans in the state they are used at tables in England, but are much larger. On the 9th of April (that is three months after sowing) the leaves of a great part of the crop had fallen off, the pods had withered, and the beans were full grown. This experiment proves that from black speckled kidney beans a weighty crop of green fodder might be obtained in *six weeks* from the period of sowing; and that in *two months* the pods and leaves had become an excellent and nutritious fodder; whilst the pods in their green state might supply abundantly the fleets that touch here with a vegetable at a moderate price, which would keep some time, and be highly conducive to the health of seamen after their long voyages.

The following is a concise view of these two crops of beans, and of three others that are now in progress.

EXPERIMENT, No. 1.

1811, June 27.—Sowed black speckled kidney beans—rows 3 feet asunder, and seeds very close in the drills.

October 23—Cut 33 feet of rows—and collected the pods—their

This crop was sown on the 27th June 1811, and therefore had been 126 days in the soil. The drills in which the seeds were planted were three feet asunder; and the seeds were so close as to touch each other. This appeared to me injudicious—because the intervals between the rows exposed too much naked surface to the sun's rays, and the young plants coming up too thick must rob each other of nourishment, and consequently retard their growth. I therefore directed the gardener to prepare a bed for a different mode of culture.

I have found by experience that on this island, it is of much importance to make a crop cover the ground as speedily as possible. When this is effected, as the soil is shaded, the moisture cannot be easily exhaled—and every passing shower, as well as dews, are of great service; because they descend to the roots, and promote vegetation. On the contrary, the dews or light rains falling upon a naked interval, produce no effect upon the crop; for they are immediately taken up in the day by the sun's heat, and by the drying winds. This is the case even on those days when occasionally several drizzling rains, or light showers have fallen: and that these are of no real benefit may be observed by the pastures, where no improvement is seen until they have been well soaked by heavy rains.

In the bed, which was prepared, drills at 15 inches asunder were opened about three inches deep; and the beans put in at three inches from each other; they were then covered with the soil.

This experiment was begun on the 9th of January 1812. On the 19th the young plants were finely come up; and on the 20th of February there were some in blossom. They were uncommonly exuberant and strong—and had much larger leaves, and were in every respect greatly superior to an adjoining crop, sown nine

contents weighed 66½ ounces—this, if the rows be one foot asunder, is at the rate of 5486 pounds, or 93 bushels per acre. The beans in this state appear to be proper food for horses, or for feeding hogs; but being hard should be soaked in water or bruised.

EXPERIMENT, No. 2.

1811, Dec. 31.—Sowed several rows of beans very thick in the drills.

1812, Feb. 19.—The crop about 15 inches high, and in blossom, in 50 days.

April 12.—Not so well advanced at this time as No. 3, which was sown 9 days later: this proves the superiority of placing the seeds at some distance in the drills.

EXPERIMENT, No. 3.

1812, January 9.—Opened drills 15 inches asunder—beans sown 3 inches apart in the drills; and 3 inches deep.

January 19.—Finely come up.

February 20.—Blossoms appearing: this is 42 days after sowing.

March 13.—Many pods in a green state—fit for gathering in 64 days.

April 9.—Leaves withered and falling off—many pods fully ripe and fit for gathering in three months after planting.

EXPERIMENT, No. 4.

1812, February 22.—Sowed six rows 4 feet asunder: 3 inches from bean to bean in the drills.

April 4.—In blossom—luxuriant crop—18 inches high in 42 days.

April 10.—Observed a good many young pods in 48 days.

April 12.—Cut 33 feet of rows—Produce 26 pounds. This being the 1320th part of an acre (if rows be one foot asunder) is at the rate of 34320 pounds, or 15$\frac{1}{3}$ tons of excellent green-fodder per acre, in 50 days after sowing the seed. During the growth of this crop, the season was unusually favourable—7$\frac{3}{10}$ inches of rain fell during the month of March.

EXPERIMENT, No. 5.

1812, March 3.—Sowed several rows of black speckled kidney, and several rows adjoining with the negro or black bean.

April 12.—Some of the black speckled are in blossom; in 40 days—the negro beans are not so strong nor so forward—season favourable—copious rains.

Since I closed the preceding statement of the *five Experiments* in the culture of kidney beans, I have this day (the 16th of April) ascertained the final result of No. 3, which was begun on the 9th of January last.

The leaves having entirely fallen, the pods being dry, and in a state of ripeness, 33 feet of rows were measured. The produce in clean beans weighed 54 ounces; which being from the 1320th of an acre, give the produce (rows one foot asunder) 71,280 ounces, or 4455 pounds, or very nearly two tons per acre. It will be perceived that the same length of rows in No. 1. produced, on the 23d of October, 1811, 66$\frac{1}{2}$ ounces:—but it must be observed that in No. 1. the quantity of seed sown was six or eight times greater than in No. 3. A jug that contained 30 ounces of No. 1. crop, contained very nearly 32 ounces of No. 3. crop, weighed at the time it was gathered: but No. 1. was not weighed until two months after being gathered. It is therefore probable, when No. 3. is also dried, that the same measure of beans will be of the same weight as the other.

Sam.l Davis Esq.r del.t

Wm Daniell sculp.t

The Water-fall at the head of James's valley. St. Helena.

I found that 49 beans of No. 3. weighed one ounce—this is 784 beans to a pound: and, the produce of the 33 feet of rows being 54 ounces, must of course be 2736 beans.

