experiment, that the plants removed from the seed bed, had been 24 days in the ground—they were strong, and from 12 to 18 inches high. This mode possesses several very material advantages, which appear to have escaped the observation of those who have treated on the subject.

By sowing the seed-bed at the proper season, which may be from a month to seven weeks before the period of transplanting, a farmer may crop many acres of land that otherwise he might not have had leisure to prepare *before* the season for sowing had passed. His transplanted crop would not be more than three weeks behind that which was sown. In new land too, where the grub might be destructive to young and tender plants, whose sweet milky matter is their favourite food, a first crop of transplanted corn might be put in, without much risk; because these older plants having larger stems and roots, and harsher juices, are, I conceive, far less nourishing to the young grub; and are also less liable to the depredations of those of larger size. At all events, the labour of those insects, in destroying a crop well advanced, would evidently be many fold greater than for one that is attacked at the time the corn begins to sprout.

These are matters that will soon be decided; for I have at present, a crop of young barley wheat (now five inches high) adjoining some that has been transplanted. If the former should suffer, and the latter escape injury from the grub, it would establish a very important point in farming: for by the transplanting mode, a first crop of barley wheat (or other corn) might be taken from newly broken up land, which, if dibbled close, would give a large quantity of green fodder, or even of corn, whilst its shading the land from the sun's heat might prevent the hatching of eggs that may remain in the soil

At Long Wood the grubs lately commenced their depredations on the edge of a barley wheat crop which was well grown, and covered the field. But whether it is that

Another mode of cultivating corn has been suggested by the exuberance of my present crop of barley wheat. It seems to me, that it is possible, at St. Helena, to raise a double crop on the same field; that is, one of green fodder, the other of corn. This may be accomplished by reaping (at six or seven weeks growth) the green crop in parallel alleys. If these alleys are two feet wide, and six feet apart, and are crossed by others at right angles 18 feet asunder, they would form beds, 6 feet by 18; or of 108 square feet. Thus a current of air would be admitted all around and through these beds, by which the growth of the corn might be promoted sufficiently without thinning. The effect of this mode is to be ascertained by the barley wheat sown on the 7th of July last.

That barley wheat is a crop of great importance in St. Helena, I have clearly demonstrated in several of the St. Helena Registers; and that it might be of infinite utility in the United Kingdoms, by keeping down the high price of bread, appears to me very possible. It is as easy to grind and make it into meal as wheat itself; and if this meal were mixed with one half, or a third of wheaten flour, it is likely it would make a pleasant and wholesome bread.

When, to these circumstances are added, that 60 bushels can be obtained from one bushel sown on an acre; that it will grow on lands (without manure) of very inferior fertility to those required for wheat crops; and also that it yields the finest sort of malt, it seems truly surprising that a grain so valuable, in many respects, should have been hitherto so very little noticed in England.

The only accounts I have as yet read of it, are by Warren Hastings, Esq.; by Mr. C. W. Paget;† and by R. Flower, of

Retrospect of Discoveries, No. 25.

Agricultural Magazine, No. 39. Retrospect, No. 26.

The barley wheat, sown on the 7th of July, was begun to be transplanted on the 25th of August: that is 49 days after sowing. The whole of the two acres was, at this time, so extremely thick, that plants for many acres might have been well spared; whilst the thinning of this large seed bed will, no doubt, make it more productive of corn. Alleys, in breadth about 15 inches, have been opened in parallel lines six feet asunder. These alleys admit air through the crop, and furnish numerous plants; they also form the paths for the men to enter, and thin the intermediate beds; which is thus done without trampling the corn.

About four acres have been already transplanted.* The plants are remarkably fine, measuring 18 to 24 inches high, exclusive of the root: each plant is the produce of one seed. Some were cut at 6 inches above the root; and others at 9 inches; that is, just beyond the spindle; according to their size. I conceive that presenting in this manner *open* tubes to the atmospheric air and moisture and dews, will be advantageous, by admitting these internally to the roots, which might be prevented in some measure, if the entire plants were set. These, at the extremities, are apt to wither and dry, and consequently become less fit for imbibing moisture; which, at any rate, could only be received externally on the leaves. The best of these two modes will also be soon ascertained, as several hundred plants have been set out in the state they were drawn from the seed bed: this will afford a comparative experiment.

the roots and stems, when strong, do not yield the proper nourishment; or that it is noxious to these insects to be deprived of the sun's warmth, and enveloped in damp and moisture at the roots of green corn, the fact is, all that entered, only a few yards, were found dead.

Transplanted wheat, at St. Helena, will not succeed, unless the season be wet for some time after the plants are set out; and long continuance of very dry weather proved fatal to this crop.

Marsden, Herts.* All these agree in pointing it out as a corn most worthy of attention. I shall postpone offering any further observations until the experiments now in process are completed. These regard the different modes of culture: the making the meal into cakes, and loaves, and the sort of bread it may produce, when mixed with certain proportions of wheaten flour.

14*th September*, 1812.

other culinary plants, are produced upon them. A reservoir is sunk in the top of the mountain. The rain water collected in it, is conveyed by channels successively to the different terraces placed upon the mountain's sides. In spots too rugged, barren, steep, or high for raising other plants, the camellia sesanqua, and divers firs, particularly the larch, are cultivated with success.

" The collection of manure is an object of so much attention with the Chinese, that a prodigious number of old men and women, as well as of children, incapable of much other labour, are constantly employed about the streets, public roads, banks of canals and rivers, with baskets tied before them, and holding in their hands small wooden rakes to pick up the dung of animals, and offals of any kind that may answer the purpose of manure; but above every other, except the dung of fowls, the Chinese farmers, like the Romans, according to the testimony of Columella, prefer soil, or that matter which is collected by nightmen in London, in the vicinity of which, it is, in fact, applied to the same uses; as has already been alluded to in describing a visit to the Lo-wang peasant, in a former part of this work. This manure is mixed sparingly with a portion of stiff loamy earth, and formed into cakes, dried afterwards in the sun. In this state it sometimes becomes an object of commerce, and is sold to farmers, who never employ it in a compact state. Their first care is to construct large cisterns for containing, besides those cakes and dung of every kind, all sorts of vegetable matter, as leaves, or roots, or stems of plants, mud from the canals, and offals of animals, even to the shavings collected by the barbers. With all these they mix as much animal water as can be collected, or of common water, as will dilute the whole; and in this state, generally in the act of putrid fermentation, they apply it to the ploughed or

SECTION XXI.

On Terracing Lands, and preparing the Sides of Hills for Cultivation.

THE Chinese form the sides of their hills into terraces before they bring them into cultivation. The same practice obtains in other countries. At the island of Madeira, many of the vineyards occupy terraces, of this sort, from the summit to the base of mountains, where the declivities are equally abrupt as the eastern side of Ladder Hill.

Sir George Staunton, in his Account of the Embassy to China, describes those terraces in the following words:—

"Throughout this short land journey, and far from all great roads, not a mile was travelled without a village; nor a spot observed, except mere rocks, or perpendicular heights, that was not under cultivation. The villages were not surrounded by walls, but were adorned with handsome gateways at their extremities. The rocky places appear to have been denuded of the earth which had covered them formerly, in order to place it on a surface where it might become more conveniently a medium for the nutriment of plants. Where the face of the hill or mountain is not nearly perpendicular to the level surface of the earth, the slope is converted into a number of terraces one above another, each of which is supported by mounds of stone. By this management it is not uncommon to see the whole face of a mountain completely cultivated to the summit. These stages are not confined to the culture of any particular vegetable. Pulse, grain, yams, sweet potatoes, onions, carrots, turnips, and a variety of

broken earth. In various parts of a farm, and near paths and roads, large earthen vessels are buried to the edge, in the ground, for the accommodation of the labourer or passenger who may have occasion to use them. In small retiring houses, built also upon the brink of roads, and in the neighbourhood of villages, reservoirs are constructed of compact materials to prevent the absorption of whatever they receive, and straw is carefully thrown over the surface from time to time to stop the evaporation. And such a value is set upon the principal ingredient for manure, that the oldest and most helpless persons are not deemed wholly useless to the family by which they are supported."

The Chinese mode of terracing is, however, attended with great labour. It seems to me that the object of retaining the rains and moisture on the sides of sloping grounds, might be nearly as well attained by easier means. If land have only a moderate descent,* it may be ploughed uninterruptedly from the lower to the higher parts; and if double furrows, or channels, were made *on level lines*, at distances of 12 to 24 feet, (varying according to the declivity) the water might be intercepted as effectually as by the more expensive mode of terracing. The steeper the side of the hill, the nearer to each other should these furrows be made.

On very steep hills, I would advise, instead of terraces, that belts of the sward (5 or 6 feet in breadth) should be left at the time of preparing them for cultivation. These belts might be accurately marked out by a mason's level, in a level direction, leaving spaces between them 12 to 16 feet broad: which alone should be ploughed or trenched.

By this method of preparation, not only might all the rain

* In St, Helena, there are above 2000 acres, that might be as easily ploughed as any lands in England.

water which falls within an inclosure be retained, but the soil would be prevented from sliding down; which it is apt to do in very steep places, when it is fully saturated with water.

Those belts would also yield occasional cuttings of grass for cattle, &c.; so that, although the whole field would not be in cultivation, yet no part would be useless.

Whoever has attentively observed the difference between a crop at the upper and lower parts of a sloping field, must be convinced of the advantage of retaining throughout an equable portion of moisture. The upper part is always poor; because it has been deprived of moisture, by the natural tendency of water to descend: on the contrary, the lower part is the most exuberant, as it becomes the repository of almost all the rain that falls within the inclosure. This fact may be perceived in several parts of this island: and it might be further exemplified by an easy experiment.

Let any one cultivate a square rod on the natural slope of a hill, and let him take another square rod adjoining, and make it perfectly level, plant them both in the same manner with potatoes, or corn: and it will be found the level spot will be infinitely superior in produce.

In regard to manuring, a great deal might be done without too servile an imitation of the Chinese practices. Manure, indeed, is deserving all possible attention: because it is the best means of ensuring good crops; and of obtaining, proportionally, a larger profit from the labour bestowed in cultivation.

I hope these observations may be serviceable to those at present engaged in breaking up the new lands. I cannot, however, conclude them without strongly recommending, that where the terracing mode is not adopted, furrows, or belts, should never be omitted: no field, upon a sloping surface, can properly be culti-

vated without one or the other: but as I have before observed, they must be carefully made upon perfectly horizontal lines; for if these furrows or belts, were to deviate from a true level, they would operate as drains, and carry off the water: and thereby defeat the very purpose for which they are intended.

24th September, 1812.

SECTION XXII.

Useful Notices on Husbandry at St. Helena—Crops liable to Attacks of Caterpillars and Aphides—Crops not liable to Injury from those Insects—Lord Bacon's Idea of the Generation of Caterpillars apparently substantiated—Method tried to prevent their Generation—the Haulm of Potatoes suggested as an auxiliary Food for Cattle—Experiments to determine the Produce of Cos Lettuce—yields, in three Months from the Period of Sowing, about 15 *Tons per Acre—an excellent Food for Hogs.*

It is an essential part of husbandry, to make choice of those crops that can be most advantageously raised in the country where it is practised. Almost every kind of esculent and grain may be cultivated here with facility and success; and the returns, from the time of sowing the seed, are much more rapid than in colder climates; seldom exceeding from four to four months and a half. Some plants are, however, more liable than others to attacks of the caterpillar and aphides. Amongst these may be reckoned the potatoe, cabbage, turnip, mangel wurzel, and radish: but the potatoe rarely suffers so as materially to injure the crop; yet the haulm, from this cause, and the present system of culture, is entirely lost to the farmer.

