

which is scarcely surpassed in any other vegetable production. In all the ravines of the island during the months of rain, the growth has been in proportion. It may therefore be inferred that two crops a year might be produced from all those parts of the island where it grows. These observations will tend to shew the large quantities that might be manufactured if we had sufficient labour for that purpose."

From Captain Pritchard's remarks, it appears that the expense of manufacturing, when soldiers are employed, is about 50 shillings a ton; and if 10 shillings be added for contingent charges of carriage, cooperage, &c. the whole may be reckoned at £3. The best Carthagena barilla has been sold at £56. a ton. If St. Helena barilla should prove of the value of only £50. the profit to the Honourable East India Company, if their soldiers were employed in manufacturing it, would be very great: consequently, this is an export particularly deserving their attention.

My own observations upon the surprising growth from the old stems and roots in various places, twelve months after the first cutting, fully confirm the opinion given by Captain Pritchard. The experiments made at that time in raising the salsola from the seed are also very satisfactory, since they decidedly prove the possibility of extending the number of plants; and that by aiding nature, and attending a little to the culture of the plant, which might be done at a very trifling expense, the produce from this island, in the course of a few years, might be immense.

I found some difficulty in ascertaining the period at which the seed is in a perfect state of ripeness. This, however, might very easily be determined, by gathering a few plants, at intervals of three weeks from the time the blossom shews itself, until the plant has changed its colour, from a pea-green to a yellowish tint. The best season for cutting the salsola is in May, June,

and July, when the leaves are full of sap, and are therefore, I should imagine, more productive of the alkali than when they begin to fade and shrink.*

Being desirous of knowing how much alkaline salt was produced from a given quantity of the *salsola*, and the comparative produce of alkali from furze and blackberry bushes, Doctor Kay, the medical superintendant, obligingly undertook the experiments, and reported as follows :

“ From a trial I made, to find how much salt a given quantity of the plant supposed to be the *salsola* would produce by incineration, and also to ascertain the comparative quantity to be obtained from the stems and leaves separately, the results were as follow :

No. 1.	Thirty-eight pounds of the plant burnt entire (under cover) yielded of dry marine alkali,	oz.
	or impure soda - - - - -	19
No. 2.	Eighteen pounds of the stems entirely divested of leaves, yielded of the same salt, -	drachms. 10
No. 3.	Thirty-one pounds of leaves adhering to the small extreme branches, yielded - - -	oz. 16 $\frac{3}{4}$

Three pounds of the large stems were burnt with the leaves in order to begin and support the ignition ; but according to No. 2, the salt from these stems would only be 1 drachm and 2 scruples, so that the salt from the leaves was 16 $\frac{1}{2}$ ounces and 1 scruple. Therefore, 100 pounds of leaves will produce upon an average 3 pounds 5 $\frac{1}{4}$ ounces of salt nearly. And the entire plant, by trial No. 1, will produce only 3 pounds 2 ounces. But, a day or two after the lixivium No. 1. had been evaporated, I found as much remaining in the cask from which it had been drawn as

The leaves of the *salsola* are small ; linear ; short ($\frac{3}{4}$ inch) ; rounded, and fleshy : although full of sap, the plant burns fiercely without being dried. (See Appendix—*Salsola salsa*.)

would probably have yielded one ounce of salt more ; in this case, supposing the 38 pounds had yielded 20 ounces, the entire plant will give nearly three pounds four ounces and a quarter from 100 pounds original weight ; but the value of this additional ounce from each hundred pounds, would be more than counterbalanced by the time employed in stripping the leaves, and their much slower combustion than when the plant is burnt entire, as cut or pulled from the ground. The ashes from No. 1 (per steelyard) weighed four pounds : those from No. 3, three pounds and three-quarters.

As you wished to ascertain the comparative quantity of salt to be procured from furze, and the bramble or blackberry, I made the following trials.

	Oz.	Scrup.
No. 4. Seventy pounds of furze yielded of impure vegetable alkali somewhat deliquescent -	$\frac{3}{4}$	2
No. 5. Seventy pounds of the blackberry-bush yielded of the same sort of salt - -	$5\frac{3}{4}$	0

The bushes were cut down from nearly contiguous thickets and burnt on the spot, and the ashes afterwards removed under cover. I think they would have yielded more salt had they been burnt in a grate under shelter, because some of the ashes were scattered by occasional puffs of wind ; but these had an equal effect on both piles. The ashes from No. 5 weighed (per steelyard) one pound and three-quarters. The weight of those from No. 4 I could not determine, as there was some earth intermixed with them. There are two species of blackberry here ; that used was the smaller sort, with green stems and paler leaves."

Doctor Kay's experiments having been conducted in the same manner throughout, are so far valuable, that they shew with minute accuracy the respective proportions of alkali produced from

the ashes of the several parts of the salsola plant, and a just comparison also with those from the furze and blackberry-bushes. But, as the very limited scale of these experiments did not admit of sufficient heat to vitrify the ashes into a cake, it seems probable that the results of the salsola would have been materially different, and perhaps more favourable, if the experiments had been made upon a larger quantity of the plant. I say more favourable, because I observed that those who have had considerable practice in burning, considered the loose ashes of very little value compared with those formed into cakes.

The very high commendations which have been bestowed on the St. Helena barilla (particularly upon the improved specimens), by persons who have a practical knowledge of its manufacture, have induced me not to withhold some further information in my possession, relative to the mode of burning; the rapid re-production of the plant, and the practicability of extending its culture throughout many parts of the island which are wholly unfit for any other purpose.

Although the salsola be a marine plant, and grows spontaneously on the most barren places, where neither corn, nor esculents, nor trees, will grow; yet it is of that nature, that it grows with great exuberance in the gardens and fields in the interior of the island. This I determined by several experiments, of which it will suffice to give the detail of one at Plantation-house.

Some of the seed, which is black and extremely small, taken from plants on Ladder Hill, were sown on the 7th February, 1810. in a box filled with garden mould. The plants appeared on the 4th March. On the 2d May they were eight inches high. Soon after they grew so large in the box, that I determined to transplant them. Accordingly about a dozen were removed to the Plantation-house garden, where they continued to thrive;

kilns only two and a half feet diameter, and four feet high, the fires burn fiercely, and the whole of the ashes, in four days, were formed into solid pieces, as hard as stone.

To ascertain the difference between this and our first mode of burning, I dug a pit, three feet in diameter, and four feet deep. It was supplied with the plant in the same manner as the loose stone kiln. It had been burning nine days when I yesterday saw it; and then there was not a lump which would weigh two pounds in all its contents. This failure appears to proceed from the total exclusion of air.

I sent the overseer to Thompson's Valley, that he might report his opinion upon the plant there, which is as follows. There is a great quantity, and it is very tall, but he supposes it will not yield much good alkali, from the quantity of stem (or stalks) with which it abounds; however, I am inclined to think that this must solely arise from its age. If it were cropped, or headed down, I have no doubt it would afterwards produce *abundantly*: therefore, should it meet your pleasure, the party there may continue to collect and burn, and from the first samples a judgment may be formed. It seems to me, that Sandy Bay will produce the greatest quantities, and the best." 25th June, 1809.

"I send you the produce of *one ounce* of barilla, a part of that piece you saw at the Castle last Monday. I prevailed on Mr. Thompson to lixivate and evaporate this small quantity. He says, that the alkaline salt is the finest and best he ever saw in all his travels. His early pursuits in life having given him a practical knowledge of these matters, his opinion may be the more relied on." 8th July, 1809.

"The barilla burning at Sandy Bay goes on very well, and the alkali is exceedingly good. I was astonished to see that those plants which were cut down only three months ago, have again

and on the 25th April, 1811, (that is, in fourteen months from the seed) each of the plants covered a space of about eight or nine feet in diameter. Hence it is clearly proved, that the *salsola* of St. Helena might be cultivated in fields, as in Spain. It seems, however, to be of a different sort. Some specimens of *Alicant salsola*, that were sent to me from England, were small twigs, about the size and appearance of lavender, and only twelve inches long: but at St. Helena, particularly in Rupert's and other vallies, or ravines, I have seen a single plant covering a space of fourteen or fifteen feet in diameter, rising to the height of six feet; and which was the growth of twelve months after cutting. How infinitely superior then would be the produce from the St. Helena sort! I am of opinion, from all I have observed, that in raising this species from the seed, the plants should be permitted to grow at least eighteen months before the first crop is taken. Then, I conceive, they would attain sufficient strength for re-production; and afterwards would yield one or two crops a year, *ad infinitum*, in the same manner as those plants (particularly in the low and sheltered places) growing in their natural state.

I cannot better illustrate what has been said on this subject, than by extracting from Captain Pritchard's official reports the observations he made at the time he was employed in directing and superintending the manufacture.

"The alkali at Sandy Bay being very superior to any yet produced, and the new mode of burning being quite different from what was first tried, I shall here detail the process by which we have arrived at perfection.

When the plant was put in a pit, according to Chaptal's directions, it was found to produce nothing but charcoal and ashes. But, by raising circular kilns on the surface of the ground with loose stones, so as to admit air on all sides, and making the

sprung up. I send a specimen of one of medium growth, which is higher than any we have seen in any other place. I send also a specimen of another kind of salsola, which is of smaller size than we have hitherto burned. It is not so abundant as the common sort ; but I am convinced it would yield alkali in a greater proportion." 23d August, 1809.

" The salsola grows very luxuriantly in Friar's Valley, by reason of the saline water with which this valley abounds. This is peculiarly deserving attention ; for these waters are nearly as salt as sea-water. I am persuaded from what I observed in my way to Thompson's Valley, that the salsola thrives better, and grows to a larger size when watered with *salt*, than with *fresh* water. I observed also, among some salsola plants which are growing within five yards of the surf, that there are icicles of salt (if I may be allowed the expression) intermixed with the bushes ; some of which are from one to two feet in length, and as clear as crystal. I should have sent you one of them, but it was impossible to reach the spot from which they impend." 31st August, 1809.

" Friar's Valley has produced the largest piece of barilla we have yet made. The overseer says it would have weighed nearly 1000 pounds before it was broken into pieces in the pit. I am perfectly sure that this is the most fit ravine to collect and cultivate the salsola." 27th September, 1809.

" I yesterday inspected the growth of salsola in Friar's Valley, and I was astonished to find that it is already fit to cut. This I attribute to the many salt springs with which that ravine abounds. I reported on a former occasion my opinion regarding the culture of salsola in this ravine ; and I can now assure you with more certainty, that this place is one of the fittest on the island for that purpose ; for, according to my memoranda, it has yielded

(comparatively with its size) twice as much as any of the other ravines, and of a very superior quality. It was from this ravine that we produced the purest soda, and the Prussian blue,* samples of which you some time ago sent to England." *21st January, 1810.*

"It is with much pleasure I inform you of the success in salsola burning. There are now 25 casks of about 400 weight each; and I calculate upon three times that number being ready by the departure of the first fleet. It is all of the very best quality; which I think will be proved by an analysis of the specimens of soda that have been already sent to England. Evidently the plant improves by cutting; which is all that is necessary to be known, in order to be satisfied that it may prove a very valuable and permanent export." *21st August, 1810.*

"The overseer will have finished burning barilla in Rupert's Valley this week, from which place one ton and 1200 weight has been produced, for the trifling cost of about £6. The burners will quit this valley on Saturday, and should you approve of it, will go to Friar's, where the salsola is now in high perfection. I expect by the end of the year to have an hundred casks of barilla ready for exportation, containing, upon an average, 400 pounds each, and that of the best quality." *21st September, 1810.*

Mr. Thomas O'Connor, a respectable merchant at St. Helena, who had for several years burnt salsola for his soap manufactory, undertook to direct and superintend the burning in James's Valley. The samples produced were, in appearance, equal to the best Spanish sorts we had received from England. He used no pits; but kindled his fires on the surface of the ground, feeding and stirring them, and taking care that the plant was

* Some beautiful specimens of Prussian blue were made at St. Helena, and sent to England. It might be manufactured in large quantities, and at a moderate price.

entirely consumed before he added fresh fuel. From his statement of the expense of collecting and burning, it appears that 20 days labour, (averaging only seven hours per day), produced 690 pounds of well vitrified ashes ; this is $34\frac{1}{2}$ pounds from seven hours labour of one man. At this rate 100 men employed during 300 days in the year (which would be 30,000 days labour) might manufacture 462 tons. But if we take the quantity at only 400 tons, and suppose it would sell in England at £50. per ton, the value would be £20,000.

