

EXTRACTS
FROM THE
MARINE PRACTICE
OF
PHYSIC AND SURGERY.

WITH SOME BRIEF DIRECTIONS TO BE
OBSERVED BY SEA-SURGEONS
IN ENGAGEMENTS, &c.

By WILLIAM NORTHCOTE, SURGEON,
MANY YEARS IN THE SEA-SERVICE.

Including,
The NATURE and TREATMENT,
of
GUN-SHOT WOUNDS.

By JOHN RANBY, Esquire; SURGEON GENERAL
TO THE BRITISH ARMY.

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MDCCLXXVI.

OF WOUNDS OF THE VEINS,
ARTERIES, NERVES, AND TENDONS;
WITH OBSERVATIONS.

IN Wounds of the Veins, the blood flows with a smooth even stream, of a gross consistence and dark color; and is ordinarily restrained by the common methods, such as dry lint, styptics, &c.

If an Artery is wounded, the blood flows impetuously and per saltum, and is of a florid color; to suppress which, if the orifice be accessible, make a ligature on the Artery with a crooked needle and waxed thread, which is the surest and best method: but the hæmorrhage may be suppressed by the tourniquet, till the ligature can be made. If it be not accessible, and the Artery runs along the side of a bone, apply a suitable bandage, compresses, or bolsters. It is not necessary to compress it so much as totally to preclude the accession of any blood, but only to impede its efflux, and retain the thrombus, so as to grow to the sides of the divided arterial coats. It requires great judgment, however, not to let the compression be too small, to prevent an Aneurism. But if the wounded artery lies within a bone which prevents its lateral compression, the only means remaining is to apply dry lint, and retain it forcibly against the divided orifice. Neither styptics nor cauterics should ever be used to suppress an hæmorrhage when ligature or compression can take place.

If a large Nerve be totally divided, at

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first it causes excruciating pain and inflammation by contracting and stretching the other branches communicating with it; afterwards the part becomes paralytic, and either fades by an atrophy, or is consumed by a mortification. For the arteries being no longer able to propel their contained fluids, for want of the Nerves which supply their coats, the humors are accumulated, stagnate, corrupt, and mortify the part. But if the Nerve (or even a Tendon) be only half divided, there follows a continual and slow laceration, a spreading inflammation, excruciating pain, fever, delirium, convulsions, &c. with a gleet, or thick serous discharge; which symptoms are in proportion more violent as the Nerve is more distended or stretched.

In order to the cure, if the Nerve lie covered, under the skin and membrana adiposa, dilate the Wound, that the medicaments may penetrate to the part. Dress with bals. peruv. warm (dropped in) a pledget of soft digestive, and an emollient poultice, with a proper bandage to take off the distention. Wounds of the Tendons and Ligaments are to be dressed after the same manner, only the applications should be more drying.

In the use of these, if the patient feel the heat of the topics moderate, then they are rightly fitted: if the part itch and smart, and the aperture become wider, the topics are stronger than they ought to be. OF

OF GUN-SHOT WOUNDS, THEIR NATURE AND TREATMENT; WITH OBSERVATIONS.

“GUN-SHOT Wounds, of all others, are more complicate, and much more difficult of cure, than an incised Wound, even with loss of substance: because here the fibres and vessels being lacerated, their juices extravasated, and their texture destroyed, a large digestion or suppuration is necessary to remove the injured parts, before the Wound can be incarnated and healed; and hence also the symptoms of inflammation, pain, &c. are commonly more violent in Contused Wounds.”

“ They are more or less dangerous, according to their extent, and the part in which they are seated. Those which extend into the bones, viscera, or joints, are of the worse kind; and especially when any of the wadding, cloths, or splinters are carried into the part together with the ball; for the consequences, in these cases, must be inflammations, gangrenes, caries, &c. which make an amputation necessary. But Gun-shot Wounds in the cranium are above all the most malignant and fatal; though even here we have often surprising instances

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instances of cures made by art and the efforts of nature, when the case has appeared to be desperate."

"The following method is extracted from Mr. Ranby's excellent Treatise on Gun-shot Wounds, whose penetrating judgment, and great experience in such cases, must be universally acknowledged."

"The first intention, in regard of accidents caused by a musket or pistol ball, is, if possible, to extract the ball, or any other extraneous body that may be lodged in the wounded part. And whenever these casualties are attended with a great effusion of blood, from the rupture of some considerable arterial vessel, it will be absolutely necessary, with all imaginable dispatch, to restrain the bleeding by taking up the artery with the needle; and, at the same time, to be particularly careful that your held proves no way elusive. There is no depending on any applications, however styptic, on these occasions."

"In order to get at the ball, or any other foreign matter that infects the wound, I would advise probing or poking to be used as fearfully as possible; having constantly experienced, through the whole course of my attendance in these cases, that such a method is highly detrimental to the patient: and,

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and, indeed, where probing is necessary, I would always prefer the finger as the best and truest probe."

"If a ball, or any other body happens to be lodged near the orifice, or is found by the touch to lie under the skin, though at some distance from the mouth of the Wound; in the first case it is requisite immediately to remove such extraneous matter; and, on the other occasion, to cut upon it, and take it out. But when it is sunk deep, and lies absolutely beyond the reach of the finger, I could never bring myself to thrust those long forceps the Lord knows where, with scarce any probability of success."

"A great number of instances have occurred to me, where balls have been quickly lodged in the body; till, after many years, they have worked themselves a passage towards the surface, and were consequently very easily extracted. In case the wound be occasioned by a musket or pistol shot, and consequently but small, it will be necessary to dilate it immediately: yet, I think, in Wounds near a joint, or in very membranous or tendinous parts, the knife, as well as forceps, should be put under some restraint; nor any more opening made, than

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than what is absolutely requisite for the free discharge of the matter lodged within."

