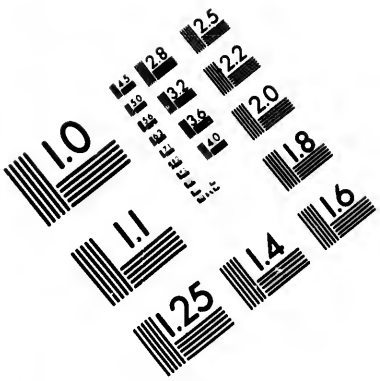

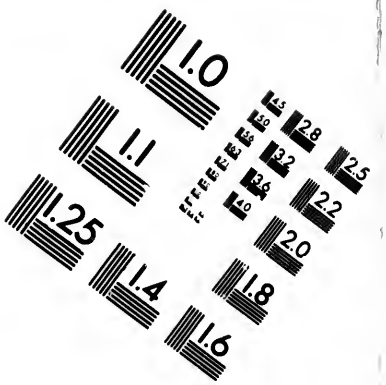

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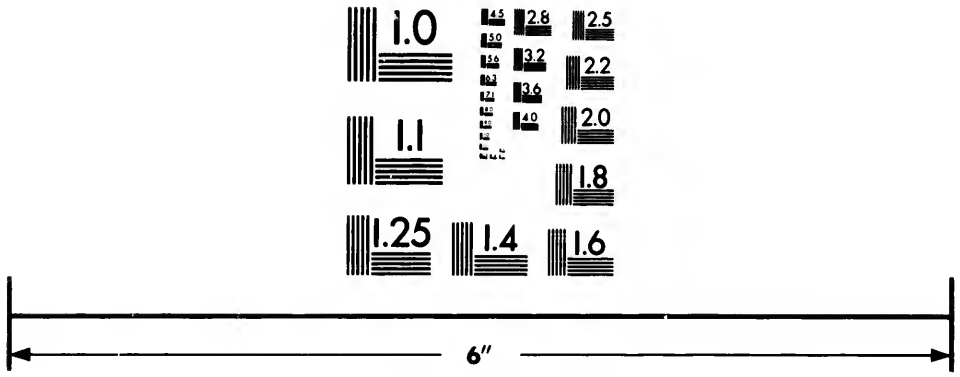

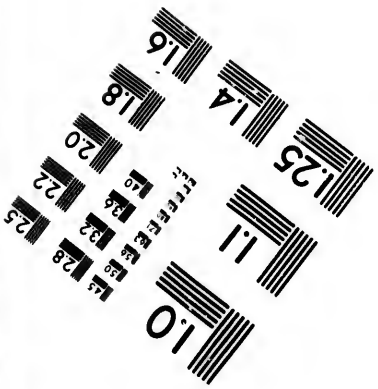

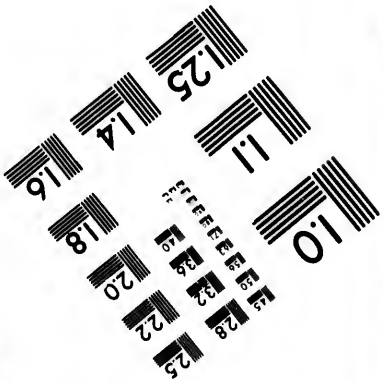

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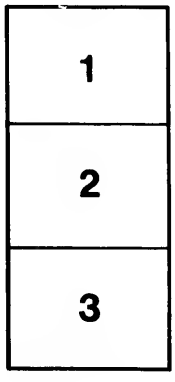
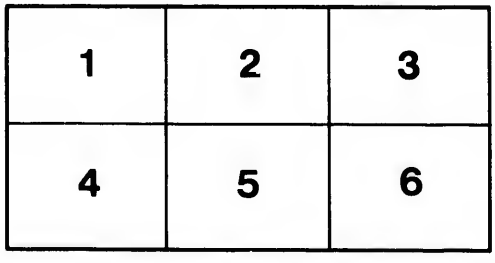




A

BRIEF STATEMENT

OF

THE PROGRESSIVE IMPROVEMENT

OF

THE HEALTH

OF

THE ROYAL NAVY,

AT THE END OF THE EIGHTEENTH AND BEGINNING

OF THE NINETEENTH CENTURY;

TOGETHER WITH PRACTICAL ILLUSTRATIONS,

AND

A NARRATIVE OF SOME HISTORICAL INCIDENTS

CONNECTED WITH THE SUBJECT,

BY

SIR GILBERT BLANE, Bart.

