SUGGESTIONS

RELATIVE TO THE

PRESERVING THE HEALTH

OF THE

Troops in the West Indies,

CONSISTENTLY WITH THE

DEFENCE OF THE ISLANDS.

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PREFACE.

ANY plan which has for its object a mitigation of the calamities unhappily attendant on war, and the preservation of the Soldier's health, will be considered, I trust, not altogether unworthy attention.

It was with this view the following pages were written. The evils there pointed out for remedy, at all times alarming, are particularly so at the present critical juncture, which demands more loudly than ever, that some scheme should be matured, and without loss of time acted on, to save the lives of our Soldiers.

Of the suggestions, here offered, on the mode of preserving the health of our Troops in the West Indies, the greater part

is

is taken from the publications of medical men on the subject: They are the fruit of their experience on the spot; and the reasoning is deduced from facts.

Ten years experience of hot climates, (seven of which were spent in the various Islands of the West Indies) have convinced me of the justice of their remarks. I believe no one, who has had the same opportunity of observation, ever can, or has differed in opinion.

The only point therefore to be considered, is, whether the suggestions offered can be adopted consistently with the defence of the Islands. That is what is here investigated.

SUGGESTIONS

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RESPECTING

The Health of the Troops in the West Indies,

&c.

THE mortality that prevails among our troops in the Weſt Indies is a fact too well known to require any proof. Every perſon, having acceſs to the documents on this ſubject, knows; that it is a common caſe for a regiment to loſe in three years a number equal to its complement: and that, in ſome ſituations, whole regiments have in a few months been entirely ſwept off. An evil of this magnitude, ſo painful to humanity, and ſo injurious to the ſervice, may juſtly claim the attention of Government.

Some medical men of eminent ability have ſuggeſted means by which the evil might be remedied, but what they have written has not, I fear, been ſufficiently attended to.

Doctor John Hunter,[X] in his treatiſe on the diſeaſes of the army in Jamaica, makes the following remarks.—" The diſorders that prove fatal to ſoldiers " and Europeans, in general, in the West Indies, are " of two kinds, namely, fevers and fluxes; they are " concomitants of armies in all parts of the world,

X Superintendant of the military hospitals in Jamaica during the years 1781-82-and 83.

" but in tropical climates they rage with peculiar
" violence. They proceed from the ſame cauſe,
" noxious exhalations from wet, low, and marſhy
" grounds—That ſuch vapours are the cauſe of
" fever has been confirmed by repeated experience
" and obſervation in all parts of the world.

" Towards the production of ſuch noxious va-
" pours there appears to be wanting the concurrence
" of three circumſtances, heat, moiſture, and
" decayed vegetable and animal matter. The heat
" of tropical climates though generally reputed the
" cauſe of their unhealthineſs, will not alone
" produce fevers, as is ſtrongly exemplified in thoſe
" living on board ſhip who remain free from
" fevers.

" Dead vegetable and animal matter do not ſend
" forth noxious vapours unleſs in a ſtate of corrup-
" tion, for which, a certain degree both of heat
" and moiſture is neceſſary—Hence marſhes in a
" hot country are always unhealthy. The dry part
" of the country continues healthy during the hot
" weather, but as ſoon as the rain ſets in it becomes
" unhealthy. After heavy falls of rain, every part
" of the flat country ſeems to exhale the ſame
" noxious vapours as marſhes; for the moiſture
" never fails to meet with ſufficient quantity of
" decayed vegetable or animal matter, dried and
" preſerved by the preceding heat.

" In dry ſandy ſpots, nearly ſurrounded by the
" Sea, there is little or no decayed vegetable or
animal

" animal matter, and there is no moiſture, for the " rain is immediately abſorbed by the ſand: ſuch " places therefore are healthy, and almoſt exempt " from fevers. Elevated and mountainous ſitua- " tions are alſo healthy, becauſe the noxious " exhalations ariſing from the low grounds are ſo " weakened by diffuſion in a great maſs of air as to " loſe their deleterious effects; and what there is of " decayed vegetable and animal matter is waſhed " away by the frequent rains, which do not pene- " trate the ground, but in running off carry " whatever is light and looſe along with them.

" Of elevated and mountainous ſituations, it " may be obſerved, that they are more uniformly " healthy than dry and ſandy places upon the " coaſt; for the neighbourhood of marſhy ground " or ſtagnant water, often renders theſe laſt un- " healthy.

" How much it contributes to health the being " raiſed even a little above the exhalations may " be judged from this, that in the flat part of the " country the houſes on a level with the ground, " or but little raiſed above it, are uniformly the " moſt unhealthy. In the barracks in Spaniſh " town, in Jamaica, upon inveſtigation, it was " found that three were taken ill on the ground " floor, for one on the upper."

Doctor Rollo† confirms theſe remarks, by ob- ſerving " that on the choice of ſituation of the " ſpot on which we fix our reſidence, though it

† Now Surgeon General and Inspector of the hospitals to the artillery at Woolwich.