"Wounds in the joints are always dangerous, let them proceed from whatever cause, whether a bullet, or any cutting instrument; and membranous or tendinous parts must undoubtedly suffer from their being thus exposed to the very sensible impressions of the air. I could produce many instances of balls going through muscular parts, and the Wounds being healed with very little trouble. And I have known Wounds of the skull from a broad-sword (both tables having been cut through, and a considerable piece loosened) which were suffered to bleed for several hours, and did well; nor were attended, at least very seldom, with any feverish complaint; which was probably owing to the great quantity of blood lost immediately after the parts had been injured. If the ball has gone quite through, both orifices are to be widened (if in a part where it can be done with safety) and particular care is to be taken to preserve both openings, that especially which is the most depending. No tents are to be made use of, where there is any possibility of avoiding them; and I would, in general, recommend light, easy dressings, with a slight, moderate bandage, just sufficient

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sufficient to keep them on the part. Thin flannel is what I would prefer, in case it can be got."

"Where the wounded person has not suffered any great loss of blood, it will be advisable to open a vein immediately, and take from the arm a very large quantity, and to repeat bleeding, as circumstances may require, the second, and even the third day. This timely precaution will prevent a good deal of pain and inflammation. Forward the digestion, and contribute towards obviating a long train of complicated symptoms, that are wont otherwise to interrupt the cure, miserably harrass the poor patient, and too often endanger his life."

"For the first twelve days it will be proper to observe a cooling regimen, both in respect of medicines and diet: and as, in circumstances of this kind, it is necessary that the body should by all means be open, a stool should be every day procured, either by emollient clysters, or some gentle laxative. Whatever application is of a hot, spiritous nature, I find remarkably injurious on these occasions, and what no wounded part can in any degree bear."

"Let the first dressing be with lint, dry, or moistened with a little oil, and a very

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very light bandage; the next with a digestive warmed, and over it the bread and milk poultice, mixed with a sufficient quantity of oil to keep it moist: and, where there is a great tension, and the Wound large, a fomentation. This course is to be continued till the sore is clean; and then it is to be healed according to art."

"This method will commonly promote a constant, easy perspiration, abate the pain, very much facilitate the digestion, and remove all danger of any approaching inflammation. What induces me to moisten the lint with oil, is the ease that is procured to a Contused Wound from such an application, in comparison with one of an absorbent, drying disposition; which, instead of giving free liberty to the sanious blood to discharge itself, and consequently preventing an inflammation by unloading the part, would possibly obstruct the mouths of the capillary vessels, and hinder nature from getting rid of that incumbrance, which she endeavors to throw off."

"Should an inflammation seize any part, through the lodgment of a bullet, or any other foreign body, that could with safety have been more immediately extracted; all attempts for dislodging such extraneous

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traneous matter should be postponed, till the swelling has in some measure subsided, and the inflammatory disposition of the fibres is nearly vanished: unless the ball, or other extraneous body, lies at no great distance from the orifice; and there is, on that account, a certainty of removing this incumbrance, without any material trouble to the patient."

"If a Wound be of such a desperate nature, as to require amputation (which is often the case, when it happens in any particular joint) it would certainly be of consequence to perform the operation immediately as soon as the patient is brought down; lest by delaying it an inflammation, which one may very reasonably expect, should obstruct a work that ought rarely to be entered upon during the continuance of so calamitous a circumstance as that of a smart engagement. The neglecting this critical juncture of taking off a limb frequently reduces the patient to so low a state, and subjects the blood and juices to such an alteration, as must unavoidably render the subsequent operation, if not entirely unsuccessful, at least exceedingly dubious. And in Wounds even where no amputation is required, it is equally advisable not to defer the care necessary to be taken of them; left,

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left, by the parts being exposed to the air, there might arise a series of very dangerous symptoms."

"Wounds that border on any considerable artery are very apt to bleed afresh upon motion, or a return of a free circulation of the blood into the part which was interrupted at first by the violence of the injury offered it; and this is almost always the case, when the slough begins to separate: for which reason one should never attempt to remove it by force; but wait, with patience, till there be a perfect separation of this slough; nor be in the least-wise shocked at the accident of arteries thus opening themselves, which a very moderate experience will convince one to be almost inevitable. The patient frequently gives warning of what is coming upon him, by complaining of a great weight and fullness in the limbs, which are ever accompanied with more or less pulsation in them: an infallible prognostic of the consequences. Let the Wound afflict whatsoever part, if these complaints attend it, I instantly enjoin bleeding and the bark."

"I have known several instances of persons losing their lives from the starting of an artery before the surgeon could reach them; particularly where there has preceded

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preceded an amputation. And I dare affirm, the quantity of blood lost in some cases, which I have observed to kill, has not amounted to twelve ounces; which I do not know how to account for otherwise, than by the drain which had been made from the mass of blood both before and during the operation; whence a sudden gush, though of so moderate a portion of blood, after the great quantity already lost, gives a check to the circulation, and causes immediate death."

"This reflection, I think, ought to be a lesson to every practitioner, to be particularly intent on the faithful discharge of his duty in regard of tying the vessels. Repeated bleedings in the beginning draw after them many advantages: they generally prevent, and always lessen, any feverish attacks, and seldom fail to obviate imposthumations."

"The body must ever be kept in a laxative state; and, when pain puts it on the rack, immediate recourse must be had to the sovereign and almost divine powers of opium; next to this I likewise add the bark, a medicine which no human eloquence can extol with panegyric proportioned to its inestimable virtues. Of such incomparable benefit is it to mankind! I have

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I have known it procure rest, if given in large doses, when even opium had been taken without any manner of effect."

"In all large Wounds, especially those made by a cannon-ball, there is constantly a great laceration of the membranes, and parts endowed with an exquisite sensation. These are ever attended with an excruciating pain, and a discharge of a gleet matter; which, if not restrained, proves often of the last consequence."

"In this unhappy state, the bark, given in doses of a drachm each, and repeated every three hours (or oftener, if the stomach will bear it) surprisingly repairs the breach made in the constitution by these terrible accidents. Elixir of vitriol taken three times a-day, in a glass of water, I find to be of singular benefit, and to prove a very good assistant to the virtues of the bark. And if the body be costive, to each dose of the bark I add four or five grains of rhubarb, till that inconvenience is remedied. Should the bark run off by more than four or five successive stools, I take care to check this effect of it by ordering two or three drops of laudanum, or two spoonfuls of the diacordium mixture along with it, every time it is given".