Now, as an acre planted in rows one foot asunder, will contain 43,560 feet of rows, and as four beans are required to a foot (if placed in the rows three inches asunder), the number of beans required to plant an acre, in that manner, is 174,240, which divided by 784 beans in a pound is 222 pounds two-tenths, or very nearly four bushels. If a reference be made to the deduced produce, 4455 pounds, from No. 3, the return has been no more than 20 from 1 of seed beans. This indeed is greatly inferior to barley wheat, which, by dibbling, yielded a return of 405 for one!

From the preceding results it is clearly demonstrated that the most profitable culture of kidney beans is in green fodder crops. On the 12th instant, experiment No. 4, gave 34,320 pounds per acre of nutricious fodder, from seed sown in the proportion of 222 pounds two-tenths per acre; which is a return, *in weight*, of 150 fold; and this in the short period of 50 days, after putting the seed in the ground.

Mr. Jennings, the Company's gardener at Plantation-house, who has, for several years, cultivated beans of various sorts, assures me that the black speckled are superior to any other; they bear sooner, and yield a more weighty crop. At Lemon Valley, a warm and well sheltered place, not much above the level of the sea, he has obtained *six crops* in the course of one year, *from the same spot of land*. A reference to the preceding experiments will shew that this is very possible: but, supposing only four crops a year from the same land, and to be used as green fodder in the state of experiment No. 4, when it was cut on the 12th of April, and yielded 15⅓ tons per acre in 50 days, the total annual produce would be 60 tons, or 134,400 pounds from one

Nettled at my arrogance, Homespun, who was the most talkative at our meetings, the cock of the village club, and whseo face, at this time, glowed with my October, exclaimed, "Pugh! I care not a single barley-corn for your books; give me practice; give me example: (thumping his empty jug on the table) these are the best rules for farmers." "True, friend," said I, gently rebuking him for his indecorum, "example has no doubt, a prevailing force on the actions of mankind; I admit it is more conclusive than the soundest reasoning; and since I see it will be impossible to persuade you by argument, I will take another mode of bringing you to my way of thinking."

Homespun by no means relished my admonition, and grinning a sarcastic smile, he, and my other rustic guests rose, and left the room.

It was not until some months afterwards that he paid me another visit, and this was during an unusually dry summer, when all the pastures were burnt up. He looked dejected, complained bitterly of the times, said he was almost ruined, that his cattle were starved, and his cows were dry, and he had been obliged to send them to Romney Marsh. "Mr. Homespun," said I, "you shall now be convinced that this is entirely the consequence of your pertinacious adherence to old customs; if you had listened to *my* advice, and to book-farming, all this mischief would have been prevented. Come with me, and behold the lucerne you despised. The crop was put in a few days after our last debate; and I have already had three cuttings. My pastures, you see, are equally bare as your own: but my cattle are still in good condition, and my cows yield twice the quantity of milk they had ever done before: and all this is the effect of the crop you treated with so much contempt."

Homespun looked grave, and as he approached a field of six

SECTION XVII.

*On Adherence to Old Customs.**

" There is an unaccountable prejudice to projectors of all kinds; for which reason, " when I talk of practising to fly, silly people think me an owl for my pains."

ADDISON.

SOON after I took up my country residence in England, I scraped acquaintance with some of the neighbouring farmers, who now and then called in, to take a pot of ale; and I received them with civility. Our discourse naturally turned to agricultural subjects; and, whilst I reasoned on new plans, my *practical* guests very soon betrayed they had not the smallest faith in " book-farming," as they called it.

" Their own practice," said they, " must undoubtedly be the best, because it was that which had been handed down by their forefathers." At one of our meetings, I very strongly deprecated this conclusion, and plainly told them they were all wrong. I had no doubt their practice was good: but nevertheless, said I, from books many useful hints, and much valuable information, might be derived upon the ***better*** practice of other countries; and which, in my opinion, would succeed equally in Sussex, as in other parts of England.

* I hesitated some time before I determined to give a place to this and the succeeding paper: but as this paper was calculated to overturn old prejudices; and " Calculator's confessions" convey a variety of accurate information upon points connected with the old and new husbandry of St. Helena, and as the sentiments of the supposed Norfolk farmer are precisely those which I entertain, in regard to the best modes of cultivating, and improving, the island, it is hoped that these considerations may appear sufficient reasons, for having mixed papers of a ludicrous nature with those of a graver description.

guished by their skill and knowledge in the matters of which they treat, are received by those with scarcely less persuasive force than the evidence of facts. It is to this class of men I submit the following extracts; and whilst I recommend them to their serious attention, I must remark that they will find the opinions of Sir John Sinclair, and the experience of Sir Henry Vavasour have most fully corroborated those opinions I have offered in the St. Helena Registers, on the subject of increasing the food of cattle, by means of arable land.

27*th July*, 1812. K.

acres, he was struck with amazement; he had never before witnessed such a crop. His forefathers had none of the kind. It was indeed uncommonly fine; he viewed it, and handled it, and exclaimed, "Well, surely this is a lamentable fine thing: I will immediately set about five acres: Oh! fool that I was! but I really could never believe it was possible to have so weighty a shew in so dry a season." He added, scratching his head, "I now perceive that you gentlemen farmers are not so much to be despised as we thought of." I thanked him for his compliment.