" be but temporary, principally depends the " preſervation of health in the Weſt Indies;" and he quotes Doctors Lind and Monro to prove the ſuperior advantage of elevated ſituations.

Doctor Lind's words are theſe—" Experience " fully confirms this truth, that in ſuch elevated " and temperate ſituations, where the ſoil is dry " and gravelly, and clear from wood, ſhrubs, or " ſtagnating water, Europeans enjoy good health " in the hotteſt climates, during all the ſeaſons of " the year."

Doctor Monro was a long time at the head of the hoſpital department in the Weſt Indies, his opinions therefore carry great weight, and he affirms that the moſt healthy ſituations in warm climates are thoſe on the ſides of hills or mountains, where the ſoil is dry, and clear from woods and ſtagnating water, and where there are no moraſſes within three miles.

Experience confirms the juſtneſs of theſe remarks. Doctor Hunter ſtates that the 66th Regiment during the ſix years it was ſtationed on Berkſhire hill St. Vincent, loſt only 72 men. He farther obſerves, that when the 19th and 30th Regiments were quartered in 1782 and 1783 in the barracks on Stoney hill in Jamaica, they were as healthy as they would have been in England. They ſeldom had more than 20 ſick in hoſpital, and the number of their deaths was inconſiderable. The ſtation indeed was not very elevated, but even there the

air was of a temperature 10° cooler than in the low country.

There are ſome obſervations of Doctor Hunter which place this ſubject in a very ſtriking point of view, and ſtrongly confirm the above remarks. He ſays, "If we may be allowed to make the ſuppoſition " that quarters had been provided for the troops " in ſuch ſituations, of 5250 men loſt to the ſervice, " there would have remained at the end of three " years and a half, 3500 fit for duty, ſuppoſing " them to have been placed at Stoney hill, and to " have ſuffered the greateſt loſſes that have hap- " pened in that quarter." This would be a ſaving of 1000 men per annum. Nor are theſe advantages confined to Jamaica, for as the ſame author obſerves, " Prince Rupert's bay in the iſland of Dominica " is a very unhealthy place; owing to the marſhes " at the bottom of the bay: one ſide of the bay is " formed by a projecting headland, called Prince " Rupert's head, which is elevated ground, but " of unequal heights—There are ſeveral barracks, " or ſtations for troops upon it, which are more or " leſs healthy in proportion to their elevation."

" Douglas bay barracks are 110 feet above the " level of the ſea, and are the moſt ſickly; Fort " Shirley is 150 feet, and the Royal Engineers' " quarters 165 feet, and are leſs ſickly; the inner " Cabrite, and the outer Cabrite, the firſt 430, " and the ſecond 590 feet high, have been found " very healthy. Theſe are ſmall elevations, to

produce

" produce effects ſo conſiderable; but the aſcent
" is ſteep, and to that in part it may be owing;
" for a gradual aſcent, by a ſloping plain to a
" much greater height, would not probably pro-
" duce an air ſo ſalubrious."

" The town of St. George in Grenada lies low,
" and there is marſhy ground in the neighbour-
" hood; the troops in ſuch ſituations have always
" been unhealthy, but the high grounds adjoining
" have been found very healthy. Morne Cardigan
" is about 500 feet high; and Richmond heights
" 730 feet. Theſe ſtations are very healthy, though
" their height be inconſiderable for a Weſt India
" iſland."

Doctor Lempriere,* who wrotè in 1799, confirms Doctor Hunter's opinion with regard to the advantage of high ſituations; and particularly mentions Stoney hill—He adds, that the troops quartered at the Maroon town in Jamaica, the higheſt poſt in the iſland, have always enjoyed good health, even more ſo than at Stoney hill—The Thermometer ſeldom riſes higher at the Maroon town than 70° in the day, and at night ſometimes falls as low as 50°.

Theſe facts prove, I ſhould think, inconteſtably, that the dreadful mortality among our troops in the Weſt Indies is to be referred, not ſo much to the climate, as to fixing on improper places for their quarters. To eſtabliſh beyond the reach of doubt the truth of this poſition, let me

* Superintendant of military hospitals in Jamaica from 1792 to 1797.

me remark, that in America, even under the line, the coloniſts ſo long as they remain in the elevated ſtations, enjoy as good health as in their native countries; but when they deſcend into the low country, they are as ſubject to the diſeaſes incidental to ſuch ſituations, as newly arrived Europeans—in like manner if an inhabitant of Santa Fé, or of the interior of Mexico, come down to Carthagena or Vera Cruz, he is as liable to fever as a ſtranger. From all which circumſtances we conclude, that high ſituations are not only comparatively more healthy than low ones, but that, ſuppoſing them out of the reach of the noxious vapour, they are abſolutely exempt from thoſe diſorders that deſolate the plains beneath.

Should it be objected that the mountains by attracting the clouds muſt have a more humid atmoſphere, and thus, inſtead of preventing, give birth to diſeaſe, I would reply, in the words of Doctor Hunter, "that a moiſt air of itſelf does not "produce fever;" and as to the mere circumſtance of moiſt air, as every Engliſhman is inured to it from his infancy in his own country; there is little probability of its hurting him in the Colonies, at leaſt in any other way, than by giving him cold, to which he is equally liable in England.