"Where

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"Where the fore discharges a considerable quantity of gleet matter, is flabby, looks pale and glossy (which appearances are ever consequent to a loss of substance) the bark continually relieves the pain that is predominant in this case, thickens the matter, lessens its quantity, and quite changes the complexion of the Wound."

"It is very common in cachectic and scorbutic constitutions (which latter too much abound in sea-faring people, especially in long voyages) for a sore, the first eight or ten days after taking off the limb, to promise all imaginable success: from which time it frequently begins to gleet prodigiously, looks pale, glossy, and flabby; and this gleet, if not checked, soon proves mortal. In exigencies of this kind, the bark hardly ever fails to procure relief, and works an apparent change in a very short space of time; sometimes in twelve hours."

From what has been here said by Mr. Ranby, it is evident that the bark is one of the best remedies in contracting the vessels, and restoring their due action upon the blood, when too great a quantity of that necessary fluid has been lost by a profuse hæmorrhage, provided the wounded vessels are

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are previously closed up, or well secured from a return of the hæmorrhage.

It also not only secures the most tender solids and small vessels from being dissolved by the acrimony of any matter absorbed, and returned into the whole mass of blood, from large Wounds or latent abscesses; but it likewise preserves the texture of the blood itself from being too much broken, or rendered too watery from the same cause, which would otherwise inevitably produce a fatal and colligative hectic. But where there is too great a fulness, or too great a strength and contractile force of the solids, and an inflammatory tenacity or firmness in the blood, it may occasion obstructions, pains, inflammations, and their consequences, unless it be timely laid aside upon the appearance of such effects.

SOME

SOME BRIEF DIRECTIONS PREVIOUS TO, AND IN ENGAGEMENTS, &c.

THE value of an able surgeon, and the necessity of his assistance, never more plainly appears than in dangerous wounds received in an engagement or battle; where many brave men must unavoidably perish from loss of blood and other causes, unless restored and snatched, as it were, from the jaws of death by the skill of their surgeon. And no doubt, the better opinion the officers and men conceive of their surgeon, the more spirits they have for the action; being confident, the wounds, &c. they may chance to receive will be properly treated, and their lives (if possible) preserved. Therefore a surgeon of a man of war should have every thing needful, in a sufficient quantity, always by him in readiness (but more particularly in time of war) placed in some kind of box or drawer by themselves. His capital instruments should be constantly kept clean, bright, and in good order. His apparatus should consist of several tourniquets (of which Petit's screw tourniquet is the most convenient, as the patient can easily manage it himself, after it is fixed) crooked needles of all sizes, threaded with proper flat ligatures, in proportion to the needle; a large quantity of
portion

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scraped (short) lint, some mixed with flour in a bowl; double and single headed rollers (or bandages) of all breadths and lengths, in good store; for slight wounds and contusions, those made of bunting (the fly-part of an old ensign) will be sufficient; but for cases of more consequence, such as amputations, fractures, dislocations, &c. the linen rollers must be used. He ought to be furnished with common needles and thread, with pins in plenty; pledgets of tow, of what sizes he pleases; after they are made, they may be wet with water, or exycrate, on the same board, and dried either by the galley-fire or in the sun. By this means he may the better lay them together (in a drawer or box) without intangling, and they are both much better and readier to spread, when wanted, with any cerate, ointment, or liniment.

Splints of all sizes must also be at hand, and when used armed with tow, or old linen cloth; likewise bolsters, or compresses of cloth, or coarse tow; but these may be readily made as occasion requires. To the above add yards of incl, or strong tape, to secure your splints in fractures, and for other uses. By this method a surgeon will always be provided against every accident which may befall his Crew.

When

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When the enemy is in fight, and you are like to come to an action, as soon as all hands are called to quarters (if your cockpit is not sufficiently large) you must desire the first lieutenant, with the captain's permission, to order the carpenters to lay a platform for your wounded men; if the cables will not be wanted, in one of the cable tires, or otherwise in the after-hold, by clearing of all manner of lumber out of the way. On the top of a smooth and even tire cask, let there be deals or planks laid close together, over them an old sail, and upon that some seamen's bedding from the purser's store-room (for which you are to have the captain's order, if he will not otherwise deliver them) ready made up, and laid one by another to place your wounded men on after they are dressed, that they may lie quiet without being disturbed.

If the ship be small, and there is no cockpit-pit, or such as you have not room to perform your operations in, you must, as near the after hatchway as is convenient, have some cask removed out (if there be not height enough for you to stand upright on the platform) that you may have a place of eight, ten, or twelve feet square, to receive and dress your wounded men, and from

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from thence to hand them to their beds: on one side of this place let there be fixed a chest of a proper height if you have no other convenient seat) to perform your operations upon; and on another just by (or table) lay all your apparatus, such as your capital instruments, needles, ligatures, lint, flour in a bowl, styptic, bandages, splints, compresses, pledgets spread with yellow basilicon, or some other proper digestive; thread, tape, tow, pins, new and old linen cloth, a bucket of water to put your sponges in, another empty to receive the blood in your operations; a dry swab or two to dry the platform when necessary; a water-cask full of water near at hand, with one head knocked in, in readiness for dipping out occasionally as it may be wanted. You must also have near you your ung. basil.—e gum. elem.—sambucin; ol. lin.—olivar. c.—terebinth; bals. terebinth; tinct. styp.—thæbaic; sp. c. c. per se.—vol. aromat.—lavend. c. Wine, punch, or grog, and vinegar in plenty.

A number of large candles should be immediately lighted, as soon as the engagement begins, not forgetting to have your mates and assistants properly instructed in what part they are to act, that every one may know his station, and what he has to do,

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to prevent confusion in time of action. Here it is necessary to observe, that the surgeon should always take peculiar care to desire the first officer to quarter a sufficient number of hands with him in the cock-pit, that he may want no assistance in the day of battle, however bloody the engagement may be.