Amongst the crops least liable to injury from those insects, are corn of all sorts; kidney beans, carrots, and lettuces; wherefore these are particularly deserving attention.

In regard to the loss sustained in potatoe haulm, it seems to me, there is a very simple, and perhaps an advantageous mode of averting it. I have observed that caterpillars generally make

their appearance at a certain stage of the growth of the plants, which seldom happens until they have been some time in blossom; and probably the generation of those insects, as supposed by Lord Bacon,* may take place at the time when a certain, yet invisible, change has operated in the leaves of the haulm; that is, when they begin to have a tendency to putrefaction. This opinion seems to be strengthened by recent observation; for, accidentally, I had a small patch of potatoes in the Plantation-house garden, considerably more advanced in growth than a crop which closely surrounded it; and I observed the haulm of this patch was swarming with caterpillars, and the whole was soon after destroyed, whilst the adjoining younger plants were wholly untouched: nor were these attacked until about a fortnight afterwards, when they had arrived at a more advanced state of growth.

It seems to me that the generation of the caterpillar may be prevented by keeping the haulm in a young and tender state: and this can readily be done by cutting it down after it has been some time in blossom. If this cutting were to commence at about 9 or 10 weeks growth,† and to continue for a fortnight, the potatoe farmer would secure about four or five tons per acre of green fodder for his cattle, which would well repay any small difference there might be in the produce of the potatoes. I have, indeed, good reason to believe that this difference would be far

* Lord Bacon observes, "the caterpillar is one of the most general of worms, and breedeth of dew and leaves: they breed in the spring chiefly, because then there is both dew and leaf. And they breed commonly when the east winds have much blown; the cause whereof is, the dryness of that wind; for to all vivification upon putrifaction, it is requisite the matter be not too moist. Caterpillars, both the greatest and the most, breed upon cabbages, which have a fat leaf, and apt to putrify."

† A surer guide is to cut the haulm about ten days after it has blossomed: red blossoms appear in 10 or 12 weeks; and the white in 7 or 8 weeks after planting.

less than in England; owing to the almost unceasing powers of vegetation which are observable in this climate. It is probably from this cause, that the gooseberry, the currant, and some other shrubs become evergreens, and bear no fruit. If then, in these, we observe so great a change in the process of nature, it is at least probable that similar changes may take place, although not perceptibly, in other vegetable productions.

I have not yet completed my experiments upon the effect of cutting potatoe haulm: but so confident of success do I feel, from the observations I have already made, that I mean to adopt the practice upon a crop of two acres allotted expressly for the purpose. My former trials were indeed imperfect, on account of cutting the haulm *within* a field of potatoes, so that when the uncut haulm was attacked and devoured, the caterpillars naturally crawled to the young and tender sproutings of the cut haulm, and eat them off as fast as they appeared.

That the cut haulm will reproduce leaves I have frequently ascertained. The following are some notices I have retained of a small experiment: but, the comparative produce of potatoes from the uncut and cut haulm was accidentally omitted.

On the 12th of February, 1809, the potatoes were planted. On the 4th of April, whilst in blossom, a square rod was mowed. It yielded 67½ pounds of fine tender haulm, which is at the rate of 10,800 pounds, or 4¾ tons per acre. The haulm of the adjoining crop was left uncut. I observed on the 28th of April, the uncut haulm had become brownish, and was much eaten by caterpillars, whilst the haulm that was cut, (having reproduced leaves) was of a fine green. The last notice I took of this experiment was on the 14th of May, when the cut continued in green leaf, that is, 40 days after it had been mowed. This is sufficient to prove that the powers of vegetation do contiuue in this climate long after

the haulm is cut: and if further trials should fully confirm what is here related, the discovery of a new mode of culture would be of infinite advantage, because the potatoe haulm, hitherto lost to the farmer, would become valuable as a food for cattle and hogs; and would consequently be of great service when the pastures are low; and would also give him the means of enriching his lands with large quantities of valuable manure, which might be made by consuming the haulm either as food or litter (or both) in his farm yard.*

Lettuce is an esculent which I have never observed here to be injured by the caterpillar or aphides. Its growth is quick, and it may, I believe, be raised at all seasons. I lately ascertained its produce per acre: which proves it might be a valuable acquisition to the hoggery, and an auxiliary food for cattle. The circumstances of the crop alluded to are as follows:

On the 13th of August, last, a seed bed was sown with cos lettuce, received from the Cape of Good Hope. It was transplanted on the 28th of September, at the distance of 15 inches from plant to plant. On the 13th of November, although well grown, the plants did not entirely cover the soil, wherefore, they might admit of being set nearer to each other, that is, at one foot asunder. In this case an acre would contain 43,560 plants. Twenty plants cut close to the roots on the 13th of November, yielded 16 pounds of excellent fodder; consequently an acre would produce 34,848 pounds, or about 15 tons. It is probable it might even exceed this quantity, and that the average weight of full grown plants might be one pound *in three months from*

Rating the present potatoe grounds at one hunded and fifty acres, and the produce of haulm at 4 tons per acre, this would be 600 tons of green fodder from one crop, or 1,200 tons from the two crops in the year. The practice here suggested, will, I trust, attract the attention of the landholders.

sowing the seed: for two of the largest plants having been selected, one weighed one pound and six ounces, and the other one pound.

In the annexed paper on the use of hay tea, the hog feeders will derive much valuable information; and I very strongly recommend their attention to lettuce crops, as I am confident they will find them equal, if not superior, to any other in feeding sows and pigs, and particularly during the summer months.

Mr. Arthur Young informs us, in his Calendar of Husbandry, that he first observed the sowing of lettuces for hogs, practised in a pretty regular system on the farm of a very intelligent cultivator (not at all a whimsical man) in Sussex. He had, every year, an acre or two, which afforded a great quantity of very valuable food for his sows and pigs." He adds, that "it yields milk amply, and all sorts of swine are fond of it." And he thinks that "the economical farmer, who keeps many hogs, should take care to have a succession of crops for these animals, that his carts may not be for ever on the road for purchased grains, or his granary open for corn, oftener than is necessary." These observations may well be applied to this island, where grain is dear, and where the carriage to the interior is difficult, being upon an ascent of 5 or 600 yards from James's Town.

It gives me peculiar satisfaction to observe that my endeavours to promote the prosperity of this settlement, by publishing the results of experiments, and by communicating every useful tract I find, on subjects connected with the important objects I have had in view, have not been fruitless: at this moment a spirit of improvement in husbandry is clearly manifested in all parts of the island, and the happy consequences resulting from it are already felt in a degree that scarcely could have been credited by those who, not unnaturally, were averse to new practices.

What has already been effected, merely by the extended culture of potatoes, and by some most exuberant specimens of corn, are sufficient to prove the surprising change that will soon be produced in the value of this long neglected island; a change which will be not less beneficial to the lord's proprietors than to the landholders, and all other classes of the community.

It is also with gratification I observe, at the Cape of Good Hope, the same energies, and the same pursuits, carrying on under the auspices of his Excellency Sir John Cradock. His observations upon the importance of agriculture, and upon its slow progress in that colony, are so truly applicable to St. Helena, that I shall conclude this paper with an Extract from a Government advertisement (in the Cape Town Gazette) dated the 17th of October, 1812. This paper contains sentiments exactly similar to those that were communicated in the St. Helena Register for October, 1812, in an Extract entitled "On the Cultivation of the Soil." This coincidence, as to the time of publishing, is not less remarkable, than the coincidence of the subjects; that two neighbouring colonies, remote from the mother country, which have been so long occupied without having made the smallest advances in the arts of husbandry, should, at the very same time, be roused from inactivity to useful and laudable exertion.

In the advertisement referred to, Sir John Cradock makes the following observations.

"It is now established on the authority of the most eminent and enlightened men who have written upon the subject, that agriculture forms the true basis of the Wealth of Nations; and that commerce and manufactures, although powerful auxiliaries, are considerations of secondary importance. Agriculture too, or the cultivation of soil, is naturally the primary object of all emigrations from civilized nations to foreign countries: and such

productions are most cultivated as experience may point out to be most congen al to the climate and soil.

" When it comes to be considered, the number of years that this colony has been possessed by an enlightened and industrious nation, it is a matter of surprise that the progress in agricultural pursuits has not been more rapid. This observation is plain to every understanding capable of considering the inadequate proportion which the increase of cultivation bears to that of the population of the settlement.

" His Excellency, with a lively sense of this growing evil, and an ardent desire to lend his full support and countenance to the support of agriculture, as well as the improvement of cattle of every description—objects so highly essential to the permanent welfare of this valuable and growing Colony, judges it expedient to re-organize the Board of Agriculture; and is pleased to accept the resignation of the gentlemen hereafter named, (members of the late board), who for the reasons they have severally assigned, cannot afford such portion of their time as becomes necessary to give efficiency to the institution, and embrace the various objects which must at least for some time, command the attention of the board."

" His Excellency has therefore taken upon himself, the Presidency of the Board of Agriculture."

These judicious sentiments ought to serve as a farther proof to our cultivators, and to convince them that the change which has happily been effected here, is conformable to what is universally admitted as the true basis of the Wealth of Nations. It has been well observed in an able Essay on the Spirit of Legislation, " that without agriculture, *which is the base of the prosperity and power of the state*, there can be neither commerce nor manufacture. *It is to agriculture that we ought ever to attend*

as the most important point. She furnishes nourishment, fuel, clothing, and the first materials for every thing. Population is created by agriculture, which gives subsistence to all without exception—to the farmer and the workman, as well as to the merchant."

20th November, 1812.

On the Use of Hay Tea in feeding Hogs.

THE use of hay-tea, in the feeding of hogs, has been attempted by Mr. Saunders, of Stroud, Gloucestershire, with much success. He was led to the use of this liquid, from considering its effects in weaning calves. In his experiments, as stated in the Agricultural Magazine, the sorts of hay made use of, were *clover*, *sainfoin*, and *lucern*;* and he thickened the tea or wash indiscriminately, with either grains, or bran, or pollard, or any kind of meal, or boiled cabbages, or *boiled potatoes* (carrots, though excellent, he had none:) sometimes adding two or more of these articles, as his stock of either most enabled him. And he had the greatest satisfaction to find, that he made *a single sack of boiled potatoes*, when mixed with wash, and without any other ingredient, go as far as four or five sacks, (though boiled) when he gave them to the pigs alone; and the expense of the wash thickened with potatoes, is considerably lower than potatoes alone. With the view of showing the practicability of prosecuting the plan individually upon a larger scale, he gradually increased his stock to upwards of four hundred; and in the course of his experiments,

* The wire-grass has been used with success, at Long Wood, in rearing calves: and appears equal to any other grass for the purpose recommended. K.

he used nearly fifteen hundred hogsheads of the wash, consuming when his stock was at the highest, about five hogsheads daily. And, incredible as it may appear, he maintained them, collectively at the very low rate of one penny a head per day; and in excellent store order, and many of them fit for the butcher. It deserves particular attention, he says, that, in a week or fortnight after he had commenced his experiments, the pigs which he had before been feeding with potatoes alone, improved in their coats, which from looking coarse, assumed a gloss, and became fine and short; a proof, surely, of the great nutrition of the food, and of its perfectly agreeing with pigs.