The charges of making would be nearly as follows.

100 Chinese labourers rated at £30. per annum, which rather exceeds their annual expense at St. Helena (see page 186)	-	-	-	-	£ 3,000
Freight to England, at £5. per ton	-	-	-	-	2,000
2400 old beef casks for packing	-	-	-	-	2,400
Contingent charges of cooperage, carriage to wharf, &c.					50
					<hr/> 7,450
Estimated value	-	-	-	-	20,000
Leaving a profit of	-	-	-	-	<hr/> 12,550

It is impossible to form an estimate of the quantity that might be manufactured at this place. The salsola plants in their natural state are scattered over the exterior of the island, from the margin of the coast to the distance of more than a mile from the sea. Upon Ladder Hill, and Rupert's Hill, New Ground, and many other elevated spots, as well as in the ravines, they are generally detached shrubs, two or three feet high, and covering a space of from four to eight or nine feet in diameter. Some are much larger : but to the eastward of Long Wood there seems to be a different species, growing like a creeper, the plants uniting,

and forming a matted texture over the soil, which at a distance resembles a fine rich meadow.

But whatever may be the quantity of salsola plants at present, I have no doubt it might be greatly increased, and at a trifling expense, in the following manner.

Having succeeded in raising plants from the seed in Plantation-house garden, and upon some barren spots on which the salsola was growing spontaneously, there can be no doubt of the possibility of extending the culture. It seems to me, that the least expensive mode would be, to loosen the soil in the intervals among the natural plants intended to be cut ; to postpone cutting until the seed is perfectly ripe ; and, after cutting, to spread the plants upon the loosened soil, and beat them a little before they are carried to the fire. I conceive, that by these simple means, the seed would be sufficiently deposited for the purpose of vegetation. If, however, an entire new plantation is to be made, I would recommend that the surface soil should be previously loosened by a rake or harrow, and the seed very thinly sown, and then bush-harrowed with the salsola itself. If the sowing were to take place just before the rains are expected, the new Plantation would thrive exceedingly ; and if permitted to remain, as already mentioned, for eighteen months before the first crop is taken, it would yield one or two crops a year. New plantations might also be formed from seed beds ; as the young plants have been found to thrive well after transplanting.

I have dwelt the longer upon this subject, because it holds out a fair prospect of obtaining some return for the heavy charges that are annually incurred by maintaining this small establishment.

Amongst the various lichens with which the island abounds, there is that valuable species called Orchel. The circumstances

of its discovery, and the encouragement that was held out to collect it, and send it to England, are recorded in a letter from the Court of Directors, dated the 16th December, 1743, in these words.

“ We are well satisfied, that our island abounds with archell, of which some sent us, is of the right sort, particular samples whereof came enclosed, as also of what grows in other parts. Mr. Goodwin has informed himself concerning this product as far as the short time would admit, therefore we must further refer you to him.

As this product is for dyeing, and will be of great benefit to our country, we are willing to give our inhabitants all encouragement for the gathering it.

The best sort of what our island produces, as by the samples sent us hitherto, if cleansed, gathered and picked, is worth £40. or £50. a ton, and as the freight home will be one-third of our freight from India, being about £10. a ton of 20cwt. net, we will therefore give to all such of our inhabitants as bring in any quantity not less than half a hundred, after the rate of 15 shillings a hundred, to be paid down by you as they bring it in.

But further to encourage them to gather large quantities, we will give leave to any of our inhabitants to ship it and send it home upon their own accounts on the following terms.

As it is the product of the island, which is our property, we will have 25 per cent. on the gross sale, in full of all charges for our indulgence, and £10. per ton freight, which we must pay the owner; there being no custom payable to the crown, the remainder will come to the proprietor, which we will take care shall be duly paid to his attorney.

You are to receive and pay for accordingly what they shall bring in to you, the parcels not being less than half a hundred,

as before mentioned, and agree with the commanders to take it on board their respective ships, at one-third freight upon our account, and license all others to ship for their own account on the terms above-mentioned; you taking care to agree for the freight on the like terms, which we will answer and make good.

A sufficient quantity of spirits is delivered to Mr. Goodwin, to make the experiment, in order to know the true archell, who has also directions how to make use of the same."

It will no doubt appear surprising, after the knowledge of so valuable an article of commerce being a spontaneous production, that it should have, to this day, remained wholly unnoticed and disregarded. I cannot ascribe the supineness and negligence of the inhabitants to any other causes, than the scanty means of labour which they have always complained of, and to the terms proposed in 1743 not having been sufficiently encouraging to withdraw them from other pursuits, which yield, without much trouble, a certain and quick return. The sale of their farm produce to the shipping was a plain and uncomplicated concern: but to collect, and select the proper lichens at the very low price which was offered,* the payment of freight, and the subtraction of duty, together with the necessity of correspondence, and of agents in London, required a new sort of management, to which a St. Helena planter had never been accustomed.

Conceiving, however, that the increased value of this dye, of late years, and the augmentation of the labouring population, by the introduction of Chinese, may hereafter hold out stronger incitements to exertion, I resolved in the mean while, to use every means in my power, to obtain the fullest information concerning a natural production which may ultimately prove of considerable

* In 1743, it seems that Orchel sold in London for £50. or £60. a ton. In later times it has arisen to nearly four or five times that price.

Gregory's, Hold-fast Tom, Prosperous Bay, and on the windward coast of the island, considerable quantities of it might be collected very readily and at a trifling expense.

No. 2. is a lichen which grows upon the gum-wood trees all over the island, but particularly on those in the Honourable Company's plantation at Long Wood, where it is abundant. From this lichen, it is presumed, a beautiful colour may be extracted ; it might also be found valuable as a substitute for gum, if used according to the process in Lord Dundonald's patent. That nobleman's report states " that 1lb. of dry (prepared) lichen " will do as much work in calico printing as 1½lb. of gum " Senegal, and the difference of price makes a saving of £45. on " each table or press, in war time, and half that in peace." The lichens his Lordship specifies are " those which grow on trees " and shrubs." It may not be held unreasonable to suppose that the lichen of this number may possess superior mucilaginous qualities, growing on the bark of a tree which itself yields a very pure and excellent gum.

No. 3. is another lichen, found as No. 2.

No. 4. a whitish crustaceous lichen ; found in abundance all over the island.

No. 5. is a box containing a specimen of a yellow lichen : this is found in many parts of the island, both in the interior and towards the sea ; it grows on trees, rocks, and arid soils ; it is not so plentiful as the other kinds.

No. 6. is a lichen growing on rocks, intermixed with No. 1. and is in great plenty.

No. 7. a small fibrous lichen ; found generally, and in abundance on rocks, walls, &c.

There is no doubt but this island produces other, and perhaps infinitely more valuable lichens than any of those collected ; specimens of which with all care shall be made.

demonstration, that “ the island of St. Helena abounds with
“ Archill.”

I have thus pointed out two valuable articles of commerce that might be supplied from St. Helena. There are several others of minor importance, which might be obtained at a very trifling expense : amongst which may be reckoned the *Socotrine Aloe* ; the *Palma Christi*, and the *Capsicum*. The scientific reader may possibly discover, in Doctor Roxburgh’s List of Plants, several others deserving attention.

Of the socotrine aloe, or *Aloe perfoliata*, there are two or three varieties. They all grow exuberantly ; and consequently might be cultivated to any extent.

The palma christi,* or *Ricinus communis*, which produces the finest sort of castor oil, although a valuable plant, is totally neglected. Its importance, the facility of its culture, and the various uses to which it might be employed, are so well explained in Captain Barnes’s official report, that it would be superfluous to add more upon this subject.

“ I beg leave to offer to your notice the following observations on a subject which I humbly conceive would, if properly attended to, materially contribute to the Honourable Company’s interests on this island, by affording a revenue of some magnitude, from a neglected, yet very valuable source, with little comparative trouble, risk, labour, or expense.

Some time ago, I had the honour to present you with a small specimen of castor oil, I had extracted from the fruit of the

* The palma christi, of which the vernacular name on St. Helena is *physic nuts*, did not escape the notice of Governor Roberts ; for it appears by the consultation, dated the 30th August, 1709, that he ordered them to be planted.

value to the Honourable East India Company. Captain John Barnes, the military surveyor, undertook to explore all those places where the lichens are to be found, and to collect specimens for the purpose of being sent to England. In his researches he discovered seven different sorts: upon which he made the following report.

“ Having read that the *Lichen roccella* (which for the purposes of dyeing affords a very beautiful and valuable tincture called Archill) is imported into England, from the Canary and Cape de Verd Islands, and considering that St. Helena, from its similar situation, might also produce it, I have with the approbation of the Hon. the Governor, made a collection of lichens, &c. in the hope that amongst them it may be found; especially as it appears from the records of the island in the year 1743, that the true archill had been sent from hence to England, and was highly approved of. I cannot take upon me to assert that my search has been perfectly successful, but from every information I can obtain, I am induced to believe that it has not been entirely the contrary. I have not had time to make experiments on the lichens collected, nor indeed could I have satisfactorily depended upon the result of any, had they been made so as to have determined which was archill, carried on as they must necessarily have been with considerable difficulty, both for the want of proper apparatus, and scientific skill and experience on my part. It will afford me the highest possible satisfaction, if any of the present collection may prove at all conducive to the interests of the Honourable Company.

The package and box, No. 1, contains a lichen which is conceived to be a species of *roccella*: this conjecture is strengthened by the information of a gentleman, a native of this island, who points it out as the same sort which was approved of at home: it grows in abundance on the rocks near the sea, and especially at

Should it appear to the Honourable Court of Directors as deserving their consideration to obtain from St. Helena the true Archill, and it be not found in any of the lichens already gathered, if an accurate description of it, with a specimen of the plant from Canary or the Cape de Verd, together with instructions and tests for experiments could be sent out, it might at once be determined whether it is to be found on this island.

I cannot offer any calculation of the quantity which may at present be procured of any of the lichens; certainly many tons of each, particularly of No. 1. and 2. No. 5. appears to be in the least abundance." *St. Helena, 10th July, 1809.*

Lieutenant Phillips, of the artillery, also procured five samples from the windward rocks of High Knoll.—“The whole,” says he, “are so very brittle and dry, that in gathering and bringing “them, they were almost reduced to a powder, excepting one “sort, which grows in places more sheltered than the others.” After minutely examining them, he inferred that sample No. 1. was in the first stage; No. 2. in the second; and No. 3. in the third; and that No. 4. and 5. were of two distinct sorts: consequently High Knoll appears to produce only three different species. They are all to be found in great abundance, excepting No. 2.

That sort which corresponded, as far as I could judge, with the description given of the true Archill moss, was reduced to a fine powder, and moistened with strong *lime water*, *urine*, and *alkaline salt*. It soon gave out a pale red: after remaining a few days it became of a deeper tint: and the liquid squeezed from those ingredients exactly resembled the finest coloured red wines.