All things being ordered, and placed as above in readiness, and the surgeon's and purser's cabin beds made up, to receive the captain, or any of his commission officers, who may chance to be wounded; if you have any sick on board, that cannot stand to their quarters, let them be put down with their hammock and bedding into the hold, fore cockpit, or sheet cable tier, out of the way before the action begins; but be sure to keep your platform entirely for the wounded men. Let one of your mates or assistants go to them now-and-then to see how they are; or else order one of the stoutest of the convalescents to come to you at times, if he is able, and acquaint you if any of them are worse, and in case of faintness, to give them a little cordial, which he should have by him for that purpose.

When the action is begun, if more than one wounded is brought down at a time,
R
always

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always first take care of him who is in the most immediate danger; but otherwise dress them as they come, without distinction: if any is brought down with a limb off, or a violent hæmorrhage, and you happen to be in the midst of an amputation, or other capital operation, and cannot that instant attend, order your mate or assistant (for the present) immediately to fix a tourniquet on the part, to restrain the flux of blood from being fatal to the patient, and do what else you may think necessary, till you have finished the operation you were about, and laid the patient in bed.

Never encourage those to stay below (after their wounds, &c. are dressed) who have been but little hurt, but insist on their going up again to their quarters, otherwise threaten to report them when the engagement is over. I have many times known cowardly lubbers come tumbling down the ladder with most violent groans and complaints, though at the same time they have received little or no hurt; and all I could do or say would not prevail on them to make a second trial of their courage, nor go up again till the action was all over. Nay, I have been told (by those quartered at the same gun) that some dastardly-sellows have actually put their feet, or stood in

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in the way of the carriage, on purpose to be hurt, that they might have a plausible pretence for going down to the doctor; which I must own I have great reason to believe, having sometimes met with such contusions in the legs and feet, occasioned (according to their own confession) by the carriage, but at the same time so slight as was scarce worth mentioning; though sometimes very violent, at other times there was scarce any injury or contusion to be perceived, notwithstanding the most grievous complaints of pain and uneasiness.

When you are entering on any capital operation, you should use your utmost endeavours to encourage the patient (if he is sensible) by promising him, in the softest terms, to treat him tenderly, and to finish with the utmost expedition; and indeed you should use expedition but not hurry: you should not make more haste than the case requires, nor cut less than is necessary, or leave any mischief unremedied; for the neglecting this critical juncture of taking off a limb, frequently reduces the patient to so low a state, and subjects the blood and juices to such an alteration, as must unavoidably render the subsequent operation, if not entirely unsuccessful, at least exceedingly dubious. Therefore, if a wound

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wound be of such a desperate nature as to require amputation (which is often the case in sea engagements) it is certainly of consequence to perform the operation immediately as soon as the man is brought down: and in wounds, even where no amputation is required, it is equally advisable not to defer the care necessary to be taken of them.

In regard to the wounded, you should act in all respects as if you were entirely unaffected by their groans and complaints; but at the same time I would have you be careful with such caution, as not to proceed rashly or cruelly, and be particularly careful to avoid unnecessary pain.

When the action is all over, you are then to go round your patients, and examine if the wounds have bled any thing considerably since they were dressed; and if the hæmorrhage still continues, remove the dressings very gently and carefully, and apply fresh ones.

It is not improper here to remark that the tourniquets should still remain on these patients, who have had their limbs amputated or shot off; that they may be always in readiness, in case of a fresh hæmorrhage; and in case there be no assistant present when it happens, the patient should be

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be instructed himself how to tighten it, if he feels the wound bleeding, before help can be procured. You are likewise to see that their wounded limbs, &c. lie easy, and as they ought; and that the patients are supported with proper diet and medicines suitable to the symptomatic fever, &c. as mentioned under the various heads in Northcote's Marine Surgeon,

As soon as possible after the engagement is ended, and your wounded are all taken proper care of, acquaint the captain how many there are wounded, and the nature of their wounds, if they are like to prove mortal, &c. And desire he will please to order cradles forthwith to be made, as many as you think necessary, wherein your wounded men must be placed, with their bedding, in a proper birth by themselves. The cradles are first to be well cleated, and secured to the deck and sides of the ship, placed so, as that you may easily go between to dress the people.

As soon as the ship arrives in a harbour, the sick and wounded must be immediately sent on shore, where their cures will be perfected in a much shorter time than it is possible on board in an insalubrious air, and on such diet only as the ship affords.

It is necessary the surgeon of the ship should

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should give a more particular account of patients sent to an hospital, than is the common practice in the navy, of merely filling up a sick ticket with the general name of a disease, &c. He ought to acquaint the surgeon, or his assistant at the hospital, of the peculiar constitution of the patients, the manner they have been treated from first to last, the symptoms, &c. that have occurred; and what ever other circumstances he should be informed of, in order to enable him to perform a more speedy cure.

PREVENTATIVES OF THE SCURVY

AT SEA, &c.

THE best method of preventing the Scurvy at Sea is a liberal use of acids (particularly those of vegetables) and to avoid eating the ships salt provisions as much as possible, to use friction daily, either with a flesh-brush or coarse cloth. Proper exercise, dry linen, and cleanliness, not a little contribute to health.

It appears from many repeated experiments of Dr. Lind, and a number of Surgeons in the royal navy, that of all acids, oranges and lemons have the best effect in preventing

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preventing and curing the Scurvy (the latter I shall here omit mentioning, it being already laid down in the Marine Surgeon, Vol. II. Chap. VIII. Sect. VI. Art. Scurvy, to which the reader is referred). Oranges, in my opinion, are better than lemons, for by these Lord Anson's people were so speedily and surprizingly recovered at the island of Tinian. It is certain, when they are properly and sufficiently used, they are an infallible cure in every stage and species of the Scurvy, if there is any degree of natural strength left; and where a diarrhoea, lientery, or dysentery are not joined to the other symptoms. Some are apt to think tamarinds, vinegar, spirit of salt, elixir of vitriol, and other acids of the same kind, will do as well; but experience (that best of masters) plainly shews the contrary; and though acids agree in certain properties, they differ widely in others. Whenever these fruits are given without success, you may be fully assured the disease is not the Scurvy; for in the real genuine Scurvy they were never yet known to fail. However it is necessary also to observe that fresh vegetables of all kind prove a great relief to scorbutic patients when set on shore.