"Nor is it, says he, less remarkable, that this voracious animal, though fed with this food but twice a day (which he prefers to oftener) would lie down contented for the remainder, provided he was well-ringed, and had a warm and dry place to shelter himself under.

"And this he attributes to the following causes, besides the nutritive properties of the wash:

"He found it beneficial to store the boiled potatoes in large casks (in which he conceives they would keep good above a twelvemonth) and when they had remained in them some time, freed from the water they were boiled in, (which is considered noxious) they not only went further, but they generated a spirit; and the wash being also, as he apprehends of considerable strength, they disposed the animal to betake himself to rest from their soporific and intoxicating qualities; a circumstance evidently conducive to his quicker growth. Nor can an objection be raised to this food when applied to the flesh of the animal. So far from possessing any pernicious quality, it communicates, perhaps, a richer and more delicate flavour to the pork and bacon than they receive when fed after the common mode; and the butchers,

and others, not only eagerly purchased his pigs, but commonly remarked that they rapidly improved when put up to fatten."

"And hence," says he, "arises another most important consideration.

"He is confident he could make one sack of meal, of whatever description, go as far as two sacks in the common mode of fattening. For, by gradually thickening the wash with meal, it forms, he thinks, the best introduction to the higher and last stages of fattening, both for pork and bacon; indeed that method should be followed throughout the process, using the wash instead of water. The increased quantity of a cheap and highly nutritious food, thus administered, will satisfy the voracious habits of this animal, and yield, he says, the greatest profit; and this alone would cause an immense annual saving of corn, which would tend to ensure plenty and cheapness; the grand desiderata in all experiments. For the price of a commodity, in a great degree, depends on the relative quantity produced, and the regular consumption; to lessen the consumption, therefore, diminishes the demand, and has the same effect as increasing the supply, which must necessarily cheapen the article."

And his calculations of the daily expenses of this mode of feeding, are the following:

He observes, that "clover, or sainfoin hay, at £4..13..4. per ton, is 4*s*. 8*d*. per hundred, or $\frac{1}{2}d$. per pound; and that twenty pounds of either, well boiled, will make with the addition of the incorporating ingredients, sufficient wash or food to maintain, throughout the day, fifty store pigs, from three months old, to an indefinite age upwards.

Estimation of daily Expenses of feeding fifty Store Pigs.

	L.	s.	d.
To potatoes, two bushels, (120lb. at 5s. per sack,) -	0	2	6
To clover, or sainfoin hay, 20lbs. (which will give 10 quarts, or 2½ gallons of liquid food to each pig) -	0	0	10
To coal, ½ bushel, (at 6*d.* per bushel, average value)	0	0	3
To attendance, boiling food, serving, &c - -	0	0	6
Total	0	4	1

This is 1*d.* short of 1*d.* a head per day.

Again:

Potatoes, 1 bushel, (60lbs.) - - - -	0	1	3
Grains, 2 bushels, at 6*d.* per bushel, - -	0	1	0
Clover, &c. - - - - -	0	0	10
Attendance, - - - - - -	0	0	6
Coal - - - - - -	0	0	3
Total	0	3	10

This is 4*d.* short of 1*d.* a head.

Or,

Potatoes, 1 bushel - - - -	0	1	3
Meal of any description (particularly oat-meal, as being the cheapest) or pollard - - - - -	0	1	4
Clover - - - - -	0	0	10
Coal - - - - - -	0	0	3
Attendance, - - - - -	0	0	6
Total	0	4	2

This is exactly 1*d.* per head.

It is remarked that " carrots, either raw or boiled, are excellent; and these, with oatmeal and grains, would makea cheap

and good addition. And that the hay when put into the furnace to boil, should be put into a net, or a basket with a lid to it, or in a tin kettle and cover, filled with large holes, and the potatoes, (or carrots, &c.) should be steamed over the tea, while gently boiling or simmering. This may easily be done, by fitting to the furnace, a vessel having a number of holes, of the size of a common auger, bored through the bottom of it, so as to allow the steam to pass through the potatoes, with which the vessel is filled; and having a little moist clay, or a wet flannel or cloth put circularly round the bottom, where it rests on the mouth of the furnace, so as to secure the steam from escaping. By this mode of steaming the potatoes, a considerable saving will be made in the article of coal. The potatoes should be but slightly steamed or boiled, and not reduced to a pulp,* and whilst hot should be trod or rammed in casks for future use. The hay, after boiling, may be dried, and perhaps offered to store cattle: or else thrown to the pigs as litter, or, to add to the dung heap. The wash should be carefully given to the pigs in a lukewarm state, and if meal, or pollard be added, it should be thrown into the tub, or cooler, immediately after boiling the wash, and well mixed together; but steaming the meal, or pollard, and even the grains might be a further improvement. The water where there is a sufficent fall, may be led into the furnace without any trouble whatever, by means of a leaden pipe; or may be conveyed into the furnace by a spout from the pump; and the tea may be drawn off, through a cock into a cooler, which should be placed by the side of the furnace. To convey the wash to the pigs he used an

* The steaming operation would, no doubt, be much facilitated by previously slicing the potatoes, by means of the potatoe cutters; of which a few were lately received at this place, from England. K.

SECTION XXIII.

Homefolding of Sheep recommended.

THE subjoined paper, addressed to the Editor of the Agricultural Magazine, seems deserving attention on this island ;* where the little regard paid to sheep is obvious to every observer. In general no care whatever is taken of them, and they are suffered to wander every where, like wild animals, to the great annoyance of the industrious, whose crops are often destroyed by their depredations. The laws which enjoin the tending of flocks are never heeded : nor do the proprietors appear to be sensible of the real value, and importance of those animals, nor of the great improvement they are susceptible, when treated with due care and attention.

The plan proposed by Old Suffolk might be introduced here, at a very small expense, and with few deviations : for instance, instead of the fold being made along the side of a barn, any stone fence wall having a northern aspect, is equally well suited to the purpose. The covering of the fold might be of furze, or coarse grass, and the nightly provender for the sheep, instead of hay or turnips, might be at first (until straw is more generally introduced here) the refuse of potatoe crops. Even a small allowance, placed within a dry, warm, and well sheltered retreat, during the rainy seasons particularly, would very soon tempt these naturally tame, quiet, and inoffensive animals, habitually to seek for their homely dwelling and food, after a very little

* Dated 23d October, 1811, and signed " Old Suffolk."

open barrel or hogshead, suspended upon a pair of shafts with wheels to it, drawn by a single horse.

It is added, that " in the estimates of the expense of maintaining the pigs, it should be observed, that he has taken no credit for the article of manure ; and thus his pigs will make the farmer a present of their dung, as well as pay him a good price for their keep. Fifty strong stores, with a sufficient quantity of stubble, (which is frequently and very improperly, ploughed into the land) or carpenters' shavings and saw-dust, or virgin earth, or sand, especially sea-sand, (where obtainable) laid down in the yard, will make, he says, in the course of the year, from two to three hundred waggon-loads of excellent manure : the sea-sand will add saline particles to the manure, and check evaporation." And he thinks it " necessary to remark, as a most favourable circumstance, that the hay-tea binds the dung of swine, and renders it hard and black, like sheeps' dung ; and if it does not produce this effect, it must assuredly be either bad in quality, or not properly boiled, or not rendered sufficiently strong ; all which particulars should be most carefully attended to ; and the state of the dung is an admirable guide to go by. The hay should always be of an excellent quality ; and that which heated best, and contains most of the saccharine juices should have the preference. Bad hay is certain destruction to the pigs. Clover stands first, next sainfoin, and lastly, meadow hay. Indeed, most of his experiments were made, he says, (though not by choice) with meadow hay."

Extracted from " The Complete Farmer"—by K.

SECTION XXIV.

Progress of Agricultural Improvement in 1810-12 *—beneficial Effects of extending Cultivation—the Government commend the Exertions of some, and animadvert on the Obstinacy and Idleness of others—flourishing State of St. Helena in the Year* 1675.

THE tracts contained in the preceding Sections are selected from many others which were published in the St. Helena Register, between November, 1810, and January, 1813; and as it was observable that they had produced a considerable change in the sentiments of the landholders—by the plough gradually coming into use, and by the quantity of land in cultivation having been doubled during the above period, it was, therefore, deemed expedient officially to notify the progress of improvement—to commend the industrious, and to animadvert on the conduct of those who seemed obstinately determined to adhere to their old practice, and to withhold their aid from the grand object of general improvement. This measure of the Government, it was hoped, might operate as a further stimulus to exertion; and with this view the following Proclamation was issued:

"*Island of St. Helena,* 11*th January,* 1813.

"THE Governor and Council have derived much gratification in observing the laudable spirit of industry which has for some time past, been manifested amongst several respectable landholders; and in contemplating the progress in agricultural improvement; by which a fair prospect is now held out of St. Helena becoming, in a short time, far more abundant in its internal resources, and

attention of the shepherds in training them to come to it at a certain hour in the evening. I am persuaded that whoever may try the experiment, will soon be satisfied that the expense and trouble incurred will be amply repaid, by the improvement of his sheep, and by the valuable manure they will produce: and if the experimenter should happen to have a real *gout* for good mutton, I have no doubt he will be very thankful to Old Suffolk for the good advice he has given.

18*th December*, 1812. K.

interests of the Honourable East India Company, and those of individuals.

"The greatly enhanced prices of beef, pork, and flour from England, and of rice and paddy from India, during the last five years, together with the present state of affairs with America, are circumstances which should operate as a further stimulus to exertions; for by still extending the culture of potatoes and corn, and raising crops suited to the feeding of live-stock, the demands for the above-mentioned articles of import might be greatly diminished; and little inconvenience would be felt in this remote part of the globe, from those causes which unavoidably have led to the high price of provisions in England.

"These observations will have due weight with those landholders who have already manifested a laudable disposition to promote the improvement of the island: but the Governor and Council can entertain but little hopes of their making any impression on the minds of others, who occupy extensive farms, have large establishments of servants, and who still persist in their former habits of inactivity, or absolute idleness; thus betraying equally a total disregard to their own interests as to the Company's orders. It is therefore once more recommended to the landholders of this description, that they examine the 'Laws and Ordinances,' in their possession, and inform themselves of the Orders of the Court of Directors, particularly those stated at length in the General Letter, dated 30th March, 1810, (page 86 to 90.)

"It is also proper to apprise the persons alluded to, that annual Reports of the farms, and lists of families and servants are regularly transmitted for the information of the Court of Directors, by which will be seen the relative industry of individuals; and consequently the deserving and the undeserving tenants are thus brought to light. Wherefore, if the Court shall discover that

in the means of refreshing fleets, than it has ever yet been since its first establishment.

" Comparing the annual Reports of the farms for 1810 and 1812, there appear to have been added since November, 1810, ninety-one acres to the cultivated lands : of which 49½ acres have been thus improved by the exertions of individuals.* The beneficial effects resulting from this increase of cultivation, have been felt by the garrison and the community at large ; by His Majesty's and the Honourable Company's ships having been enabled to provide potatoes at moderate prices, in quantities sufficient for their crews during a long passage ; and by a part of those sums formerly expended in the purchase of imported food, having become a saving to the island—proportionate (at the least) to the diminished expenditure of flour and rice.

