

A short account of the most effectual means of preserving the health of seamen, particularly in the Royal Navy / [Sir Gilbert Blane].

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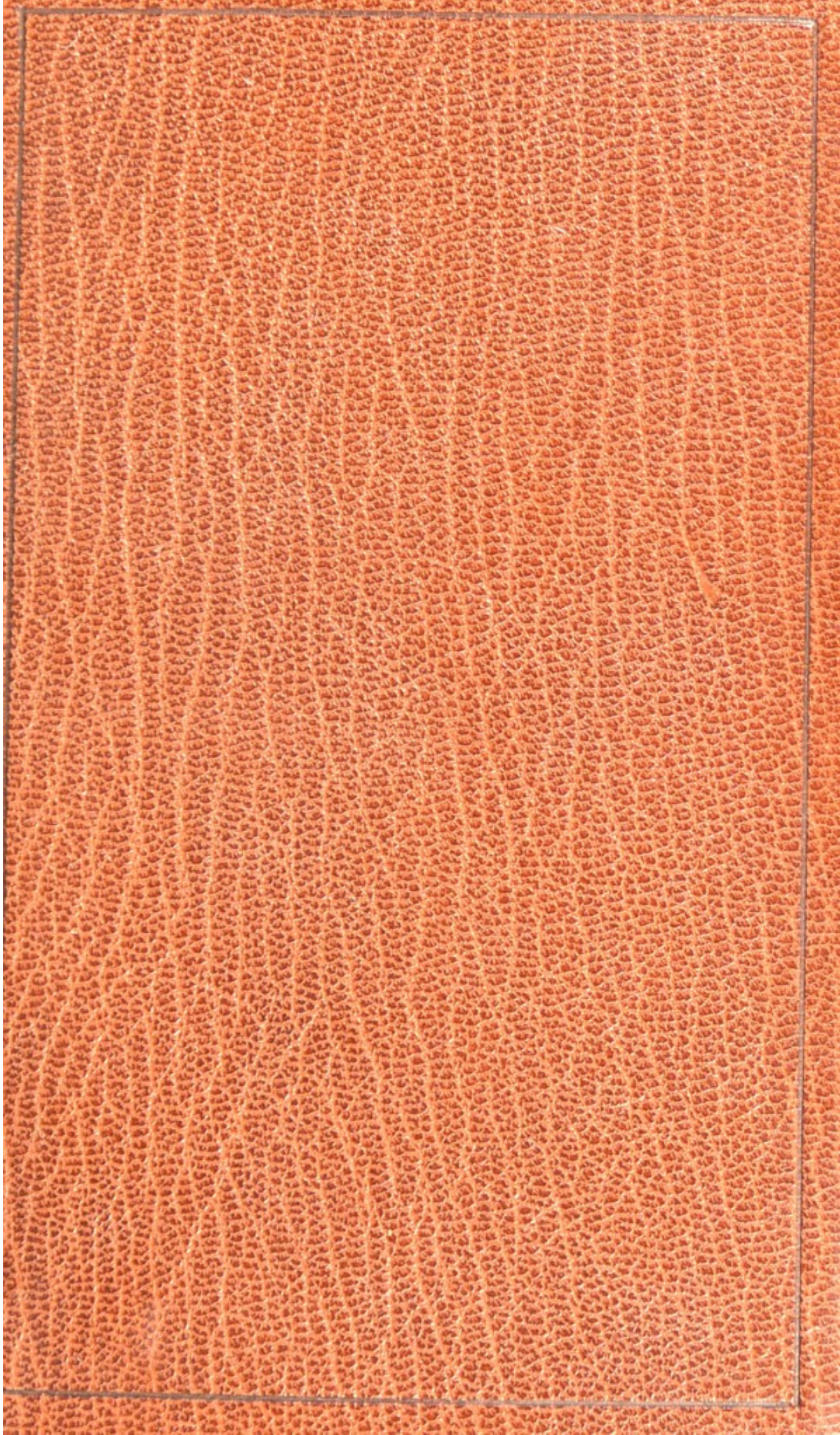
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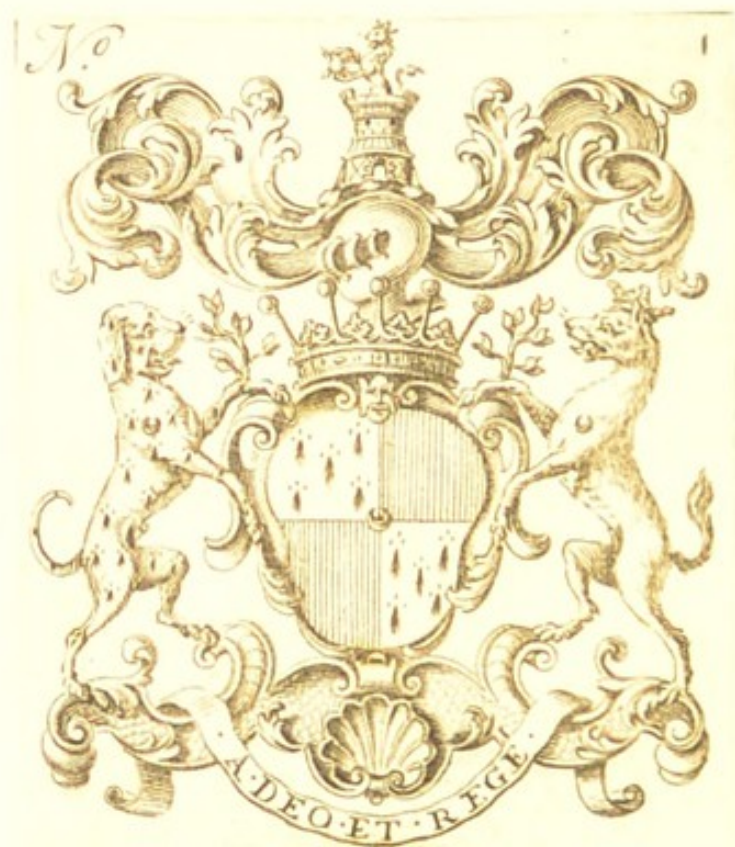
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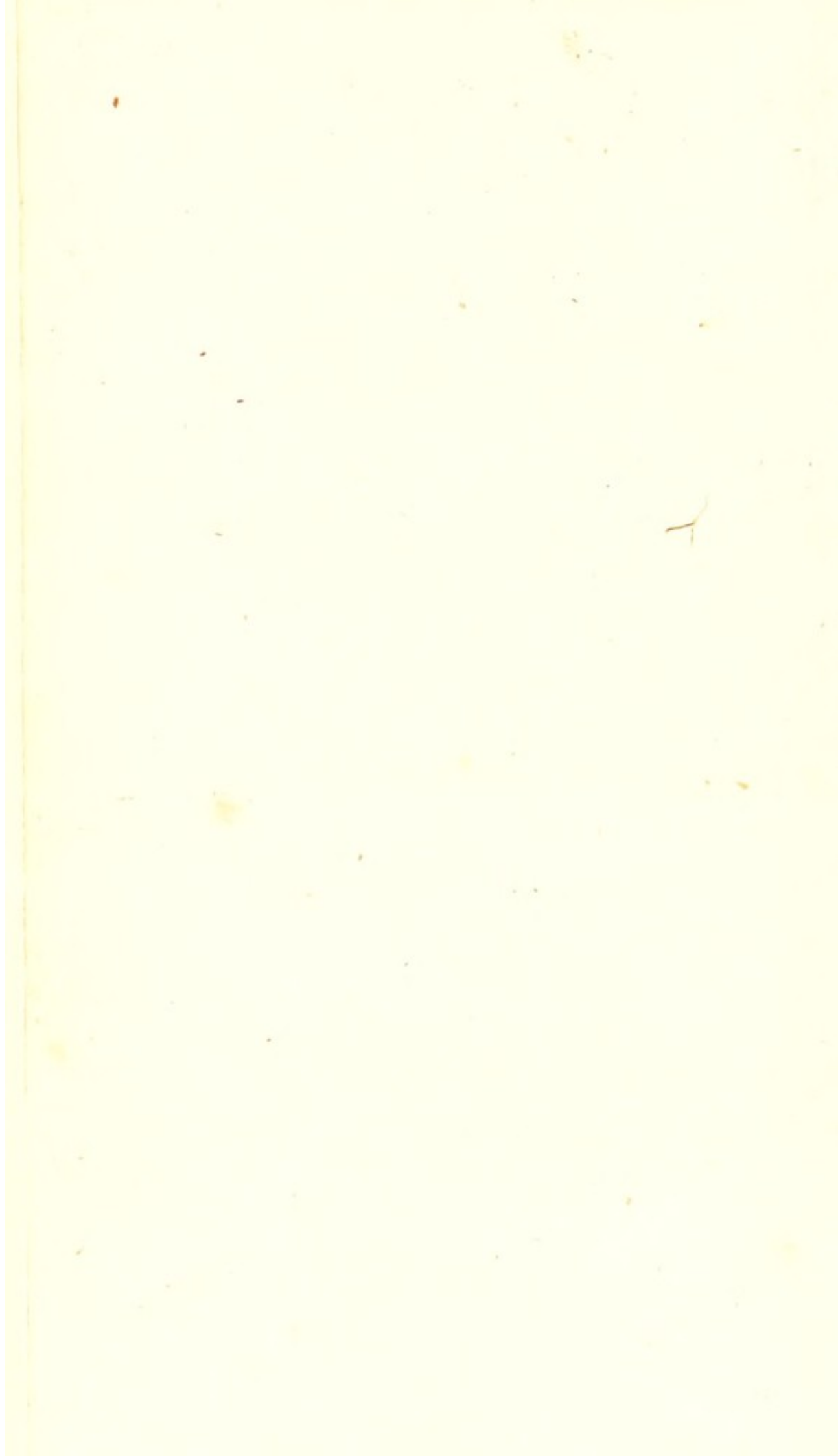