FELLOW OF THE ROYAL SOCIETIES OF LOND. EDINB. AND GÖTTING.

~~AND~~ OF THE IMPERIAL ACAD. OF SCIENCES OF ST. PETERSBURGH;

and of the Royal Acad. of Sciences of Paris; under L. Rodney PHYSICIAN TO THE FLEET IN THE WEST INDIES AND NORTH AMERICA IN THE LATTER PART OF THE AMERICAN WAR;

ONE OF THE COMMISSIONERS OF SICK AND WOUNDED SEAMEN DURING PART OF THE LATE WAR; AND

PHYSICIAN TO THE KING.

LONDON:

PRINTED BY W. NICOL, CLEVELAND-ROW, ST. JAMES'S.

1830.

TO

HIS MOST GRACIOUS MAJESTY

WILLIAM THE FOURTH.

SIRE,

In availing myself of the permission which Your Majesty has been graciously pleased to grant me of inscribing to you these pages, I feel the utmost anxiety to do justice to a subject in which I know Your Majesty to be deeply interested, not only as Sovereign of the British Empire, but as having relation to a department of the Publick Service, to which Your Majesty was professionally attached during a great part of Your Majesty's life. In that Service I became known to Your Majesty, by serving in the same fleets both in the European and

American Seas fifty years ago. And in the first year of it, I had the honour of presenting YOUR MAJESTY, then at New York, with a copy of a tract on the same subject as this, under the title of "An Address to the Officers serving in His Majesty's ships of war in the West Indies and America in the autumn of the year 1780." I have now the honour of presenting a like Address, to be distributed among the present Officers of the Royal Navy, illustrative of the progressive improvements which have accrued to YOUR MAJESTY'S service from pursuing the various means I recommended, and which I now lay at YOUR MAJESTY'S feet.

I have here stated, in as few words as possible, what are these salutary means, and enumerated the resulting advantages; which are, that YOUR MAJESTY'S Navy can be maintained in a state of efficient duty by an incalculable diminution of the requisite number of seamen, of the amount of tonnage and of the necessary expenditure of treasure in the present day, and in future, as compared

with those times in which I had the honour of being first known to Your Majesty.

Permit me, Sire, further, not in the language of adulation but of truth, to express my conviction, that there are none of the most patriotic and loyal of Your Majesty's subjects who exult more on the evidence which I hope to produce of these facts than Your Majesty,—Your Majesty having already evinced, since the commencement of your reign, the ruling principle of Your Majesty's conduct to be that of a paternal anxiety watching over and protecting the best interests, the rights, the liberties, and the general welfare of the subjects of these realms, by the manifestation of which Your Majesty already reigns in their hearts.

I have only, further, humbly to request Your Majesty's gracious acceptance of the expression of the ardent sentiments of veneration, as well as of affection and gratitude, which I feel for the many proofs of good will and good offices received at Your Majesty's

hands in former days, and of which I must ever retain the most indelible remembrance, and I have the honour to remain,

SIRE,

YOUR MAJESTY'S

Most devoted and dutiful Servant and Subject,

GILBERT BLANE.

London, 2d. Nov. 1830.

In evidence of the passage in the foregoing Dedication, in which the Author disclaims *adulation*, the reader is referred, among other proofs, to the following extract from an Address of His Majesty, at a civic entertainment at Lewes, to which the King and Queen were invited on the 23d of October, 1830.

"IT IS A FIXED PRINCIPLE IN MY MIND, THAT THE "TIME OF THE SOVEREIGN IS DUE TO THE NATION OVER "WHICH HE IS CALLED TO REIGN, AND THAT MY TIME IS "ALWAYS BEST BESTOWED IN FURTHERING THE HAPPINESS "AND PROSPERITY OF THE PEOPLE."

And that these are not empty professions, is amply attested by what has occurred on the day in which this Dedication is dated, being the day on which is opened the first Session of Parliament of the new Reign, and on which His Majesty, in consideration of the financial distresses of the country, does, in his Speech from the Throne, announce the transfer of the hereditary emoluments of the Crown to the Nation; a substantial act of bounty, evincing an unexampled instance of patriotic principles and feelings, and absolving the Author of this Tract from all imputation of servile and unmerited adulation, so disgusting, and too usual in the ordinary style of Dedications.