" Amongst those whose exertions have been conspicuous in producing this beneficial change, and whose merits are deserving particular notice on the present occasion, are Messrs. Brooke and Defountain, Miss Mason, Captain Sampson, Mr. Samuel Knipe, Mr. John Kay, Mr. Bagley, Mr. Hayward, Major Wright, Mr. Legg, Mr. George Leech, Mrs. Alexander, and Mr. Alesworth.

" It is to such examples (which evince a strong conviction in those persons of the importance and advantage of agriculture) that the Governor and Council look forward with confidence to its more general introduction ; which is undoubtedly the best possible means of promoting the prosperity of the island, the real

Although these beginnings may appear trifling to English farmers, there being only " 91 acres *added* to the cultivated lands since 1810;" yet when it is considered that prior to that period 88 acres were the total in cultivation ; and that this statement is taken from the official return, dated in May last, which comprises but a small portion of the year 1812 (since which time many more acres have been added,) the whole improvement, under all the circumstances of this place, is as much as could have been expected.

neither their repeated orders, nor arguments, nor successful examples, will rouse this class of landholders to exertion, it is indeed highly probable they will order them a fate similar to some of those 'drones' who are noticed in the 13th page of the 'Laws and Ordinances;'* not by a removal from the island, but from the lease lands, in order that these may be placed in the hands of persons who are willing to contribute to the general welfare of the community.

"By Order of the Governor and Council,

T. H. BROOKE,
Secretary.

* *Extract of a Letter from the Court of Directors to the Governor and Council, dated 8th March, 1675.*

"We are pleased to hear from you that the island is in such a flourishing condition, and that all things thrive well with you. But yet we find there is wanting industry and pains taking in many of the inhabitants, which we will not permit to continue to be amongst you; for they that will not plant and take care for provisions of their own, we will not supply them; rather send them home under the title of drones." On the 11th of January, 1709, the Court again ordered "the drones to be sent away"—and in this letter it is added, "We are pleased with the account Governor Roberts gives us, that he effectually checked that lazy disposition of too many of the planters, to let all run to ruin; and by removing some of the drones, and speaking well of the industrious, has mended the temper of the rest, that they are as busy as bees," &c. &c.

SECTION XXV

Feeding Sheep with Potatoes, and Soiling Cattle recommended.

I HAVE selected two extracts for insertion in the present month's Register, upon subjects, which I think are deserving the attention of every landholder.

The first, "*On Feeding Sheep with Potatoes,*" shews that potatoes were particularly serviceable to ewes and lambs "at a trying season;" that bullocks and sheep, although they had plenty of good hay within reach, preferred the potatoes: which were given to the cattle raw, unwashed, and whole. These are valuable facts; since they prove decisively that the extension of the potatoe culture is an excellent means of guarding against losses in cattle and sheep "in trying seasons;" (as seasons of drought undoubtedly are) against which it has not been the practice here, as in England, to make any provision.

The paper on feeding sheep further teaches, that five bushels of potatoes, given every morning to 100 sheep, and afterwards turning them out to pasture (instead of fresh straw twice a day) might be sufficient to keep them in good condition; but as English sheep are much larger than those of this island, even *half* the above quantity might be a vast benefit: and in this case two bushels and a half would suffice for a hundred sheep; being a daily allowance of about a pound and a half to each. At this rate, supposing an acre to yield, from the two crops annually, 400 bushels: these are equivalent to 16,000 daily rations; or sufficient for more than 40 sheep throughout the year.

Young's Annals of Agriculture.

Surely this application of *one acre* of potatoes on a farm would be profitable in many points of view; the sheep would no doubt be improved by an increase in flesh; the milk of the ewes would be more abundant; the lambs would of course thrive better; and the practice of home-feeding would soon tame the whole of the flocks; and particularly "the common sheep," which are, at present, a great nuisance throughout the island; besides, by littering the feeding yard with coarse grass, or straw, &c. a considerable quantity of valuable manure would be obtained, that would amply repay the trouble and expense; and would be of great value in restoring exhausted lands. When all these circumstances are considered, it must be admitted that the practice of feeding with potatoes would be extremely beneficial. If it were once introduced, it would soon convince the landholders, that however extensive the culture, there could never be any want of consumers, even should there be a disappointment in the sale. One of our potatoe farmers, some time ago, assured me he had lost five hundred bushels, which had rotted, as there was no demand for them. I did not pity him; because if he had been in the habit of feeding his servants and cattle at that time, in the manner here proposed, or of lowering and suiting his prices to the market, such a loss could never have happened.

The paper in question further proves that potatoe grounds are an excellent preparation, as I have formerly noticed, for crops both of barley and wheat.

The second Paper "*On Soiling Cattle,*" is at present not so applicable to the state of this island as the first: but it contains

Soiling is a phrase in husbandry expressive of the practice of mowing certain crops in a green state and giving them to horses, cattle, &c. in stables, stalls, and yards. There are some judicious remarks, in page 311 of Mr. Arthur Young's Farmer's Calendar, relating to this mode of feeding, to which the reader is referred.

much useful information, and may possibly induce our cultivators to turn their attention, when husbandry is a little more advanced, to clover, rye-grass, and lucerne, which in England are esteemed valuable crops for this system of feeding. In the mean time, I again recommend the practice of green fodder crops from barley-wheat, oats, or common barley; for all these have already been found the most certain, and most rapid in growth in this climate. Their produce is immense, being from 12 to 14 tons per acre in two months from putting the seed into the ground. It is indeed my opinion that these crops are preferable here to clover or rye-grass. The lucerne, however, thrives well, and certainly deserves attention; because, when once established, it will last for many years without any other expense than harrowing and weeding; which are necessary for the purpose of keeping it clear of weeds, and opening the soil for the admission of air and moisture.

Mr. Curwen's Paper * also contains some useful hints on the subject of soiling, that are equally applicable to the crops I recommend as to those he made use of.

February 24th, 1813.

Communications to the Board of Agriculture, Vol. VI. Part 1.

the *Cactus Tuna* be found; as the many publications of the late revered Doctor James Anderson, of Madras, have so amply shown.

These publications extensively distributed, and the numerous supplies of Nopal and *Tuna* that were issued at Madras, always with a view of part being landed at this island, as plants that would be of the greatest value to the crews of the large fleets that resort here, and are detained for often a long period of time, from their capability of thriving on the barren inhospitable looking exterior of this island, render it unnecessary for me to say much on this part of the subject, it having engaged so much the attention of the philanthropic Doctor Anderson; and which must be well known here from his many publications received.

Having stated thus much, Honourable Sir, it is impossible for me to avoid mentioning my disappointment at not being able to find one plant of the *Cactus Tuna*, and but a very few of the Kew Nopal: so few as to be more an object of curiosity than utility.

The Kew Nopal being, however, the *Cactus* of most value, both as a plant for rearing the fine cochineal, and therefore called *Cactus Cochinilifer*, as well as its superiority as a vegetable for sea-stock, I hope the endeavour I made while at Madras to support Dr. Anderson's most anxious wish of establishing the culture of the Nopal and *Tuna* as a vegetable, principally for sea-stock, and as a vegetable for the poor, will be some apology for the the liberty I now take in pressing this subject on the attention of the government of St. Helena, and of recommending that a portion of the Botanical Garden, as it is called, in James's Town, may be appropriated for this most useful purpose. I mention this garden as being public property, and from its being enclosed,

SECTION XXVI.

Doctor Berry's official Letter to Governor Beatson—suggests the Culture of Kew Nopal and Cactus Tuna, *the Arabian Date, and Guinea Grass—Doctor Berry's fermenting Balls an excellent Substitute for Yeast—Captain Haig's Report on Nopal—a nutritious and valuable Antiscorbutic.*

To the Honourable Colonel Beatson, Governor, &c. &c. &c. St. Helena.

HONOURABLE SIR,

HAVING, whilst traversing the most interesting parts of this extraordinary volcanic island, seen, with much satisfaction, the very beneficial consequences that have resulted from your zealous and unremitted endeavours to encrease the means of subsistence to the inhabitants, and to render the island thereby a less expensive tenure to England, I trust you will excuse the liberty I now take of enclosing a letter from Captain Haig, commanding the ship Regent, detailing the advantage he has received for his ship's crew; and of expressing my confident hope of this public address being the means of also adding the culture of the Nopal to the list of your objects of public improvements.

The leaves that Captain Haig has been able to obtain for his crew, are from a prickly *Cactus*, supposed in India, to be a native of the Mauritius, and there used only as a fence before the *Tuna* was generally known and distributed. If these leaves have been found as a vegetable so much superior to the watery poor vegetables procurable for sailors, and these even in inadequate quantity, and at a price too high to be furnished for any length of time, how much superior would the leaves of the Kew Nopal, and of

and thereby protected from any depredation by goats, and where nearly an adequate culture of Nopal plants may be made, at little or no expense to government, without much encroaching on the ground that may be thought necessary for the culture of vegetables for the family inhabiting the house there; and if even a small sum was charged on the supplies of Nopal leaves furnished, to reimburse any expense incurred, and for transport, if necessary, to the shipping; I should consider it proper, as attaching some value to the supply, which being furnished *gratis*, might tend to diminish;—such being the general tendency of mankind to prize according to the difficulty of obtainment. I feel the less hesitation in recommending this principal culture in that garden, as its object as a Botanical Garden has been frustrated, and from its limited scale, and the little that is growing in it of a foreign and valuable nature: from the many seeds from many quarters, and particularly from India, that have been forwarded, it would seem badly calculated for the continuance of such an object. But for the culture of the Kew Nopal, it will answer well, the only thriving plants of this *Cactus* being there; the very few at Plantation-house and Long Wood being of so stunted a growth, though long in the ground, as to show that either the ground or the elevation is not favourable to the luxuriant growth of this esculent plant. There is also another species of *Cactus* growing in the Botanical Garden of a large size, what Dr. Anderson called the China Nopal: I wish attention to be paid to this distinction in making plantations, as the Kew Nopal is alone the object of culture as a vegetable; the leaves of the Kew Nopal are more retuse, narrower, and less thick, with fewer and shorter thorns, and the full grown leaves, not too old, are of a dark green, while the other, or China Nopal leaves are of a lighter green, and with a less lucid surface: these distinctions will prevent any

mistake. There being no *Tuna* plants on the island; and the plant for the fortifications and for the enclosures against the depredations of goats, being what is denominated the Mauritius *Cactus*, I will request some baskets of the *Tuna* leaves, and of *Tuna* seed to be sent here by the first opportunity, in the expectation that it may meet with attention, so as in a few years to form fences and enclosures in James's Valley—thereby affording an equally formidable fence, while its leaves will be a more agreeable vegetable for its more acid nature.

Having now stated, Honourable Sir, all that can be necessary for me to say on the subject of this address, which I trust will meet with your approbation; I will take the liberty of trespassing a little longer on your time, by mentioning what appears to me of import, next in consequence to the increase of agriculture, which has so successfully engaged your attention; the benefits resulting from it, I have heard acknowledged in the most honourable and gratifying manner, by such of the old soldiery as I have met in my excursions, who have uniformly stated, that in the reductions of the prices of articles of food, and particularly in the abundant supply and reduced prices of potatoes, they have subsisted better since your government commenced, than they ever did before.

The government, by taking agriculture on an extensive scale into their own hands have done this general good: but from the wide field that is yet open, the whole of the interior of the island for six or eight miles in every direction, being capable of cultivation, a long perseverance must still be given to make this island what it should be, favoured as it is by situation in the tropic. I almost despair of its being effected, unless there are some small divisions of land, and some villages established in situations where there is water, there being in the interior only

proprietors of land and slaves, from which there is little stimulus to industry.