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A

Short Account

of the

Most Effectual Means

of Preserving

THE HEALTH OF SEAMEN,

Particularly in the ROYAL NAVY;

BY

Gilbert Blane, M.D.

To
The FLAG-OFFICERS
and
CAPTAINS

Of His Majesty's Ships of War

On the WEST-INDIA STATION,

*The Following Pages
are Respectfully Inscribed*

BY
*Their Most Faithful and
Most Obedient Servant,*

Gilbert Blane.

*SANDWICH, off Antigua,
21st August, 1780.*

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A D V E R -



A D V E R T I S E M E N T.

MY design is to exhibit, in as concise a form as possible, a view of all that has been discovered, so far as I know, concerning the means of preserving the health of seamen. Besides what I have learned from my own observation, and from the conversation of naval officers, and men of the medical profession, a great part of what is here advanced has been extracted from Authors, and particularly from the works of Dr. Lind, and Capt. Cooke*. As the observations on this important subject lie dispersed in voluminous writings, to which officers have seldom time or opportunity to resort,

* It is to Dr. Lind we are indebted for the most accurate, ingenious, and original observations on this subject; and Sir John Pringle has given an excellent compendium of Capt. Cooke's improvements in his elegant discourse before the Royal Society.

sort, I thought it would be a useful and acceptable undertaking to collect them into a small compass, together with such new remarks as have occurred to others as well as myself, particularly respecting this station*.

More may be done towards the preservation of the health and lives of seamen than is commonly imagined, and it is not the office only of humanity and duty, but of interest and policy also.

The forming of a seaman depends upon a long habit, and a practical education, from an early period of life & if our stock of mariners were exhausted, or diminished, neither treasure nor any other means could soon repair the loss.

In this view, as well as from the peculiar dependence of Britain upon her navy, this order of men is truly inestimable. Moreover, considering men merely as a commodity in an æconomical,

* Leeward Islands.

nomical and political view, independently of moral considerations, it could be made apparent that their health and lives might be preserved, at a much less expence and trouble, than is necessary to repair the ravage of disease.

It would be endless to enumerate the accounts furnished by history of the losses and disappointments to public service from the prevalence of disease in fleets. The disasters occasioned by it are evident. Sir Richard Hawkins says, that in twenty years, he had known ten thousand men who had perished at sea by the scurvy. Commodore Anson, in the course of his voyage lost more than four fifths of his ship's company. There are many instances that I have seen in ~~the~~ history, of expeditions, that have been frustrated in their object, from the force of disease alone: That under Count Mansfeldt in 1624: that under the Duke of Buckingham the year after: that under Sir Francis Wheeler in 1693: that to Carthagera in 1742: that of the French under

D'Anville in 1746 ; and that of the same nation to Louisbourg in 1757.

That the health of a ship's-company depends upon means within our power, is strongly evinced by this ; that ships in the same situation of service enjoy very different degrees of health. It cannot escape observation, that in this, and every other fleet, there are ships with the same complement of men, which have been the same length of time at sea, and victualled and watered in the same manner, some of which are extremely sickly, while others are free from disease. Is it not to be inferred, that the health of men depends, in a great measure, upon circumstances within the power of officers ; and indeed upon them much more than on the medical branch ?

Prevention is better than cure, as the art of physic is at best fallible. It is prevention*

* It is not meant by this to insinuate that every commander is absolutely accountable for the health
of

vention more particularly that is the subject of this little treatise, which is therefore addressed to commanders, in whose hands alone the means of it are : it depends chiefly on points of discipline and order, which they only can enforce ; and I am well persuaded that a certain degree of attention on their part would bid fair to extirpate disease from the navy.

Several obvious and well-known particulars will be found, on the perusal of the following pages, which it may be thought superfluous to mention ; but it was my intention to omit nothing of consequence which I have heard of, or observed as a matter of ascertained utility ; and I believe the most experienced will find either something new, or what they had not before sufficiently attended to.