A

BRIEF STATEMENT, &c.

The dangers of a life at sea have been a frequent theme of lamentation among the poets and historians of all ages. In remote antiquity, and in the middle ages, the calamitous disasters at sea, took their rise from the insufficiency of human means in controlling the elements; and they were also more frequent than in modern times by the less perfect construction of ships, and from their not being able to venture far from land before the invention of the mariner's compass, whereby they were more exposed to the operation of storms, by foundering at sea, or by being stranded on rocks or shoals.

But since mankind have learnt to traverse oceans, evils unknown to our ancestors have arisen more hostile to human life than rocks, shoals, and storms; for since the invention of the compass more seamen have perished by the scurvy and fevers than by all other causes inseparable from practical navigation.

In consequence of ships being enabled, in modern times, to make voyages far more protracted both in space and time than formerly, it was necessary to be provided with a sufficient stock of

food, which could by no other means be done but by salt provisions, under the use of which the health and lives of men could not hold out long enough for such distant voyages as were then to be undertaken. And the habits of life at sea in that age were such, and the virtues of cleanliness and ventilation so little studied and understood, that fevers of the most baneful and infectious nature were engendered, equally hostile to a seafaring life on prolonged voyages, and cruises, as the scurvy.

Considering that it is to the maritime ascendency of Britain that she owes essentially and peculiarly all that wealth and dominion which now enables her to sway the destinies of the world, and has put into her hands the balance both of power and justice, it is impossible to assign too much importance to whatever improves navigation. And it is to be hoped that while she pursues her own legitimate ends of self defence and commerce, she will not abuse her unparalleled power for the purposes of unjust aggression, but carry to the utmost limits of the habitable earth, and the navigable ocean, those schemes, the tendency of which is to promote the interests of science, the extension of civilization and happiness, among our benighted and untutored fellow creatures.

The purpose of this tract is to announce, that the only obstacles to the completion of these mighty purposes, have been removed by progressive improvements in the course of the last fifty

years. The scurvy has been extirpated; and the means of counteracting fevers have been so far attained, that they can never prove a serious evil under such vigilant, zealous, and intelligent commanders and medical officers as now belong to the naval service.

Without entering into further details, which the limited nature of this tract will not admit, the reader will perceive by a mere inspection of the following scheme, to what an extent the improvement in question has been carried.

By a faithful and diligent examination of the medical records of the navy, it has been ascertained that the proportion of those sent to hospitals in all parts of the world to the number voted by Parliament, was,

In 1782	- -	1 in 3.3.
1795	- -	1 in 4.
1813	- -	1 in 10.75.
1819	- -	1 in 8.8.
1829	- -	1 in 8.9.

Thus it appears that only a third part of the sickness prevailed in 1813 that did in 1782. And it ought to be remarked, that the increase of the two last statements over the preceding was owing to a great prevalence of the yellow fever, and that great as the difference is between the year 1782 and 1813, it would have been still greater had it not been for the reports upon this fever being blended with the general reports, as appears by

the result of those statements which are confined to temperate climates.

The next proof I shall produce in evidence of the high pitch of perfection to which it is practicable to bring the health of seamen in prolonged voyages or cruises, is derived from the state of health of the fleet which blockaded Brest harbour in the year 1800. It consisted of twenty-four ships of the line, besides smaller vessels, under the command of Lord St. Vincent, and kept the sea from the 27th May to the 28th of September following, without one of them being in port—without the men having a single meal of fresh beef—and without sending more than sixteen to an hospital. Let this state of things be contrasted with that of the channel fleet in the first years of the American war. It appears by a letter to me from Dr. John Lind, of Haslar hospital, that in one of these years there had been sent on shore from the channel fleet in the course of four months six thousand and sixty-four men, almost all affected with fever or scurvy; and that on another occasion, after a ten weeks cruise, two thousand five hundred men were brought into port ill of scurvy.

Innumerable other proofs of the same blessed improvement of the health of the navy might be adduced. Indeed the whole service affords one luminous and overpowering display of the same fact—a fact, the full importance of which can

only be comprehended and duly appreciated, by considering, that unless some new means of preserving the health and lives of seamen had been discovered and put in practice, the whole stock of them must have been expended before the conclusion of the revolutionary war, that is, between the years 1793 and 1815; for the whole efficient range of the life of a seaman is little more than twenty years; and in so long a period, and under so great a waste of life and health, the commerce of the country could not have been able to supply the demand of the navy, had the expenditure of life been as great in the revolutionary war as it had been in the American war.