But as oranges and lemons are apt to spoil in keeping, there is now to be had an excellent

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excellent quintessence of these fruits, which may be very advantageously used as a succedaneum, being but little inferior to the recent juice.

When you are in countries where oranges and lemons grow spontaneously, and can be procured in great plenty at a small expence, I shall here shew how to bring their juices, by a very easy method, into a small quantity without prejudice to their virtues.

Let the juice of these fruits be well cleared from the pulp, and deperated by standing some time; after which it may be poured off from the gross sediment: let it then be poured into any clean open vessel of china or stone ware, which should be wider at the top than at the bottom, that it may evaporate more readily. A china basin or punch bowl is most proper on account of the form. Put this into a pan of water over a clear fire; let the water come almost to boil, and continue nearly in that state, with the bowl full of juice in the middle of it, till the juice is found of the consistance of a thick syrup when cold. The slower the evaporation of the juice is, the better; that is, it ought to continue twelve or fourteen hours over the fire: when it is cold it is to be corked up in a bottle for use.

Two

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Two dozen of good oranges, weighing five pounds four ounces, will yield one pound nine ounces and a half deperated juice; and when evaporated there will remain five ounces of extract, which in bulk will be equal to less than three ounces of water: so that twelve dozen of oranges or lemons may be put into a quart bottle, and preserved good several years. When this is mixed with water, and made into punch, few are able to distinguish it from the fresh juice mixed up in the same manner.

However, when the fresh fruit can be had, the fragrantcy of the peel may contribute somewhat to the cure of the Scurvy; and when these are wanting, the same thing may be obtained from a few drops of their chymical essence, or the aromatic oil contained in their rinds; and if a small quantity of this be added to the extract, it will give it the smell and fragrantcy of the fresh fruit in great perfection: or rather add a little of the outer peel to the extract, a little before it is taken off the fire, and then the nicest taste will not be able to distinguish the difference between the fresh fruit and this. The virtues of this extract, thus made, lie in so small a compass, that a quart bottle full will serve one man at sea

several

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several years. In making of it there is little or nothing flies off but the water.

It will likewise be of great use to all seafaring people to have always with them, bullace, sloes, wild-plums, hips, elderberries, goose-berries, and the like, preserved in bottles, in the same manner as the pastry-cooks keep the latter. Cabbage, French beans, &c. may be preserved by putting them in clean dry stone pots or jars, with a layer of salt at the bottom, then a thin layer of the vegetable covered with salt, and so alternately till the pot is full; then the whole must be pressed down with a weight, and its mouth quite stopped with a cork or timber plug, well pitched over, that no air or moisture may enter: thus the vegetable may be kept fresh and green for a whole year.

At the time of using, the salt is to be washed off with warm water. This is the manner by which they preserve that never-failing remedy Greenland scurvy-grass. Every common sailor should also lay in a stock of onions and mustard, for they are a great preservative at sea. The Dutch sailors are preserved from the Scurvy by pickled cabbage. It must be observed, likewise, that a soup of boiled cabbage and onions will cure an adventitious Scurvy in
its

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its first stage, either at land or sea, in any part of the world; and what will cure will prevent.

Salt provisions should always be eaten with plenty of vinegar, mustard, and onions, but as little of the meat as possible, especially when the Scurvy begins to make its appearance in the ship. Those who have been weakened by long illnesses should be more particularly guarded against the Scurvy, by living on boiled biscuits, with a few drops of the quintessence or extract of lemons or oranges, and a spoonful of wine; as also oatmeal and rice gruels, flummery, stewed barley, with raisins or currants, fago, and wine, &c. But more particularly pickled green cabbage or beans, as before mentioned, and small onions boiled with the portable soup made weak. Most of their food ought to be acidulated with orange and lemon juice, their quintessence or extract.

The inspissated juice of turnips (a thing very easily and cheaply procured) is an excellent kind of ingredient in soup for sea use. The water-dock (*hydrolapathum*) the berries mentioned above, and crab apples; also apples, pears, or any other fruit, either preserved with coarse sugar (by being boiled in it) or else brought to a
rub

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rob or extract, by boiling their expressed juices, &c. as already laid down for that of lemons and oranges, by which means it may be kept good through the longest voyages. Apples, pears, &c. when well chosen, and well packed in dry tight casks, will keep very good for two or three months; or they may otherwise be cut in slices, and put upon strings in dry weather, by which they will be dried without losing their flavour or taste; they are then to be carefully stowed in very dry boxes, and aired sometimes to prevent their mouldering or being damaged.

Good wine may be made by fermenting the before-mentioned extracts with water and sugar; bullace and sloes are preferable to any other (oranges and lemons excepted) being a noble antiseptic astringent.

Poor people that winter in Greenland, under vast disadvantages in point of air and diet, preserve themselves from the Scurvy by spruce beer.

The common beer brewed for the use of ships should be imbittered with wormwood, chamomile flowers, or even gentian, rather than by means of hops; and by the former it will keep longer than with the latter, without acquiring any bad property, and have full as agreeable a taste; but it should be plentifully

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plentifully impregnated with those ingredients.

The shrub black spruce of America makes a most wholesome drink, and affords a balsam superior to most turpentine; it is of the fir kind. A simple decoction of the tops, cones, leaves, or even of the green bark, or wood of these, is an excellent antiscorbutic; but perhaps it is much more so when fermented, as in making spruce beer, which may be brewed fresh every two or three days. It is to be made by pouring boiling water on the tops, cones, leaves, bark, or wood of the spruce, or any other fir, dried or green; the latter may be easily carried in bags at sea: but when these cannot be had, a little turpentine or wormwood may be substituted; which ever be used, it is then to be fermented by the addition of a proper quantity of molasses, which, by its diaphoretic quality, makes it a more suitable medicine.