Thus, by perseverance and example, I succeeded in removing from Homespun, and the rest of my mulish guests, who were all attracted by my lucerne, the strong prejudice under which they laboured towards old custom, and against book-farming. Their visits daily became more frequent; my opinions were listened to, and received, with more respect and decorum than was usual at the commencement of our acquaintance. There was an end of their sly jeering and jokes, which did not escape my penetration; and I soon became a sort of oracle among them, whom they eagerly consulted at those times when they came to see my "new-fangled husbandry," as they called it, many parts of which they did not, however, fail to imitate; but not till they saw it was their *interest* to do so.

In turning the minds of men from ancient custom, or deep-rooted prejudice, we must naturally expect to encounter difficulties. The most forcible arguments are of no avail: but once shew them a successful example; prove to them, practically, the advantages they will derive, and self-interest will do the rest.

By such means no one need despair of converting the most obstinate. Enlightened and liberal minds are, indeed, far more easy to persuade. Indubitable testimony of what has already been done, and even the opinions of men who have been distin-

SECTION XVIII.

Calculator's Confessions;—and his Opinions on the new Husbandry at St. Helena.

To the Editor of the St. Helena Register.

SIR,

I HAVE been amused, and I hope you will find edified, by your correspondent K's conversion of Mr. Homespun, as related in your last month's Register. I confess to you that I had long been a downright branch of the Homespun family: I have had my strong prejudices to old custom, and I verily believed it was totally impossible to surpass our home practice: but I have lately witnessed some things that have actually made my hair stand on end; I see the ploughs, with two or three horses, managed by two men, doing more work in one day, than any ten of my best slaves could perform in ten days; besides these fellows, Mr. Editor, cost me a deal of money, for after the first purchase (dear enough, to be sure) I must feed and clothe them; and after all, they are sometimes very saucy and idle. Now, thinks I, if I could only teach Cæsar and Pompey, my two best men, to manage this new machine, and if I were to clap-to a couple of my best oxen, or horses, I should get more work from these two men, in one day, than I could otherwise get from the whole of my gang: and my cattle would not be a hair the worse for it.

I am a man of figures, Mr. Editor, and I can make calculations; I can multiply pounds, shillings, and pence into each other, which, *you* will allow, is no small proof of my abilities; and, therefore, you will readily admit I am not ignorant of the common rules of

arithmetic. I have, indeed, reflected, very seriously upon Homespun's story, and as I think, it is clearly proved he was a bit of a gooseacre, a self-conceited obstinate fellow, until he got new lights, I hope this confession, although at Homespun's expense, will prove to a man of your knowledge and penetration, that I am not undeserving to be ranked amongst those of "enlightened and liberal minds," to whom K. has submitted the practicability of keeping a cow and pigs upon a small piece of arable land.

I will now tell you my plain notions upon "the new-fangled husbandry," as Mr. Homespun called it; which we have lately witnessed in this our island, where I have been born and bred, and from which I have never been farther than the fishing banks. You will, I hope, excuse me, if I should be a little long-winded; but, when we folks are beginning to write for the public view, you cannot expect we can express ourselves in the same short way as other folks would.

Well then, Mr. Editor, I must also confess to you, that I am naturally what they call a sly fellow, and I own, when I first heard of all these new things, I thought they were down-right foolishness. I thought my grandsires knew all that was necessary to know. They planted yams, and potatoes, and beans, with the spade and pick-axe; which had been the practice from time immemorial; and, as I had never seen a plough, I did not like to shew either my ignorance or curiosity; nor did I wish to appear publicly an advocate for new things; because I dreaded the jokes at the Almond-tree.

I therefore thought it best to take a peep, unsuspected, at what was going on. I sneaked along the roads early of a morning, and had a good view of all that was doing, over the fences. I saw

The "Almond-tree," in James Town, is the resort of idlers.

Mr. Fish,* with the said plough, getting on at a great rate; tearing up the ground neatly on the Church fields: I saw Tom Stream,† and Johnny Spring ‡ no less busy, and I was wonderfully surprised to see how much they did in a short time. A couple of horses, or three or four oxen, and a couple of men, were all they needed; indeed, I am told, in Scotland two horses and one man do the business; and when once we get our half-starved beasts and horses in good order, and in strength, by the green crops of corn I have also seen, there is no reason why *we* mayn't do the same likewise.

Now, thinks I to myself, if I can get Cæsar and Pompey, with a few of my cattle, at present doing nothing, to do all these things, what a great saving it would be. These two able men, and one of the new machines, (that rolls on wheels like a wheel-barrow) with some of my beasts, would, I am positive, do me more service than 50 Cæsars and 50 Pompeys. Away then, says I to myself, with your spades and your pickaxes; and let me try the same things. The first cost will be nothing compared with what I shall gain.

After attentively observing the method of ploughing, I thought other things might be seen—I watched; and saw drills opened with the plough, and potatoes dropped in, and then covered up. I then saw the said Fish, Stream, and Spring, (and favourably ominous I think it is, that these allied names come together) still using a plough to take the potatoes out of the ground; nay, I saw more; for the harrow was used; and I wondered at the scraping it made; for at one scrape, it scratched out, in a couple of hours, more potatoes than twenty of my slaves could gather

* Mr. Breame, of Norfolk, the superintendant of the Company's farms.

† Thomas Brooke, Esq. Secretary to the Government, and author of the History of St. Helena.