It now remains to be mentioned, through what means these mighty results have been brought about. Are we to thank for it a guardian angel, presiding and watching over the dearest and most valuable interests of our country? or is it more rationally imputable to some of those profound and exquisite discoveries in science, mathematical, chemical, mechanical, or pharmaceutical, with which the present age abounds above all others?

No such thing.

The scurvy has been prevented, subdued, and totally rooted out, by the general use of lemon juice, supplied for the first time at the public expence in the year 1795, and which operated so speedily that in less than two years afterwards it became extinct, and has remained so.

And with regard to fevers, they have been extinguished (though not so rapidly as scurvy) by a watchful attention to the following points, cleanliness, ventilation, dryness, sobriety, the separation of those in health from those affected with contagious fevers, and by a more general and deep impression on the minds of commanding officers, that one of their most sacred and indispensable duties consists in enforcing the means of preserving health, and that to them, more than the medical officers, belongs the duty of an unremitting vigilance with regard to all those regulations as points of discipline, now so well ascertained, by which the generation and the spreading of infection are counteracted.

It would have been fortunate had a specific been discovered as effectual in preventing fever, as lemon juice is in annihilating scurvy. There is indeed an article which approaches to it, though not so rapid and decided in its operation. This is soap. The present Board of Admiralty has had the great merit of first providing the fleet with this invaluable means of abolishing those squalid habits, by which the febrile poison of fever is generated. Although Lord Verulam, in treating of the Black Assizes of Oxford, in the year 1572, pointed out clearly that this was the production of filth, accumulated by the long neglect of the persons of the prisoners, his opinion was not attended to; the cause, in the opinion of others, being made to consist in pestiferous exhalations from

the earth, or other fantastical means. The true cause was not acted upon till the middle of the eighteenth century, when Pringle, Lind, and others revived the opinion of Bacon. Such however is the slow progress of knowledge, that soap, the great means of promoting cleanliness, was not seriously thought of till the year 1810; so that like lemon juice, the virtues of which had been ascertained in the reign of Elizabeth, the Government did not avail themselves of it till that of George III. The supply is still too scanty to have its full effect. If I were to affirm that the expence incurred even by the most ample supply of soap would not be the hundredth part of what would be incurred by the sickness which would arise from the want of it, I should be greatly within the mark, and the thousandth part would perhaps be nearer the truth.

There are so many public advantages as well as sentiments dear to the heart of every good subject and good man, that they cannot be too much recommended, cherished, and dwelt upon. Of these subjects of reflection none seems of such magnitude as the consideration that, in consequence of the great improvement of health the efficiency of the navy is doubled, and the national treasure husbanded to an incalculable amount. What a consolation it is in the present state of the public finances, that in case of any future war, it can be carried on at sea with so great an abatement of

treasure, and consequent burdens on the nation! For it does not require any deep thought to perceive that at a time when a fleet, as we have seen, could not keep the sea for more than ten weeks without being rendered unserviceable by scurvy, and that national protection required that when the channel fleet has been constrained to return into port in so short a time, another naval force, as nearly equal as possible, ought to be ready to replace it, for repelling invasion, or baffling the expeditions of the enemy. I was in the habit of saying that at present there was as much service in two ships as formerly in three; but one of the most distinguished sea officers that ever lived, declared to me, that it was his conviction that two ships now are equal to four of former times. How must every young man's breast therefore exult, when, from the moment he enters the service, he feels conscious of his contributing to these splendid results, while at the same time their hearts are swelling with pride that they belong to a country, which almost in their own memory, or that of their fathers, have made such displays of skill and gallantry as are unequalled in the history of the world, namely, the conflicts of the 12th of April, 1782, near Dominique, under Lord Rodney; that of the 1st of June, 1794, on the confines of the Bay of Biscay, under Lord Howe; that of the 14th of February, 1797, under Lord St. Vincent; that of Cam-

perdown, on the 11th of October of the same year, under Lord Duncan; that of the 1st of August, 1798, at the mouth of the Nile, under Lord Nelson; and that of the same great commander on the 2nd of April, 1801, at Copenhagen; that of July 1801, under Sir James Saumarez; and to crown all, that of the 21st of October, 1805, at Trafalgar, under the immortal Nelson.