This objection therefore is futile, while the advantages reſulting from an elevated ſituation, particularly from the coolneſs of the nights, are incalculable. Thoſe who have been in the Weſt

Indies

Indies need not be reminded how weakened a perſon feels after a night ſpent without reſt, owing to the cloſeneſs, and heat of the air, which almoſt always prevails, in low ſituations, and brings with it the tormenting accompaniment of ſwarms of moſkitoes. Thus oppreſſed by theſe united evils, the ſoldier endeavours to find relief by lying down in the open air, or admitting the damp breezes of the night to blow upon him: "cauſes, which, of "themſelves, powerfully concur, in rendering fevers "both more violent and more frequent†;" beſides which, "every thing that weakens or exhauſts the "body, would ſeem to co-operate in giving force "to the original cauſe of fever‡." In elevated ſituations, moſkitoes are hardly ever found; the coolneſs of the night invites to ſleep, refreſhes and invigorates the body; and the ſoldier, for his own comfort, excludes the damp breezes of the night, which there, would be unpleaſantly cold, and conſequently avoids one of the principal cauſes of diſeaſe.*

In cool and elevated ſituations, thirſt is leſs excited; and if the barracks are at a diſtance from the town, it may be poſſible, perhaps, with proper precautions, to prevent the men from getting the

† ‡ John Hunter.

* "In elevated ſituations; in abodes not infeſted by marſhy "exhalations; and where the atmoſphere is generally temperate "and ſerene, fanned occaſionally by cooling breezes, the night "air is less hurtful and dangerous."—Vide Doctor Rollo, p. 18.

new

new rum, which liquor is another cauſe of diſeaſe, not indeed producing fever of itſelf neceſſarily, but giving riſe to irregularities, which do produce it, and has alſo the effect of inducing that ſpecies of colic*, which not unfrequently occaſions palſies of the extremities, and renders the ſoldier an invalid for life.

Doctor Hunter obſerves " that after having ſelec-
" ted a healthy ſituation for the troops, in order that
" they may reap the full benefit of it, care ſhould
" be taken that they be not permittted to go down
" to the low grounds, for if they are, they will
" infallibly carry fevers up with them. One great
" advantage of negro troops would be, to remove
" all neceſſity or even pretence of ſending the
" European ſoldiers from ſtations of this kind; *for*
" *by employing the negroes on such occasional duty*
" *as might occur in the low ground, the Europeans*
" *would not be at all exposed to the causes of disease.*"

To the opinions of theſe authors, let me add the ſentiments of ſome perſons whoſe abilities and experience cannot but have great weight. The firſt I ſhall mention is Mr. Home.[X] His profeſſional ſkill is too well known, to make any comment on this head neceſſary. He has viſited moſt of the Leeward Iſlands, reſided eight months at St. Lucia, and was afterwards ſurgeon to the iſland of Jamaica. Many

* Owing to it's containing a solution of lead, supposed from it's dissolving the lead of the worm of the still, which it deposits after having been kept about a year.

[X] Member of the Royal College of Surgeons

of the opinions here advanced, he himſelf pointed out; and my own previous obſervations, his experience confirmed. I have his permiſſion to refer any perſon to him, who wiſhes for more minute information.

I ſhall next mention Sir Wm. Young.[X] The rank he holds in this country, the great eſtates he poſſeſſes in the Weſt Indies, and above all the pains he has taken to inveſtigate the ſubject, in all that regards the civil and commercial intereſts both of this country and it's colonies, render his opinions of great authority.

He obſerves, that "the chief towns in the iſlands, "for the convenience and purpoſes of trade, are "ſituated in bays to leeward, as ſuitable to "ſhipping, both for ſhelter and ready departure; "theſe bays, for the moſt part, are formed, and "cloſed in, by an amphitheatre of hills; and the "town on the beach is backed by ſome portion of "plains, or lowlands, running to the foot of the "ſurrounding heights. In the wet yet ſultry "ſeaſon, and when the air is leaſt ſalubrious, it here "loſes all vital elaſticity and circulation; and "ſhut up from the eaſtern current of the trade "winds, animating more open ſituations, oppreſſes "with cloſeneſs and languor even thoſe moſt "accuſtomed to the climate and country: but "further, the lowlands to the back of the town, "are, in the rainy ſeaſon, to a degree inundated by "drippings from the ſurrounding hills, and form

"beds

[X] Late member of Parliament for St. Mawes.

" beds of mud and marſh, which, under the ſultry
" heats, emit vapours peſtilential to the vicinity.

" Lowland towns, then, are not the proper
" ſtations for European troops; nor are poſts
" however high up the country, which are to
" leeward of wet and marſhy plains, the exhalations
" from which, by the courſe of the trade winds,
" bear directly on the garriſon: and this remark
" applies eſpecially to the fortreſs adjoining Scarbo-
" rough, in Tobago, which is affected and poiſoned
" by the marſh of Bacolet contiguous to windward.