This experiment, made without any skill on my part, when added to the observations of Captain Barnes and Lieutenant Phillips, and to the information communicated in the official letter from the Court of Directors, in 1748, afford a positive

Ricinus communis, of which you was pleased to express your approbation ; since that period, I have at every leisure moment, collected all the information I possibly could respecting this plant ; and have ascertained by the incontrovertible fact of experiments, the produce of oil, which on an average may be extracted from its fruit ; and I now trespass on your time and patience, in laying the results before you.

As it regards the plant itself, it never has been cultivated on St. Helena, but in its wild state grows in great abundance in most parts of the island, with vigour and luxuriance equal, if not superior to any shrub we have ; it bears a prodigious quantity of fruit, which by attention may be obtained all the year round : the plants yielding at the same time berries fit for gathering, and unripe ones in various stages of growth.

The situations most favourable to the palma christi, appear to be those which are humid and sheltered : there are waste lands of this description belonging to the Honourable Company, on which, if plantations of it were formed, immense crops would be produced ; for, it is to be presumed, that if the little care necessary was bestowed on its cultivation, its increase would be in vast proportion : the vallies in St. Helena, which are for the most part well watered, are peculiarly adapted for this purpose, and so ready is it to vegetate, that by only dropping the bean on the ground, and occasionally affording it water, it will speedily grow in any soil, and at any season of the year.

The expense of cultivating this shrub, even if many plantations of it were formed, would be inconsiderable ; little, if any, preparation of the soil is required for it ; neither cattle, sheep, goats, rats, or mice (so destructive to most other plants and fruits) will touch it ; fences are not therefore necessary to its preservation ;

and from the time the seed is placed in the earth to the period of gathering its produce, one man is fully competent to the management and care, of at least, 1000 plants.

As a shrub, it might also be rendered very useful. Where inclosures are made by sunken fences, or sod walls, on these, as an additional security, it might be advantageously planted, being of quick growth, thick and strong. Considerable quantities of fuel would also be obtained from it, which might be used in preparing the castor oil.

It would doubtless be found serviceable in other respects, as time and experience would afford opportunities to demonstrate.

In collecting the fruit, neither much time nor labour would be consumed, and consequently little expense incurred. Children (who for the most part are brought up in habits of idleness on this island) might be beneficially employed for this purpose, and their reward made commensurate to their diligence.

The process I adopted in extracting the oil, and which has proved successful, I need not in this report detail; not that I have the least objection so to do to any one, particularly to you, who have always been good enough to honour with your approval the humble attempts I have made to afford satisfaction to my honourable employers; but it may be necessary to state, that it is an expeditious method, sure, and attended with small cost.

The fruit being gathered at a proper age, I can safely assert, that in the several extracts I have made, the produce of pure castor oil has never been less than in the proportion of one-third of the weight of the bean; generally approaching nearer to half the weight, and that the average which may be fairly estimated is full forty per cent.

The refuse of the bean after the oil is obtained, I understand

to be a very nutritious and wholesome food for cattle, hogs, &c., and of which they are particularly fond.

The modes which would be proper to adopt in the cultivation of the *Ricinus*, is not for me to attempt an arrangement of; but I take the liberty to state, that supposing an acre of land to be occupied with full grown, bearing shrubs, the best distance they should be from each other would perhaps be ten feet, which would allow 360 plants on an acre, including room for water trenches, &c. : upon a moderate calculation each tree would yield 50 pounds weight of beans per annum ; this would amount to 18,000 pounds weight per acre: the produce in oil, taking it only at one-third, would be 6,000 pounds, or 750 gallons : supposing this quantity sold at 12s. per gallon (which I am told is far under the market price), would bring £450. sterling. The expense of cultivation, manufacture, and freight to England, say £50. ; so that a probable profit of £400. per acre would arise to the Honourable Company. Twenty-eight acres, containing 10,000 trees, would at this rate produce an annual revenue of £11,200.

As the seasons in the equable climate of this island would but little affect plantations of this valuable shrub, calculations may be formed concerning them with some degree of certainty ; and I have no hesitation in saying, that the foregoing one is likely to be much within what may be justly expected to accrue from the culture of the *palma christi*, and the preparation of castor oil from its fruit.

It must, however, be understood, that some time would necessarily elapse (perhaps a year or two) before any considerable advantage could be experienced ; and even should not what I have suggested prove to answer in every point, the trial may be so easily made on an inferior scale, and at so little hazard, trouble, and expense, that, with submission, I conceive it would not be

impolitic to attempt it, especially as the oil which may be so had, would more than repay the cost of obtaining it, by permitting it to be used for burning in lamps ; for which purpose I know none better, giving a clear, steady, and brilliant light, and offending neither in smoke nor smell.

If these thoughts should induce any experiments to be made on this subject, I am, under your approval, not only ready to superintend the plantation of the shrub, and the manufacture of the oil. but I am sanguine enough to state, that in case of failure, I will endure my trouble as my compensation."

Of the *Capsicum*, Doctor Roxburgh mentions three sorts ; the *cerasiforme*, or cherry-pepper ; the *grossum*, or bell-pepper, and the *frutescens*, or shrubby pepper. There may possibly be others which have escaped his notice ; for amongst them is that kind which yields the best sort of Cayan-pepper. They all thrive luxuriantly in the low vallies near the sea, producing two, sometimes three, crops in the year. In those places, the plants raised from the seed, bear fruit in nine months ; and at Plantation-house, where it is cooler, in eleven ; shewing, on the same plant, blossom, unripe and ripe fruit, all the year round.

Those who are experienced in the culture of capsicum, recommend an annual succession of plants, because they degenerate, or become unproductive, after three years. By this means there can be no doubt that immense quantities might be raised, and at a trifling expense. In short, from all that has been stated concerning the mineral and vegetable productions of St. Helena, and its fertile soil and fine climate, it must be evident (as Governor Byfield observed in the year 1730) that " if the inhabitants were
" a diligent, industrious, laborious people, such as you want,
" and they ought, and this place requires, they might raise many
" things for the supply of shipping, which would turn to a very

“many of the inhabitants; which we will not permit to continue 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.”

This threat was actually carried into execution by Governor Roberts in the year 1708; and had a temporary effect. But, notwithstanding those orders and menaces, and all that had been done during more than a century to excite a proper spirit of industry amongst the landholders, I found on my arrival in 1808, that 88 acres, in gardens and potatoe grounds, was the total quantity of cultivation. This indeed was barely sufficient for a scanty supply to the shipping: and the produce was sold at the most exorbitant rates. Under such circumstances, it may readily be imagined, that little, if any, of the island produce was consumed by the inhabitants. The fact is, that in 1808, there was a population of 3600 living almost wholly upon the public stores, obtaining most of the necessaries of life in profusion, at prices not exceeding one-third of the prime cost in England.*

Nothing could possibly be more adverse to improvements than so strange and unprecedented a system. The feeding of a population was not only baneful in its effect upon industry and cultivation, but the scanty produce which so small a portion of the lands afforded, aided by a combination to keep up the prices, had enhanced every article of farm produce to such a degree, that the object of maintaining the island, at so great an expense, was almost entirely defeated. The commanders of ships could not purchase refreshments for the seamen at the rates which were extorted: accordingly, they took no more than what they required for themselves and passengers; and the consequence was, that the quantities exported, of island products greatly

See page 207.

“ good account ; for the island is really capable of considerable
“ improvement. We have set them a good example, and hear-
“ tily wish they had discretion enough to follow it.”*

Notwithstanding this complaint of a want of diligence, industry, and discretion amongst the inhabitants, I observe by the Records,† that Mr. Byfield’s unremitting exertions had brought the island into a higher state of improvement than at any period of its history. During his administration, the inhabitants were so abundantly supplied with island productions, that there was no demand whatever for salted beef and pork from the public stores. The small quantities that remained in store, Mr. Byfield requested permission to have sent to Bencoolen : in order “ that it should sell for
“ a little, rather than be all lost, which must be the case if it
“ remain here ; for we have not any demand or occasion for it.”‡ This retrospect to the Records clearly shews, that if St. Helena were properly managed, and agriculture carried on to the extent of which the island is capable, the demand for imported provisions might be reduced to a mere trifle.

It is well known that St. Helena, since the period of its discovery, has been successively, and exclusively appropriated by the Portuguese, Dutch, and English, as a place of rendezvous and refreshment for ships returning from India. No expense has been spared to render it suitable to this important purpose. Many judicious orders and regulations have been from time to time sent from England ; and it was particularly enjoined “ to render every
“ acre of ground capable of cultivation, as productive as the
“ nature of the soil would admit.” So early as 1675, the government was told by the Directors of the East India Company, that “ We find there is wanting industry and pains-taking in

Extract from official letter, dated the 24th June, 1730.

† Letter, 26th May, 1730. ‡ Governor Byfield’s Letter, 26th May 1730.

lower potatoes from 10 or 12 shillings a bushel, and rather than feed slaves and servants, and far less live stock, with so *valuable* a commodity, the crops were actually suffered to rot at the farms, and many cart loads were thrown into the sea. The price of every other article was in the same proportion.

In regard to raising the prices of the island produce, no reasonable grounds have ever existed. From taxes the inhabitants are wholly exempted. They are subject neither to poor rates nor tythes; and they hold their lands at an extremely moderate rent, that is, from 1s.6d. to 5s. or 6s. per acre. The war taxes in England have not extended to this place; and which can only be felt, and that in a very trifling degree, upon woollen manufacture, and a few other European articles. The necessities of life (beef and pork, flour and rice) had remained at the same prices since the year 1772!! From this period to 1808 the beef and pork, supplied from the Company's stores, had invariably been sold to the inhabitants, both white and black, at 4d. per pound; flour at 2½d.; rice at a little more than 1d., and *paddy** at ¾d. per pound. Between the years 1800 and 1808, there being no restriction on the issues of those articles from the public stores,† the consequence was, that in this short period, the annual charges of the island had increased from £69,000. in 1800, to £157,000. in 1808.‡ But, after having most clearly ascertained, by referring to the Company's orders, that neither the low prices at which provisions were sold, nor the profuse issues from the public stores

* *Paddy* is rice in the husk, with which poultry and horses, &c. are fed.

† In justice to the late Colonel Brooke I must observe, that during the whole of his meritorious administration, the demands on the public stores for imported provisions were very trifling; and the refreshments supplied to the shipping were sold at extremely moderate rates. See *Comparative Prices*, 1789 and 1810, page lxiv.

‡ See page 208.

diminished. It will scarcely be credited that so determined was the spirit of combination to keep up the prices, that rather than

Abstract of the principal Articles of Farming Stock exported 1789, 1810; shewing the increase of Prices, and the decrease in the means of Refreshment to Shipping.

ARTICLES.	Prices in 1810.	COMPARATIVE EXPORTS.		
		1810.	1789.	Prices in 1789.
		Number.	Number.	
Bullocks killed, - - -	1s. 2d. per lb.	176	346	6d. per lb.
Bushels of Potatoes, - -	10s. to 12s.	3288	3468	6s. per bushel.
Bunches of Vegetables, -	not ascertained.	375	not ascert ^d .	—
Baskets of Apples, Peaches,	} ditto	88	ditto	—
Oranges, Figs, &c. -				—
Cwts. of Hay, - - -	10s. or 12s.	139	181	6s. per cwt.
Pompions, - - -	2s. 6d. to 5s. each	1118	2032	1s. 6d. each.
Turkies, - - -	32s. to 42s. do.	278	725	5s. to 8s. each.
Geese, - - -	21s. to 25s. do.	95	28	6s. each.
Ducks and Fowls, - - -	7s. 6d. to 12s. do.	1810	5104	1s. 6d. to 2s.
Hogs and Pigs killed, -	1s. 3d. per lb.	170	347	6d. per lb.
Sheep, - - -	40s. to 60s. each.	25	201	21s. each.