It is therefore highly satisfactory to contemplate the many proofs of the substantial benefits that have accrued to the sea service in the last fifty years both in war and commerce, in all quarters of the world, from the zeal, humanity, and good judgment, displayed in promoting the health of seamen. It has been proved that it has given double efficacy to the national force, and therefore subtracted in the same proportion from the national expenditure. It may be alleged by those who are disposed to question this position, that it is not by the improvement of health alone that ships are enabled to keep the sea at all seasons, and in all climates for an indefinite length of time. This is certainly true, for the sheathing with copper,* besides adding to the speed of

* The following is the history of the coppering of the navy, as furnished to me from the records of the Navy Office, by the kindness of Sir Robert Seppings. The first ship that underwent this operation was a frigate, in the year 1761, another in 1765, another in 1770, four in 1776, nine in 1777. The first ship of the line which underwent it was the Invincible, in

of ships, has proved of incalculable benefit by superseding the necessity of frequent repairs, whereby much time used to be wasted in harbours. Nor without this could it have been possible to have maintained the long blockades, such as that off Brest, in 1800, whereby the hostile ports were as it were sealed up, and the threatened invasions of the enemy repelled. It may further be alleged, that by means of the recent discoveries in astronomy and mechanics, ships are enabled to keep the sea in prosecution of long cruises and voyages, whether for the purpose of war, commerce, or geographical science, without losing time, or incurring danger in making land for the purpose of correcting longitude. All this is admitted. But these considerations are so far from disparaging the benefits of health, that they give it additional importance; for it is manifest, that without the supply of lemon juice, and the other means of maintaining health for a sufficient length of time, the advantages of copper sheathing, the facilities in finding the longitude by chronometers, telescopes, and astronomical tables, which do so much honour to the human intellect, particularly to the age and country in which we live, would be in a great measure frustrated. It

March, 1779, and seventeen more in the course of the same year. In the course of the two following years, the whole British navy was coppered, a circumstance so important, that it may be considered as an era in the naval annals of the country.

would be of little avail that the depths of mathematical science, the elaborate researches of mechanical, optical, and chemical philosophy, should be called to the aid of navigation, so as to cooperate so admirably in carrying it to its present exalted state of perfection, unless the means of preserving health were to keep pace with these mighty improvements.

And on a review of this subject in all its extent and relations, it will appear that there is not probably to be found in the whole range of human affairs a finer illustration of the practical benefits of progressive knowledge in promoting the great interests of mankind—so that science, while it lends an aid, sheds also a grace and dignity, over the useful arts—nor can there be a more striking proof of the maxim, that humanity, like every other moral virtue, is the best policy—nor could we light on a more happy example to elucidate that subsidiary influence and mutual dependance, by which all the arts, sciences, and professions have a reciprocal bearing on each other, conspiring to bring about the greatest sum of human enjoyment, and affording a field of contemplation, in which cultivated, benevolent, patriotic, and pious minds, delight to expatiate.*

* The like sentiment is thus elegantly expressed by Cicero: Etenim omnes artes quæ ad humanitatem pertinent habent quoddam commune vinculum, et quasi cognatione quâdem inter se continentur.

In the sequel of this tract it is my intention to relate some of the most remarkable incidents which came under my own observation in the course of my service.

In the course of the year 1780, my first year of service as physician to the fleet on the windward station, I found from my own returns and from examining the records of the hospitals, that the annual loss of lives from disease previous to our arrival, and some time after, had been at the rate of one in seven: nor was this alarming rate of mortality imputable to the prevalence of the peculiar epidemic of the climate, for there were then very few cases of yellow fever; and as the principal causes of it were such as seemed to me to be removable by practicable and attainable means, I was anxious to state these circumstances at the source of authority. I found that in a fleet, of which the complement of men was 12,109, the mortality in one year had amounted to 1,518, besides 350 rendered unserviceable, a number more than equal to the equipment of three ships of the line. When this is duly weighed by a considerate mind, as it affects the most important interests of the state, together with the great difficulty and expense of replacing these valuable subjects by fresh recruits, and when the calamitous sufferings of the individuals themselves are brought home to our feelings, no case could be conceived more calculated to awaken sentiments of patriotism and humanity.

No opportunity occurred of effectually removing these deplorable evils till the autumn of 1781, when I attended Sir George, afterwards Lord Rodney, to England, whither he went in order to procure reinforcements, foreseeing that the windward station in the West Indies would become the great theatre of war. It was then I made such representations as brought about a total change in the state of health of the fleet.