It must be evident that the apathy and difficulty of increasing agriculture—of there being no adequate supply of milk, and much less of butter, where there are so many cattle and sheep—and the scanty supply of eggs, where there should be an abundant stock of poultry, can alone be under such circumstances, from there being no lower class of inhabitants dependant on their own industry, and no establishment or settlement for the slaves when grown up.

There are no villages for them, or small spots of ground to cultivate, as is the case in the West Indies.

The Chinese also who are here, are not so much employed in agriculture as in labour. I think an experiment may be made with prospect of future benefit, by establishing men in small communities in a few places on the island, and to insure their industry, by the ready sale of what they may rear, in a public market, giving them premiums at first, and land on perpetual lease, and such annual quit rent after a certain lapse of years, as may be agreed upon; in this manner the government land may be sold with public and private benefit.

But to ensure the moisture and rain, on which extensive agriculture must depend, it will be necessary to clothe the summit of the mountainous ridges in the interior with trees, all the elevated ridges being naked, there being no trees higher than the ridges, by which, clouds are not attracted, nor vapours condensed: the rocky summits of mountains of the exterior, tending still further by their naked surface to keep vapour clouds elevated, by which they are blown past, to fall in rain at sea. The few gum-wood trees which are said to be indigenous, seem to have so little hold of the ground on the sides of the ridges of Diana and High Peak,

as to be of little value either as a wood of utility, or for firewood. It should therefore be cleared away at Long Wood, where it interferes with agriculture, leaving only intermediate rows for shelter, for it occupies at present, ground capable of agriculture without being of the smallest use, and is not sufficiently elevated to answer the purpose I am recommending: the peaks that should be covered with wood, being elevated far above the level of Long Wood.

As it would be an undertaking of labour and expense, more perhaps than would be given to cover the sides of the ridges towards the summits with wood, I have suggested to some gentlemen, and particularly to Major Hodson, as Arabian dates are sent here for sale (the seeds of which will grow), that if he would put some of these seeds in his pocket on going to these peaks, and make his servants stick them into the rich soil on these elevated ridges, he might clothe them with trees in this easy, slow, but general manner, that would not be eaten by the goats, would take strong root, and from its luxuriant growth in Mysore, which in climate and elevation approaches that of these peaks, there can be little doubt of their thriving, and when any more useful trees can be reared these trees may be cut down or thinned. I have also suggested that the seed of the Guinea grass scattered on these summits would grow and distribute itself, and be the means of affording the best of fodder to the fine English cattle reared on the island.

The fir tree which you have reared with the same view, and mean to distribute at low rates, will be planted where they can be enclosed, and taken care of, but even some of these may be planted on these peaks, and if surrounded with a circular wall for a few feet, may be then left without further care, a few prickly pear leaves covering the top of the enclosure. In India, where

there is more heat, you must have seen considerable plantations made this way, and as on these peaks there cannot be any other attention required or for watering, a good deal may be done, by employing some of the Chinese in this way. Lower down there are springs, in which many of the forest trees of the Malabar mountains will grow. In furtherance of this object, I will transmit a copy of this letter for introduction in the public prints in India, with the view of soliciting seeds being sent here, and will make particular requests myself to be more certain. I shall request them being directed to the Town Major of St. Helena, to be reported by him, and disposed of as government, or individuals may wish.

It gives me pleasure to learn from you that the fermenting balls which I described in the Madras Gazette of the 22d February, 1812, had been so useful as to afford excellent fermented bread to the fleet that sailed at that period for England. I have not been able to do any thing in the way you wish, of endeavouring to make a similar ferment to improve the bread at St. Helena—not having received the plants I requested, nor a bottle of the juice of the gum-wood tree: but from what I tasted of this juice, I think it will afford all that can be required in this way, it being a saccharine juice, which when allowed to approach the acetous fermentation, will so nearly approach the Cocoa nut or Palmira Toddy, as to be equally useful as a ferment.

On speaking to the baker in James's Town respecting the weakness of his ferment, and of his bread not being sufficiently raised, he attributed the failure to the impurity and badness of the wheat flour: this may certainly be obviated by having grain sent instead of flour, to be ground at St. Helena, by which there would be little danger of its being spoiled or impure. I mention this to show that I have not been inattentive to your wish,

but as you have taken the subject into consideration, I shall add no more to this already too much extended Letter.

I have the honour to be, with respect, Honourable Sir,
your very obedient Servant,

ANDREW BERRY.

St. Helena, 12th March, 1813.

To Dr. Berry.

DEAR SIR,

As you are well acquainted with the virtue of the Nopal, I send you some that has been gathered by my Lascars on this island; on the arrival of the Regent, I incurred an expense of 18 to 20 shillings per day for a supply of greens for my ship's company, which (consisting entirely of Lascars) was far from being agreeable to them, and having accidentally discovered the Nopal near Major Hodson's house, my men have since constantly preferred using it. I have no doubt that from this preference a more beneficial effect must result to them than from the light waterish kind of greens usually supplied to the shipping; as it is a plant that requires little care in rearing, and scarcely any soil, I think under the auspices of the present Governor, it might be raised in great abundance on the rocks of this island; there are many ships that seldom give potatoes to their Lascars or Chinese; and those nations of India who have once experienced the benefit of its antiscorbutic qualities, will be able to continue it without expense, and when properly strung over a ship's stern, it will afford a good nutriment long after potatoes are decayed.

I am, Dear Sir, your's obediently,

JAMES HAIG.

Ship Regent, March 5th, 1813.

SECTION XXVII.

Reply to Doctor Berry's Letter — English Husbandry acknowledged by St. Helena Farmers superior to their Own—Soil and Climate peculiarly favourable to Cultivation—Accounts Received of the spreading Property and Re-production of Potatoes upon Islands in the South Seas—Experiments to ascertain these Points—Lead to a Singular and Advantageous Mode of Potatoe Culture in tropical Climates.—Potatoes a good Preparation for Corn Crops. Fishery at St. Helena formerly Productive—Evils of the present System—Improvements suggested. Establishment of Chinese at St. Helena—Differs from that generally adopted—Their Pay, Rations, and Occupations. Trees attract Moisture and Rain—Cultivated Land has a similar Tendency. Experiment in reaping Barley—Wheat —Yields per Acre $10\frac{1}{2}$ *Tons of green Fodder, in two Months from the Time of Sowing — Loss of Weight when hayed,* 100 *Pounds in* 146.— *Hints suggested for ascertaining the relative Moisture imbibed by cultivated and uncultivated Land. — Nurseries of Trees established at St. Helena.—Pineasters preferable to Arabian Date for Cloathing the Summit of the Hills.—Favourable Report of Doctor Berry's Fermenting Balls.*

To Andrew Berry, Esq. M. D.

SIR,

YOUR official letter, dated the 12th of March, contains some judicious remarks and valuable hints which are well deserving attention. These, and the testimony you have borne, in confirmation of opinions I have long held and promulgated, in respect to the capabilities of this island, are highly gratifying to me; for being thus spontaneously offered by one whose long experience in pursuing objects of improvement, similar to those in which I

have been engaged for nearly five years past, will, no doubt, have some weight with the remaining few; whose minds have yet a bias to the absurd and erroneous idea "that St. Helena is "a barren rock, and can never be made productive."

How can such assertions stand against your declaration of the quantity of land capable of cultivation; against my own opinion (communicated officially) "that between two and three thousand acres are fit for arable land;" and against all that has already been done in the extension of the Company's farms; as well as by the recent laudable exertions of several individuals?

The present crops on Plantation-house farm were lately inspected by one of our principal cultivators. He had long been adverse to a change of system, but he now acknowledges their superiority, and the advantage of using the plough, and expresses astonishment at seeing such exuberance on lands which he had predicted would never repay the expense of bringing into cultivation.

This favourable change of sentiment has, indeed, for some time past, been pretty general: at length it is strengthened and confirmed by incontestible proofs. There can, therefore, be no doubt that the English practice of husbandry will gradually establish itself in all parts of the Island: since it tends to reduce the expense of labour, and to ameliorate the lands. These circumstances will prove highly beneficial to the landholders: particularly if they will seriously turn their minds to those sources of wealth which have been pointed out to them in a paper entitled "On the importance of introducing agriculture on the island of "St. Helena," published in the St. Helena Register for August, 1812.

Every day produces some further proofs that this soil and cli-

Vide, Section XIX.

mate are as favourable as any in the world for cultivation. I need not recapitulate various successful experiments, which I have already published in the St. Helena Registers, on potatoes, barley, oats, and wheat; and on Indian corn, beans, &c. &c.; nor have I leisure to arrange many others that have been completed, or are now in process: yet I cannot deny myself the gratification of relating some circumstances regarding a very cheap method of cultivating potatoes, which originated in information I received from some captains of whaling vessels (who had landed on islands in the southern ocean), and in the present crops at the Plantation-house farm.

Those captains assured me, that they procure potatoes, in abundance, at some of those islands where a few were planted by that distinguished navigator Captain Cook. It may be supposed that in planting them they had not all the advantages of a well prepared and pulverised field: nevertheless they grew, and continue to grow, and now spread over a considerable space of land. This fact of the re-production of potatoes, during a period of forty years, and their spreading property appeared to deserve notice. I accordingly established the following experiment, with a view of ascertaining the second point; but which, however, was not so clearly and satisfactorily determined as the first; and this has given a result far exceeding what I expected.

The deductions that may be formed from a successive re-production during so many years, are of such a nature as will leave no doubt of the possibility of simplifying the potatoe culture at St. Helena (and in all similar climates where vegetation is not checked by frost); and of lessening the charge of labour to a mere trifle in comparison with what is required in the colder climates.

The experiment alluded to was this: on the 18th of June, 1812,

I marked off two square rods in length, and one in breadth, of potatoes that had been planted in rows on the 20th of January, 1812: the haulm was completely fallen. Each row, in this oblong space, measured 33 feet in length; and there were twelve rows in the breadth. With a view of ascertaining the spreading property of potatoes, I took up six intermediate rows; leaving the same number for re-production. The six rows taken up yielded 78 pounds of small potatoes, or at the rate of 13 pounds from each 33 feet of row, or 223 bushels per acre.*

Five months afterwards, that is on the 20th of November, and some weeks after the haulm had again completely fallen, the six rows which were left in the soil, were also taken up. These yielded, of very fine large potatoes, 292 pounds. Thus, the increase, by leaving the crop in the ground, was in the proportion of 78 to 292, or from 223 bushels to 834 per acre. This calculation is on a supposition that if the six first rows had remained, their produce would have also increased to 292 pounds.

Besides this large produce in potatoes, the preceding crop was plainly discovered by the seed being entire, and of a darkish hue, and in some degree shriveled. These seed potatoes were separated, and weighed 75 pounds; and, although not marketable, have been eaten by hogs. Wherefore, by retaining a crop in the ground, when not likely to be productive, or for which there is not a ready sale, it is proved that very little of it is lost, and a very great produce may be expected from the succeeding crop.

From this statement it will be seen that the difference between the produce of the six rows on the 18th of June, and the seed potatoes gathered from the remaining six rows on the 20th of November, was no more than three pounds: the former being 78 pounds, and the latter 75.

A St. Helena bushel is 56 pounds avoirdupois.

The experiment I have now detailed, led to another: which is, indeed, the old-established practice on this island; and which, on my arrival here, I was disposed to condemn, as being so very opposite to English husbandry.