‡ John Defountain, Esq. Storekeeper.

in the course of the day. Such things are truly surprising: but when I considered the power of a claw hammer in drawing a nail, I concluded there must be something not less wonderful, although unfathomable to me, in the power of the new machine we have had introduced here, because I well know, that if I and my whole family, who are pretty numerous, were to try, with our fingers to draw a well-hit nail, we should not succeed. I have no knowledge of what they call mechanics; I know nothing of the principles; but this I know, that a claw-hammer will do the business with a small twist of the hand; and so I take it to be with the plough.

Now, Mr. Editor, after seeing, (which you know is believing) I set to work: I bought a plough and a couple of harrows; and I succeeded far beyond my expectation.

I then began with my calculations; and I clearly convinced myself, and I hope I shall convince others, that by saving expense in labour I should be a great gainer. I ascertained I could bring into cultivation a wondrous deal more land; that I could sell much more of my produce to the shipping; that by having plenty of potatoes I might not only feed my family and slaves without the expense of buying, and the trouble of bringing from the valley; and raise pigs, and assist my cattle when our seasons fail; but that I should likewise keep more money in my pockets; which have been rather empty of late; and if I and my fellow planters could once contrive to furnish the breweries with barley for malting, we might get a deal of the money that is now sent to England, and this I understand amounts to eight or ten thousand pounds a year: and as Mr. Brabazon's brewery is now getting up, there will, no doubt, be a greater demand.

What a great gain would all this be to us planters. Being a man of calculation (as I told you before) without pretension to

15 years of our Homespun management, we find, although the crops seem to grow well, they do not come to perfection ; they get what we call the rot. No doubt manure would act like a medicine, and might soon restore the lands to health and vigour.

The diseased farm I allude to, is that near the High Peak, and as I have long had an eye to that farm, but that its case seemed to me a desperate one, I thought it advisable to consult Mr. Fish ; who, no doubt, we may reckon our best land doctor here ; for as to Stream and Spring, they are as yet only young beginners, and cannot be expected to know much of these things.

When I asked Fish, " what he would do with that land?" he replied," Do with it ! why, I would make a mine of it." I did not immediately comprehend him, and he explained, he would make his fortune by it—" How so?" said I—" Easy enough," said he, " for the land is good, and a great part of it, fit for the plough. In front of the new house, both in the vale or ravine, as well as on the west side, there are many fine acres, at present covered with coarse and useless grass.

" There is also a good large space inclosed around the premises, which I see it is needless to plant, unless it goes through a proper course. Land, you must know, is in a manner like your stomach, which I fancy you would not like to have constantly crammed with the same food ; and without any sort of seasoning : in time, you would not relish it; and disorders might follow. Now I understand this land, or stomach, has tasted nothing for the last fifteen years but potatoes; consequently, it loaths that food, or, as we English farmers say, " *it is tired of the crop.*" This expression is very common with us, for we say such a field is " tired of clover," and the like ; although this is a mode of expression, on which some of our best agriculturists have differed. One thing, however, is certain, that if land, in its nature tolerably

much knowledge, I can easily satisfy myself, that a penny saved is a penny got; and I perceive also that if all our pennies go into the Company's stores, or into the hands of the shipping gentlemen, or are sent to England, our purses must be very lank; and this is, I verily believe (nay I am perfectly convinced), the reason we are not so rich as we might be. I never thought of this until I read Homespun's story; which made me think it was at least probable there was something wrong or rotten at bottom.

Now I see it plainly; and I will no longer be slack in trying to mend my ways, and my fortune; by such means as are in my power. And, now, to conclude.—From all I have said, I think I have shewn you clearly, that I am no longer of "the mulish tribe." I heartily wish my conversion may open the eyes of my dear countrymen, whose welfare I have sincerely at heart, in order that they may follow my good example.

There is one thing I forgot to mention, and I hope it is not too late, that if we can raise barley for the breweries, we can at the same time have plenty of straw for our cattle, if a dry season should happen, and also we might have plenty of manure, which I see by two or three papers in your Register is reckoned a good way of making our lands yield better crops. Perhaps you may have heard that we have not much come into this practice yet, and that we do tolerably well without manure, that is, we can have twenty or thirty successive crops of potatoes, without ever once thinking of manure, and yet I find it is considered absolutely necessary, and is very much the practice in the country you came from.

But to tell you the truth, Mr. Editor, I have not found that my lands pay so well after so many croppings. Something therefore is wanting, and this something, I take to be manure. So very bad indeed are some of the lands near me, that after 10 or

good, has been drained by repeated, or improperly managed crops, the best remedy for recovering such exhausted land, is by a few months fallowing; and by frequently stirring it, and clearing it of every sort of vegetable substance. By this plain and easy mode (a sort of abstinence, if I may so express myself,) not only will its tone be recovered by the influence of air and moisture from the atmosphere, but weeds will be extirpated, and insects of every sort (and particularly the grub) will be effectually destroyed by being deprived of that food which is absolutely necessary for their subsistence, at the time the solar heats occasion a change from the oviparous state."

I did not clearly understand the whole of those odd expressions; but I however perceived, that Mr. Fish is, as I imagined, a very learned land doctor. I therefore candidly told him that I understood, only in a general way, all he had said, in which there seemed to be no small portion of good sense. I therefore requested him to go on, and tell me particularly the mode he would pursue with that farm, if it were in his own occupation.

He continued—"If that farm were mine, and I should be glad it was, if I had not so many other fish to fry," (here he condescendingly suited his expression to my comprehension,) "I would, in the first place, clear the garden, comprising several acres, of all its rubbish, and lay the whole under a clean fallow, for at least six months. I would frequently stir the soil, and would not in all this time allow a weed to rear its head. Whilst this operation is carrying on, I would enclose 10 or 15 acres of the most level and best land, and pare off the sward and coarse grass, forming small heaps all over the field, and then set fire to them. The ashes should, if possible, be ploughed in immediately.