In a memorial to the Board of Admiralty, I stated the causes of disease to consist in :—

1st. The neglect of cleanliness, ventilation, and dryness in the interior economy of ships.

2ndly. The want of the supply of an article, which had been found, by the most unequivocal experience to be infallible in preventing and curing scurvy, one of the most destructive scourges, and the most peculiar to the sea service, of any class of disease. The remedy alluded to is the juice of lemons or limes.

3rdly. The abuse of spirituous liquors, not merely as the most common means of intemperance, but as the habitual beverage of seamen, even when diluted. I recommended the substitution of wine, and, I ought to have added, of strong malt liquor.

4thly. The want of adequate nourishment and comfort for the use of the sick and convalescent on board of their own ships.

5thly. The want of proper bedding and of soap ;

so that along with the suitable articles of diet the means might be afforded of curing men on board of their own ships, the hospitals on that station being at that time too small, ill arranged, and extremely expensive; the men by going ashore being also exposed to the epidemic and endemic of the climate, and to the most pernicious temptations, from the facility of procuring the means of intoxication.

6thly. The want of a gratuitous supply of medicines, as well as necessaries to the surgeons, in order to enable them to cure as many as possible without sending them to hospitals.

7thly. As Hospitals are, to a certain degree, indispensable at the principal stations, especially for the relief of ships in which contagious diseases prevail, new regulations of them in point of space, separation, ventilation, and cleanliness, were also recommended.

Though all the recommendations here specified were not at first complied with in their full extent, enough was done to evince their expediency, and to lead to great future improvements. I had the immediate and high gratification of succeeding in the recommendation of wine, and of being an eye-witness of its almost incredible benefit in the new reinforcement which accompanied the Admiral on his return. The Formidable of 90 guns, the flag-ship, in which I was embarked, was, by way of experiment, supplied with Teneriffe wine

of an excellent quality, to the total exclusion of spirits. With these advantages, the expence attending the supply of essence of malt and sour krout was saved, even after being amply superseded by the superior virtue of other antiscorbutics; under this new arrangement this ship enjoyed a degree of health far superior to any other in the squadron; for of 750 men none died in the Formidable for four months after leaving England, nor were any in that time sent to the hospital, except thirteen, of whom none were affected with any of the diseases belonging to a life at sea, for they were all cases of small-pox, wounds, and ulcers. Nor did any real sickness break out in this ship, till the infection brought on board at Jamaica by the return of men lent to assist in cleansing the Ville de Paris in the months of June and July in that year. After this the whole fleet was supplied with wine.

Though partial supplies of anti-scorbutic fruits were ordered on particular occasions, it was not till the year 1795 that the general supply of lemon juice was decided on by the Board of Admiralty. This happened a few months after I was appointed a Commissioner of the Board for the care of sick and wounded seamen; but it is due to Dr. Blair, then Chairman of that Board, to mention, that he had stated the expediency of the measure some months before my appointment. All the other measures regarding medicines, necessaries, and

bedding, were soon after duly attended to, except the supply of soap to men in health. This was indeed most laudably and judiciously provided by the present Board of Admiralty (not indeed gratuitously as in the case of lemon juice,) but by a method long in use in the navy with regard to tobacco and slops, by which it was put in the power of the men to obtain it by demand on the purser, by whom it was charged against their wages.

Some very impressive examples of the speedy and complete cure of scurvy by the citric acids (the scientific term in chemistry for the juice of the fruits of the genus Citrus and natural order *Hesperidæi*) occurred on board of the Invincible and Alcide in the first year of my service, and next year on board of the Arrogant, and a still more striking and conclusive proof of this on a large scale occurred in the autumn of 1782, in a fleet of 28 ships of the line, at New York, as specified in my work on the Diseases of Seamen. In these the scurvy and scorbutic habit prevailed to a great degree; for though orders were given at Jamaica, where they lay for ten weeks previous to sailing for North America, for the purchase of fruit and other vegetables, very little could be procured on account of the extraordinary drought of the season. Fortunately, a small prize vessel loaded with limes, lemons, and oranges, was carried into New York, about the time the fleet arrived, and