" Dry ſituations, with a free current of air, are
" of the firſt importance to the health of troops in
" the Weſt Indies: and the objections to ſuch
" ſelection of ſpot, which may ariſe from the
" neceſſity of guards, and poſts of vigilance and
" defence, near to the ſeat of government and
" trade, might, to a great degree, be obviated, by
" furniſhing detachments, and frequent reliefs, for
" the duty required;* reſerving the main body,
" and head quarters, at a ſtation choſen with a
" regard to health.

" In new and moſtly unſettled countries, ſuch as
" Trinidad, the ſelection of military ſtations, with
" regard to health, may be difficult, but is moſt
" important. The large tracts of uncleared wood,
" cover as it were, one general marſh: the foliage

* This duty should be done by the Black Corps. See Hunter's opinion, page 9.

" of the trees not deciduous, or ever revegetating,
" and fully ſupplied, lets through the rain, and
" ſhuts out the ſun, ſhading and protecting the bog
" which hath thus been created; and thence in
" the autumnal evening, from the platform of
" every grove, a fetid vapour is ſwept on by the
" eaſterly wind, or land breeze, as may be, and in
" every quarter to leeward is to be ſmelt, taſted,
" and felt, as a poiſon to life.

" In ſuch countries, without any deference to
" the Commiſſary, and the ſituation of his ſtores,
" and to his or any other perſon's convenience
" whatever, concerned in furniſhing ſupplies to
" the ſoldiery, every other conſideration ſhould
" give way to that of the health of the main body in
" garriſon, and the ſtation moſt ſuitable in this
" reſpect ſhould at all events be preferred*

" In times of peace, and at all times, as far as is
" conſiſtent with the ſervice, the principle of
" ſacrificing all other conſiderations to thoſe of
" health, in the ſelecting military ſtations being
" admitted, its application muſt be the reſult of

* That Sir Wm. preferred high situations for the troops may be gathered from the following observation (p. 224) " I have men-
" tioned that in 1792, when I was in Grenada, the 48th Reg. had
" suffered most severely from sickness in the old Spanish fortress
" on the beach: I will add, that at the same time the 67th Reg.
" stationed on the heights behind the house of my friend General
" Mathews, the Governor, where I resided, had been generally
" healthy, and lost very few men."

" inquiry and experience: I merely ſuggeſt and " plead for its more general adoption.

" Our excellent Officers in command will ever, " as far as depends on them, take neceſſary precau- " tions for the health and comfort of the ſoldier; " but in many caſes, barracks have been already ill " built, and ſtations ill choſen; there they are: no " other place of reception is provided; and thither " the officer muſt march his men, to die, where " others have died before!"

Since then it appears from the above facts, and from various others, which might be adduced, that low ſituations are almoſt uniformly unhealthy to our troops, and elevated ones properly ſelected, not only comparatively healthy, but even as much ſo as the ſtations commonly aſſigned in England (if they are not ſuffered to go into unhealthy ſituations, and to carry back with them the ſeeds of diſeaſe.) It only remains to be inveſtigated, whether ſuch poſitions can be taken up conſiſtently with the ſecurity of the iſland.

Upon this ſubject I ſhall begin by obſerving, that a garriſon enervated by the diſeaſes of the low countries, can never preſent an effectual re- ſiſtance to an invading enemy, even for a ſingle attack; much leſs for a protracted conteſt in the field; while on the other hand, I am within the truth, in ſtating that a body of troops in health and habituated to the climate of the Weſt Indies, are more efficient than double their number, ſent direct from Europe.

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If therefore by ſtationing your Weſt India troops in elevated ſituations, you in the firſt place ſave three fifths from death or decrepitude: and if ſecondly, you ſecure their being always efficient, it is evident, that the adoption of this meaſure would enable us to defend our Weſt India Iſlands with a much ſmaller proportion of troops than are now ſent from this country.

But it will be aſked, can the troops placed in elevated ſituations, choſen principally with the view to health, execute the objects for which troops are ſent to the Weſt Indies, can they defend the town and ſhipping, and maintain the ſovereignty of the iſland?

In anſwer to this I ſhall obſerve, that the ſovereignty of the country can never be ſecured but by having efficient troops: and theſe can be preſerved ſuch in the Weſt Indies only by quartering them on elevated ſituations, which, I need hardly obſerve, are not only the healthieſt but alſo the ſtrongeſt ſituations.

Let us ſuppoſe the other method were adopted, that a poſition be taken up in the low country, and that the defence of the town and ſhipping be made the main object, to which every other conſideration is to be ſacrificed, ſuch a poſition cannot be fortified but at an enormous expence; to which, if the neceſſity of renewing the garriſon in proportion as it periſhes by ſickneſs be added, it will be found, that the defence could not be

carried

carried on in this manner, but at a waſte of men and money that this country could not long ſupport; and after all, the garriſon may be ſo weakened by diſeaſe, at ſome emergency, as to render it incapable of making any defence. In April 1782, when Jamaica was threatened with attack, though upwards of 7000 men had been ſent there in the three preceding years, there were not above 2000 men fit for duty.