We observe by the Agricultural Report for 1812, a full confirmation of this practice. It is there stated, "that the newly enclosed lands in England, have in general proved

I would endeavour to give it two or three ploughings and as many harrowings, so as to pulverise the soil perfectly before I put a crop in it. I would then, just before the setting in of the rains (in January or June) open furrows, nearly level, and at the distance of two feet asunder; and drop potatoes in them, at one foot apart in the rows. These, I would cover with the plough; and by such means I should secure myself a good crop from this fresh land; a crop which I am convinced would nearly repay all my expenses; if I could sell it at the island price, which is eight times what I got for potatoes in England. But as I might not be able to do this, I would take care to have a good breed of pigs to consume the surplus produce at the farm; I would give them and my sheep and cows a part; and by keeping all those and my cattle, in what we call a farm yard, (and of which I have seen nothing of the kind in this island) I would soon have plenty of manure, or muck; from which I should derive great profit by its meliorating effects on the lands when I am to prepare them for wheat; or as they begin to fall off in the powers of vegetation. My pigs would soon increase in number and size; and for which I should never be at a loss for a ready sale; which is a vast advantage to a farmer: and whilst taking two successive crops of potatoes from the garden, and the new land, I would prepare another new field of the same size as the first, and treat it in the manner I have described; and so on, till I had all the best land in cultivation.

fertile; and the mode of breaking them up, in all improved districts, is by paring and burning. All the old objections to which having been proved futile and groundless, where subsequent good culture is persevered in; namely—working the eradication of weeds, pulverising the soil, and giving these lands a fair portion of manure."

The good effects of paring and burning have been frequently manifested here, by a comparison of crops, that have had the benefit of turf ashes, with those where no ashes were spread. The superiority of the former is so great, that few would believe it, if they had not seen it.

The first field and garden should next have a smothering crop of barley or oats, sown rather thick, and which, in two months from the seed, would yield me 12 to 16 tons per acre of green fodder. This would be a valuable acquisition to my stock; and by haying and stacking some, it would secure me against losses that I might otherwise sustain in my cattle, if a bad season should arrive.

" After these three crops, from each of these portions of land, I would again sow them with a crop of barley for malting; and for which I should also have a ready sale to the breweries; and gradually I would bring these lands by manuring, into a state, fit for bearing wheat: for furnishing a portion at least of that flour, which is at present imported here from other countries. It is by such means only, Mr. Calculator," said he, " that you farmers can ever expect to be wealthy, like some that I know in England. You have the same, nay better means; you have a charming climate, and a fine soil, and your lands give you *two* crops a year. The sale prices are high; and you have always a ready market. What more can a farmer desire? All you want, my friend, is a little industry; and I am happy to see that many of you begin to be sensible of these truths."

I was exceedingly pleased with Doctor Fish's lecture. My mind had been prepared to receive every word he uttered; I was however at times rather puzzled: but I hope I shall hereafter convince you, by my next communication, that his care to instruct me, has not been thrown away.

I am, SIR,

Your obedient Servant, and constant reader,

August 6th, 1812. CALCULATOR.

SECTION XI.

On the Importance of introducing Agriculture on the Island—Erroneous Notions regarding Rats; not more numerous at the Farms than in England—successful Method of destroying them.

An earnest wish to promote the interest of this island, has induced me to devote my leisure to various agricultural experiments, which have from time to time appeared in the St. Helena Register.

The results of those experiments very soon satisfied my mind of the practicability of a change of system, from which the greatest improvements might be expected. I was aware, however, of the difficulties I should have to encounter in overcoming strong prejudices in favour of customs that had existed from the earliest period of the establishment. The same sort of prejudice is, indeed, peculiar to farmers of all countries, and is, perhaps, equally strong in England as in any other part of the world. I could not, therefore, blame those who differed in opinion: but I was by no means discouraged. I was fully persuaded that perseverance and successful examples, would ultimately succeed in turning the minds of even the most obstinate, to a change, which, I can easily demonstrate, is obviously for their advantage. This change, indeed, appears to me the only possible means of ameliorating the condition of the landholders: and of extricating them from the difficulties they experience from the limited and narrow views they have long pursued; by which they could hardly expect much more than a bare subsistence.

There is, at length, a prospect of the objects I have long had in

view being fully accomplished. My experiments have attracted notice. Much more land is in cultivation ; and several instances of the new husbandry have already been manifested.

The laudable examples of Messrs. Brooke and Defountain, in substituting the plough and harrow for the spade and pickaxe, and the exertions of Mr. John Kay and Captain Sampson, deserve particularly to be noticed. *Their* success may prove even far more convincing to the landholders in general, than the soundest reasoning or the clearest deductions ; although they have been drawn from experiments, conducted with the greatest care and attention ; a mode, unquestionably the very best, and most certain of increasing our knowledge in the agricultural, as well as in other arts.

Those gentlemen, therefore, have well established claims to commendation and to encouragement ; being the first who have led the way, and given their attention to the wise and judicious order of the Court of Directors, dated the 7th of March, 1794 ; " to render every acre of ground, capable of cultivation, as productive as the nature of the soil will admit."