the whole cargo was, by my advice, purchased for their use. In consequence of this and other refreshments served on board, few cases were sent to the hospital; and the men, as soon as they could walk, were sent on shore for a few hours every day for recreation, by which means their health, strength, and spirits, were restored in a few weeks. It is but justice to Admiral Pigot, who had now superseded Lord Rodney, that to the accomplishments of an excellent seaman and officer, he added the virtues of a most zealous and humane commander, and readily complied with whatever I recommended as conducive to the health of the men. And it was pleasing on this occasion to see a proof of the great economy of expending small sums of money on refreshments, and to see also a removal of those prejudices which stand in the way of whatever is new, however palpable and demonstrable its benefits may be. One would almost believe that the saving of money was to be held more worthy of attention than the saving of lives; the true statement of the case being that by this plan there is a great saving both of lives and money. The expence of replacing those who die, and of supporting hospitals, may with truth be stated at much more than a hundred times what the supply of fruit and other refreshments would cost. Yet we do not read in the history of our maritime wars, except in one instance, that of Admiral Watson's fleet, in 1757,

that any effectual means till now were ever taken for a general supply of this antiscorbutic specific.

I had also the great satisfaction at this time of having my recommendation for the supply of soap complied with, and of perceiving the vast utility of this temporary supply to the great number of men who were cured on board of their own ships.

It occurred to my mind, as a duty incumbent on me as physician to the fleet, soon after my arrival on the station early in 1780, to enlighten the commanding officers, as far as lay in my power, regarding the most effectual means of maintaining the health and vigour of the men, of preventing the invasion of disease, and of doing justice to the sick. I perceived indeed the most anxious and laudable pains taken to husband and preserve from decay all manner of stores, such as ropes, blocks, spars, gunpowder, and arms. But however precious these may be, as the indispensable implements of war, it will not be disputed that human hands are not equally so. Yet, though there was the additional motive of humanity, it does not appear that this branch of duty had been studied with the like degree of anxiety as that which regards the care of the inanimate material of war. It must also be obvious to naval officers, that it is on the numbers and vigour of the hands, that their own success and reputation must depend in the conflict with the elements, and in the hour of battle. Money has metaphorically been

called the sinews of war; but the most indispensable article for the efficient purposes of war, is the sinews literally, and properly so called, belonging to the living engines by whose energies it is carried on. This oversight is not imputable to the inhumanity of those who conduct the navy in the civil and military departments, but to that error of judgment, by which they conceive, that all that concerns the health of the men lies in the department of the medical officers, and that if they take care to provide professional gentlemen, possessed of due skill, and furnished with an adequate assortment of drugs and instruments, they stand absolved from all further responsibility in what regards the health of the mariners.

I felt it therefore as a matter of imperious duty to explain myself fully on this subject to the commanding officers of the fleet. This I did in a printed tract, which was distributed among the flag officers and captains. In this I endeavoured to set forth how much the health of the men, particularly with regard to the prevention of disease, depended on the good judgment and exertion of officers, who alone could establish and enforce the regulations respecting ventilation, cleanliness, and discipline. This was extremely well received;* and it is not for me to say what

* The author has in proof of this, not only the innumerable testimonies of personal regard which he has experienced during the after part of his life from these distinguished persons,

share it may have had in the great alteration in the conduct of the officers of the navy regarding these duties, and how far it may have contributed to the revolution which has taken place in later times in the whole system of the medical management of the navy. There can indeed be no situation in which there is more room for genuine virtue, praiseworthy conduct and address;—none to which there attaches more grave and solemn responsibility;—none on which there is a more imperious claim on the conscientious discharge of duty, than that of a naval commander. The men are cast on his humanity and discerning judgment under various aspects. A ship in the middle of the ocean is a little world within itself, at the arbitrary disposal of an individual—seamen and marines are subjected by martial law to a more despotic exercise of power than the constitution of the state authorises in civil life, or even in the army—naval officers can at their single arbitrary discretion, inflict such a summary and severe punishment as cannot be inflicted in the army without the solemnity of a court martial: Englishmen surrendering from considerations of

but their interposition on his behalf on the conclusion of the war, when they unanimously made application, through the Admiralty, for a reward to him in peace, no half pay being then established for physicians to fleets. In compliance with this His Majesty was pleased to grant him a pension for his services.

public expediency what they hold most dear, and that of which they are most jealous, their liberty, becoming thereby the greater objects of grave decision and considerate feelings. All seafaring people, especially those employed in war, are exposed to peculiar and unavoidable privations, hardships, and dangers, which ought to be mitigated, as far as is practicable, by those at whose absolute will they place their lives and limbs:—it is in their character to be unthinking and careless of their own welfare and interest, requiring to be tended like children, and, like children, are entitled to a *parental* tenderness from the country they protect and the officers they obey.