Although

of his ship's company, and censurable when it is sickly, for this may depend on his predecessor, or a stubborn infection may have prevailed from the original fitting and manning the ship, which he may not have superintended.

Although the design of this work is to be extensively useful, yet my trouble would be compensated, should it prove the means of health and comfort even to a single ship's company. Nay, I should not repent my labour, could I enjoy the conscious certainty of its having saved the life of one brave and good man.

MEANS

MEANS OF PRESERVING
THE
HEALTH
OF
SEAMEN.

THOSE who live at sea, are in a certain degree exempt from some of the diseases to which a life on land is subject; but there are more fatal diseases incident to the former than the latter. The superior purity of the air at sea is more than counter-balanced by the artificial means of propagating disease on board of a ship. But as the air is so pure at sea, and as the causes of disease peculiar to a sea-faring life are chargeable rather to the mismanagement of men, than to the unavoidable course of nature, we are encouraged to exert our attention in endeavouring to eradicate them.

The only very fatal diseases incident to seamen are Fevers, Fluxes, and the Scurvy.

I. OF FEVERS.

WHEN a fever is very prevalent in a ship, it is almost always infectious, and this infection must either have been visibly introduced from without, by the persons or clothes of men, or it has arisen from causes existing within the ship herself. The means of prevention should have regard to both these.

1. *Means of preventing the Introduction of Infection.*

The *introduction* of infection is prevented by great caution in admitting men who come from jails, guardships, tenders, captured vessels, and in general those who are remarkably ragged and dirty, or who have come from ships, or other places, where the fever is known to have prevailed.

The mode of manning the navy by pressing is, I suppose, unavoidable, but it is
 one

one of the greatest means both of generating and spreading the seeds of disease. As this cannot be remedied, and as the exigency of the service, in time of war, does not excuse persons of any description, it becomes highly necessary to prevent the effects of the contagion that may adhere to them. This is done by stripping and washing their bodies; by cutting off their hair; and destroying all their clothes, before they are allowed to mix with the ship's company in which they are going to enter. Those who have strictly put those methods in practice know how effectual and infallible they are; and exact attention is necessary, as a single infected man, or even any part of his clothing, will spread sickness through a whole ship's company.

Even men in health who are remarkably dirty, or that have been in the company of those who have been affected with an infectious fever, will communicate disease as much as the sick themselves; and the jail distemper has been known to proceed from
 prisoners

prisoners who were not themselves affected by it.

This tallies with another observation which it is of consequence to attend to: namely, that two ships companies which were healthy when separate, become unhealthy when mixed. The influence of habit on the human constitution is extremely powerful, and long use will reconcile it to air, diet, and other circumstances, which are detrimental to those unaccustomed to them: and there is a peculiar air and atmosphere in every place, to which those constitutions that are habituated to it, naturally accommodate themselves.

As there is a greater hazard of mixture when the crew is numerous, I take this to be one reason, for the greater unhealthiness of ships of the line than of frigates, or other smaller ships.

When we reflect what havoc an infectious fever sometimes makes in a ship, it

will appear how very important it is to attend exactly to these circumstances; for if the cause of the sicknesses of particular ships be traced to its source, it will generally be found, to have arisen from taking in infected men at *Spithead*, or wherever else the ship's company may have been completed.

Since this was first printed, an excellent institution has taken place at Portsmouth for the prevention of infection. There is a ship appointed for the reception of recruits to the fleet, where they are carried to be stripped, cleaned, and provided with new clothing, before they join their respective ships; and the fleet has been more healthy since the establishment of this method.

2. *Means of preventing the Production of Infection.*

FEVERS of an infectious nature are not always produced by the introduction of any evident causes of contagion, but the infection seems frequently to arise spontaneously, as it were, being either actually generated, or being excited or rendered noxious, when it would otherwise have lain dormant and inactive.

The means of preventing this sort of infection in a ship are chiefly fresh air and cleanliness, shelter from cold and wet, and keeping the ship from being too much crowded. Nature has wisely contrived our instincts for avoiding filth, by rendering those places loathsome to the senses which have been long crowded with numbers of people, and by making it offensive both to ourselves and others to keep the same clothes long in contact

contact with the body. It is this, joined to a narrow and confined situation, that gives rise to the jail distemper, and fevers of a like kind that originate in hospitals, or in ships where similar circumstances concur.

The means found to be most effectual for keeping men clean, and preventing them from neglecting their persons, from poverty, slovenliness, or parsimony, have been,

1. To see that all that enter be provided with a proper change of linen, and that a weekly review be made to see that the men are clean.

2. Every man should be made answerable for a certain necessary quantity of strops; and it has been the practice of some of our most able and intelligent commanders to form the ship's company into divisions and squads, the weekly inspection of whose persons and clothing is assigned to as many re-
spective

spective officers*. This would both prevent the unhealthiness arising from want of cleanliness, and diminish the means of drunkenness procured by selling their slops.

3. A review of this kind would also prevent seamen from allowing their wet and dirty clothes to lie in a chest or corner till they are corrupted, and become a source of nastiness and disease.

4. A true seaman is always cleanly, but others require a degree of compulsion to make them so. The exertion of authority in such a case, is so far from being considered as a hardship, that they expect it; and it is the duty of officers, as it is of parents,

rents,

* It was an article in the instructions of the late Commander in Chief in America, that the ship's company should be divided into as many divisions as there were Lieutenants, and these divided into squads, with a Midshipman appointed to each, who should be respectively responsible for the good order and discipline of the men.

rents to children, to constrain those entrusted to them, to perform what is for their good. It will appear to every one who reflects on the subject, that a regulation of this kind is as necessary as any other part of duty; and it deserves to be made an article of the public instructions, instead of being left to the discretion of officers. This sort of discipline is particularly necessary in ships of the line, in which, one cause of their greater unhealthiness, is the neglect arising from the great numbers, among whom there are men that no one takes cognizance of, and who skulk below indulging in filth and laziness.

5. There are ships that allow the men a day in the week, when circumstances admit, for washing their clothes; and I have observed the best effects from it. It would be a good rule for the service to supply soap, as it does fops, and deduct it from the mens wages. The trouble that is taken in attending to neatness, order, and sobriety, never fails to be rewarded with a healthy ship's company, to
the

the great satisfaction and private comfort of the Commander, and the unspeakable advantage of the public service.

6. It is of consequence that the Purser should lay in a sufficient quantity of stows, suited to the climate for which the ship is destined, in order that there may be a supply, after she has been for some time from home upon a distant station*.

7. To air and exercise the men above decks, whether their duty requires it of them or not; and to air their hammocks by exposing them upon deck, especially after the ports have been long shut in consequence of bad weather. The hammocks cannot be thoroughly aired unless they are unlash'd. This cannot, with any convenience, be done
daily

* It would tend greatly to the health of seamen to have a navy uniform established, in order that they might always have in their possession, and be accountable for a certain quantity of decent apparel, subject to the regular inspection of their officers.

daily in a man of war; but it might be done, from time to time, by the different divisions in rotation; and the same may be said of scrubbing and washing. When men come to sleep upon them after these operations, they produce the same agreeable sensation that we experience from a change of linen, which, like all other natural and moderate gratifications, highly conduce to health and pleasure.