That poſitions may be found embracing equally the object of defence and health, is proved by that of Fort George in Trinidad. That they are not always to be found ſhall be admitted. Nevertheleſs ſituations may in general be found in the Weſt India Iſlands, at no great diſtance from the principal towns, uniting the advantages of health and defence.

The mountains in that country for the moſt part exhibit a ſucceſſion of prominent ridges, in the form of counterforts; and deep ravines formed by the torrents. Their ſides are rugged and ſteep, and not unfrequently hardly acceſſible except by the beforementioned ridges. If therefore you ſcarp the ſides of the hill; and cut through the ridges which lead to it, you already have a very ſtrong poſition: if in addition, you command theſe ridges by works, you convert it into a ſtrong fortification, and at a ſmall expence.

Another very great advantage, mountainous poſitions in the Weſt Indies always muſt poſſeſs is, that

that when they are inſulated, the enemy muſt have conſiderable force to inveſt them completely; for, whilſt you occupy a point at the top, he muſt occupy a very great extent at the baſe, or leave your communication open with the country, by which you may receive every kind of ſuccour.

At firſt ſight it may appear that by occupying the creſt of the branches or ridges, that project from the mountains, you completely block up the garriſon; but it muſt be obſerved that, theſe ridges are in general ſo inſulated from each other by the ſteepneſs of their ſides, and by the deep ravines which intervene, that the enemy's poſts placed on them, would each run the riſk of being attacked ſeparately, without the poſſibility of receiving aſſiſtance from the others, unleſs a line of contravallation was drawn round the whole hill, a work of enormous labour, and ill ſuited to the conſtitution of European troops in ſuch a climate.

That we have not hitherto occupied ſuch poſitions, I conceive to have been owing to a dread of the expence that would be incurred in tranſporting materials for building, military ſtores, proviſions, &c. to elevated poſitions, more than any other cauſe; for ſuch an arrangement would by no means preclude the poſſibility of defending both the town and ſhipping, and that nearly as effectually as by any other mode hitherto adopted.

To incloſe Weſt India towns with fortifications would be a fatal attempt, becauſe, by obſtructing

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the free circulation of air, they would be rendered far more unhealthy than they are at preſent, this has been proved in ſeveral inſtances; beſides which, the towns being thus fortified would inevitably be deſtroyed by fire, in caſe of bombardment, the houſes in that country being built of wood, a calamity ſurely much greater than that of paying a contribution, the utmoſt that could befal an open town. For theſe reaſons therefore it has always been judged prudent to occupy ſome point, or points, near the town and harbour, to defend the acceſs to both. But then it rarely happens that you can do this effectually, without taking up ſo many points, and thoſe ſo diſtant from each other, as to require almoſt an army to defend them.

I would venture to ſuggeſt therefore, that the beſt general plan of defence would be to occupy ſuch points on the coaſt and harbour, as more immediately command the acceſs to both, with ſuch works as ſhould require few men, *always to be taken from the negro corps.* Theſe ſhould ſerve as advanced poſts; nor ſhould the white troops ever be detached from the principal poſition till the enemy were in ſight.

The poſitions occupied being ſtrong by nature and art, might be defended with few men; ſtrong detachments could therefore be made at the moment of attack, theſe conſiſting of men who are (if I may venture to adopt the expreſſion) acclimated, healthy, and vigorous, would enter the

conteſt with an enemy probaby poſſeſſing none of thoſe advantages; the acceſs to the ſhipping and town thus defended by a moving force, ſupported by the fortified points, would probably be effectually protected, at all events, in caſe of defeat an eaſy retreat lies open to the principal poſition.

When an enemy in that climate of debility and languor looks up to an immenſe mountain, every ſtep of which he has to fight his way, and to drag up the heavy materials for a ſiege along with him, he will probably not riſk the attempt, or if he does, pay ſeverely for it.

But an objection will be ſtarted. Such poſitions may not be to be found but at a conſiderable diſtance from the coaſt, and conſequently they will be ſubject to have their communication with the ſea cut off. This puts the caſe in the worſt poſſible point of view: nevertheleſs I would ſtill take up a poſition, poſſeſſing the advantages of health and ſtrength, for this reaſon, becauſe, though it would be more difficult to derive ſuccours from a fleet, it would alſo be more difficult for the enemy to make his attack. He has all his heavy ſtores to carry into the interior for the ſiege, and as he muſt leave part of his troops upon the coaſt, he will have fewer troops to inveſt the place, whilſt he will have a greater extent to occupy. We, on the other hand, could defend ourſelves with little risk of loſing our men; and in this event, with the certainty of the enemy loſing many of

his,

his, eſpecially could the defence be protracted till the rainy ſeaſon: his difficulties, in inveſting the place conſtantly increaſing, when our ſuccours arrive, he muſt either leave troops to continue the blockade, and meet the ſuccouring army, with his corps diminiſhed in numbers, and enfeebled by diſeaſe, or he muſt withdraw his whole force, and leave us at liberty to fall on his rear, whilſt he is himſelf attacked in front by the forces newly arrived: and this may ſerve to anſwer the caſe ſuppoſed. I feel confident however, that ſo long as we can command the ſea (when we cannot it will be uſeleſs to think of defending our Colonies) no enemy would run the riſk of loſing both fleet and army in an almoſt hopeleſs attack.