This Abstract clearly shews that the refreshments to shipping in the year 1789, and particularly in beef, hogs, sheep, and poultry, when the sale of rice and paddy to the inhabitants from the Company's stores amounted to no more than £327. per annum, were far more abundant than they have been of late years, notwithstanding the annual sale of rice and paddy, had augmented to £3600. per annum, in 1809.

From this ten-fold augmentation of the issues of *paddy*, which is the grain used for feeding stock, it might have been expected that the *quantities* of stock raised, would have been proportionally increased: but effects directly contrary have been produced; for, not only have the *quantities* greatly *diminished*, but the *prices* have been *raised* in a triple, or quintuple, proportion. The theory of markets finding their own level, can never be applied to St. Helena. The markets there are always deranged by the arrival of fleets. To these *alone* the islanders look for a sale of their products; and from the captains and passengers they demand whatever prices they choose. Nothing can prevent exorbitant prices being demanded, but the interposition of Government. If the prices were regulated and kept within moderate bounds, a greater degree of industry would be excited, a greater quantity of stock would be raised, and the islanders, by a more extensive sale, would derive a greater profit, or return, during the year.* In 1811, the Government did interpose, and prohibited any person demanding, or receiving, more than five shillings for a fowl: the other sorts of poultry were reduced in the same proportion; and potatoes fell in price, by the effect of the Company's farms.

See Section XIII. p. 85.

had ever been sanctioned by the Court of Directors, a reform was adopted, which, by its gradual operation, produced a reduction in the charges of the island, from £157,356. in 1808, to £104,880. in 1812.*

Another cause of the increase of the island charges, was a total neglect of the orders of the Company to extend cultivation. This would have undoubtedly been the best means of lessening the demands on the public stores, and of augmenting the stock of cattle: but, instead of obeying those orders, the farmers gradually became graziers. Their cattle and sheep were left to themselves on the pastures; and no provision of fodder of any kind was ever thought of, to meet a season of drought. Lands formerly in cultivation were abandoned and overgrown with weeds; and few traces of industry were to be seen. Under such circumstances, the increase of population, that is, of planters and their slaves, had been of no advantage to the island; for in the year 1717, when the total of those inhabitants was only 833, there were 1765 cattle on the island; and in 1812, when the same class of inhabitants had increased to 1732, their stock of cattle was no more than 1494.

Such were the real causes of all the existing evils. Had the same energies which are so conspicuous during the governments of Messrs. Roberts, Pyke, Byfield, and Dunbar,† (between the

* See Note, page 208.

† “*Governor Roberts’s* administration (1708-11) may justly be said to form a new æra in the history of St. Helena. The general disorder into which the island had fallen, and the accumulated defects which had arisen and multiplied under his predecessors, were at once corrected by his able conduct. Attention to business, regularity, and economy, were established in every department; whilst strict justice, and a conscientious regard to the Company’s interests, distinguished the measures of this excellent Governor.”

“By a vigorous execution of laws, which had long been disregarded, Captain Roberts rendered himself obnoxious to those who were desirous of accommodating their private

years 1708 to 1746) been followed up, St. Helena, at the present time, would have been in the most flourishing condition. Its

views at the expense of the Company's interest ; and, as truth and justice could form no basis for open remonstrance, secret misrepresentation and detraction were the only weapons that could be employed against him. These, together with a plausible statement delivered to the Court of Directors by George Hoskinson, a wealthy planter, of infamous character, at length succeeded in effecting the removal of Captain Roberts. The groundless charges which had been preferred against him, were soon detected ; and the unjust treatment of the man whose merits had been so conspicuous, justly excited the strongest indignation."

" *Governor Pyke* was twice in charge of the Government ; first, in 1714-19, and afterwards in 1732-38. His attention was principally directed to agricultural improvement. Although he had many obstacles to encounter, yet, in five years, he restored the island from a most ruinous condition, to as flourishing a state as could be expected, considering the difficulties he had to overcome. He has very justly been accused of arbitrary conduct ; but upon the whole, the Court of Directors were satisfied with his first administration, and re-appointed him Governor in 1732."

" During five years that *Mr. Byfield* filled the Chair, from 1727 to 1732, his savings for the Company were calculated at £25,565. Their sense of his merits was manifested by an addition to his salary, and other marks of favour. The inhabitants also, about five months after their liberation from the galling yoke of Captain Smyth's tyranny, testified their acknowledgments in an address to Mr. Byfield, for his equitable administration ; and, in the following year, again took occasion to express their high sense of his just and indulgent disposition. But, when the recollection of former sufferings and oppression had worn off, present blessings were undervalued, and discontents fomented against the man, who, by general confession, had every claim to esteem and affection. A powerful party was formed against him, and a deputation of two of its members was sent home to lay their pretended grievances before the Court of Directors."

" Byfield, indignant at this ungrateful treatment, retired from his situation in disgust ; but whilst his enemies succeeded in driving him from the island, they were little aware of the punishment they had been preparing for themselves. Captain Pyke was appointed to succeed, and arrived in March 1732. During his second administration, he fully justified the charge of arbitrary conduct, of which he was accused. The white inhabitants were ignominiously whipped and imprisoned for trivial offences ; the military officers fined and suspended without courts-martial," &c. &c.* The day on which Mr. Byfield

inhabitants, by being compelled to industrious habits, would have been affluent; and its fertile lands, by yielding more than two crops a year, would have supplied, in abundance, almost every necessary of life.

St. Helena has generally been represented as a barren rock but this is not the fact. There are two or three thousand acres, (as already observed) covered with excellent soil of unusual depth, and capable of cultivation. Comparing it with Malta, every part of which I have explored, I consider it infinitely superior in capabilities. In Malta there is scarcely any natural soil, and yet that island abounds in corn, cotton, silla, and fruit of all kinds; and the prices of provisions are moderate. Its fields, formed at a great expense, by bringing soil from Sicily, contribute to support a large population, and its cotton-thread is a valuable export.

But, at Malta, every man depends on his own industry: at St. Helena, on the contrary, it is remarkable that all, with very few exceptions, are under no such dependence. If a soldier be employed in labour, it matters not to him whether he be idle or active; he knows he is clothed, fed, and paid, at the Company's expense. It is the same with the slave; for he, poor man, has no stimulus to exertion; he is also fed and clothed by his master, but not paid. And in respect to some others, and the

embarked for England, he gives a very summary view of the state of the island: 'We have had,' says he, 'a fine season again; and this place plentifully abounds with *yam*, and *beef*, and *idle fellows*.' Letter to the Court of Directors, 24th March, 1732."

"Governor Dunbar was unwearied in his exertions (1743-7) to watch over the resources and fertility of the island. He introduced the plough; and his experiments in the cultivation of oats, barley, and wheat, at Long Wood, gave rise to such hopes of success, that a barn was erected there;" but his successor had no taste for improvements, and those promising beginnings were totally forgotten, and no longer thought of, until the year 1808.

free blacks, they contrive, by extorting high wages, to provide their maintenance by two or three days labour in the week, which enables them to purchase from the public stores, at a cheap rate, a sufficiency of *imported provisions* for themselves and families.

Such was the state of St. Helena, in the year 1808. It is therefore by no means surprising that clamours arose, and that representations were made, concerning the very inadequate refreshment which the island afforded.

But, since that time considerable changes have taken place ; the Company's farms have been established ; Chinese labourers have been introduced ; and a much larger quantity of land brought into cultivation, both by the government and individuals. The objects I had in view by establishing those farms were to place, beyond all contradiction, the capabilities of the soil and climate ; to set good examples of English husbandry ; to defeat the combinations already mentioned ; and to regulate, or keep within reasonable bounds, the market prices. All these intentions had been fulfilled in 1812. Potatoes had fallen in price, from 12s. to 4s. a bushel delivered at the farms, and to 6s. in James's Town. Some of the planters, having superabundant crops, publicly advertised to sell at 3s.6d. ; but this was rather discouraged until cultivation shall have been more extended, particularly as the commanders of the Company's ships declared they were perfectly satisfied with the reduced prices.

Many of those commanders, as well as captains of H. M. ships, very handsomely acknowledged the great benefits their crews had derived from the ample supplies of vegetable produce ;* and it

* When H. M. ship *Illustrious* arrived at St. Helena on the 19th July, 1813, Captain Skene represented the deplorable state of his crew ; being worn out by long residence in India, and many of them severely tainted with scurvy. One hundred and fifty-four men

seemed very generally to be admitted, that whilst St. Helena can furnish large quantities of potatoes and vegetables at moderate rates, it could seldom be necessary to make any demand for beef at the island price, which is fourteen pence per pound ; for in all disorders incidental to seamen after long voyages, (except in cases of great debility,) it is probable that a vegetable regimen, combined with ships provisions and wholesome beer, may be nearly, if not wholly as efficacious in promoting a recovery as a change from salt to fresh meat. The question seems to be, whether sixteen pounds of potatoes (which cost fourteen pence) be equivalent to one pound of fresh meat. The experiment is worthy a trial, if not already made.

From these recent facts, it will readily be perceived how very easily St. Helena might be rendered the most perfect and complete place of refreshment for ships in the world. All that is wanting is to promote and encourage the culture of the lands. If the present scale of cultivation were enlarged, and plantations of trees extended to many of those parts that are unfit for other purposes, there cannot be a doubt, that every necessary refreshment for fleets, and food for the inhabitants, as well as useful timber and fuel, might be produced in the greatest abundance.

The laudable spirit for improvement, which at present exists among some of the landholders, affords a fair prospect of attaining all these objects. " Plantations of trees," says Governor Wilks " are become a favourite object with most of the landholders, " since the destruction of the goats, has begun to shew that trees

were upon the sick list, incapable of duty : but on the 1st of September, when he sailed for England, most of them were restored to health ; and the sick list was reduced to thirty. Their recovery was chiefly ascribed to the abundant use of vegetables, and wholesome beer.

Governor Wilks's Agricultural Report, dated 10th March, 1815.

“ can really be preserved :* and also, since plants have been
“ procurable. According to present appearances, penal obliga-
“ tions will be superfluous. At present, my chief doubt arises
“ from the apprehension that I shall not be able to supply the
“ whole of the demands for the present year.”

It has been already stated, that the climate of St. Helena is remarkably pure and salubrious, and wholly exempted from gales and tempests. There is abundance of fine water, and a safe and commodious anchorage all along the leeward coast, where ships are not only sheltered by the high land, but are most powerfully protected by the fire of the batteries. And as St. Helena is in itself a place of great strength, situated in the direct tract of ships returning from India, it seems impossible to imagine a port more peculiarly adapted for the purposes to which it has been so long appropriated.

The Cape of Good Hope, since it has become a British colony, appears, however, to have been considered as a more suitable rendezvous. Fresh meat, flour, and wines, can undoubtedly be procured there upon more moderate terms than at St. Helena. I know of no other superiority that the Cape possesses ; and I am firmly persuaded, if the circumstances of both climates, more especially the uniform and moderate breezes of St. Helena, were compared and contrasted with the tremendous gales to which the latitude of the Cape is subject, at all seasons of the year,† that

* The advantages that were expected to result from the extermination of the goats have been realised : they are pointed out in the first Section of this Work : which is almost *verbatim* my official minute upon this subject, dated the 20th of September, 1810. Although this measure met with some opposition in the first instance, there is not, now, one person on the island who entertains a doubt of its expediency.