8. To keep the ports open as much as possible, and to have scuttles in them for the admission of fresh air: this is extremely useful every where, but particularly in the West-Indies. It should be an *established rule* to cut scuttles in the sides of frigates destined for this station, the heat between decks otherwise becoming insupportable.

9. To fumigate frequently with fires of wood sprinkled with pitch or rosin, carried about between decks, in a pot or moveable grate, or in a tub with shot in it when the

ports can be opened; or, if the weather will not admit of this, to burn gun-powder wetted with vinegar.

10. The sick berth should be occasionally washed all over with vinegar.

11. Dryness is of the utmost consequence, and wherever there is wet below, the vapour of it pervades the whole ship and taints the air. The less water a ship has in her hold, the better, and it is a rule with some Captains, whom I have known most successful in preserving their ship healthy, not only to have daily fires in the well, but to bail out the water when the pumps would not exhaust it all, and never to let her make above five inches. It is therefore doubtful whether it is a good practice to ~~put~~^{let} in water, as is sometimes done, in order to sweeten the hold, for the same sweetness will be preserved, by keeping it strictly dry. If it happens that a ship is very putred below, from previous neglect, or unavoidable leakage, it may be advise-

adviseable to let in water in order to pump it out again.

12. The good effect of fire and smoke is strongly evinced by this, that when it was the custom for frigates to have their kitchens between decks, they were remarkably more healthy than they are now that they have them under the fore-castle, where the heat and smoke are dissipated without being diffused through the ship, and causing a draught of air upwards as formerly. The benefit and comfort arising from having a large fire, round which men might assemble and warm and dry themselves in a sheltered place, was also very distinguished. I leave it to those who preside over the construction of the navy, how far an alteration in this respect would be adviseable in fitting this class of ships.

13. To wash and scrape all the decks frequently*. Washing may produce un-wholesome

* Lord Howe gave it as part of his instructions to wash the upper decks every day, the lower decks twice

wholesome moisture, and care should be taken to do it in dry weather, if possible, and as early in the day as convenient, that there may be time for it to dry. It is after washing that fires are most applicable and useful*.

14. To

a week, and the orlop once a week at least. He also ordered that every washing, smoking, mustering of clothes, or other means for the health of the ship, should be marked in the log-book, and the reason to be assigned there if they were omitted at the regular times. That it is a methodical proceeding of this kind which can alone make service truly easy and effective, is too well known to the experienced officer to need any comment.

* Dryness is perhaps of as great consequence as any one thing that can be named, for not only the complaints commonly called colds are more owing to wet than cold, but moisture is the means of producing, or at least, exciting dangerous fevers, and contributes greatly to the production of scurvy. It is observed that new ships are generally unhealthy. Whether this is owing to moisture, merely as such, or to something specifically noxious in the exhalation of wood, I will not take upon me to determine, but the fact is well

14. To work ventilators, and to put down wind-fails, as often, and for as long a time as possible. This is more particularly necessary in large ships, where the mass of foul air is so great, and so remote from the access of the external air, that it cannot be thoroughly swept off but by such contrivances. Under this head it may be recommended to keep the decks as clear as possible from chests and other lumber which are in the way of sweeping and washing, and prevent the free course of the air.

15. To berth the watches alternately, which at the same time preserves the trim of the ship. By this arrangement men lie much cooler, and it is more agreeable in every respect, as well as more healthy.

16. Though

well ascertained. Wood is moist either by being used in too green a state, or by being injudiciously stripped of its bark and outer surface, when piled and exposed to the weather in dock-yards.

16. Though foul air and uncleanness, are the chief causes that produce an infectious fever; excessive fatigue, too much exposure to heat, cold, and wet, scanty or unwholesome food, bad water, and intoxication also, contribute severally to awaken the seeds of this disease,

3. *Means of Eradicating Infection.*

IT frequently happens from a neglect of the means that have been mentioned, an infectious fever prevails, and when once it has gained ground, adheres obstinately to a ship, in spite of cleanliness, good air and diet, and all the other means that have been prescribed for preventing infection. In this situation some measures have been thought of for *eradicating* this subtle poison. The means that have been found most effectual are,

1. To keep the sick separate from the healthy; and to cut off all intercourse, as much as possible, in order to prevent its progress. For this end it is necessary to appropriate a sick berth to contagious complaints; and not only to prevent the men in health, from gossiping about it, but to discover and separate such complaints, as soon as possible, both to prevent them from being

caught by others, and because recent complaints are most manageable and curable.

2. Those whose profession it is to superintend the health of the ship, would find it for their ease and interest, as well as duty, to walk over the different decks once a day, or every other day, in order to make an early discovery of those who are taken ill.

3. Though I lay great stress on the duty of the Commander, it will not avail unless the Surgeon also acts his part, by such kinds of attention, joined to his skill in his profession.

4. Surgeons are more regarded by us, than by other nations; but it would be happier for our service if they were more respected. To men of liberal education and sentiments, as surgeons ought to be, and generally are, the most effectual inducements for them to do their duty, are flattering attentions, and a certain degree of estimation in the eyes of their officers. Strict and distant
 2 behaviour

behaviour may have their operation upon those whose duty is merely mechanical; but how can they inspire that humane attention to human sufferings, and that sense of duty which may induce a man, in this character, to act his part with propriety and effect?

5. It has been mentioned before that the clothes of men are as dangerous a vehicle of infection as their persons: it should be made a strict and invariable rule, that in case of death from Fever or Flux, every article of bedding, and the clothing about the body, should be thrown over-board with it.

6. Upon the same principle, in case of recovery from either of these diseases, as it seldom can be afforded to destroy the clothes and bedding, they should be smoked, and then scrubbed or washed, before the men join their messes, and return to duty. It must be observed, that their hammocks will frequently be brought in contact with those of the other men, by being stowed with them in the netting.

7. If

7. If the inconvenience of this operation be objected to, let us reflect for a moment how much more inconvenient the sickness itself is, how noisome and disagreeable, and what a clog to public service; not to mention the regard due to the sufferings of the objects themselves.

8. Infection sometimes adheres to the timbers of a ship for months and years together, and can be eradicated only by a thorough fumigation. This may be done when the ship is in such a situation that every person can be turned out, in order that pots of charcoal and sulphur may burn between decks, while the smoke is confined by shutting the hatches. An action with the enemy, has been known to purge a ship from infection.

9. As infection may prevail, there should be the more regular and frequent use of fires, and in scraping and washing the decks and beams, particularly in the sick berths where

hot vinegar should be sprinkled twice a day on the beams planks and sides.

10. The fume of pitch, tar, and other resinous substances, has a more powerful effect than any other smoke; and besides what is thrown upon the fires, it would be useful to throw pitch upon a red hot iron, or to immerse a loggerhead in a vessel where there is pitch or tar.