I muſt again have recourse to Mr. Hunter's book, in corroboration of what I have juſt aſſerted, as his opinion is ſupported by that of a perſon of diſtinguiſhed military talents.

He ſays, (page 61) "To conclude, the intereſt "of government, the ſafety of our Weſt India poſ-"ſeſſions, and the calls of humanity, are all "equally concerned, in providing quarters for the "troops in healthy ſituations. That ſuch are to "be found in the Iſland of Jamaica, is proved "by full and repeated experience; and there is "this further to be ſaid in their recommendation, "that they are in general favourably circum-"ſtanced for the defence of the country. Stoney

" Hill,* of which mention has ſo often been made,
" was deemed by Sir John Dalling and Sir Archi-
" bald Campbell, both officers highly diſtinguiſhed
" for their military knowledge, a moſt advanta-
" geous poſt for the defence of the Iſland."

But I have admitted, that a formidable objection againſt occupying high poſitions, ariſes from the expence of conveying to them, building materials, ordnance ſtores, proviſions, &c. it becomes me therefore to obviate this difficulty, which I would do by conſtructing ſuch machinery as will render it almoſt as little expenſive, in this reſpect, to occupy thoſe poſitions, as the poſitions in the low country.

The firſt object ſhould be to occupy a high and healthy ſituation, as near the coaſt and principal town as could be procured, and commanding the principal harbour, or ſome other if poſſible, capable of containing and defending the royal and merchant ſhips.

In this ſituation, which we ſhall ſuppoſe ſtrong by nature, (moſt of the mountains in the Weſt Indies being acceſſible only by extremely ſteep aſcents) the principal depot ſhould be formed; and as the ſteeper the hill is, the ſtronger and healthier the poſition,† ſo will the plan of ſupplying it be more eaſy of execution.

* Stoney Hill is 10 miles from Kingston, in the interior.

† John Hunter, p. 307, and p. 9 of these suggestions.

If

If it be aſked how high we are to go before we arrive at an healthy ſituation, without going too far, which would only ſerve to increaſe expence beyond what is neceſſary? I anſwer, this queſtion remains to be ſolved, we do not poſſeſs a ſufficient knowledge of the country to decide it; but I conceive ſuch knowledge might eaſily be procured. We ſee, however, that at Prince Rupert's Bay, a height of only 590 feet ſecures to a certain degree, the health of the troops ſtationed there, notwithſtanding they are immediately above a noxious ſwamp, which they muſt be conſtantly paſſing and repaſſing in going to and from the main iſland. Morne Cardigan and Richmond heights, in Grenada, although the latter is only 750 feet high, and the former 500, are found comparatively healthy ſtations, and perhaps, if the troops were not permitted to come into the low country, a much greater number might be ſaved. The height of Stoney Hill, which is one of the healthieſt poſitions we know of, in the Weſt Indies, is not aſcertained; but we know that the temperature of the ſprings there, which is ſuppoſed to give the mean temperature of the air, is 71° of Fahrenheit, about 10° lower than what it is upon the coaſt. The thermometer therefore for the preſent may be conſidered as a ſufficiently accurate criterion to decide the point, and we ſhall conclude that a place where the mean temperature of the air is ſomewhere about 71°. would be an eligible

ſituation

ſituation for troops; ſuppoſing always that it be dry, airy, and at a ſufficient diſtance from ſwamps.

It being a material object in the plan to keep every ſpecies of military ſtore out of the reach of the negroes, and even of the negro troops, that they might not have the means of arming others, I would have the depot in the principal fort, which ſhould be garriſoned by white troops excluſively. And this I would do, from the maxim laid down by Sir William Young, that, the ſpirit of revolt is ever to be awakened by the facilities of revolution: and as keeping military ſtores in inſecure ſituations affords the very facility to be guarded againſt, it ſhould never be permitted.

The method I would propoſe to carry the ſtores, &c. to the elevated ſituations, is the ſimple inclined plane, with a power at the top to raiſe the weight, to act either by the impulſe of wind, water, or ſteam, or occaſionally by cattle.