Again, when spruce cannot be had, the common fir-tops used for fuel in the ship should be first boiled in water, and then the decoction be fermented with molasses; to which may be added a small quantity of wormwood and root of horseradish (when it can be got); the fresher it is drank the better. When other things are

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are wanting, tar-water may be fermented in the same manner.

A drink may also be brewed the same way from the iassafras chips, or from the branches or berries of the juniper plant: for it the benefit is supposed to depend (as it certainly does) upon the fermentative quality, or to be derived from an accefcnt, antifeptic, corroborative, and balsamic virtue in the remedy, what is more liberally endowed with these qualities than these substances I have mentioned?

Besides fresh and preserved fruits, vegetables, and the drinks above mentioned, fermented liquors of all sorts are good, but more particularly cyder; among these are included many wines of every kind; or the juices of fruits (already taken notice of) may be fermented with ale, &c.

The late very learned and justly celebrated Doctor Huxham says, "Let all ships, that are to proceed on a long cruise or voyages, be supplied with a sufficient quantity of sound generous cyder; the rougher, provided it is perfectly sound, the better."

If apples are found of such vast service in the Scurvy, surely the juice of them, when become a vinous liquor, cannot but be

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be very salutary, and seems exceedingly well adapted, as a common drink, to correct by its acidity the alcalescent, putrefying quality of bad, corrupted provisions. This cyder should be at least three months old before it is served in, and quite fine; if it be too new, and foul, it is apt to give severe colics: it should be racked off (once at least) from its gross ley into good and sweet vessels, which will contribute to its becoming fine, and prevent it from growing ropy, in which state it is good for nothing: but if some of it should turn to vinegar, which may frequently happen, it will still be very serviceable; but it is found, when well managed, to keep good and sound even to the Indies. Every sailor should have at least a pint of cyder a day, besides beer and water.

The prize wines, which are commonly low and thin, and very frequently spoil by keeping, might be distributed among the ship's company (especially in want of cyder) to very good purpose.

The ventilators should be constantly worked, once a day at least; and the decks frequently washed or sprinkled with vinegar. In case of stinking water, lemon juice, elixir of vitriol, or vinegar should always be mixed with it, which will render it much

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much less unwholesome. A small drachm of garlic brandy, or the tincture of bark, taken in the mornings fasting, and when going on the night watch, is a great preservation. See the next Chapter on the Preservation of Health, &c.

Cream of tartar, being the essential vegetable salt of wine, is a very proper succedaneum when fruit is wanting; and orange or lemon peel (or its essence) will greatly improve the flavour: besides cream of tartar is the most grateful of all acids, substituted in the room of the juice of lemons and oranges, and best adapted to the constitution of mariners: it is also the cheapest; for an allowance of the eighth part of an ounce a day will not cost the government much more than one shilling yearly for each man, or eighteen pence at most. Two pounds and a half of cream of tartar will be sufficient to acidulate an hog'shead of water; this, with rum and sugar, will become a salutary composition of a cooling, strengthening, antiseptic, and diuretic nature; for there is nothing more represses the inflammatory and intoxicating power of spirits than acids. Such a liquor would prove infinitely more wholesome than the grog, wherewith the navy is commonly served

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served when spirits are used, both in the East and West Indies, and elsewhere.

The officers and men (that can afford it) should always carry to sea a very considerable quantity of pickles of different kinds, particularly onions; and preserves and extracts of all acid fruits, such as sloes, bullace, damsons, &c. They must all be properly preserved in glass bottles or stone jars well tied over; glazed earthen vessels are very dangerous either for preserves or pickles.

Allowing cyder, &c. to the fleet, indeed, may be deemed a very expensive project; but where the lives of so many brave and useful people are in the case, I think (as Dr. Huxham very humanely observed) the cost should by no means come into competition with the advantage that may be received from it. The Romans constantly carried with them vinegar and wine in their fleets and armies, and the common soldier and sailor daily partook of both; nay, they were at many other considerable expences to preserve the health of their armies, &c. Now, if that glorious prudent people thought the life of a Roman soldier so valuable, and were at such expence to preserve it, why should not we have as much regard to that of a British sailor,

RULES FOR PRESERVING HEALTH.
IN WARM, AND COLD CLIMATES, BY
DOCTOR LIND, and SURGEON NORTHCOTE.

HEALTH itself is not so prejudicial to Health as is generally imagined; but when joined to moisture it is remarked, that it occasions the most fatal disorders in all warm climates.

When a ship rides at anchor near marshy ground or swamps, and the wind blows directly from thence in hot weather, the gun ports ought to be kept shut; and if she rides with her head to the wind, a thick smoke sail should be constantly kept up to the fore-mast, to carry up the smoke of the galley, and prevent its coming aft over the ship: at such times the men should be enjoined to smoke tobacco, and the ship should often be fumigated with it, as well as with pitch and tar; the method of procuring tobacco to be so used, without any additional expence to the government, is, instead of burning the great quantities every year seized by the custom-house and excise-officers, to order it to be preserved, and sent to the dock yards to supply the ships destined for foreign voyages; it may be either added to the boatwain's or carpenter's stores, in such large quantities as may be thought convenient for the above use of fumigating: to prevent

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sailor, who is altogether as brave, and as useful to the Common wealth?

It is necessary here also to remark, that the usual method of impressing seamen on their return from long and tedious voyages, void of necessaries, chagrined at not seeing their friends and families, and most commonly in a bad state of health, and not allowed time and opportunity to recover it, hath been the bane of thousands: and I most heartily wish, for the honor of the nation and the good of the public, that a method of manning our fleet could be found out more consistent with common humanity and British liberty; and likewise to have it served with more wholesome provision, better beer, and a sufficient quantity of sound generous cyder on board every ship, to be used at discretion, and as necessity required; from the foregoing remarks it is evident what advantages would accrue from it.

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abuse, it should never be used without the captain's order, and always issued out by weight; it would likewise be proper that centinels should attend the burning it to prevent embezzlement, which precaution in my opinion would be of infinite advantage on many occasions, and a much more prudent way than the present method of consuming it, without the least benefit accruing to any individual.