This practice is to leave in the ground, at the time of taking up potatoes, a sufficiency of seed for the following crop, and this is called " a self-sown crop."

Comparing a crop of several acres of the Church fields, treated in this manner, there is at present every appearance of its being even superior to a part of the same field that was regularly planted in rows, and with seed from the same crop as that left in the ground. This " self-sown crop" is, indeed, much more forward: which may be easily explained. It is evident that the seed, by remaining in the soil, had suffered no check in vegetation: whereas the other seed, by being taken up and exposed to the air in a building, for several weeks previously to being planted, must have been drier, and therefore less susceptible of the powers of vegetation, at the time they come into action in the regular course of nature.

Hence it is obvious that a succession of crops of potatoes may be obtained here, after a field has once been brought into cultivation, without any other expense than taking them up, and then harrowing the field. All that is necessary is to leave the requisite quantity of *small seed* potatoes in the ground at the time of taking up; and I would recommend that the gathering of the crops should be postponed as long as possible, so that the potatoes, to be left in the soil, may receive some check in vegetation, by which the new crops may more nearly meet the most favourable seasons for vegetation; that is, in the rainy months.

By this simple mode of cultivation, there would be no less than six expensive operations saved to the farmer; the first is, the

taking up the seed; the second, carrying it to the store-room; the third, returning it to the field; the fourth, opening the furrows; the fifth, putting in the seed; and the sixth, covering the seed.

When all these circumstances are duly considered, it must be admitted that the saving of labour in the culture of ptoatoes on the island of St. Helena, would be immense; and consequently that this essential article of food, for man and cattle, *ought to be* in the greatest abundance, and at very moderate prices; particularly as St. Helena tenants are neither subjected to high rents, nor to poor-rates, nor to taxes of various descriptions, which bear hard upon English farmers.

These observations on potatoes will shew how little labour is required to bring the new lands into cultivation for corn; for after enclosing, and paring, and burning the sward, spreading the ashes, and twice ploughing and harrowing, the furrows are opened with the plough, the seed dropped in them, and then covered. These last operations are, in fact, a third ploughing; which will bring the land into the finest state of pulverization; and no further trouble, as I have already noticed, will be required for the two or three following crops, than to take them up with the plough about three weeks after the haulm has fallen; leaving a sufficiency of small potatoes for seed. After the third or fourth crop is gathered, the land may be sown with barley-wheat, without danger from grub or other insects. This process has been successfully pursued at the Plantation-house farm: but if corn be attempted as a first crop, there is great risk of losing it by the ravages of the grub: this is the case in other countries as well as at St. Helena.

You must have observed, from the printed papers I occasionally transmitted to you whilst at Madras, that the main objects of my

agricultural pursuits have been the extensive cultivation of corn, potatoes, and all sorts of esculents. The minute details I have given of many successful experiments on a variety of island products, cannot fail in carrying conviction to the mind of every reasonable man, that my views for the improvement of the island, are by no means speculative: being founded on the solid basis of facts incontrovertibly established: and which is, unquestionably, the surest mode of guarding against error.

There are, however, many other points that merit attention. Every thing that tends to increase our internal resources for the support of the inhabitants, or for administering to their comforts, or for the refreshment of ships, is undoubtedly deserving a place in the system that is now carrying on; and which, if pursued with ardour, will ultimately prove of infinite advantage to the landholders, and will tend to relieve this island (in a great degree at least) from its present dependence on other countries.

The virtues of the different species of Nopal, as an antidote for scorbutic disorders, have been so well established by the publications of your worthy relative, the philanthropic and much respected Doctor Anderson, and the advantages Captain Haig derived from the prickly *Cactus*, which abounds on Ladder Hill, and many other *dry places* here, afford the strongest arguments in favour of your suggestions on this subject. Due attention shall, therefore, be paid to the appropriation of a part of the Botanic Garden as a nursery for the Kew Nopal; from whence, after being naturalised to the climate, it might readily be transplanted to the sides of the hills on either side of James' Town: which would serve for utility as well as ornament, and would also be conveniently situated for the supply of shipping.

The prickly, or Mauritius, *Cactus*, is apparently a hardy species. It grows well even upon the rocky surface, and the sides

of Ladder Hill ; and thrives in a colder temperature, both to the northward and southward of Plantation-house, as well as at Long Wood. The hedges that have been already formed at those places, will soon become nurseries for its further propagation ; and as it possesses a triple advantage, by making the most impervious fences, by being useful as a vegetable, and by guarding itself against goats and other animals, I think that every means should be used to extend its culture.

The plants already growing on Ladder Hill, cover several acres. I shall recommend that the leaves of these, at proper seasons, should be planted all down the north-east point of the mountain : in order that ample supplies of this *Cactus* may be at hand for the shipping.

I acknowledge my obligations to you for your endeavours to send supplies of the Nopal and *Tuna* to this island : but of all you sent, I received no more than sixteen leaves. These arrived in the rainy season, and were immediately put in the soil, but most of them were destroyed by white maggots that had bred in them, which I think is a strong proof they do not delight in moisture.

I concur in your idea that the establishment of a few villages in the interior would be desirable ; but this plan cannot conveniently be carried into effect until husbandry is farther advanced ; for at present most of the necessaries of subsistence, excepting potatoes and vegetables, are brought from James's Town : but when pork shall be raised at the farms, together with grain for feeding poultry and hogs, and wheat also raised, and ground in the interior into flour, the convenience of country habitations will be far greater than at present.

It is certainly a most serious evil that we have scarcely any class of inhabitants who are solely dependant on their own

industry. Almost all are paid, clothed, and fed ; and it is to this evil may be traced the want of adequate supplies of milk and butter, of poultry and eggs, and I may well add of fish : for if there were persons here, whose existence solely depended on their exertions to provide those articles, they would be in the greatest plenty, and at reasonable prices. The fishery is, indeed, upon the most wretched system. The boats are private property. The fishermen, in general, are either soldiers or slaves ; and as both are clothed and fed, and the former paid, what stimulus can they possibly have to exertion ? They set out in the evening, and have the option of being active, or of going to sleep in the boats ; and if they return in the morning with a very scanty supply, they imagine they have done all that could be expected ; or if they have caught more than they bring to the landing place, the surplus is either sold on shore for money, or to the shipping at the anchorage for spirits. Thus the present St. Helena fishery is unproductive ; tends to promote idleness, dishonesty, and intemperance : and it costs the annual labour of 130 able men : who, after a night's fishing, or sleeping and drinking, in the boats, are little disposed to labour during the day.

I am of opinion that thirty or forty expert fishermen, *having an interest in their labour* (upon an establishment similar to a South Sea whaler), farming the fishery at a very moderate rate, merely to give an exclusive privilege (as at Batavia, and I believe Columbo), would bring more fish to the inhabitants, and to the market, than the total number of men above-mentioned. This may be fairly presumed, from the comparatively great success of the gentlemen fishing parties when they return from a night's amusement.

From what has been said, you may perceive that a plan might easily be formed for availing ourselves of those innumerable

bounties of nature, which are so abundantly spread around this small island. It is said, that not less than seventy-six different kinds of fish are in these seas,* some of which are large, and of excellent quality: and if double or triple the quantity that is now supplied to individuals, could, by any means, be procured, it would evideutly diminish the demand for imported beef and pork.

The fish most commonly taken and used, are mackarel, albacore, cavalloes, jacks, congers, soldiers, yellow tail, old wives, and bull's eyes; and of shell-fish, stumps and long legs.

† During the active and meritorious administration of Governor Byfield, between the years 1727 and 1731, the quantity of fish caught was more than the blacks could consume. The consequences are stated to have been very advantageous to the Company's interests, by reducing (or rather withdrawing) the demand for salt beef and pork: and it seems the health of those who had formerly subsisted on salted meat, was much improved by a change of diet to fish and potatoes.

If we suppose a population of 3600 to consume 2400 pounds of fish per day, and the established average price to be two-pence per pound, instead of the present rates, the value would be 20*l.* per day, or more than 7000*l.* a year. This, exclusive of salting fish, would be a good speculation for a few professed fishermen from England; having proper fishing-boats like those used at Brighton. In these they might anchor at the distant fishing banks, and daily send on shore the fish in the smaller boats

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Extracts from the General Letters to England regarding the Fishery, 1727 to 1731.

1727. *May* 6th. Paragraph 36. "We have taken care that your blacks have always had their belly full of provision. We still get fish in great plenty, and have done so the year round, and in the coldest weather; and don't at all doubt of getting the like plenty this year; for we don't loiter our time and dream out our days, but attend to our duty and mind your interest. If the fish, in cold weather, go a great way out into deep water, where our yawls can't lay, we get coarse salt on the mountains, fit out our long-boat, and go after them, and catch what we want, and salt them upon the spot; and it often happens that they return with a very great quantity of neat fish, after their guts are out and their heads off. Those who say otherwise deceive you: what we write is truth."

In respect to the Chinese, they are a good deal employed in agriculture; that is, in fencing the lands, in paring and burning,

Paragraph 27. " No care is wanting to keep your blacks in heart, that they may be able to labour: and for this last twelvemonth, in which they have been fed with fish, have been more healthy than in any one year."

1728-9, *February 22d.* Paragraph 7. " Your Honours' slaves, of whom we had the misfortune to loose five, together with the long-boat, as they were going for lime (as your Honours will see in our consultation of the 29th of October), have enjoyed their health since they have been fed with fish remarkably better than they ever did, when, at a very great expense, they were allowed salt provisions: and we have had, and still have, such good fortune in our fishery, that we weekly catch more than they can well consume, and doubt not but our faithful endeavours to secure your Honours from any charge upon this account, will be attended with the like good success for the time to come: so that those who formerly told your Honours that fish were not to be had the year round, did it on purpose to deceive you: or knew not what they said—which latter seems most likely.

March 30th. Paragraph 24. " We have still such good luck in our fishery, that we often catch more than your blacks can eat; and we will be particularly careful to save your Honours the heavy charge of salt beef and pork."

1729, *December 10th.* Paragraph 6. " Your slaves continue to thrive upon their diet of fish and potatoes. We hear very little now of fluxes, aching bones, or pains in the belly, though when they were fed with salt provisions, it was common to have 20 or 30 of them laid up at a time. Their food is now wholesome and not expensive; the great plenty of fish which we still continue to catch, having effectually secured you from the former heavy charge of salt meat, and we faithfully assure your Honours we have exerted ourselves in such manner, that there is no likelihood you should again be at that expense; it was what gave us great disturbance and uneasiness, and we could not rest till we ha found means to remedy it."

1730, *April 19th.* Paragraph 18. " We continue to catch fish in great plenty, with which your blacks are very well pleased."