An inclined plane of this nature is to be found in Glamorganſhire, where a ſteam engine of a fifteen-horſe power, carries 4 tons of iron ore up a regular aſcent of 940 yards in 15 minutes, and a perpendicular height of 512 feet.*

Upon

* Since writing these ſuggeſtions, the Board of Ordnance did me the honor, upon my application, to permit me to take Mr. Rennie's (the civil engineer) opinion, upon the beſt kind of power to be applied to an inclined plane of 950 yards in length, which it is propoſed to make at Fort George, in the Iſland

Upon this principle every kind of ſtore might be eaſily conveyed to the higheſt ſtations, and ſufficiently rapid for every military purpoſe: eſpecially as this mode of raiſing the ſtores would not prevent, when wanted, the employing the method in uſe at preſent; but there can be little doubt that the mode propoſed would be fully ſufficient.

With regard to the ſupplying of ſtores from this depot to the different points where they might be wanted, eſpecially on the approach of an enemy, I have to obſerve, that any quantity of ſtores may be ſent down from an elevated poſition, with much more facility and rapidity than they could be conveyed along a level plain; there can therefore be no objection to the plan on this ſcore. The ſimple operation of ſignal, will further facilitate the buſineſs; two minutes will be ſufficient by this means to ſpecify what ſtores are wanted, and theſe may be immediately tranſmitted, two tons or more at a time, and at the rate of five or ſix miles an hour.

Island of Trinidad. His opinion is, that a windmill, or steam engine, of a six-horse power, will take up 5 tons per hour. By this means, if the steam engine were employed, upwards of 100 tons might be raised up in 24 hours, and for the expence of £2. in coals. The same could not be done, in the usual way, by carts, in less than five or six days, and would cost upwards of £200. Such an engine, when not employed in raising weights, might be applied to the sawing timber and various other uses for the garrison.

But

But as the Poſition may not furniſh ſprings, it may be aſked, how are you in this caſe to be ſupplied with water?

In this caſe ciſterns or tanks muſt be made, the ſame as in many of the fortifications, which already exiſt in the Weſt Indies: and indeed upon the ſame plan as is adopted in Antigua, where the entire population is ſupplied with water in this manner, there not being any other mode of procuring it but by collecting the rain from the tops of the houſes, &c. in a reſervoir, the ſize of which is calculated according to the number of people or cattle that are to be ſupplied. But as it may ſometimes happen, that during a dry ſeaſon this reſource may fail, though there is leſs riſk of this happening on the mountains, where the clouds are naturally attracted, than on the plains; but if it ſhould happen, we are almoſt certain of finding ſprings on the ſides of large mountains or at their baſe. If therefore the rain ſhould fail, the ciſterns may ſtill be kept conſtantly full and ready for a ſiege by drawing the water from theſe ſprings, by the Inclined Plane, in the ſame manner as water is drawn from a well.

Such is the method I would adopt for the ſupplying of an elevated poſition with it's neceſſary ſtores, both for proviſion and defence; and as the time and expence, neceſſary for conveying them have been hitherto conſidered obſtacles of ſufficient magnitude to prevent the execution of the ſcheme, I truſt I

ſhall

ſhall be found to have ſhown that thoſe obſtacles may be removed, without in any ſhape laying open the place to an attack from the enemy.

I have quoted from Mr. Hunter (p. 59) of his book and (p. 5) of theſe ſuggeſtions, to prove, that in Jamaica there were loſt to the ſervice from the year 1779 to 1783 at the rate of 1000 men per annum, from no other cauſe but diſeaſe incurred from quartering the troops in unhealthy ſtations; and I ſhall confirm this poſition by ſubjoining, in a note, the average numbers who have died in the Charibbee Iſlands, between the years 1796 and 1802 incluſive, amounting to 2494 men per annum. As theſe laſt had been on actual ſervice a part of the time, though but for a ſhort period, and not in any great numbers, we will ſuppoſe that only one half of them might have been ſaved, upon the principle laid down by Mr. Hunter. If therefore we proceed on a calculation frequently adopted, that a ſoldier coſts government in raiſing, diſciplining, equipping and ſending out to the Weſt Indies, on an average £100 a man, it will appear that if the health of the troops had been attended to, a ſaving would have been made in Jamaica of £100,000 per annum, and in the Charibbee Iſlands of £124,700 per annum.

Would the arrangements I have propoſed coſt this ſum? certainly not! The adoption of it would perhaps be expenſive at the outſet, but the whole of this annual diſburſement would be afterwards

 ſaved,

ſaved, and our iſlands would be infinitely more ſecure.

In whatever point of view therefore the ſubject is conſidered, it's importance is great. If philanthropy be the ſubject, how can we contribute more largely to the happineſs and comfort of individuals! If policy and economy, how can we better promote the intereſt of our country than in preventing an unneceſſary waſte in the two great ſources of national power, Wealth and Men: and if an inferiority of population alone renders us incompetent to cope ſingle handed with an enemy, far more numerous than ourſelves, nothing more deſerves the attention of a wiſe and vigorous Government than the preſervation of the health and of the lives of it's ſoldiers.

NOTE.

NOTE.

FROM the year 1796 to 1802, the average number of troops in garriſon in the Charibee Iſlands amounted to 11,561, out of which number, the average annual deaths (excluſive of thoſe who fell in action) amounted to 21½ per cent. or an annual loſs of 2494 men. The annual expence of theſe men, reckoning them to coſt in raiſing, diſciplining, equipping and ſending out to the Weſt Indies, £100. per man, is £249,400.