11. It has an extremely good effect also to white-wash all the decks and beams with quicklime.

12. It sometimes happens that the number of sick in a ship is so great, that it is not possible to take proper and effectual measures for stopping the progress of a disease. But when she can be cleared of her sick by sending them to an hospital, no pains should be spared to extirpate the remaining seeds of infection. For this purpose let their clothing and bedding be sent along with them.

13. Their

13. Their hammocks, utensils, and whatever they leave behind, should be smoked, and either scrubbed or washed before they are used by other men, or mixed with the ship's stores.

14. The decks, sides, and beams of their berths should be well washed, scraped, smoked, and dried by fire, and finally white-washed all over with quick-lime.

15. It may be proper to mention in this place, that the *orlop*, and all below it, by being below water is more apt to become a receptacle of nastiness, and by being less under the eye of the Captain and other officers, is more apt to be neglected. I think I have seen sickness propagated and continued from this circumstance, when the quarter-deck and gun-decks having been kept sufficiently clean have escaped.

16. The well and the hold should also be attended to, and a grate with fire in it should be let down from time to time. When the
hold

hold has been long shut, it becomes full of a deadly air, and the common method of trying it by a lighted candle is so well known as hardly to need mentioning*.

17. Dryness and circulation of air cannot be enough attended to. I have known great advantage from letting down for an hour, daily, a grate or pot with fire into the well when moisture and disease prevailed, and indeed at other times also.

18. To prevent filth and moisture, the shingle ballast is greatly preferable to the sandy sort, commonly employed; which lay soaking and retaining all kinds of moisture, proves a sink—of dampness and corruption.

4. *Means*

* This bad air, I believe, is not productive of epidemic diseases: the air that is really to be feared in this way is that which is fouled by the stagnating effluvia of the living human body. The air of the hold which renders bilge water so offensive, may be considered as disagreeable, and when very strong, produces suffocation.

4. *Means of Guarding against Infection and bad Air.*

1. IF an infection actually prevails, and men are unavoidably exposed to it, the best means to prevent its taking effect is, to live in the more generous manner, particularly with regard to the article of drink, always restrained in such measure as to avoid intoxication.

2. It is of the utmost consequence to avoid excess, irregularity and being exposed, either by intoxication, fatigue, fasting, watching and getting wet.

3. To these may be added certain affections of the mind, such as care, grief and fear, which in like manner weaken the powers of life, and render the constitution more accessible to the assaults of disease.

4. I have already mentioned separation as a principal means of stopping the progress of contagion,

contagion ; and those who are under the necessity of approaching the sick should avoid close contact and their breath : they should not go within their influence with an empty stomach, and when near them they should smell to vinegar and camphire.

5. It is highly worthy of observation that the influence of infectious distempers does not extend so far as is commonly imagined. It is now known for certain that the infection of the Plague does not extend above a few yards, and the same seems to hold with regard to malignant fevers. This discovery is very valuable by ascertaining the degree of risk, for when men imagine themselves in the same danger when at a considerable distance from the seat of a particular disease, as if they were in contact with the sick, they are apt to expose themselves rashly and unnecessarily to the infection.

6. All the preceding observations concerning infection are particularly applicable to the fevers prevailing at sea, which however

ever are not so frequent in this climate * as in England †. There are other sources of fever

* Leeward Islands.

† This is a remark which, so far as I know, has not been made by any author, and till observation convinced me of it I fancied the reverse to be true. It is certain that there is something in the tropical climates averse to the production or continuation of infectious fevers. I have seen so many instances of crowding and nastiness in ships and hospitals without contagion being produced, and which in Europe would have excited it, or rendered it more malignant, that the fact is ascertained beyond a doubt. Farther, those ships which bring this infectious fever from Europe, in general get rid of it soon after coming to this climate, and nothing but the highest degree of neglect can revive it. This brought into my mind what is related of the Plague at Smyrna and other places; that it disappears at the hottest part of the season, and it is a disease we never hear of in the Torrid Zone. It is very difficult to ascertain the cause of this, as every thing relating to infection is very obscure. We may conceive it to be owing to the greater degree of airiness which the heat of the climate makes necessary, or the use of less woollen clothes: there may be something in the state of

fever only to be met with on shore, such as the neighbourhood of woods and marshes, the vapours of which produce intermitting and bilious fevers, and they deserve attention here, as sailors are occasionally exposed to them.

7. The *preservatives against such fevers*; besides temperance and the avoiding of cold, wet and fatigue, are cold bathing, good living, particularly in the article of drink, and the use of some bitter medicine, such as Peruvian bark or chamomile flowers.

II. OF

of the body, particularly of its surface, which disposes it less to produce or imbibe the poisonous effluvia, or more probably the virulent matter is of such a degree of volatility as to be readily dissipated in a certain degree of heat.

II. OF FLUXES.

1. **T**HERE are few remarks to be made upon fluxes, but what have been delivered on *fevers*, the same rules being applicable in a great measure to both.

2. The flux seems frequently to be a kind of substitute for fevers, as it prevails most in those ships that have brought from Europe an infectious fever. This ceases upon coming into this country, and is succeeded by the *dysentery*, which seems to be the last effort of the contagion, modified into this form by the influence of the climate. It seems at other times to be a spontaneous disease as well as fever; for both will sometimes arise in this climate, at sea, without any suspicion of infection or a specific quality of the air, and merely from circumstances of heat, cold, wet, fatigue, intemperance, &c.

3. With regard to *prevention*, besides the rules of *cleanliness, dryness, smoking and airing,*

ing, which are necessary to prevent and root out fevers, attention should be paid to men, upon their first coming to this climate, that they be exposed as little as possible to sudden changes of heat and cold, or to hard labour, especially in the night air, or in rainy weather.

4. As it is the disease most incident to those new-comers who use a sea life, it is probable that the diet, and other circumstances peculiar to a sea life, tend to produce it, and therefore a fresh and vegetable diet should be always used as much as possible, particularly upon first coming into this climate.

5. As the bowels are the seat of this disease, every error in diet should be carefully avoided, and moderation in point of the *quantity* of what we eat and drink, is as necessary as the choice in point of *quality*.

6. The nature of this disease is such, that it is necessary to pay greater attention to

cleanliness and the separation of the sick than in fevers, as it is more catching and more offensive.

7. It has been found of material benefit in preventing dysenteries, to put quick-lime into the water, the bad quality of which concurs with other causes in producing them in this climate. This is a good practice every where, and at all times, for nothing is more powerful in sweetening and preserving water than this substance, the water being carefully drawn off from it.

8. I have thus gone through the two acute diseases to which seamen are most liable, namely, Fever and Flux. If I were to mention any others, they would be Colds, and feverish and *rheumatic complaints* in consequence of cold and wet.

9. All sorts of fevers may be more or less owing to cold and moisture; for infection itself will frequently not take effect without their influence. They are fruitful sources
of

of complaint, even in hot climates ; and it is a great point to preserve clothing uniform and dry, the body when under the influence of external heat being extremely sensible to every change and vicissitude in the quality of the air.