May 26th. Paragraph 2. " In our several letters this season we have been so full and particular in our account of matters of most consequence, that we have little material to lay before you now; that of greatest moment is, to acquaint your Honours that having, with great pains and industry, supplied your blacks for these last three years with great plenty of fish, the greatest part of that superfluous chargeable cargo of salt provisions, sent for by Mr. Smith, at a great expense to your Honours, lies upon our hands unsold."

in driving carts, in planting and gathering potatoes, and many other offices; and some are already become expert ploughmen. But the establishment here is necessarily different from that in any other place. At Java, at Prince of Wales' Island, and other settlements, I am told, they are the leading persons in farming: and at Ceylon this was unsuccessfully attempted; for they cultivated nothing more than for their own immediate wants, and were, in consequence of little service to that colony. If provisions were cheap, the experiment might be worth a trial here: but, in the present state of St. Helena, it would certainly fail; because, if Chinese had lands, they would do as their neighbours; for it could not be expected they would sell at *lower* prices. It was these considerations that induced me to form them into a regular establishment. The Company pay the labourers a shilling a day, and find them in rations; and by this mode, their military services may be at command, and very useful in aiding the corps of artillery, in dragging of cannon, and carriage of ammunition; in short, in employments similar to those of the artillery Lascars in India. As they are all placed under the direction of European overseers, it cannot be doubted that much more labour is obtained from them than if they were left to themselves. This mode of management, the Rt. Honourable Lieutenant-General Maitland admitted was far better than that he had introduced on the island of Ceylon, by giving them lots of land. It is the mode I recommend, as the most advisable *at first*, in all places where Chinese may be introduced; and where the prices of the products of the

1731, *April 2d.* Paragraph 17. "We will dispose of the salt beef as well as we can; the blacks will little want it, for we still continue to catch fish in great plenty, and that yearly saves your Honours a great sum.

December 28th. Paragraph 6. "We have still good luck in our fishery the year round; upon which, and beef and pork, your blacks are plentifully fed."

lands are high; and particularly if the object should be, through their means to reduce those prices.

Your observations on the attraction of moisture and rain, appear to be judicious. Trees have usually been recommended for that purpose. I am of opinion, however, that cultivation has also a tendency to produce the same effect; and in proportion to the extension of arable fields, so will be the increase of moisture. This will readily be conceived by attention to the following facts.

On the 5th of May last, I cut down a square rod of barley wheat, that had been two months in the ground, from the time of sowing. The produce in a green state, was 146 pounds, or about $10\frac{1}{2}$ tons per acre. It was carefully collected and dried in the air, until the 26th of May, when it weighed no more than 46 pounds; consequently, 100 pounds of moisture had been evaporated; and if only half this weight be supposed to have been, at the time of cutting, absorbed in the soil and roots, under the thick shade of an exuberant crop, the total quantity of moisture would be 150 pounds on a square rod, or above ten tons upon an acre. These circumstances lead me to believe there is a more accurate mode of determining the comparative moisture, on ploughed and unploughed lands, than by the vapour glasses lately introduced in England.

As the planting of trees, for useful timber and fuel, is an important object here, I have always intended it should keep pace with cultivation. During the last four years several thousand pineasters and oaks have been set out, and there are still a good many in the nurseries. This year the nurseries are to be established on a larger scale. Every cone from the pineaster and cypress trees at Plantation-house has been collected, as well as the seeds of the Botany Bay willow. These trees, and the indigenous red wood, together with the largest species of Morgossa

(*Melia Azederach**) are, without exception, the finest trees for this island. Their growth is rapid; they are all evergreens; stand the trade wind in the most exposed situations, are extremely ornamental, and most of them are equally useful for timber as for fuel. Under all these advantages, I should prefer them to the Arabian date for clothing the summits and sides of the highest ridges; and as upon these there is a cooler temperature, and a greater degree of moisture, it may be expected they would grow with more luxuriance than those in the vicinity of Plantation-house. I do not, however, object to the Arabian date, since it would tend to the objects in view, and would be a valuable acquisition to the fruit trees of St. Helena.

The fermenting balls which you described in the Madras Gazette, of the 22d of February, 1812, were found to surpass even your most sanguine expectations. Some of the passengers in a ship where they were daily used, assured me, that, during the voyage to St. Helena, they had the lightest and finest bread they ever tasted on board ship: they compared their breakfast rolls to

* I have, at present, some beautiful specimens of the *Melia*, from seed received from Dr. Roxburgh, which was sown on the 26th of February, 1812. The young trees were transplanted on the 3d of October, 1812, and some are now three feet high, spreading out horizontal branches, and forming a thick foliage about four feet in diameter. The young trees when transplanted at seven months growth, had tap-roots, like a small parsnip. These roots were as long as the stems above ground, and both together, of the largest plants, measured from 18 to 24 inches. They are, therefore, peculiarly suited to this climate; and are, by far, the best of all the Indian trees I have received. Neither the Teak nor Sissoo seed, nor any other of the many timber trees, for which I am indebted to Dr. Roxburgh's kindness and attention have succeeded at Plantation-house; notwithstanding they were sown and treated according to his directions. However, the trees I have enumerated would be sufficient for every purpose; and if the planting system be followed up, St. Helena, in the course of even twenty years, would yield a considerable supply of useful timber, and abound with fuel.

the French rolls in London. I should hope that a similar ferment may be produced here, by following your directions, and using the juice of the gum-wood tree, as you recommend, as a substitute for the Palmira, or cocoa-nut toddy.

Permit me to conclude, by expressing my best acknowledgments and thanks for your suggestions, and for the interest you take in the welfare of this island. I have endeavoured to make some return, by conveying to you such information as I conceived might be acceptable.

I am, Sir,

your most obedient, humble Servant,

ALEXANDER BEATSON.

St. Helena, 17*th April*, 1813.

SECTION XXVIII.

Mr. Miller's Directions for rearing Scotch Pine are applicable to the Pineaster—St. Helena Pineaster Wood described—weightier than common Fir—thrives upon poor Soil—average Growth about two Feet in the Year—sometimes grows more than three Feet. Plantations of Firs at St. Helena more profitable than in Europe—Computation of their Value in twenty Years. Negligence and Inattention to the planting Law much to be regretted—The fittest Trees for St. Helena Plantations enumerated—Further Notices upon the Growth of Trees—and upon the necessity of extirpating Goats, and tending Sheep.

MR. MILLER'S directions for planting the Scotch pine are in general applicable to the Pineaster, which is the species of pine growing at Plantation-house, and at other places on this island. This is described in Miller's Gardener's Dictionary. "*Pine "tree with two thick smooth leaves in each sheath, and pyramidal "acute cones; the Wild Pine, or Pineaster.*"

The wood of St. Helena pineaster of twenty-four years growth, which has the appearance of pale mahogany, is weightier than common fir, in the proportion of 6 to 5, and apparently surpasses in quality all the sorts that are usually imported here. It grows even upon poor, hard, clay soil, and consequently may be cultivated with better success in many places: but particularly about the middle of the island, where there is better soil, more moisture, and a cooler temperature.

According to personal observation and particular attention to pineasters of different ages, I have observed that, in general, their average growth is about two feet in the year. This is upon dry

land: upon better soil, the growth would no doubt be quicker; for, in some cases, I have seen them shoot three feet in twelve months. A good many of these trees may be seen at the east side of the lawn at Plantation-house, which are already well grown. The seed-bed was sown in May, 1809, and the young trees transplanted in May, 1810: one of which, in four years, already measures ten feet eleven inches high. Even this small specimen of a pineaster plantation is sufficient to shew the advantages that would, in a few years, be derived from the establishment of large plantations. Judging from the size of some pineasters, planted by Colonel Patton, about eight or nine years ago, I am of opinion that the *first thinning* of St. Helena plantations might take place in nine years from the seed; at which time, the stems would yield many pieces of small timber, fit for a variety of purposes; and the branches would furnish abundance of excellent fuel; an article at present so very scarce on this island.

According to Mr. Miller, the first thinning, in the northern climates, takes place at sixteen or eighteen years growth; because, he says, they are four years old when transplanted: but here they are set out after being about ten months, or one year, in the seed-bed. I conceive their quick growth in this climate, may be ascribed to the powers of vegetation not being at any time suspended: which is not the case in cold and frosty regions.

The advantages therefore of forming plantations of firs at St. Helena are much greater than in Europe; the expenses will be much sooner reimbursed; and the best trees, being left for growing timber, will be of great value; and at this island would establish fortunes for the younger branches of even the present generation.

It may not be unprofitable to take a view of the advantage that would accrue from the proposed plantations. The result will, I trust, operate as a powerful stimulus to exertion, and will, I hope,

each; consequently their value at the present time would have been at least £1,500,000.: this is exclusive of immense quantities of fuel that would also have been furnished by thinning the plantations during that period.

How much then have the present generation cause to lament the negligence and inattention of their fathers! If those plantations had been established, fuel would have been, during the last twenty years, in abundance; and there would have been enough to supply the numerous ships that annually touch here; whilst the aspect of the island would have been beautified: and in all probability an improvement in the climate effected, by the attraction of a greater degree of moisture from such extensive plantations.

Surely these reflections are enough to rouse the attention of the present landholders; and as every facility will, in future, be given to forward so laudable an object, by establishing proper nurseries in the Company's gardens at Plantation-house, from which all the fittest sort of trees for this climate will be supplied, at moderate rates, I therefore entertain a sanguine hope that the present beginnings will be pursued with ardour.

If, after what has been said, and I hope clearly demonstrated, there should be any occupier of land, who is not impressed with a conviction of the infinite importance of plantations of pineaster and other useful trees, and who does not exert himself in rearing them, I should consider such a man as totally blind to his own interests; regardless of himself and family; and of little or no use to the community of which he is a member.

I cannot quit this subject without again adverting to what has been stated in my letter to Dr. Berry, in pages 15 and 16 of the last month's Register.* Experience, during five years past, has clearly shewn that the pineaster, stone pine, cypress, Botany Bay

keep up that spirit for planting which has happily this year shewn itself, by many applications for trees from the Plantation-house garden. Seven thousand one hundred and eighty-four fine young plants have, within these few days, been distributed in various parts of the island. These will very soon determine the best sites for the plantations. That number, and about four thousand transplanted during the years 1811 and 1812, make, collectively, an addition of above 11,000 pineasters to this island: the value of these, in twenty years, according to the following computation, may be estimated at about £12,500. sterling.

I will suppose a landholder to establish a plantation of only *two acres* upon land at present useless: and according to Mr. Miller's directions, that he places the trees at the distance of four feet. In this case, each acre will contain 2722 trees, say 2500, or 5000 in the two acres.

After nine years growth the thinning of the plantation would yield 2500 trees, about 18 feet high; and worth as timber and fuel 10*s*. each, or - - -	£1,250
2500 trees of standing timber, at twenty years growth, estimated at 40*s*. each - - - -	5,000
Total value of two acres at 20 years growth	£6,250

But if we take a more enlarged view of the proposed plantations, the advantages will appear immense. Supposing then that the old planting law, requiring one acre in ten to be planted with trees, so often repeated, but never attended to, had been enforced; and that those trees had been pineasters, and planted twenty years ago. The quantity of land thus planted would have been 600 acres, having 1250 trees of standing timber upon each acre, or 750,000 trees upon the 600. These, at twenty years growth, are certainly undervalued at St. Helena, when reckoned at only 40*s*.

willow, the indigenous red wood, and the large species of Morgossa (*Melia azederach*), are without exception, the very best trees for this island. They are of quick growth, and all evergreens; they stand the trade wind in the most exposed situations; and most of them are equally useful for timber as for fuel. To this list I may venture to add the *Bois noir*, or black wood. Of this tree I lately received some seed from Governor Farquhar at the Isle of France, who is of opinion that the black wood might be a valuable acquisition to the St. Helena plantations. So far as I can at present judge, I have reason to believe it will succeed admirably. The young plants are already finely come up, and are much more forward than any other of the seeds that were sown at the same time. "The *Bois noir*, at the Isle of France, "is beautiful during nine months of the year, grows surprisingly "quick, and yields a timber that is excellent for ship-building, "and other valuable purposes."