Boats crews and men employed on shore, being most exposed to the open air, should be often relieved, and never suffered to sleep on shore, not even in tents or otherwise, if to be avoided; but should always be obliged to return and lie aboard at night: but when this cannot be complied with, and men are obliged to remain on shore, their tents should be very close, and erected on the driest spot they can find, that is, upon dry sand, gravel, or chalk, near the sea shore. The negroes, and some of the Indians on the coast of Guinea, both of whom sleep on the ground, have constantly a fire producing a little smoke burning in the huts where they sleep, which corrects the moisture of the night, and renders the damp of the earth less noxious; therefore if your tent is made on the grass, and at a distance from the sea-shore, it will be necessary to observe the same rule: the door of the tent should be towards the sea, and the back part secured

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by double canvas. All old forsaken houses, caves, and such like places, should be well purified with large fires; the men should never sleep on the ground, but in their hammocks, and be very well covered; every morning and evening they should take a dram of the spirituous tincture of the bark: likewise the officers and men, when on shore, should be allowed a more plentiful, but not immoderate use of vinous liquors.

Dr. LIND says, that people coming first from a cold into a hot climate, are apt to have plethoric symptoms (which in general I have found to be the case in many southern voyages, with some few exceptions) a pain of the head, giddiness, a sense of the weight, and fulness of the breast, and some are apt to be seized with ardent fevers and diarrhœas.

All practitioners have observed, that newcomers into warm climates are at first liable to fevers tending to the ardent kind, and are very subject to fevers of the remitting and intermitting kind, which are the epidemics of all warm countries at certain seasons of the year; and after some time they are apt to fall into fluxes, the yellow-fever, and other diseases depending on a putrescent state of the juices.

Nothing has been found to be more productive of diseases in those warm climates, than indulging freely in the use of spirits and

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other strong fermented liquors, lying on the ground, being exposed to damps and dews, and working hard, or using violent exercise in the heat of the day.

The most dangerous diseases in intemperate climates, and voyages to the southward, proceed from a continuance of hot, moist, close weather, or from heavy rains, common at some seasons of the year between the Tropics; at first a few of the men are seized with the bloody-flux, which is succeeded by a malignant fever of the remitting or intermitting kind, but most commonly it is like a double tertian: this is epidemic between the Tropics, and is the autumnal fever of all hot countries; the safety of the patient entirely depends on the fevers intermitting, or at least on its remitting so much as to allow an opportunity of throwing in the bark, which is the only sovereign remedy in these sort of malignant fevers, though they put on different appearances.

The bark might be made extremely palatable by infusing it in spirits with orange peel, and the bilious fever and the bloody flux might be prevented by it: four ounces of bark and two ounces of dried orange peel will be sufficient for a gallon of spirits; and two ounces may be allowed each man a day when there is an apprehension of these malignant diseases: it will be best to

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take half in the morning on an empty stomach, and the other half when they are called out to their night watch.

The bark is an excellent medicine for sailors on many accounts, it being the greatest antileptic taken inwardly of any yet discovered; but as it is a very expensive drug in England, it is not to be supposed that ships will carry such a quantity of it as to be of common benefit to the whole crew: though this may unhappily be the case for the poor seamen, yet they may be supplied at the cheapest rate with a medicine of nearly equal goodness and efficacy from our own soil, and if prudently employed, the scurvy, that maritime pestilence, will seldom or never make its alarming appearance among a ship's crew on long and dangerous voyages, proper care with regard to cleanliness and provisions being observed; the medicine here recommended to their use is the fine bark of the English oak, which is easily preserved, and may be conveniently taken in the quantity of a drachm at a time, occasionally in powder, extract, decoction, or tincture. In intermittents (for poor people) it has been frequently used with success.

It is necessary to observe, that in sultry climates, or during hot weather in all places subject to great rains, where the country is over-run by thickets, shrubs, or

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be every day fumigated with the steams of tar or pitch, and in wet, damp weather, fires often lighted between decks, with proper centinels over them to prevent any danger.

To boil vinegar between decks or in the hold fills the whole cavity of the hull with a vapour that is salutary and antiseptic to a very great degree; and this may perhaps be the best way of using vinegar to prevent a corruption of the air, or the spreading of diseases; fumes of tobacco (as already mentioned) may be employed to the same purpose with good success.

The cloaths of the sick and the sick birth ought particularly to be fumigated; their foul cloaths should always be instantly sprinkled with vinegar, or tied to a rope and plunged into the sea, to wash them from all seeds of contagion; vinegar should also be dispersed plentifully every where through the ship, cloths dipt in it hung up in all parts, and fresh vinegar frequently sprinkled upon them, to keep the vapour of it continually afloat, but especially the sick birth ought to be daily well washed with vinegar.

The use of cold bathing-tubs under the fore castle, and bathing in the sea early in the morning, have been found extremely beneficial in hot countries, for this practice

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woods, especially if there are marshes or stagnating waters in the neighbourhood (which are exceedingly pernicious to the health of all Europeans) the malignant diseases above-mentioned may justly be dreaded: the fens and marshes even in England are bad for strangers.

The ship should never lie so near the shore, as that the mountains (if there be any) may intercept the sea breezes (or in the sea term, she should never be land lock'd); the same precautions are necessary in places, either during or soon after the rainy season: in hot climates wind fails in the day time should constantly be kept up, and at sea in the night likewise; the ventilators should be continually worked, and the lower deck ports kept open, when the weather will permit, from sun rising to sun-set; the decks must be kept clean scraped and washed, but the latter never after sun-set. When sickness begins on board a ship, the sick should immediately be removed as much as conveniently may be from the sound; the sick-birth should be as airy as possible, without exposing the sick to catch cold, and always kept as clean as may be; the centinels over the sick should constantly empty and wash the buckets which the sick make use of every watch.

The ship (particularly a new one) should

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not only braces up the fibres, and contributes to health but cleanliness likewise, and promotes perspiration; but then the people should not stay too long in the water, nor go in when overheated with work or liquor, nor when the stomach is full, or there is an eruption with a prickly heat on the skin. Diarrhoeas and other complaints, the effects of great heat, have been cured by bathing, and their returns prevented.