† In the month of November, 1799, which is a summer month, H. M. ship Sceptre and every vessel in Table Bay, was driven on shore. Had there been a valuable India fleet there at the time, it is highly probable that the whole would have shared the same fate.

such a comparison would lead to a conclusion, that the Cape of Good Hope is not only inferior to St. Helena as a rendezvous, but is of all places the most unsafe, and the most improper for the resort of valuable fleets.

In order, however, that the reader may form his own judgment on this question, I shall here present him with an account of the climate of the Cape, as given in a recent publication.*

“ For nearly half the year the south-east wind prevails, and at times rages with the most desperate violence. The inhabitants of Cape Town are apprised of its approach, by observing at first a small white cloud, or mist, rising between the mountains called the Devil’s head and the Table mountain ; soon after the Table mountain itself becomes enveloped in thick cloud or mist, and the storm almost instantly begins, and roars in the most terrific manner, without ceasing, many days together. At its height nothing can scarcely stand against it. Waggon’s drawn by twelve or fourteen oxen are frequently blown out of the road.”

“ Those dreadful storms continue, for different periods, from three or four, to nine or ten days ; and between the periods the heat is very intense. The spring opens about the end of August, and the two hottest days I ever remember, were the Christmas days of the years 1811 and 1812 ; on the former of which, by a thermometer in Cape Town, the degree of heat was, at half-past nine in the morning, at 120 degrees, and was thought to be still more in the advance of the day.”

“ During the prevalence of those hurricanes, not only the sensations of invalids are acute to an extreme, but even the robust and the healthy feel its dreadful effects. The frequent and almost momentary transitions from heat to cold are extremely unpleasant and dangerous to an English or European constitu-

* The Importance of the Cape of Good Hope, published in 1814, by R. B. Fisher, Esq.

tion, until it is inured to it. The finest part of the year is termed the winter, commencing about March or April, to the latter end of August, or beginning of September. This is the rainy season, when it frequently rains in torrents for many days, and the houses and whole town are deluged with water. But in the intervals of rain the temperature of the air is remarkably mild and pleasant, and the atmosphere most uncommonly clear. It is seldom or ever very cold, except that sort of cold which arises from damp. The tops of the mountains are at this season covered with snow; but I scarce ever remember to have seen snow on the plains."

"In Table Bay, which is known to be excessively deep and rocky, and as it were the surrounding country reversed, for many months in the year no ships can land, or even enter; and, if any, being before in the Bay, continue there during those months, which is sometimes unavoidable, they ride with very great difficulty, and in considerable danger, with head and bow anchors, which are frequently obliged to be shifted at the turn of tide. Even in the finest season, and often in the calmest weather, there is an immense surge, which there is nothing to break. There are no harbours, docks, or quays; a complete open road-sted, and nothing but a long projecting jetty about 300 yards, on which if you cannot safely land, you must be content to go stern foremost with the surge, and be left on the sand."

"There are only six months in the year in which ships ever venture into Table Bay; and during the winter season, the Admiral on the station, and the men of war, constantly go round to False Bay, and take shelter in Simon's Bay. The number of vessels said to have been lost in Table Bay is almost incredible. I myself saw two ships, that, in the same night, broke from their anchors, run aground, and were totally lost, and when the weather was not very tempestuous."

This account of the dangers of Table Bay, and the frequency of long continued and violent tempestuous gales, must satisfy every disinterested person, that St. Helena is, from its local circumstances, infinitely superior, in every respect, as a place of rendezvous and refreshment. At the Cape, "the number of vessels said to be lost is almost incredible." At St. Helena, there is not, on record, a single instance (nor can there ever be) of a vessel being lost by bad weather. How great then must have been the value and importance of this small island to the commercial interests of the East India Company! If their ships, during the last century and a half, had been compelled to resort to the Cape instead of St. Helena, it may readily be imagined that, in such a climate, immense losses of ships, and property, and lives, would have been sustained; and that the Company, at the present time, (as they never insure) must have been *minus* several millions sterling!

It is said that False Bay and Saldanha Bay afford some degree of security against storms: but admitting this to be fact, still those bays are objectionable, because they are situated in a boisterous region; consequently, neither of them could ever be made so perfectly secure against the elements, (and I may add, against an enemy) as the port of St. Helena is at the present moment.

To erect fortifications and public buildings, in short, to make new settlements at Saldanha, or False Bay, would necessarily be attended with prodigious expenses; after all, no public benefit could possibly arise: at least in the refreshment of ships. Indeed from all I have heard, I have great reason to believe, that few commanders, on their returning voyages, would optionally, for the sake of refreshment, run the risk of their own property by remaining in those latitudes a longer time than is necessary: from which indeed they seem at all times glad to escape as soon

formed of the manifold advantages which have resulted from the abolition of spirit houses, and the introduction of breweries.*

* The houses for retailing spirits were abolished on the 15th of May, 1809. The garrison at that time consisted of about 1250; of whom 132 were sick in hospital. Four months after that abolition, the patients were reduced to 48: but, as it was found impracticable to put down intemperance, whilst *cheap spirits* were on the island, the Government adopted measures to prevent any being landed: which have completely had the desired effect.

Soon after the total abolition of spirits, in 1810, the patients in hospital gradually declined to between 30 and 40; which, (considering there were, at that time, about 100 non-effectives, and others far advanced in life) were as few as could well be expected. This surprising reduction is to be ascribed solely to a change of diet, arising from a more abundant supply of vegetables, and from substituting wholesome beer for an abominable deleterious spirit, such as new Bengal rum or arrack; of which, for many years before, more than 300 leagers were annually consumed on this small island!

"It will hardly be credited," said the late Doctor Adam Baildon, in his official report, 24th November, 1808, "that soldiers and others are frequently brought to the hospital as far advanced in real scurvy, as if they had just landed after a long voyage: and many who are brought for other complaints, are considerably tainted with this disease.

This is to be ascribed to the great prevalence of drunkenness, which is a subject, in my opinion, deserving the most serious attention. The health and comfort of the soldiers, and consequently the strength of the garrison, are so very materially affected by it, that to find some method by which it would be effectually prevented, becomes a consideration of no small importance.

On my arrival I was much surprised at the great number of patients attacked with liver complaints. The mildness of the climate led me to suppose that such complaints ought not to be common here, and I very soon discovered, that the cause of those complaints, and of four-fifths of the diseases in the hospital, originate wholly in the excessive use of spirituous liquors. In the colder climate of Britain, liver complaints are rarely met with, and are generally confined to hard drinkers; and more especially dram-drinkers. It is in this way that most of the spirits here are consumed. Indeed, the use of all intoxicating liquors produces a craving for a repetition; and the stimulus given to the stomach is so sudden and so powerful, and the degree of exhaustion that follows so great, that this craving in those accustomed to spirits, often becomes more powerful than hunger or thirst; so that the soldiers in this state, though perfectly certain of punishment, will commit almost any crime rather than forego their drams. It is well known to every officer

as possible, and to make for St. Helena, a safer port, where they can have every article they stand in need of; although, of late years, at rather a greater expense,

I have already noticed that fresh meat, flour, and wine, are the only articles which are procurable at the Cape in greater plenty, and at a cheaper rate, than at St. Helena. The first, I have endeavoured to shew, is not very essential to the refreshment of seamen, where vegetables are in abundance. The second is never required by the India ships, because they are so well provided for the voyage, that they frequently dispose of the surplus to the inhabitants, and sometimes to the Government of the island. In respect to Cape wine, by the late arrangements, there has always been (since the withdrawing of spirits from the island) a provision for the garrison in the public stores: consequently, some could at any time be spared for the ships if it should be wanted.

Hence it must be obvious there can be no want of refreshments: and as all those scenes of riot and intemperance, which had for many years disgraced this settlement, are happily at an end, by a prohibition on the import of spirits, and by the introduction of breweries and beer-houses, I will venture to say, there is no sea-port, or garrison, in the world, where sailors and soldiers can be permitted to land with so little risk of committing excesses. This, indeed, was clearly ascertained, in August, 1813. Captain Halliday, commanding His Majesty's ship Tigre, permitted 300 of his men to go on shore in one day. They went into the town and country, conducting themselves in the most orderly manner, and retired quietly on board in the evening, without a single instance of intoxication.

When this fact is contrasted with the following account of the exhibitions in garrison, a few years before, some idea may be

Upon my arrival, in 1808, I was forcibly struck with the disorderly conduct of the soldiers. Scenes of the grossest intemperance were daily exhibited at the spirit houses. Crowds of soldiers and sailors were in constant attendance, rioting and

in garrison, that in drunkenness alone, originate 19 in 20 of the crimes for which the soldiers are brought to punishment."

In a subsequent report, Doctor Baidon notices more particularly the appearances of St. Helena scurvy. Upon these appearances, and upon the anti-scorbutic qualities of nopal, he reported as follows.

" 21st August, 1809.

" I consider Doctor Anderson's discovery of the anti-scorbutic and nutritious qualities of the nopal, to be of the greatest importance to this island. Vegetables are here very scarce; wherefore, if the opuntia had no other recommendation than that of being a pleasant vegetable, it must be considered as a great acquisition to the inhabitants in general. I have formerly stated to you, that the men of this garrison, from their living principally on salted provisions, and being seldom able to procure vegetables (joined to the abuse of spirits,) are generally afflicted with the scorbutic diathesis; which appears by their spongy gums, purple spots, and by scratches, often degenerating into livid, troublesome sores, &c. Some I have seen admitted into the hospital as bad with scurvy as if just landed from a long voyage. As an addition to our hospital diet, the opuntia will, therefore, be a most valuable article. I trust, indeed, that if cultivated in sufficient quantity, it will soon be the means of altogether preventing the soldiers from acquiring the scorbutic taint; however this may be, it will certainly add greatly to their comfort as an article of common diet. It must appear from all I have stated, that the several species of opuntia will be extremely useful on this island, for the following purposes.

1. As a pleasant vegetable for common use.
2. As a most important addition to the hospital diet in general.
3. As an article of food for the soldiers, adding to their comfort and preserving their health.
4. As an anti-scorbutic, used raw or otherwise, for seamen landed here.
5. For the supply of ships while here, as an article of diet, and as an anti-scorbutic to carry to sea.
6. As fences.
7. As an ornament to the hills of James's Valley.

Doctor Baidon's Letter, 21st August, 1809.

boxing in the public streets. The roads leading to the country were often strewed with drunken men, laying insensible, both white and black. When the means of purchasing spirits were exhausted, some of those abandoned wretches had no other resource than in theft and burglary. Of their nightly depredations I had numerous complaints: but so cunning and dexterous were the band of thieves, at that time in garrison, that I could never obtain sufficient evidence to convict them. At length, in addition to restrictions, and afterwards the abolition of the spirit houses, I determined, as the only expedient of rooting out such licentiousness, to get rid of the most notorious characters. Officers commanding corps were directed to furnish lists of all who had been tried by courts martial for "irregular behaviour;" connected with suspicions of theft and house-breaking. The number was 42, of whom 23 were selected and sent to Bengal, enlisted for five years: this had the desired effect, and depredations on the Company's store rooms, and on the dwellings of individuals, ceased.

St. Helena, besides being valuable for refreshment to the East India Company's fleets, might become of considerable utility as a place of seasoning for their troops destined for India. Its appropriation to this purpose was suggested by Governor Brooke, about the year 1796, after he had, at different periods, forwarded drafts to Madras to the number of 1210. These disciplined soldiers, prepared for a warm climate, by a few years residence on St. Helena, were found far less liable to diseases (as might naturally be supposed), than those who were sent direct from England. The havoc that was made amongst some of His Majesty's regiments, about the year 1781-2, when they took the field, immediately on their arrival, compared with the healthiness of the St. Helena detachments, affords a striking proof of the good

effects of having troops previously seasoned before they are sent to India.