10. To *prevent* these effects I have nothing to add to what has been already mentioned, except to recommend a prudent use of spirituous liquors in cases of exposure and fatigue, and to *suit the clothing to the climate and season.*

11. The virtue of spirits is very much heightened by infusing *garlick* in them, and this is perhaps the best known preservative for seamen, against the cold and damps of northerly climates.

III. TWO PARTICULAR REMARKS.

THERE is a large tribe of diseases, the children of idleness and luxury, almost entirely unknown to seamen. These are the gout, hypochondriac, nervous, and stomach complaints.

State of the Ships Coppers.

THERE is another circumstance highly deserving attention, though not referable to any of the articles we have mentioned. It is the *state of the ship's coppers*, which as they are not tinned are extremely apt to contract verdigrise, one of the most deadly poisons known, and frequently the unsuspected cause of disorders.

IV. REMARKS *on the WEST-INDIA Stations*
in general.

THE following remarks are very important, particularly as they relate to the West-India station.

1. The abuse of spirituous liquors is extremely pernicious every where, but a number of circumstances concur to make it particularly so here. Rum is not only cheap and easily procured, but that which is sold to sailors is generally of an extremely bad and unwholesome quality. Add to this that this species of debauchery is more hurtful in a hot than in a cold or temperate climate.

2. No pains should therefore be spared to keep such rum from them; and care should be taken that they be supplied with what is *old and sound.*

3. A water or two more should be added to the grog in this climate, or wine should be served in place of it.

4. Seamen should be allowed to go on shore as little as possible, especially at night, for they are here exposed not only to the land air from marshes that are generally near the shore, and thereby catch intermittent fevers, but they also find the means and opportunity of getting drunk.

5. The sure and natural remedy of these evils is to prevent them as much as possible from going ashore, and on no account to permit them to stay all night.

6. Many valuable lives would be saved by each ship hiring a boat's crew of negroes or others seasoned to the climate for the purpose of wooding and watering.

7. It most commonly happens that part of the ship's company are under the necessity of performing these duties: when this happens,

pens, they may be preserved from harm, by each man taking half a wine glass or less of the tincture of Peruvian bark before going ashore*. If this is too expensive, or cannot be supplied in sufficient quantity, any bitter tincture, or even a dram of plain spirits,

* This may be thought too troublesome to be practised in the hurry of service, and I have in general purposely avoided mentioning any thing but what is easily practicable and highly important to the body of seamen at large; but such a precaution as is mentioned above, may be serviceable to officers, or to a ship's company where service is easy, and on a small scale.

It was found the means of preventing sickness on the coast of Guinea, by Mr. Robertson, surgeon of the Rainbow, in the late peace; and by the same means Count Bonneval and his suite entirely escaped sickness in the camps in Hungary while half the army was cut off by fevers. In consequence of Mr. Robertson's and Capt. Collingwood's representation of the effects of the bark, both in preventing and curing fevers, the ships fitted for the coast of Guinea have been supplied gratuitously with it, and Government would find its account in extending this to all the Tropical stations.

rits, will in some measure answer the same purpose.

8. Next to intoxication and marshy air, the most frequent cause of disease in hot climates, is too much exercise in the Sun. Care should be taken, therefore, not to harass men much with labour, upon the first arrival, for this, as well as every other hardship, is apt to produce the fevers or fluxes, with which, almost every ship is more or less visited upon first coming into the climate.

9. The cold bath, especially in the morning, before the heat is intense and the perspiration profuse, has been found of the utmost benefit in preserving health in hot climates. Those who have had the perseverance to make their men practise it, have been amply rewarded for their trouble by their ship's company remaining healthy. I could name instances of this fact both in the East and West-Indies.

10. As the air is less pure, and the ship worse ventilated in port than at sea, this might be remedied by making the ship ride with a spring upon the cable, and by making her lie as much out of the lee of the land as is safe and convenient, especially where the adjacent shore is muddy or swampy. This last circumstance is in some situations of the utmost consequence; and a hundred fathoms in a road has been known to make a most essential difference in the health of a ship's company.

11. I would observe in general, with regard to this climate, that there is no absolute rule of life that will apply to all men. We must have regard to former habits, which it would be dangerous to counteract all at once. A man addicted to drink liberally, should not become too temperate of a sudden; and much less should a sober man become intemperate. The same holds with regard to animal food: it is found that a greater proportion of vegetable food is proper,

per, especially fruits and acids; but the change should be gradual.

12. A small quantity of salt provisions is good in all unhealthy countries, and so are spiceries of every kind. I am of opinion, that it is not the salt quality of provisions that makes them productive of Scurvy, but the want of their native juice, and the nutritious principle.

13. It has been the custom even to make seamen drink sea water for the scurvy, which, though of no service, I never heard that it promoted the disease. All animals have a craving for sea-salt, and Nature has kindly made it the most plentiful and universal of all saline bodies. It braces and invigorates the fibres, and the want of it, not only renders food nauseous, but makes the animal weak and flabby.

14. I was told by the Physicians to the army, at New York, that the soldiers in Cantonments, were not near so subject to
 agues

agues as the people of the country; and the only difference in their mode of life was, that the former had a certain proportion of salt provisions. When ships are in port, I believe it would be better to allow a certain quantity of salt provisions, than to feed the men entirely upon fresh, both because it would be salutary and agreeable, and because their constitutions would probably be the more easily reconciled to an entire salt diet when necessary.

15. But it must be observed, that I would except from this observation, the crews of such ships as have just returned from long voyages or cruises, in which case, it may be necessary to alter their habit of body as quickly as possible by a diet entirely fresh.

V. OF WATER.

AS water is one of the articles most essential to the health of a ship's company, it deserves particular attention. Spring water is to be preferred to running water, as the latter, especially in a hot climate which teems with life, is apt to be impregnated with decayed vegetable and animal substances, such as leaves, grass, wood and insects. This is the most prejudicial kind of impurity, for the mineral impregnations common in springs are seldom in any degree unwholesome, and do not tend, like the other, to make the water corrupt.

It is of consequence that the casks be well seasoned by age and use; and a fumigation with sulphur before they are filled has by some been thought a good method of preventing them from contaminating the water.

It has also been found that butts, by being filled for some time with sea water, are thereby

thereby prevented from communicating any bad quality to fresh water; and this is the method most effectual and most practicable.

If running water only can be had, the best means of rendering it pure and sweet, is to put a pint of quick-lime into each butt when it is filled. I have mentioned that this has been thought to have a good effect in preventing the flux.

There are several other substances that have been found useful in correcting bad water, such as allum, cream of tartar, burnt biscuit, vinegar and acid fruits, such as tamarinds*.