But this loſs of 21½ per cent. is the average loſs. In the year 1796 it amounted to 40 per cent. It may be ſaid that this loſs was occaſioned by the troops being employed on actual ſervice in the field, and at an improper period of the year. This moſt probably was the caſe, but as the greater part of them died after they had returned to their barracks, we muſt infer that the immediate cauſe of their deaths was the unhealthineſs of their reſidence. The ſervice on which they had been employed might have prediſpoſed them to diſeaſe, but it may be queſtioned whether if they had been ſent up, on their return, to healthier ſituations, and

proper precautions been taken, they would not have recovered.

In 1795 the 83d Regiment diſembarked direct from Europe; and immediately marched againſt the maroons in Jamaica. They ſerved a ſevere campaign of ſeven months in the mountains againſt theſe people, expoſed night and day to almoſt inceſſant rains.—After the campaign, four companies of this regiment were quartered at the Maroon Town, (the higheſt poſt in the Iſland) where they continued healthier than they probably would have done in England: whilſt the remaining companies of that Regiment, who returned to the low country, experienced great mortality.

Doctor Jackſon,[x] whoſe opinions upon this ſubject appear very juſt, conceives that one reaſon of the ſoldiers ſuffering ſuch mortality after ſevere campaigns is the immediate tranſition from great fatigue to ſupine repoſe. Upon this principle if the ſoldiers after a campaign were removed to high ſituations, where the temperature is cool, they might be employed on the fortifications with advantage to the ſtate, as well as advantage to their health.

In this year (1796) the 31ſt regiment, then in St. Lucia, 776 ſtrong, had only fifteen men fit for duty in ſeven months.

In the ſame year, the 27th and 57th regiments, then in Grenada, loſt 35 officers and 1121 men in leſs than eight months.

In

[x] aſſistant Phyſician to the army in St. Domingo

In Tobago in the year 1802, the French garriſon was nearly extinct in ſix months. Sohuquet's grenadiers had only two ſurviving out of 42 in that period, owing to the unhealthineſs of their poſition.

The 48th regiment poſted in the old Spaniſh fort by the carenage in Grenada in 1792, had loſt a number equal to their complement in three years; becauſe the ſituation is extremely unhealthy.

In ſhort, whenever regiments have been kept in unhealthy ſituations, in proportion as they have been more or leſs ſo, they have become extinct in the courſe of one, two, or three years!

Mr. Hunter in his ſecond chapter, ſpeaking of the number of men annually loſt in Jamaica, between the years 1779 and 1783 makes it appear, that the mortality was fully as great in that time, as in the late war, and that it proceeded entirely from the climate; the troops not having been at all expoſed to the hardſhips or fatigues of actual ſervice.

On this laſt ſubject he obſerves. "It is with "horror, that we thus ſee our fellow-creatures "ſacrificed in thouſands to the dreadful viciſſitudes "of climate, joined with other cauſes of mor-"tality; and if ſuch be the caſe in our own iſlands, "where there are no enemies to encounter, and "where the evils of the climate are not aggravated "by the fatigues and hardſhips unavoidably attend-

"ing

" ing actual ſervice, ſome idea may be formed of
" the dreadful havoc, that muſt enſue among
" European troops, when thoſe cauſes are com-
" bined.

" The firſt expedition of any note, ſent from
" this country to the Weſt Indies, was that againſt
" Hiſpaniola under Cromwell. They failed in
" their attempt upon that Iſland, but afterwards
" attacked Jamaica, where they met with little
" reſiſtance. There were above 10,000 land forces
" ſent upon the expedition, yet we find them
" calling for reinforcements almoſt as ſoon as they
" were in poſſeſſion of the iſland; and in a ſhort
" time after, repreſenting the diſadvantages ariſing
" from ſending new raiſed men.

" The dreadful mortalities attending the ſucceſs-
" ful expeditions againſt Martinique, Guadaloupe,
" and the Havannah, are ſtill freſh in the memo-
" ries of many. It is ſufficient to ſay, that a very
" ſmall part of the victorious troops were alive
" three months after their conqueſts.

" In the late war, 5000 of the braveſt troops in the
" world took poſſeſſion of the iſland of St. Lucia:
" their loſs in killed and wounded, in the ſeveral
" unequal and deſperate attacks that were made
" upon them by the enemy, was not conſiderable;
" but at the end of a twelvemonth, ſcarcely a man
" remained of the original number. The mortality
" continued as great in the ſubſequent years. *From*

" ~~From~~ *the*

" From the firſt of May 1780, to the firſt of
" May 1781, the number of dead was equal to the
" average ſtrenghth of the garriſon during the
" year.

" The mind recoils with horror from ſuch ſcenes
" of deſtruction of the human ſpecies."

FINIS.

J. Smeeton, Printer, 148, St. Martin's Lane.