It is therefore obvious, if the recruits enlisted for India were to be sent to St. Helena, and exchanged for an equal number of seasoned soldiers, it would be a means of saving many lives that otherwise would fall a sacrifice to the disorders incidental to warm climates. The India recruits might remain from two to five years, in the option of the Governor; or proceed, at any time within that period, to their destination: or return to England, after the expiration of their term of service. If this plan were carried into effect, it would moreover check that spirit of insubordination, combination, and discontent, to which some men are liable, when too long kept in one place.

Knowing from experience, that many abandoned characters still remained in garrison, in 1812, after the mutiny, and knowing their unceasing thirst for spirituous liquors, and the improbability of some incorrigible drunkards among them ever being contented without spirits, after having been so long habituated to intemperance, I suggested to the Court of Directors, that all those who were in the disposition to serve in India should be immediately relieved. This would enable the Governor to weed the garrison, by selecting for India the worst subjects (who could do no mischief there); and by such means there would be an end to all discontents and clamours; and the St. Helena corps in a short time would be composed of a peaceable and sober class of men, on whose fidelity and zeal a perfect reliance might be placed.

With a garrison composed of such men, placed in the exterior posts, and forming three reserves, with field-pieces, in the interior, so distributed as speedily to reinforce the points attacked, I should feel a perfect confidence, that no external attack, however formidable, could possibly succeed.

so that there would be imminent danger of losing the ships, both by sinking and blowing up.

It must nevertheless be observed, that although such a wind as would enable vessels to come into the road by South-west Point, be very rare in this latitude, yet westerly winds have been known to prevail for a week together. These, however, seldom occur oftener than once in five or six months, and as their duration is often momentary and always precarious, it would be too great an uncertainty for an enemy, after a long voyage, to wait here in the expectation of so very precarious an event.

From those observations it will appear that there is no certainty of arriving at James's Town without coming round the north-east end of the island. And even then, if ships, after doubling Sugar-loaf Point, where the trade wind generally leaves them, and the eddies commence, do not keep close under the shore all the way between that and the road, they run great risk of being blown entirely off the bank ; or of being compelled to come to an anchor at no great distance from the batteries.

Ships thus obliged to hug the shore between Sugar-loaf Point and the road, gives the island a prodigious advantage over an enemy who might attempt this route ; because he would be exposed to such a continued and multiplied fire from the batteries between Butter-milk Point, and James's Town, as scarcely any number of ships would be able to overcome.

Rupert's Bay, James's Town, and Lemon Valley, are the principal landing places on the leeward coast. All these are well fortified by fleur d'eau batteries, provided with furnaces for heating shot, and flanked by cannon placed upon the cliffs far above the reach of ships' guns. Mortars and howitzers for showering grape upon ships' decks, or upon boats attempting to land, are also provided. In short, it seems wholly impossible to force a descent

In order to illustrate this opinion, it will be necessary to offer a few general remarks upon the natural strength of the island ; and upon the means it possesses of giving perfect security to ships at the anchorage, as well as of opposing the most vigorous resistance to an enemy's attack.

The natural strength of St. Helena consists in its compact form and size, and in its inaccessible coasts, formed by an almost uninterrupted chain of rocks, or mountains, rising in nearly a perpendicular direction, to the height of from 500 or 600, to more than 1200 feet.

It is well known that vessels bound to St. Helena, take care to be considerably to windward ; so that by steering afterwards a westerly course, they can hardly fail of falling in with it. After gaining sight of the land, they steer towards the north-east end, in order to fetch the road, by keeping close to the Barn and Sugar-Loaf Point ; for when they attempt to come round by the south-west point, they generally find themselves so much baffled by flurries of wind, issuing in all directions from the vallies, that they cannot proceed without standing off to a considerable distance, in order to get the trade wind. But, even then, they find it extremely difficult to work into the road ; because the wind to leeward of the island seldom blows for five minutes together in the same direction. In addition to those difficulties, an enemy's fleet would have to work in, in the face of a great number of guns ; which would not fail to rake them ; and after coming on the bank, perhaps within less than a mile of the shore, they might attempt to warp in, which would be wholly impracticable, on account of the constant and excessive fire from the batteries on shore. The nearer the ships approached, the greater would be the risk ; particularly from the fire of the elevated batteries, which would penetrate the upper decks, and pass through the hull under water, and even into their magazines ;

impossible for any number of troops, however great, to approach ten yards within the landing places. This opinion is founded upon repeated trials made at Goat-pound Ridge, which is situated close to the landing place at Young's Valley, and 729 feet above the sea.

A single stone, which weighed about 80 pounds, being set off from the top of this ridge very soon acquired a rotatory motion, and, at first, rebounded gently upon the declining surface. As the velocity of the stone was accelerated, the force with which it rebounded and struck the loose and brittle rocks increased; and at each rebound numerous stones and fragments of rock were detached. These, following in continued succession, and spreading to right and left operated precisely as the first stone; so that by the time it had reached the bottom of the hill, myriads were in its train, which covered a space of at least 100 yards, and flew with such prodigious force across the ravine, that many of the largest stones ascended to the height of 60 or 80 feet upon the opposite hill. Such was the astonishing effect produced by a single stone, that it seemed to me, if a whole battalion had been drawn up in the ravine, that not a man could have escaped alive.

This experiment, will serve to shew the mode of defence that is applicable to all the narrow ravines which have not been fortified. Indeed, it must appear, that nothing can be necessary at such places, but a good look-out, a few iron crows, a collection of stones, together with some blue lights, or fire-balls, to roll down the hills at night, for the purpose of shewing the position of the enemy if he should actually have entered.

In aid of this simple, but most destructive kind of defence, I must further observe, that in conformity to existing orders, and regulations, one of the reserves, with field pieces, would instantly

at any of those points. Even admitting that the enemy's troops got on shore and succeeded in carrying the fleur d'eau batteries, they would then be exposed to inevitable destruction, from the tremendous fire from the heights, and above all from the immense quantities of grape (or even stones) that might be thrown (with very small charges of powder) from howitzers and carronades of large calibre placed upon the heights, against which it would be wholly impossible to find shelter.

Besides the principal landing places above mentioned, there are several ravines, or vallies, interspersed throughout the coast, where an enemy might undoubtedly land, if he were not opposed : but, most of these are also protected by batteries ; or are so easily defended by rolling stones from the heights, that no body of troops attempting to gain the interior by these ravines could have the smallest chance of success.

Of those ravines, Captain Mitchell, an able engineer, who was sent to the island in 1765, gave the following description.

“ The ravines, or *vallies* (as they are improperly called) are extremely narrow, and remarkably rugged. They seem formed by nature for carrying off the torrents which precipitate themselves from the interior of the island ; and they all terminate towards the coast in beaches, where an enemy, if not opposed, might disembark without much difficulty. But the ascent being extremely steep and rugged, and terminating at a great distance from the coast, it would be impossible for an enemy to get into the country, if ever so inconsiderably opposed. I will venture to say that 500 men would be much more than a match for ten times that number in this situation.”

I not only concur in this opinion, but I trust I shall make it appear that two or three men stationed on the heights just above the entrance of any of those ravines, would render it utterly

(except Sandy Bay which is well fortified) that can properly be called practicable : for, although some of them have beaches, where, in smooth weather, troops might land, yet the difficulties to be surmounted before an enemy could get into the country are so very great, that I apprehend nothing less than absolute negligence, and supineness in the garrison, could ever endanger the island from an attempt in this quarter."

If this was the opinion of a skilful engineer fifty years ago, how infinitely more secure must be the island of St. Helena at the present moment, improved as it has been by the zealous and indefatigable exertions of Governors Brooke and Patton, who, during a period of twenty years devoted their attention to the grand object of placing this important island in a condition to repel the most formidable attacks.

But, nothing has so essentially contributed to the security of St. Helena against external attack, or stratagem, as the introduction of telegraphs.* These are erected on the most commanding heights, some of which are two thousand feet above the level of the sea ; and are so connected one with another, and so spread all over the island, that no vessel can approach, in any direction, without being descried at the distance of sixty miles. The vast utility of such an establishment, in a mountainous country, where any other mode of conveying intelligence must necessarily be slow, may readily be conceived. The telegraphs have, in fact,

* The telegraphs were first established by Governor Patton in the year 1803. They are his own invention, and of a very simple and cheap construction ; and have been found fully to answer every purpose for which they were intended.

The East India Company's and Sir Home Popham's numerary signals are also made use of. By these, His Majesty's and the Company's ships are all known by their numbers long before they reach the island : and as no ships whatever are permitted to pass Banks's Battery, without sending a boat on shore, it must be evident there is no possibility of taking the island by surprise.

placed the whole island under the eye of the Governor; for he is instantly apprised of every material occurrence in any part, or even within sight: and, with equal celerity, he can convey his orders wherever they may be necessary, both during the day and night. In short, the troops can be under arms at a moment's warning; reinforcements can be sent to the points of attack, or posts occupied, or any other military operation directed, simply by a code of signals.

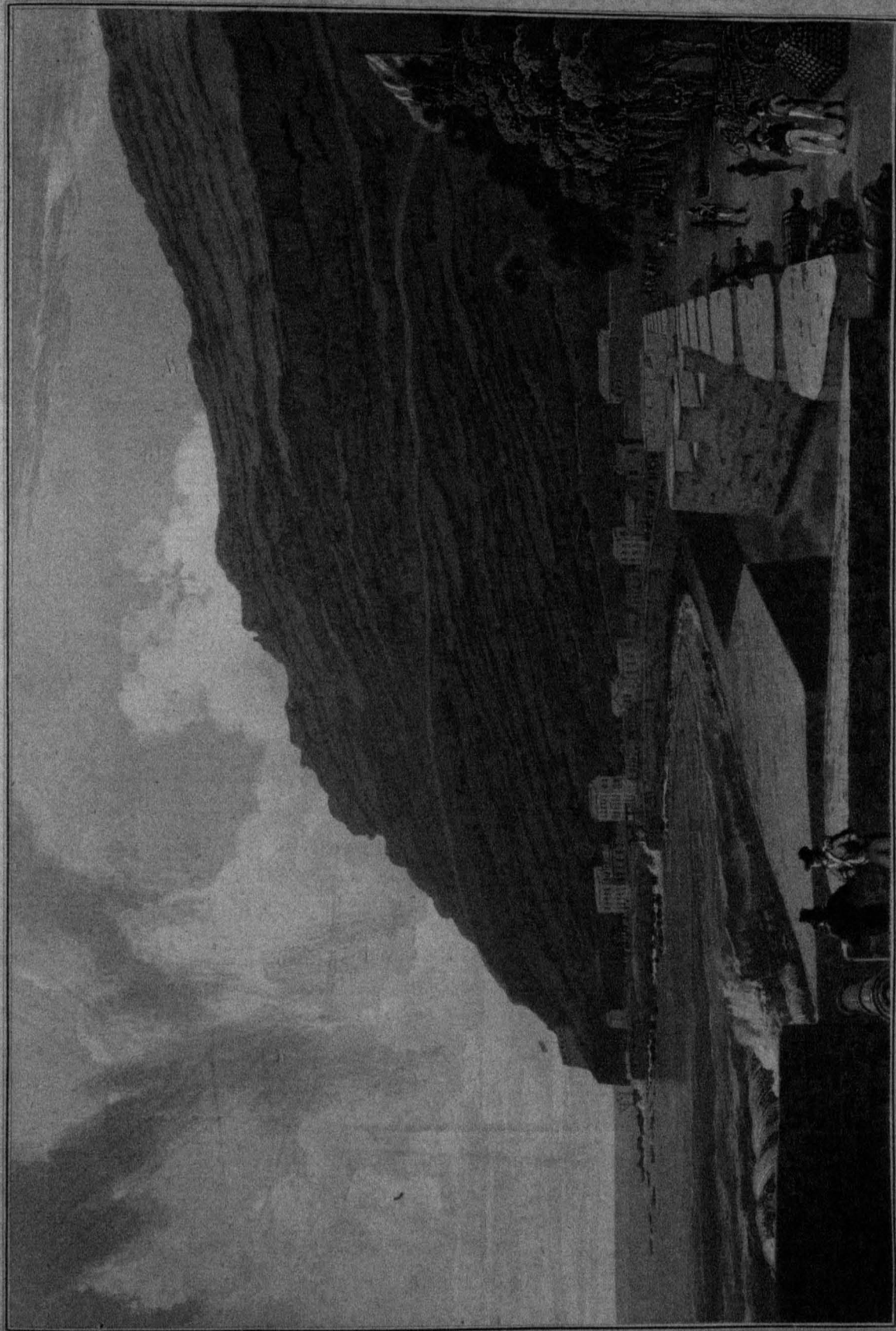
With such means of receiving information, and of sending orders, a Governor of St. Helena is as fully prepared to oppose a vigorous resistance, at every point of his extended line of defence, as if he commanded within a small fortress.