If water is grossly impure, filtering is one of the best means of purifying it. As a
dripping-

* Sir Charles Saunders found that the water of the river St. Lawrence brought on fluxes, and that four pounds of burnt biscuit put into each butt removed the noxious quality.

dripping-stone will not produce enough for a ship's company, the following expeditious method may be practised. Let a quantity of sand be put at the bottom of a barrel placed on one end, without the head, and let another barrel of a much smaller size, with both ends knocked out, or an open cylinder of any kind, be placed erect in it, and almost filled with sand; if impure water be poured into the small barrel or cylinder, it will rise up through the sand of both barrels, and appear pure above the sand of the large one in the interval between it and the small one.

But if water should be offensive by being long kept, the most effectual and expeditious method of sweetening it is by exposing it to the air in as divided a state as possible; and this is best done by Mr. Osbridge's machine, which no ship should be without. If it is wanting, the place of it may in some measure be supplied by blowing air through the water with a long-nozzled bellows.

The following contrivance will also be found to afford a sufficient supply of sweet water to particular messes, and will answer the purpose of a dripping-stone. Let the narrow mouth of a large funnel be filled with a bit of sponge, over which let there be a layer of sand or gravel covered with a piece of flannel, and over the whole another layer of sand. Care must be taken to change the sand, sponge, &c. whenever they become loaded with the impurities of the water.

There should be in every ship an apparatus for distilling water in case of distress. This consists merely of a head and worm adapted to the common boiler, and the distillation may go on while the victuals are boiling*. More than eight gallons of excellent

* The want of this may be supplied by a tea kettle with the handle taken off, and inverted upon the boiler, with a gun barrel adapted to the spout, passing through a barrel of water, or kept constantly wet with a mop. Here I cannot help mentioning also, that in case of

cellent fresh water may be drawn off in an hour, from the copper of the smallest ship of war.

VI. OF

great extremity, it has been found that the blood may be diluted, and thirst removed, by wetting the surface of the body even with sea water, the vapour of which is always fresh, and is inhaled by vessels on the skin, whose natural function it is to imbibe the moisture that floats in the atmosphere.

It may be added, that in case of necessity, every contrivance should be fallen upon to save rain water, which is always wholesome and pure.

VI. OF SCURVY.

THE Scurvy is the disease most fatal to seamen next to fevers : it was formerly as fatal, but modern improvements in the mode of living have rendered it *less frequent and violent*. Under this denomination I comprehend, not only the actual disease called Scurvy, but that habit of constitution which, though compatible with all the duties and functions of a seaman, upon the least scratch being received, particularly on the lower extremities, in this climate, a large and incurable ulcer ensues, which loses many good and able men to the service.

The cause is chiefly owing to the quality of the diet at sea ; but this is assisted by a variety of other circumstances that render its progress more rapid, and begins the disease when diet alone would not have the effect. The greatest part of the food of a

ship's company is necessarily salt provisions. Biscuit and pease, though of a vegetable nature, are hard of digestion, and though they qualify the animal food, they do not answer the purpose of fresh vegetables.

There are several other circumstances besides diet which contribute to render a sailor's life unnatural and full of hardship, and concur with it in producing the scurvy. These are chiefly a *scarcity* or *bad quality* of water; a cold moist and foul air, either from climate or from the manner in which a ship is kept; bad clothing, damp and dirty bedding, or foul apartments, and crowding. It is also remark'd that the lazy and indolent are always most liable to the scurvy.

With regard to provisions, besides its being recommended to carry to sea as large a supply of live stock and small beer, or other fermented liquors, as the nature of those articles will allow, the world has lately been made acquainted with articles of

a more durable and portable nature, which so qualify the salt provision and crude biscuit that they can be used without inducing disease*. These are chiefly *Malt, Sour-kROUT, portable soup, vinegar, the juice of lemons and oranges, the essence of spruce,* and in general

* As bread is a principal article of diet, the utmost care should be taken in preserving it, and great advantage would arise from keeping it in casks that are water tight instead of keeping it in bags or laying it loose in a bread-room. Capt. Cooke by this method, and by giving it a cast of the oven in the course of the voyage, preserved his biscuit sound in every respect for more than three years.

The same may be said of malt, which being well rammed in casks of this kind will keep for nearly the same length of time.

It is also to be remarked that *flour* by being extremely well pressed will keep any length of time, and it would perhaps, in many cases, answer better to send it to foreign stations in this form rather than that of biscuit. There would be a considerable saving in the expences of freight, and the biscuit would be sounder, by being baked on the spot.

general all vegetable substances preserved either by salt*, sugar, or vinegar. *Sago*, *Salop*, *currants*, and eggs preserved by greasing and putting them in salt, may also be mentioned, if not as common store, at least as necessaries for the sick and recovering.

It must likewise be observed that such is the excellence of those articles of food and medicine, particularly the malt, lemons, oranges, and fourkrout, that they are efficacious in curing as well as preventing the Scurvy †.

It

* Green vegetables of all kinds may be preserved by salt for more than a twelvemonth, with their original flavour and freshness when washed from the brine.

† Capt. Cooke found the *malt* most beneficial, and that a pint of wort given twice a day never failed to remove the first appearances of the complaint.

Dr. Lind, whose observations have been more accurate and extensive than those of any other Physician, is of opinion that the juice of oranges, lemons, and
limes,

It was mentioned above, that without actual symptoms of the Scurvy, there is a constitution induced by a sea life, and particularly in warm climates, by which the smallest wound or scratch on the leg or foot, generate a foul and incurable ulcer.

From what I have observed in the West-Indies, there are more men lost to the service from this trifling circumstance, than from the most malignant disease; and I earnestly recommend that shoes should be considered as an indispensable article of store, and the use of them be strictly enforced upon the seamen, who generally go barefooted in this climate.

It is to be remarked, with regard to the West-Indies, that when a ship is in port, encouragement should be given to the sale of
 roots,

limes, is the most powerful antiscorbutic. The Roman armies are supposed to have been preserved from disease by the use of vinegar.

roots, greens, fruits, sugar and molasses. These may be procured by exchanging for them as much of the ordinary allowance of bread, beef and pork, as can be spared*.

Butter

* This is commonly left to the management of the sailors themselves who generally make a very bad bargain, but it is worth making a public concern of it. It might be managed by instituting short allowance in the following manner. Let only so much bread, flour, or salt provisions, particularly the latter, be issued as are absolutely necessary, and let the balance for the ship's company be thrown into one estimate.

Let the agent victualler pay into the Purser's hands, the value of these provisions in money at the contract price, with such a discount as will allow for the use of the money.

Let the Purser, in return, give him a receipt as for so much provision as have been checked. This money being distributed in the name of short allowance, will enable the people to buy vegetables, and the King's provisions will be saved for a time of want, or for a cruize,

More

Butter being an unwholesome article of diet in this climate, and also very corruptible, should be no part of the victualing sent to this station. Its place may very properly be supplied by *sugar* or *molasses*, the natural produce of the country. These are extremely wholesome, nourishing, and antiscorbutic, and those who have tried to substitute them for *butter* have found the change to be popular as well as salutary among the seamen*.

When

More money will be raised in this manner than by the common method of compensating for the short allowance, by which it is made payable at home, and the small additional expence is no consideration in comparison to the health of the men.