Not doubting that some others will soon imitate these beginnings, (since they will find it their interest to do so) and that they will adopt the plough and harrows, by which they may, *without any addition to the manual labour they now possess,* greatly extend cultivation, it would be superfluous to offer any further arguments with a view of enforcing what has been already stated in my several communications upon this most important subject : I shall, therefore, only recommend to all the landholders, that they direct their attention to the many acres of excellent land, at present in a state of nature, lying, in a manner, waste and unprofitable that they duly reflect on the deteriorated state of the pastures in seasons of drought, and their former losses in cattle ;

about 500 acres of wheat annually, would suffice for the island consumption.

The import of malt this year was 790 quarters (say 800) or 6400 bushels. This quantity might be produced from the barley wheat, which is undoubtedly the very best for malting. (Register for March, 1812, page 4.) Supposing 50 bushels to be the average produce from an acre, 130 acres would annually supply the breweries. It may therefore be inferred that 6 or 700 acres in the cultivation of corn, would render the import of wheat and malt almost unnecessary, and the landholders might not only by this means retain among them the sums that are annually sent to England for flour and malt—but they might also derive ample sustenance for their cattle. The fodder of straw from the 700 acres, may be rated at twelve hundred tons. This added to occasional green crops of fodder, which, (after two months from sowing the seed), would yield from 12 to 14½ tons an acre, (Register* for April 1812, page 4) would place the proprietors of cattle beyond all risk, when the grass lands are bare and parched by the sun's heat.

Now supposing the wheat to be, at first, sold at 3d. per pound, or 15 shillings a bushel,† and that 900,000 pounds is the annual quantity required, the value would amount to £11,250 0 0

6400 bushels of barley wheat when malted, if sold at 12*s.* a bushel, would be - -	3,840	0	0
And, 1200 tons of straw, at £2. - -	2,400	0	0
	£17490	0	0

As the St. Helena beer is in high estimation at the Cape of

The experiment referred to was with Cape oats.

After the first three years of cultivation, the island price should keep pace with the London market.

and compare the immense difference in produce between even the best pastures and a crop of green fodder of oats or barley, (Goat Papers, page 76. St. Helena Register for April, page 6) and then ask themselves this question—" Have not our lands, in many places where they have been tried upon a small scale, yielded abundant crops of corn and esculents *twice* a year?" The answer is too obvious not to confound the most sceptical, or I should rather say, the most obstinate, who may yet persist in declaring, that " agriculture here can *never* succeed." Such assertions must appear most futile and unfounded, when contrasted with numerous facts that have been already so clearly and incontrovertibly established.

It is now four years that I have given my attention to this subject; and after distinctly proving the capabilities of the soil and climate, I have not the smallest hesitation in declaring my opinion, that if 6 or 700 acres, of the two or three thousand, that are capable of being brought under the plough management, were allotted to corn crops, the present population might be supplied with bread corn in abundance, the stock of cattle and sheep augmented by means of straw and green fodder crops; a vast number of hog's reared; the lands meliorated by manure; and the breweries furnished with a sufficiency of barley for all their demands. I will now proceed to examine the effects that would be produced from so laudable an appropriation of even that small portion of the pasture lands.

According to an investigation detailed in my minute of the 31st August 1810, (published in page 6 of the " Laws and Ordinances)" it will be found that the consumption of flour at St. Helena in the year 1808, was 878994 pounds. Doctor Adam Smith reckons 2000 pounds of wheat to be the produce of an acre: but I will take it at 1800 pounds of flour; at which rate

Good Hope, it may be presumed the demands for it will yet increase. The farmers of St. Helena might therefore, by means of industrious habits, and a proper course of husbandry, obtain from these new sources, a return equivalent to 17,000 pounds sterling annually from *one* crop, exclusive of what they derive from their cattle, and potatoes, and other articles of farm produce. From this concise view of our home consumption, and the prospect of export, it must be obvious, that no farmers in the world can possibly have a stronger incitement to exertion, than those of St. Helena: for they are at all times, assured of a ready sale, and even more than a reasonable price, for all their products. If then they would only strive to be purveyors to the population, instead of allowing the whole to be buyers, of flour, malt, pork, &c., imported here, it requires no uncommon degree of penetration to discover that a vast improvement would soon take place in their condition.

To these objects I would therefore recommend the capital and industry of the island being employed. Some persons here may possibly consider that the plans recommended are upon too grand a scale; but I will ask them, What are 700 acres of cultivation in the hands of a few English farmers?—Lord Kames, in his "Gentleman Farmer," has stated, (in page 292) "I will venture to say that in most soils, fifty acres of corn may be commanded by a single plough; provided the crops be distributed through the year, to afford time for managing all of them with the same men and cattle." According to this estimate, which I believe is generally admitted to be correct, in England and Scotland, the

It is true that flour and malt can be conveniently imported from other countries but surely it is an object of the first importance to promote the prosperity of the landholders. This can never be effected whilst all their scanty earnings are expended on foreign produce. Such has been, and is, the practice at St. Helena.

whole proposed extent of cultivation on the island of St. Helena, and from which so many advantages might be obtained, could easily be managed by fourteen ploughs or fourteen petty farmers; that is, if they confine themselves to *one* crop only in the year.

I would not however propose that any one should, at first, attempt the cultivation of 50 acres. I would have all to do a little—to feel their way—and to proceed gradually, according to the extent of their means. In this, there can be no hazardous speculation; and as there are between 60 and 70 landholders, and above 200 blacks attached to the farms*—surely among these collectively, the 700 acres proposed would require no very extraordinary degree of exertion.