Of the trees I have here enumerated, there is, I believe, only one (the *Morgossa*) which is fit for underwoods; and as these would be extremely serviceable for fuel, because they re-produce after being cut down, I would recommend extensive plantations of Morgossa, China peach, island peach, fig, guava, orange, and lemon trees, all of which bear cutting, and, after being once established, would yield a succession of fuel for many years.

Plantains, too, are deserving attention. If the low grounds, where there is a good supply of water, were filled with groves of this excellent fruit, they would not only be a great acquisition as food for man, but their stems would yield, after the fruit is ripe, abundance of nutritious fodder for cattle; which would secure the landholders from such ruinous losses in cattle as have, at times, occurred in seasons of drought; and which I am fully convinced, from all I have read on this subject, and from the successful trials

I have made of green-fodder crops from corn, are entirely to be ascribed to improvident management, and to depending solely on pasture lands.

I shall conclude these observations with the following notices, regarding the growth of trees on the island of St. Helena, which are recorded in my journal.

February 9th, 1813.—At Long Wood there are some China peach trees, on the east side of the offices behind the house (a very exposed situation), raised from peach stones put in the soil by Colonel Broughton about four years ago. These trees blossomed last year, but had no fruit. At present they are ten to twelve feet high, and have a good many peaches on them. This proves that very valuable orchards of peaches might speedily be raised at St. Helena. A few acres, planted in sheltered and warm situations with peach stones at four feet asunder, would be much sooner productive of fruit; and when thinned, at four or five years growth from the seed, would yield plenty of fuel: and the best trees being left, would continue for many years to produce great abundance of fruit, which would be serviceable to the inhabitants and shipping, and what might be to spare would afford an admirable food for hogs; as these animals are extremely fond of the fruit, and more so of the kernels, they might be suffered to range in the peach orchards as they do amongst oak trees in England. Thus they might be fed, during January, February, and March, without any expense to the proprietors.

These observations apply equally to orchards of figs and guavas; which come in season immediately after the peaches, and would give a further supply of food to those animals during the three following months.

Some young pineasters which Colonel Broughton received from the seed-bed at Plantation-house, sown in May, 1809, are now,

at three years and a half growth, 9½ feet high. Some red wood trees of the same age are from 6 to 8 feet high, with fine straight stems now in red blossom.

May 20th, 1813.—At Plantation-house there is amongst the pineasters sown in May, 1809, and transplanted in May, 1810, a remarkable fine tree which this day, in four years, measures ten feet eleven inches. Some Morgossa trees (the seed of which was sown on the 26th of February, 1812), transplanted the 3d of October, measure 3½ feet high; with horizontal branches which cover a space of 4½ feet in diameter. This is a surprising growth in fifteen months from the seed. I also this day measured a beautiful young cypress which was a seed on the 8th of April, 1811, and transplanted on the 2d of July, 1812, and has now attained the height of four feet and five inches. These few notices may be of use hereafter to refer to; and are, undoubtedly, sufficient to convince all unbiassed persons here, and elsewhere, of the facility with which plantations of useful timber, and of fruit trees, might be raised at St. Helena. It is, indeed, much to be lamented, that any obstruction whatever should stand in the way of these extensive and valuable improvements. If the goats are not exterminated, and the sheep tamed and tended, there is but too much reason to apprehend that those animals will be a constant source of vexation and loss, to those who have really a desire to contribute their efforts to the general good of the island.

May 20th, 1813.

SECTION XXIX.

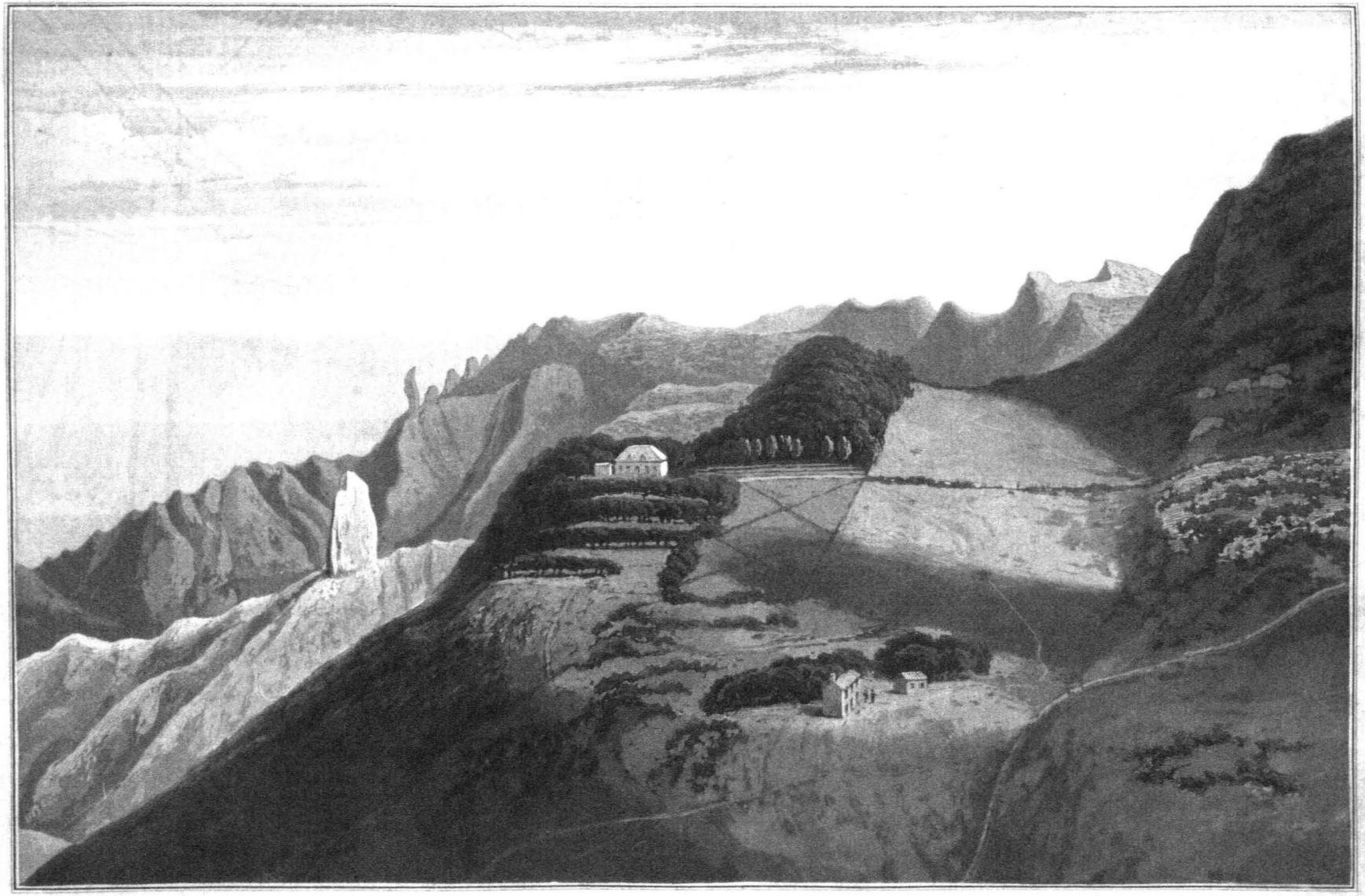
Means of collecting Water on the driest Parts of the Island, and Observations on the Advantages resulting from this Practice.

In the year 1809, I made an attempt to introduce the Indian mode of forming tanks, or reservoirs, by means of a mound or embankment. It seemed very practicable; but the soil not being sufficiently tenacious for retaining water, the first trial did not succeed; a second, however, was completely successful, and affords a positive demonstration of the practicability of retaining water, collected during the rains, in even the most barren and driest parts of the island.

This had long been a desideratum at St. Helena; and as nothing tends more to general improvement of a country than the introduction of water in those places, capable of cultivation, which are destitute of natural supplies of this element, I shall here give an account of the successful method which has been carried into effect; and which already has rendered a considerable portion of land fit for habitation and other useful purposes; which, before the formation of the reservoir, had always been considered as barren and unprofitable. This reservoir was originally intended for the supply of the soldiers composing the garrison of Ladder Hill; who, ever since a military post was established there, had been stinted in the supply of water, on account of the laborious task allotted them of bringing it in kegs from James' Town. To relieve them from this fatigue, and to furnish an adequate supply, a tank has been formed on the south side of High Knoll, which, by means of small channels cut on

this hill, as well as on the adjoining hill, called " Merrimans," will receive the whole of the rains that fall on a space of several acres. As those hills are mostly covered with grass, the rain water which runs from their declivities, is much cleaner than that from the more level surface of Ladder Hill; where, for want of vegetation, the soil is readily loosened, and carried off by the streams; which are, at all times, extremely muddy.

The tank, or reservoir, has been excavated in stiff clay, at the distance of 2800 yards from the new fortifications on Ladder Hill. The prevailing south-east wind, coming down a valley immediately beyond it, keeps the water in constant agitation, and prevents it becoming stagnant or muddy. As the descent from the tank to the fortifications is one foot in ten, the stream moves quickly. A cut stone water course has been laid the whole of the distance. At those places where the ground is tolerably even, it is raised about six inches above the surface. The small ravines, or gullies, are crossed by walls, having openings or gutters for the free passage of the rain, under the water course, so as to prevent the muddy water from Ladder Hill, mixing with the purer stream from the tank. The reservoir contains about 4000 tons; and as it may be expected to be filled twice a year, (during the two rainy seasons) the total annual supply will be about 8000 tons. Allowing 10 tons a day for Ladder Hill, there would remain 4 or 5000 tons for any intermediate gardens; or for cottages that may hereafter be erected between High Knoll and Ladder Hill. The whole of Ladder Hill, comprising about 300 acres, has ever been devoid of water, and of no value whatever; but as a few small cisterns at proper distances can be established near the choicest spots of land, they may possibly invite persons to build and to cultivate. It seems to me that the culture of the melon, pumpkin, grape, and all sorts of esculents, might be carried on



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View towards Sandy bay. St. Helena.

extensively; not by the costly mode of breaking up a great part of the land, and clearing it of rocks and stones, but merely by digging holes two or three feet in diameter, and filling them with good mould and manure. This method, with occasional watering, and particularly in situations sheltered from the south-east wind, would promote the growth of many sorts of vegetables; and by thus having water, passing through this, at present desert tract, there might be many places selected, suitable to the purposes of cultivation, and of rearing hogs, poultry, &c.

To form some idea of the immense quantities of pumpkins that might be raised in the manner I have suggested, and which would not only be a valuable acquisition to shipping, but a cheap food for hogs, it will be sufficient to state, that from a dry bank at Plantation-house, of light soil, measuring 360 feet by 12,* in which holes were dug, and a few seeds sown in October, 1810, there was, from the first crop, a return of 3583 pounds of excellent pumpkins: several of which weighed 70 pounds each. I have been informed that this produce is even inferior to that which has been obtained in other places of this island.

* This being 4800 square feet, is about the tenth part of an acre; the produce would therefore be about 35,000 pounds of pumpkins per acre. The seeds were sown on the 27th of October, 1810, and the last of the crop was gathered on the 9th of July, 1811. Mr. Henry Alexander, Colonial Secretary at the Cape of Good Hope, informed me that the Dutch farmers there sow pumpkin seed amongst their corn, and by this means obtain a double crop. This practice is deserving attention on this island.