It has been found by experience, that men have preserved their health and strength in long southern voyages with *the allowance of salt provision for one day in the week only*.

* Molasses and rice were found so effectual in preventing and curing the scurvy in North-America, that Lord Howe issued a general injunction for the use of them, and the success was answerable to his expectation.

When captures are made, in which there are molasses, sugar, rice or cocoa, part should

tion. The use of salt provisions to scorbutics should at the same time be strongly prohibited.

Oatmeal is in a great measure an unnecessary article of expence to Government in victualling for this country, both because the articles we have mentioned are more cheap and wholesome, and the seamen like it so little that they will hardly touch it. A small quantity, however, would be extremely useful if employed to make what is called Flummery or Sooins, which is a food extremely light, cooling, and easily prepared, and was found to cure scurvy effectually on board the *Essex* in the late war.

Capt. Cooke found wheat to answer in place of oatmeal; and this or *barley* would be a good substitute, for part of it at least, in victualling the navy.

Potatoes would also make an excellent substitute, and they have lately been used *raw* with great success in curing the scurvy.

Might not *porter* be made an article of the navy victualling, as it will keep any length of time in any climate. It might be substituted for *rum* or *wine*,
and

should be appropriated to the use of the ship's company, and deducted from their fourth part.

The salt provisions should be rigidly withheld; and this will require the more attention as the depraved appetite leads to their use: but in proportion as men are not fit for labour, the other articles of diet will afford sufficient nourishment, independent of animal food. It is of great consequence that this be done early in the disease.

I beg again to recommend to the medical gentlemen to inspect the ship's company frequently,

and it is more nourishing and antiscorbutic than either.

A great part of the oatmeal that is served is given to the hogs.

Without determining which grain is most wholesome, any change that can induce men to eat a due quantity of either with their salt provisions, must have a good effect.

quently, with a view to find out the first slight beginnings of disease and fores, as it is of the utmost consequence, to take them in time, especially as seamen are apt to be inconsiderate, with regard to their own preservation.

VII. OF HEALTH IN GENERAL.

BESIDES diet, there are other articles of the naval œconomy almost as essential, to the prevention of diseases.

As *indolence* is both a cause and a symptom of the scurvy, *idleness* and *skulking* should be rigidly discouraged, unless the disease is so far advanced as to render it cruel and even impossible to force men to take exercise.

The same turn of mind that inclines a man to laziness disposes his temper also to low spirits, which tend to foment every disease, but particularly the *scurvy*; and encouragement should be given to whatever produces jollity, contentment, and good humour.

It is uniformly observed that *seamen* are less subject to scurvy than *marines* and *landsmen*, which is probably owing to the greater activity

activity of their life and alacrity of their minds.

The other circumstances of most importance are, dryness, airiness, roominess, every article of cleanliness, and warm clothing where the climate and season require it.

The directions given in these points for the prevention of fevers will also serve on this head, and it may be remarked farther in favour of cleanliness that it is not only directly conducive to health, but to good order, sobriety and other virtues*.

It

* The importance of this will further appear when we consider the effect of *filth* upon the general health of mankind, for it is the origin of a very large tribe of acute diseases, by which I mean fevers and feverish complaints. This is one of the curses entailed on us by clothing, which, more than any of the deviations from nature peculiar to our species, renders man subject to distempers above the rest of the animal creation.

It is also worth observing, with regard to health in general, that there are few things more deserving of attention than the guarding against excessive fatigue. It would be well if it could be rendered convenient at all times, except in cases of danger or emergency, to put the men at three watches instead of watch and watch. This would have the most happy effect upon their health, by allowing them to have compleat rest, and to get thoroughly dry.

Fatigue is a very frequent means of bringing on disease, and breaking the constitution; and it is a circumstance in which young officers are apt to forget themselves. They should therefore take care how they *call all hands* wantonly, and oblige men to exertions beyond their strength, especially as this will be submitted to more readily by sailors than any other set of men, from the generous alacrity of their temper.

One of the happy effects resulting from the good treatment of seamen is the encouragement

agement it gives men to enter into the service, and to do their duty with cheerfulness and resolution. There is something more daunting to the mind of man, to see his fellow-creatures languishing in disease, or perishing miserably from sores or sickness, than in the terrors of fire and sword.

A great number of men are lost to the service, as I have said, by the *bad ulcers* that arise in this climate, from sores in the lower extremities, in consequence of slight scratches; and it is impossible to recommend too much the strict attention of surgeons to the first appearance of such sores, which will at the same time save them a great deal of disagreeable trouble and labour.

The whole of these observations is meant to have respect to the prevention of disease, and the means of it fall within the province of those who are entrusted with the direction of the navy, either in a civil or military capacity. With regard to cure and recovery, a great deal is also in their power by providing

ing

ing and recommending proper *diet* and *cordials* *.

A liberal use of *good wine* would save many lives, both by its virtue in curing low and malignant fevers, and as a restorative to convalescents, numbers of whom are lost by relapses, or pine away in dropsies and other chronic complaints, for want of *suitable diet* in the article of *drink* as well as *food*.

The necessaries of a surgeon are by no means adequate to this; and the utmost care should be taken to lay in *portable soup, rice, sago, sallow* and *currants*, and to procure fresh meat wherever it can be had, for the *convalescent* and *scorbutic* patients.

It

* Though there is still room for improvement, the navy is now on a better footing with regard to the health and comfort of seamen than I am told was the case in former times. *The victuals are in general sound, and better in quality*; the civil department has shewn in many instances a readiness to adopt the means, and to furnish the articles that have been recommended for the health of the men; and such commanders as I have the honour to know are also humane, attentive and intelligent.

It is needless to say that this would not only be an object of humanity, but a great *pecuniary saving*, considering how expensive it is to support invalids, and to *replace* men; not to mention that it is upon the health and lives of men that all public exertions essentially depend.

It may be observed further, that there are several particulars in which *officers* may be subsidiary to the *surgeons*. For example, it is of the greatest consequence that men should make known their disorders early, as a very little medical attention will *prevent* a fever or flux if taken in time, particularly in this climate.

As seamen are averse to complain, and may escape the attention of the *surgeon* till their distemper has gained ground, officers, by noting in a book made on purpose for the daily inspection of the surgeon, those who are missed from duty upon calling the watch, and even those who are remarked to *droop* and *look ill*, may get men put upon the *sick list*,

list, and proper means used for their recovery in the *beginning of their complaints*.

Upon the whole, there is no situation of life in which there is room for more virtues, more conduct and address, than that of a *sea officer*. The men are thrown upon his humanity and attention, in more views than one: they are subject to a more arbitrary exertion of power than the constitution authorizes in other departments of the state: it is their character to be thoughtless and neglectful of their own interest and welfare, requiring to be tended like children; yet from their bravery, and other respectable qualities, they are entitled to a degree of *parental* tenderness, attention and care, both from the state they protect, and the officers they serve under.

T H E E N D.





A.
Med. Naval