For carrying into effect the plans I have here recommended, there is a sufficient number of horses, and many cattle, that usually remain idle on the pastures. These might soon be trained, as well as the slaves, to the several purposes of husbandry. Those who have only small patches of land might use the spade, or hire a plough, as suggested by Sir John Sinclair in his paper on Cottages. Others who have a greater extent of land might begin with only 8 or 10 acres of their choicest land. In both cases the new lands should be inclosed with good fences, the process of paring and burning adopted, and after the soil has been well cleaned and pulverized, there should be two or three successive crops of potatoes taken; and, at the time the new lands are under this management, I would recommend, that the present old potatoe grounds should be ploughed, and sown with barley wheat, or Cape barley or oats, in the proportion of two bushels per acre for the first crop —this would yield a weighty produce of green fodder, which

* In addition to these, the farmers can hire Chinese labourers from the Company's establishment, at two shillings per day.

would keep the working cattle in good condition, and furnish some portion of manure for those lands, that have been exhausted by a long succession of incessant cropping.

The second barley wheat crop should be raised with a view to malt for the breweries: and finally, these old potatoe grounds might be brought into a condition fit for crops of wheat, provided attention be paid to making manure, by collecting all the cattle of the farms at night into an inclosure, and feeding them with the green-fodder crops.

By such means the landholders might put into their own pockets those large sums that are now expended for the purchase of flour and grain; and, in the course of a few years, they would undoubtedly become more affluent than they can ever expect to beif they confine themselves to the comparatively limited demands of the shipping. They would also derive an inward satisfaction in thus being obedient to the Honourable Company, and in contributing to the general good of the island, and to the comfort of all other classes of the community: they would, moreover, prove themselves deserving of the favours and indulgence of the lords proprietors; which they and their families have invariably received at their hands.

Although a due consideration of all those advantages (which I have no doubt are attainable from the extension of agriculture) will, I trust, excite a considerable degree of emulation and exertion, yet it is my intention to recommend that certain premiums, or prizes, should, be given to those who shall first distinguish themselves as able cultivators. And with a view of animating their exertions, I mean to propose that there be six classes of merit. The first prize to be given to him who shall have broken up the largest portion of uncultivated land, or delivered into the Company's granary in James's Town, the greatest quantity of

barley wheat: because this is a corn that can be most easily raised. The other prizes to be allotted in gradation according to the respective proportions of newly cultivated land and of corn delivered: but no person should be entitled to any prize who shall not have broken up five acres of uncultivated land, and delivered not less than two hundred bushels of corn, the produce of his farm.

I shall further recommend that the first six candidates for prizes within the first twelve months from this date, in addition to honorary prizes, should receive a remuneration equivalent to the original cost of one plough and a pair of harrows.

No expensive buildings would be required for the proposed improvements, because the corn could be received into the Company's granaries in James's Town, or deposited in a small building appropriated, or erected for the purpose at each farm, immediately after it has been thrashed and cleaned. These operations might be performed in the open fields, a practice which is usual in India and in Egypt, and even in the colder regions in the North of Europe.*

But the advantages which the landholders would derive from the appropriation of 700 acres to the culture of corn, would very far exceed what has been stated. It must be recollected that the St. Helena lands produce *two* crops a year, consequently, the wheat and barley grounds might yield, annually, *a second* crop, either of potatoes, mangel wurzel, cabbages, beans, or turnips, and the like; or of green fodder from corn, or from maize; or even, in some instances, a second crop of barley and oats, for grain; so that it seems possible to supply the proposed quantities of flour and barley wheat by means of less than 700 acres—and, therefore, it may be reasonably supposed that between 4 and 500 acres of corn land, would be found sufficient; and the other two

* Vide, Section III.

hundred acres would yield a sufficiency of potatoes and other esculents. After a spirit for cultivation has been once excited, I have no doubt it would rapidly increase, and be carried far beyond the scale I have here suggested.

I must however remark that if two crops a year are taken from the proposed 700 acres of cultivation at St. Helena, they will require nearly double the number of ploughs and labour, that they would in England—that is 28 ploughs, instead of 14.

Hence it seems, that if 700 acres were constantly cultivated with corn, they might produce, annually, more wheat and barley than would be immediately wanted for the island consumption. Part of the second crops, or green crops, if given to cattle and sheep, would soon augment the island flocks;* and the number of hogs that might be reared by means of those crops, for supplying the garrison occasionally with fresh pork, would be im-

Several persons, in England, appear to have entertained doubts as to the propriety of breaking up much land on this island, from an apprehension it would interfere with the grand object of raising stock for the supply and refreshment of the shipping: but so far from lessening the supplies, either of cattle or vegetables, I trust, I have distinctly proved that it would be the best possible means of increasing them.