In order to illustrate all that has been stated, I shall suppose an enemy's fleet in sight. The moment this is ascertained the general alarm is fired; which is the signal for the troops to get under arms; to reinforce the batteries, and to send detachments to the three reserves in the interior. Thus, all the troops, and every effective man on the island (for they are all soldiers*) are

* *Extract of a Letter from the Governor and Company of Merchants of London trading to the East Indies.*

19th December, 1673.

"That all the planters be by the Governor listed under either of the aforesaid commanders, or such other officers as the Governor and Council shall think fit, that may exercise and train them up in arms, at least once in two months, to qualify them for the defence of the island. And that particular places, or posts, be assigned by the Governor, whereunto all and every one of the said planters may repair, and have a rendezvous when thereunto required by the Governor; for though we do not hereby require the planters to keep constant watch, as soldiers, during the time we shall continue soldiers in pay, yet we do hereby strictly require, in case of the approach of any shipping, and especially upon discovery of any enemy, or any general alarm, that they do repair to their respective posts, and observe such orders in a way of military discipline, according as their respective officers shall be directed by the Governor and Council, for the safety and defence of our aforesaid Island; *it being one of the conditions on which we have granted them their land and other accommodations.*"



James Davis Esq. del.

W. J. Smith sculp.

The view across the front of James's Valley, S. H. H. H.

move towards the point of attack ; both for the purpose of reinforcing it, and of occupying the most commanding positions with guns. From those positions, by *ricochet* firing of round and grape, any of the ravines attacked, might be enfiladed, or raked, almost from one end to the other : so that to gain the interior of the island along the ravines must appear too hazardous, and too hopeless, for an enemy to attempt.

The only place remaining to be noticed, on the leeward side of the island, is Thompson's Valley, which is well protected by guns on the heights in the rear of the landing place, and upon the Castle rock. This ravine is also sufficiently narrow to admit of being defended by rolling down stones, and may therefore be considered as perfectly secure against an enemy.

From Thompson's Valley to South-west Point, the coast extends about a mile, which is every where inaccessible to troops, as is the rocky shore from South-west Point to Sandy-bay Beach, a farther distance of about six miles. There are, I believe, one or two fishermen's paths in that extent of coast ; but these are, in all places, so steep, rugged, and difficult, that no invading troops could ascend them ; particularly if opposed by the reserve at Thompson's Hill, to which are attached field pieces for the purpose of repelling an enemy, at whatever point he might attempt to ascend in that quarter.

"The windward side of the island," says Captain Mitchell, "comprehends all the eastward coast lying between the rocks called the *Needles* and *Sugar-loaf Point* : a distance of 16 miles : for, although the south-east wind does not blow directly on every part, yet the whole is very considerably affected by it : and this line of coast, comprehending nearly two-thirds of the whole, is seldom without such a surf as would deter an enemy from any attempt to land. In fact, there are no vallies, or bays, here,

placed in the most advantageous positions. Should the enemy make demonstrations of landing at one or more points, information would instantly be communicated by the telegraphs ; upon which the Governor would order such movements, or dispositions of the reserves, as he may judge proper.

From this concise view of the mode of defending the island, and from all that has been related concerning its great natural strength, its batteries, and the facility of defending every practicable landing place, by rolling stones from the heights, it must be evident that, with such dispositions of the troops, St. Helena is absolutely impregnable by an open and regular attack. I have had opportunities of examining Gibraltar and Malta, and I must confess, that the impression left on my mind is, that neither of these places are to be compared in strength with St. Helena. This superiority arises from its high and commanding coasts ; from there being no unfortified landing places that do not admit of being defended by stones : and from several other circumstances already explained. Nature, indeed, has been so wonderfully profuse in giving strength to this place, and has left so little for art to perform, that out of twenty-eight miles of coast, the fortified lines of defence, collectively, do not exceed eight hundred and fifty yards. In short, it appears to me, under all the circumstances above-mentioned, that St. Helena is not only perfectly secure against surprise, and external stratagem, but capable (even with a moderate garrison) of repelling the most formidable attacks that can be made upon it.

TRACTS.—PART I.

SECTION I.

St. Helena once a woody Island—cause of its Denudation—Plans proposed for restoring Wood, and extending Cultivation—the Institution of Goat ranges injurious—Extermination of the Goats recommended.

IN the year 1502, when St. Helena was first discovered, its interior was one entire forest—even some of the precipices, overhanging the sea, were covered with gum-wood trees.

Goats, unhappily (as it has proved) for the island, were first introduced in the year 1513, and from this period to 1588, so greatly had they multiplied, that Captain Cavendish relates “there were thousands, and that they were seen one or two hundred together, and sometimes in a flock almost a mile long.

Those early accounts, in respect to wood, are fully corroborated by the records, by the testimony of persons now living, and by the fragments of trees which are occasionally found on those hills that are now the most desolate and barren.

Within the last fifty years many gum-wood trees grew on the hills between Rupert's and Dead-wood.—This name, indeed, evidently implies there was a forest there. On the Barn-Hill, and near Lot's Wife, pieces of ebony are still remaining; and there is a tradition that a thick wood occupied Half-tree-hollow,

between High Knoll and Ladder Hill; and that some persons, who had advanced therein, lost their way and perished.

But the most remarkable and positive testimony of the existence of "huge forests" on the Island of St. Helena, is recorded on the consultation dated the 12th of July, 1709, in the following words:

"Our necessity is so great for want of coals, that we thought it would have put a full stop to our work, but do find that ebony wood will burn lime, and being informed that there are huge quantities of that wood which lie dead on the hills near Sandy Bay, the Governor and Captain Mashborne went there to view it, and found the report true, for that there is abundance indeed, and just by that place where the wood lies, are mountains of extraordinary lime stone; and it will be much cheaper to our honourable masters to bring lime from thence, ready burnt, (being light) than to fetch that sort of wood (which is very heavy), and bring it to the castle in James's Valley."

We have thus a series of clear and satisfactory evidence that St. Helena, when first discovered, and for many years afterwards, abounded with trees; but of those "huge forests" how few vestiges are now to be seen!

The cause of this sad reverse, in the aspect of the island, is readily ascertained by what is daily passing before us. Ebony, red-wood, white cedar (or gum-wood tree), are all indigenous. They shed great quantities of seed; and numerous plants are seen annually to spring up, where the trees are secured from the trespass of goats, and black cattle. Such is the case at Long-wood: in some places there are absolutely impervious thickets.—Does not this prove what would naturally take place if the young trees remain undisturbed; and that many parts of the island would, in the course of a few years, be again covered with wood?

Those young plants are preferred, by the goats, to the finest pastures: they are consequently, when exposed to their depredations, greedily devoured.*—Even the leaves of the old trees, when within reach, do not escape their ravages. The young trees having been in this manner cut off, and the parent trees having perished through age, it is no wonder there should be no succession; and this is the obvious cause that, since the period of the introduction of goats, this formerly woody island has been wholly denuded. Some of the peaks and highest lands, owing to their steep and abrupt acclivities, are the only places which have withstood their unceasing depredations.

To the goats, therefore, is solely to be ascribed the total ruin of the forests, an evil which is now severely felt by every individual, and which would undoubtedly become much more serious, if the Company should add the freight and charges to the price

* The following extract of a letter from the Government of St. Helena to the Court of Directors, dated 9th of July, 1745, affords a positive proof that the disappearance of the forests of St. Helena is entirely to be ascribed to the goats—and not to any physical cause, or change, which is supposed by a late writer to have produced a similar effect upon some hills in Ireland—that, in former times, were covered with trees.

“Finding,” say the Governor and Council, “that great quantities of ebony trees, which grew in and about *Peak Gut*, in their tender growth, were barked and destroyed by the goats that ranged there, we thought it for your Honors’ interest, for the preservation of the wood, and the welfare of the island, to order the goats there to be killed.”—To this representation the Court replied, “The goats are not to be destroyed, being more useful than ebony.”

Such is the aptness of the seeds of the indigenous trees of St. Helena to take root, that I have often observed myriads of seedlings spring up, amongst the grass, immediately after the setting in of the rains: but these were of course nipt off by the cattle. All that is here stated, and many other circumstances which have come to my knowledge, impress me with a strong conviction that if St. Helena were again uninhabited, and if cattle of every description were removed, for a period of twenty years, the island would again be covered with wood.—*May 1813.*

cheap sort of fence for their stone walls! Besides, if the Palma Christi were extensively cultivated, which might easily be done by making the hedge-rows 20 feet or more in thickness, the people of this island may not only speedily raise fuel, but may also participate in a lucrative branch of commerce, which they have hitherto left to others. It is well known, that considerable quantities of the oil of palma christi are annually sent from India to England, where it fetches a very high price: in no part of the world can it thrive better than at St. Helena.

If the above sort of fences were generally introduced, they would both secure and shelter the lands.—Cultivation might then be carried on with facility, and without interruption, and the Planting Law might be easily complied with; for the lands, at first brought into cultivation, might be converted into plantations of trees for useful timber, in the proportions required by the original tenures. Other lands might afterwards be inclosed and cultivated with corn, potatoes, mangel wurzel, lucerne, guinea-grass, &c. These valuable artificial grasses might indeed be raised among the trees as crops are in Italy: but it is much to be apprehended, that unless the goats, as well as sheep, could be confined, they will defeat every plan of improvement, and will occasion constant vexation from their incessant depredations. Wherefore, as it is morally impossible to restrain those animals without incurring an enormous expense in fencing the lands, there seems to be no other possible mode of checking the further progress of the vast ruin and waste they have committed, nor any prospect whatever of restoring wood to the island, than by their total extermination, retaining only a very limited number of sheep to each land-holder, on condition, however, that they are tended, or confined, entirely to his own lands.

The measure of extermination was resorted to by the planters

of coals. The mischief occasioned by the goats, added to the neglect of fencing, and planting trees, has greatly encreased the demand for imported fuel; and the loss to the Company upon the article of coals, in 1808, amounted to no less a sum than £2729..7..8.