Wine is the best of all cordials in the decline of fevers, (provided it is sound and good) and is a much better restorative than rum, or any other spirits however mixed or prepared; it is likewise an excellent means to prevent infection; some casks of Madeira Wine (which keeps good in all climates) should be preserved for the use of the sick in these voyages.

The swallowing large draughts of undiluted spirits has always the most fatal consequences in every climate; but when they are converted into punch, they become very salutary, preventing diseases which arise from hot and moist weather, and the tendency to corruption in the animal fluids, which is constantly induced thereby; as cleanliness alone greatly contributes to health, it may not be amiss to propose, that when at sea, the seamen and marines should be mustered when the separate watches are called every Sunday, and pass

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in review by the officer of the watch, and those that are then dirty, having a foul shirt, trousers, &c. shall have their allowance of liquor, whether beer, wine, or grog, kept for that day (by the captains order); for the second offence to stand in the pillory on the quarter-deck, and for the third, to receive a dozen lashes at the gangway: the same notice might be taken of their hammocks, when the captain thinks proper to have them examined; by this method the people would always be wholesome and clean, and consequently much healthier, for in every ship, there are a number of dirty lubbers, particularly among the waste guard and marines; and the cooks mates and their attendants are generally as bad as any.

I shall here only mention that when men are seized with inflammatory symptoms on entering into warm climates, they may be blooded freely; afterwards they do not easily bear such copious evacuations, but rather require to have them made in smaller quantities, and very early and frequent, as inflammations make a rapid progress in warm countries.

Doctor Lind says, many practitioners disapprove of bleeding in those countries which lie under the torrid zone, on a supposition that the blood is too much dissolved, but he thinks (very justly) that this

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rule will admit of many exceptions, and that sailors being strong and exposed to greater vicissitudes of heat and cold, and in re excesses and other accidents, bear fiercer bleeding in general than any other set of people. After some time the diseases in these warm climates tend to the putrid kind, and then must be treated as such.

In warm climates the ships are generally most healthy at sea, where the air is dry and serene, and the heat moderated by refreshing breezes.

RULES FOR PRESERVING HEALTH, IN COLD CLIMATES.

IN northern climates and channel cruising, though the cold is intense, yet if the air is pure and dry and the men are well clothed, there are few diseases; but when the weather is unsettled, cloudy, wet and rainy, the usual consequences are colds, attended with feverish and inflammatory symptoms, and especially rheumatic, pleuritic, and peripneumonic complaints; these last require plentiful evacuations, but chiefly bleeding, which, when timely and freely used, will prevent consumptions and chronic rheumatisms.

When the men are almost constantly wet and chill from bad weather, and undergo an uncommon degree of fatigue, it

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will be proper to let them have the following mixture, viz a pint of small beer, and a quarter of brandy sweetened with molasses, to which may be added as much vinegar as will render the mixture palatable; or, instead of the last, cream of tartar; this the Russians call *asbetten*. Dry beds and cloathing are most necessary articles; for it is observable that the most naked ragged fellows are principally attacked with winter diseases.

The scurvy is a disease common in the winter and spring; the method to prevent which is already laid down in the preceding section, and to which the reader is referred.

Dr Lind says, the most proper cordial dram a sailor can use in the winter is garlic brandy, for a small quantity of it, not only warms the stomach, but keeps the breast, kidneys, and skin free from obstructions; but neither this nor any other dram should be given to a man almost chilled to death with cold, having his limbs quite benumbed, and their extremities frost bit (as it is called); for, in this case, it has often proved fatal; but he should be immediately put into a warm bed, and have some warm gruel, sage tea, or some such diluting liquor, given him; after which a dram may be allowed, when it will prove less dangerous, and more beneficial.

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A very remarkable case to this purpose is related by Eildanus, viz. a man was found quite stiff and frozen all over; he was put in cold water, and immediately the icy spicula were discharged from all parts of his body, so that he seemed covered with an icy crust; he was then put into a warm bed, took a cordial draught, and a plentiful sweat followed; after which he recovered with the loss of the last joints of his fingers and toes. De Gangraena, chap. XIII.

People who are benumbed with cold in frosty weather, ought never to be brought immediately near a fire; for that has been found either to cause immediate death, or gangrenes of the extremities. Any kind of fruit frozen, when put immediately to the fire, will turn soft and rot; but if put into cold water, it throws out the icy spicula, and recovers so as to be almost as good as before, which, proves the above method used with the man to be right.

In cold rainy weather, tea made with sage, sassafras, or a few roasted juniper berries; with the addition of a little garlic brandy, will be very beneficial; likewise a man will never be so liable to catch cold when he is wet upon the deck, and uses exercise, as when he is below in his wet cloaths, or sleeps in them, or in a damp bed; when he goes upon deck he should

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eat a bit of biscuit, and drink a little assbitten, and then the weather will probably have but little power to alter his health for the worse.

When a sailor happens to be dead drunk, his head should be raised, and a sponge dipped in vinegar should be held to his nose; and if he can drink, he should have warm water mixed with vinegar; bleeding will likewise be proper, and a gentle emetic which operates speedily, such as the oxymel. scillitic. sal vitriol. &c.

Likewise dipping the feet in cold water will take off the pressure from the brain; and solutive clysters will abate the distension; it is but too well known how many people lose their lives by excessive drinking, and spirituous liquors; the same treatment will be useful after a large dose of opium.

These methods here laid down (chiefly taken from Doctor Lind) but partly from others, I have practised for many years in the royal navy; and with the blessing of God it has in general been attended with great success; for which reason I can the more strongly recommend it; if it be true, as was published in December 1760, taken as is supposed from returns made to the House of Commons, that of 185,000 men, raised for the sea-service during the late war, above 130,000 perished by diseases; and that two thirds of this number may be safely charged

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to the account of diseases that take their rise from putrefaction; surely every motive of policy and humanity should excite men to endeavour at finding out somewhat to check that fatal and destructive diathesis; for if sea-men could be preserved free from it other kinds of diseases would seldom endanger them.

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