There is another erroneous notion regarding St. Helena: "rats," it is said, "are so numerous and destructive that it would be wholly impossible to raise corn." This mistake has evidently originated in the fate of a few square rods of corn; which had been the utmost extent of former trials. So small a quantity, growing near the abodes of these animals, would soon be devoured in any country: but where several acres of corn have been cultivated on this island, even the first crop did not suffer more than it would have done near the homestall of an English farmer. The succeeding crop sustained no injury whatever: for, at the time of reaping the first crop, care was taken to destroy every rat that had burrowed—the number was one hundred and twenty—and the consequence was, that when the second crop was cut down, only three rats were found in a field of six acres. In the same manner the Plantation-house garden, of seven acres, has been effectually cleared of rats. Four years ago they were extremely troublesome; but during the last two years they have been wholly extirpated.

mense, compared with what it now is. The Company have agreed to purchase it at the rate of one shilling per pound: so that for pork, there would be no want of a ready sale. Besides, by the rearing of these useful animals, together with stall-feeding of cattle, large quantities of excellent manure would soon be obtained, by which, even the poorer lands might be brought into a state of improvement, fit for the purpose of raising wheat. I have, indeed, already had some exceeding fine specimens of this corn, cultivated in good land, without manure. In short, proofs are not wanting to establish, in the clearest manner, the certainty of success: but, a total change of husbandry, and a proper application of our manual labour, and of the muscular strength of animals, are absolutely necessary. By such means, I am confident, that in the course of a few years, there would be effected a change in the value of this island, which would be highly beneficial to the interests of the Company as well as individuals. It might lead to the most important consequences; particularly if it should be deemed expedient to convert St. Helena into a depot, or mart, for Indian and China produce, a plan that has been more than once suggested.

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dibbled: the rows one foot asunder; the plants 9 inches distant in the rows. In the same manner *half tufts* were dibbled in No. 2. The leaves of the plants of both were cut off 3 or 4 inches above the roots, previously to their being dibbled in the beds.

1810, January 12th.—The half tufts in No. 2 have withered and died. The whole tufts in No. 1, as well as those in the seed bed, are in a most flourishing condition.

January 25th.—In the seed bed a good many ears appear—the transplanted wheat a little backward, but very strong, notwithstanding a long absence of rain.

February 5th.—Some of the transplanted wheat is now in ear—i. e. 89 days from the seed.

February 11th.—In the seed bed all in ear—There are two sorts, one is short-headed, without beard, 33 inches high—the other sort with long ears, measures 44 inches high. In No. 1, only half a dozen ears have as yet appeared.

February 28th.—The wheat in the transplanted bed and seed bed, is all in ear—this is 112 days from sowing the seed.

March 6th.—The ears of both beds are now well filled. Transplanted corn rather more backward than the seed bed.

March 21st.—The transplanted bed still greenish. The corn in the seed bed was cut down two days ago, fully ripe: ears well filled: it has been 4 months and 10 days in the soil.

April 1st.—Examined the transplanted bed. The short headed wheat without beard is the most exuberant. Taking 4 plants of this sort indiscriminately, the number of ears produced from each seed were these:

No. 1	-	-	24 ears.
2	-	-	29 ditto.
3	-	-	32 ditto.
4	-	-	58 ditto.

April 11th.—Gathered some fine specimens from the transplanted wheat, and sent them to England. Their growth was 5 months and 2 days from the seed.

I regret having omitted to notice the average number of grains produced from a single grain. I intended the transplanted bed should have determined the produce per acre—but having suffered a good deal from Canary birds, this was prevented. I shall therefore only add, that the transplanted specimen, before it was attacked by birds, had as fine an appearance as any crop of wheat I ever beheld. This success, although upon a small scale, most unequivocally proves that St. Helena is capable of producing wheat of excellent quality. In several other printed papers I have also shewn, that the culture of wheat, as well as of other corn, may be extended even to more than the present population can possibly consume.

A paper I have seen on the subject of transplanting wheat, by Mr. John Ainsworth, of Glen, recommends the practice as one of the best means of providing against a scarcity of this necessary of life. The saving of seed is undoubtedly a considerable advantage, since it is stated that half a peck sown in a seed bed, would furnish plants for an acre. Besides this saving of seed, there are in England some other advantages pointed out: but as they do not apply to the more temperate climate of St. Helena, it is unnecessary to notice them. Upon the whole, however, it seems that this excellent mode of culture is deserving more attention in England, than has hitherto been paid to it.

In India and China, transplanting is the common practice. Seed beds of rice are thickly sown for the purpose of furnishing plants for the lands. The young plants are deemed sufficiently strong for transplanting in 30 days: even until 60 days they continue fit to be removed. It will be seen by the foregoing wheat

SECTION XX.

On Transplanting Wheat—further Remarks on Grubs—and on Barley Wheat.

On the 7th of July 1812, two acres at Plantation-house were sown broad cast with nine pecks of barley wheat, which were ploughed in, but not harrowed. Although this is the sixth crop from this land, since it was broken up, without using any manure, the barley wheat became so extremely thick, in seven weeks after sowing, that it was apprehended, the crop might be lost unless it were thinned. Mr. Breame, an experienced farmer from Norfolk, and indeed every other person who has viewed it, declares he never beheld so exuberant a specimen of corn. All agree it ought to be thinned—and various modes have been proposed.

That which I have preferred is one I can pursue with confidence, as it is the same I adopted in the year 1809, with some wheat that became too thick and exuberant in the spot where it was sown. As the process which was then used, differs, I believe, in some respects from the practice in Europe, and particularly in the age and size of the transplanted corn, I shall here transcribe the notices I have retained of the crop alluded to.

1809, Nov. 9.—Sowed a small parcel of wheat received from Van Dieman's land.

1809, Dec. 20.—At this time it was grown 12 to 18 inches high, and so extremely thick and exuberant, that it becomes necessary to thin it. Two beds were this day prepared, each measuring two rods in length, and half a rod in breadth. In No. 1, whole tufts, the produce of one grain, as drawn from the seed bed, were