To obviate, as much as possible, a further increase of this expense, it is become absolutely necessary that the utmost attention should immediately be given to those ordinances that regard fencing and planting. It is indeed fortunate there are here some trees or shrubs, of a very rapid growth, peculiarly adapted to the purpose of fences, as well as fuel. Of those, the most valuable for both purposes, is that litherto despised plant the Palma Christi. It intrudes itself every where, and is turned out of every garden and plantation, being considered in no other light than a troublesome weed.—But having remarked how rapidly it becomes a tree, I naturally concluded it might be useful in the formation of fences; and accordingly I commenced an experiment in September, 1809. The seeds were sown and intermixed with some wild brinjal (a species of solanum), upon an elevated bank four feet high, and about six feet in breadth. In the short period of twelve months I have now a beautiful and impenetrable fence about five feet in height. The stems of the Palma Christi are already about two inches in diameter, and the branches are covered with nuts. The success of this trial has determined me to improve the old fences, and to form new ones at Plantation-house-farm, of the above description, about eight or nine feet in thickness. The addition of the blackberry, entwined among the strong stems of the Palma Christi, would undoubtedly make a fence not inferior to the best hedges in England.

What an advantage it would be to the land-holders, and what an improvement in the aspect of the island, to substitute this

in the year 1731, and was completely successful.—Indigenous trees sprang up spontaneously, and many parts soon became well wooded, where no trees had been suffered to grow for many years.

It is therefore evident that the extermination of goats, and a reduction in the number of sheep, cannot fail of being a most important benefit to the whole island: and that, without this previous step, there can be no hope of ever rendering it a valuable property to the Company: and with it, there cannot be a doubt, from the success of trials upon a small scale, in various parts of the island, that every species of improvement in agriculture and planting, might be carried on successfully and extensively, and with infinite advantage to all parties concerned.

I am perfectly aware of the arguments adduced in favour of the goats—I have weighed them maturely, and I am thoroughly convinced the whole are nugatory; for it must be admitted that a few sheep, imported by this Government from the Cape, would lessen, or, perhaps, render unnecessary, any demands on the planters for supplying the Hospital; and that a large stock of hogs, upon every farm, with the limited number of sheep before-mentioned, would be no bad substitutes for the want of goat-flesh. Hogs are also preferable to goats, on account of the great quantities of valuable manure they would produce for meliorating the lands.

There is, indeed, no species of husbandry so well adapted to St. Helena as that of hoggeries.—By their means, the most extensive produce in yams, potatoes, mangel wurzel, &c. might be consumed on the farms; which it would be impossible, in this mountainous country, to carry to market, even if it were in demand. For hogs there would also be a ready sale to the Company (at the English price of pork), for the use of the garrison; and in supplying the other inhabitants: and the planters might feed

themselves and families at home without purchasing and sending for every sort of meat from James's Valley. Moreover, if the island price were lowered, there would be a very considerable sale to the shipping.

What a vast field for improvement in the condition of the planters, and what an incitement to industry does this hold out, compared with their narrow views, in having hitherto no other object or vent for the produce of the lands than what may arise from the shipping that touch here!—When disappointments in their arrival or detention occur, it is not suprising there should be complaints of “no cash being in circulation.” These would undoubtedly be removed, if industry and agriculture were extended; which are, in every country, the most efficacious means of promoting the prosperity of the people.

In respect to the goats, it would be very unreasonable to expect that any considerations of a selfish nature, or the mistaken prejudices of a few, should counteract what is obviously for the good of the whole. That the exercise of the right or privilege of the goat-ranges has ever been, and still continues, a most intolerable abuse, will not be denied. Those ranges were limited to certain spots: but what has been the result? The proprietors of goats never trouble their heads about where they browse, and as they are of course *never* looked after but on pounding days, they are seen daily to range every where; and thus a limited privilege, to a few persons, has absolutely given them the range of the whole island!

To attempt to confine them, as originally intended when that privilege was granted, would be an endless labour: and, without the most vigorous enforcement of this condition, the evils which have happened were naturally to be expected. Wherefore, the institution of goat-ranges must appear to every unbiassed person

hitherto been unproductive. Fruit trees of every sort, vines, sugar canes, coffee, and cotton, would all thrive luxuriantly in those warm and well sheltered situations. Fences would almost be unnecessary, since the steep declivities on either side, would sufficiently protect the plantations from the trespass of black cattle.

Although there were, according to the returns in December 1809, 1811 sheep and 2887 goats on the island, in all 4698, none have, for many years past, been brought to market; and the export to shipping has very much diminished, owing to the prices having risen about three-fold during the last twenty years. In 1789, 109 goats, and 201 sheep were sold to the ships: whereas, in 1809, the total numbers were only 6 goats and 22 sheep; and these last were imported from the Cape. What then is the use of maintaining such large flocks, since they neither contribute to the refreshment of ships, nor to the comforts of the community? A few individuals may indeed prefer them to hogs; and derive convenience from their mode of keeping them, because it is neither attended with labour nor expense. But whether this trifling advantage to a few, attended with an intolerable nuisance to the whole, should supersede the infinite and important benefits which would result to the island, to the Company, and even to the proprietors of goats and sheep, by their extermination, is a question which the preceding inquiry may possibly determine.

20th September, 1810.

to have been injudicious ; and by no means calculated to produce any advantage that could compensate, even in the smallest degree, the manifold evils and vexations that have resulted from it. It is indeed surprising that a privilege so extraordinary, so grossly abused, and so ruinous in its consequences, should have been quietly borne by the inhabitants at large for so many years.

By the measure of extermination all would benefit.—The owners of goats and sheep would not be losers—if they were to receive from the Company a fair and reasonable price for their goats and sheep. These might speedily be consumed by issuing them to the garrison, without any extra loss being incurred by the Company in thus giving rations of fresh instead of salt meat.

The owners might also be repaid the *bona fide* price they gave for the goat-ranges, which would indeed be the only charge to the Company attending the arrangement I have suggested ; and if it were carried into effect, those ranges, and many other places, might be sown with the seeds of all sorts of indigenous and other trees ; for where trees formerly grew, it may be presumed they would grow again. This was indeed proved, as already noticed, after the destruction of the sheep and goats in 1731.—Should this measure, therefore, be again carried into effect, and the improvements of planting and fencing carried on with spirit, there would soon be no want of fuel, nor any impediment to agriculture ; and after a few years, the inhabitants might again have restored to them a privilege of cutting wood on the goat-ranges, similar to that which they enjoyed of cutting fuel from the Great-wood. Whatever trees are thus planted, should be for the benefit and use of all the inhabitants.

If the goats and sheep were removed, many valuable orchards and gardens might easily be established in those well watered ravines or vallies which, on account of their depredations, have

SECTION II.

Experiments in the Culture of Potatoes—Comparisons of Manures—extraordinary Power of Guana, or Sea-fowl Dung, as a Top-dressing—Hints to Proprietors of Islands and Rocks in Scotland.

IN a place which has, for many years, been almost wholly dependent on foreign imports for the common necessities of life, and where neither commerce nor manufacture finds employment for industry or exertion, there can be no duty more incumbent on persons entrusted with its management, than a due attention to those means that are the most likely to augment its internal resources.

From the earliest period of its establishment (in 1673) to the present time, the most positive orders to favour and encourage agriculture have been sent by the Honourable the Court of Directors. It is, therefore, in obedience to those repeated orders, that I have endeavoured to discover the capabilities of the soil, and the modes of cultivation the best suited to the circumstances of this island. I have accordingly, in the Abstract of the Laws and Ordinances, and in the papers relating to the goats, embraced every occasion that offered of stating the results, and of introducing my opinions. I have also, I trust, proved, that immense advantages would arise to the land-holders if they were to allot a certain selected portion of their pasture lands to the culture of corn and artificial grasses, to the planting of trees, and to the introduction of hedge-rows.

Those opinions being founded on a variety of experiments, and the results having been most carefully ascertained, under my own

inspection, I can vouch for their accuracy. I feel a confidence, therefore, that whoever may hereafter make similar trials will not be disappointed. But I must here apprise experimenters, that a first crop, from land newly brought into cultivation, is generally much inferior to the succeeding ones.—I found an acre of land, which, upon breaking up, produced only 324 bushels of potatoes, yielded a succeeding crop, planted immediately after, of 522. I ascribe this improvement to the repeated stirring of the soil, by which the fertilizing influence of the rains and atmosphere were admitted. Upon these two crops no manure was used; and as potatoes are known to exhaust fertility, it might have been expected the second crop might have been less instead of greater. Hence, it seems probable, the deterioration of the soil does not take place until some time after the land is brought into cultivation.

Mr. Tull, an Oxfordshire gentleman, who published a Treatise on Husbandry, about forty years ago, speaking of the great advantages of frequently stirring and pulverising the soil, relates that a little farmer, having prepared his field for sowing, could not raise money to purchase the seed until he had lost the season; he therefore kept on ploughing, at proper intervals, until the next season arrived, when he compassed to plant his field. At harvest, his crop was so abundant, that its value was more than sufficient to pay the fee simple cost of his field. The effects, from frequent stirring of the soil might readily be determined, by comparing the produce of a square rod of ground, planted with potatoes after being stirred four or five times in as many months, with that of an adjoining space, of the same extent, planted at the time of breaking up.

On my arrival, in 1808, I was desirous of obtaining information upon the modes used here in the culture of potatoes :

an advantage is this, in a place where the scanty means of labour are generally complained of!

It will be observed, by the table of experiments, that the greatest produce was at the rate of 648 bushels per acre. This was from No. 5, in the division manured with horse dung: but even a greater rate of produce was had from a portion of the unmanured acre, which yielded the 522 bushels before mentioned. I ascertained that 30 feet of the rows of this acre, twice repeated, and taken indiscriminately, produced of fine large potatoes 52 pounds: or, as will be hereafter explained, at the rate of 674 bushels per acre.

This was also greatly surpassed by an experiment upon one kidney potatoe. It was cut in eleven pieces, which were planted in a single row, at one foot asunder, on the 5th of April, 1810, upon ground very highly manured with hog's dung. Nine of the sets only came up, and these occupied one row that measured nine feet. On the 8th of August, 1810, when the haulm had fallen, the potatoes were taken up, and weighed $21\frac{1}{2}$ pounds averdupois; which is in the proportion of 929 bushels per acre.

These well ascertained facts will, I hope, draw the attention of the planter to the row culture; and to establishing farm-yards, and hoggeries, for the purpose of manuring their lands. They might then make experiments for themselves, which I am confident would soon induce them to change their present modes of husbandry; because these are evidently far less profitable, and must, in the course of time, infallibly exhaust, and ruin their plantations.

The spot selected for experiments is in the front garden at Plantation-house. It was exactly a square chain, or the tenth part of an acre; and was, at first, divided into four equal parts

but I soon perceived, from the vague method of estimating the produce by the returns from the seed sown, without any account being taken of the quantity of land occupied by the crop, that no useful deductions could be drawn, nor any comparison made between the potatoe lands here and those in England.

I learnt, however, that two crops (or more) annually were obtained from the same land ; and that these were had, in a continued succession, during a period of 12 or 14 years, without the application of any sort of manure. This, I confess, surprised me. I heard also of " self-sown crops," that is, of leaving in the ground, at the time of digging, a certain portion of the potatoes for a succeeding crop.

This unusual course of husbandry led me to infer that a much better mode might be adopted (which is indeed practised by some of the gentlemen-planters) : and, in order to satisfy myself on this point, I resolved to commence a series of experiments, which should embrace the following essential points in the culture of potatoes ; the proper depth of planting—the best sort of seed—the advantage of the row culture—and the improvement by manuring.

The returns of 10 or 15 bushels for one sown, were, in general, deemed good crops ; but my experiments have proved that these are very inferior to what can be obtained under a different course of management.

Supposing 13 bushels to be the usual quantity of seed required to plant an acre, the returns above stated would be no more than 180, or 270 bushels per acre. According to the following table it will be seen, that by the new culture, and the aid of manure, the acreable produce of the potatoe lands may be augmented, upon an average, to nearly three times those quantities. What