In further prosecution of this subject, the Author will lay before the reader a detail of some of the occurrences of the splendid campaign of the year 1782, with some remarks on the importance and influence of the study of health, and an abstract of the total loss of men in the armaments to which he was attached.

Lord Rodney, from that thorough experience and comprehensive knowledge which might be expected in a commander who had borne an active part in three great wars, clearly perceiving that the chief theatre of naval warfare on which not only the sovereignty of the ocean, but the fate and character of the nation was to be decided, would be the Carribean seas, quitted his

station at the commencement of the hurricane season, during which there used to be a suspension of military operations, by a sort of understood armistice as it were, in order to state and explain this, and to solicit adequate succours against the following campaign. This he did without the leave of the Government, trusting that he would be justified by the magnitude of the object and the purity of the motive. He was not only forgiven, but so liberally listened to, that a reinforcement of twelve ships of the line was immediately ordered to be equipped to accompany him on his return; and the sphere of his command was extended to the whole West India Islands, having been confined before to the windward station. On one of the first days of December he had a closet audience of the King on the subject of the ensuing service, who expressed great anxiety regarding the safety of the Islands, intelligence having just then arrived of the surrender of the army under Lord Cornwallis, and that the Comte de Grasse, after a drawn battle at the mouth of the Chesapeak, had sailed to the West Indies, so as to give the enemy a naval superiority in these seas. Upon this Lord Rodney, with his characteristic warmth of patriotism and loyalty, said to His Majesty, that in place of waiting, as had been arranged, for the intended reinforcement, all the ships of which could not be ready for three weeks, he would leave town next day

and sail with whatever force he might find ready. He accordingly repaired to Portsmouth the following day, accompanied by his secretary and myself.* Here he found only four ships in readiness, with which he sailed, and was to be joined by two more off Plymouth; but having met with contrary winds in the channel, he was forced into Torbay, where the fleet was wind-bound for three weeks, during which the other ships had completed their repairs, and a squadron of twelve sailed in the middle of January 1782.

Soon after the arrival of this reinforcement the fleet was further augmented by the arrival of five more ships of the line, so that the Admiral found himself in Gros-Islet Bay, St. Lucia, at the head of a line-of-battle of thirty-six ships, the greatest naval force that ever assembled in one spot either before or since on a foreign station. There were four ships of the line besides in the West Indies then cruising or protecting convoys. Those included in the line-of-battle consisted of five of

* I happened early that morning to learn from the Marquis of Lothian, gold stick in waiting, that the Admiral, who had seen him after quitting the King, wished to see me; upon which I hastened to his house, when he told me of the hasty promise he had made, and that he must be out of Hyde Park Corner with daylight; that there was a place in the coach for me if I chose. On stepping into the coach, one of the very few who had heard of his hasty departure came up to take leave, to whom he answered, God bless you, I will send you the Comte de Grasse, and drove off.

90 guns, nineteen of 74, one of 70, eleven of 64, manned with 21,608 seamen and marines.

Such was the state of health of the fleet on the 1st of April, according to my official returns, that in some of the ships there was not a man that could not come to his quarters. The most healthy were either those which had been seasoned to the climate, such as the Ajax, in which there was not a single sick man, or those which had recently arrived from England, such as the Formidable, in which there were only two on the sick list.

His Majesty's forebodings expressed at Lord Rodney's audience proved too true, for on the arrival of the Comte de Grasse on this station, his naval superiority was so great, that he had captured the island of St. Christopher, and some late reinforcements from Europe had swelled his force to an unparalleled amount, a fact which justified the Admiral's solicitude in repairing to England for reinforcements, and accounted for his anxious promptitude in returning to his station.

There lay ready for sea at Martinique at this crisis thirty-three ships of the line; one of 106 guns, two of 90, two of 84, two of 80, twenty of 74, one of 70, five of 64, besides one of 80 under repair. They had, 5,400 land troops on board, as testified by the musters found on board of the enemy.

On the morning of the 8th of April a signal was made through a chain of frigates stationed

between St. Lucia and Martinique, that the enemy's fleet had unmoored, and were proceeding to sea. Upon this the British fleet, at that moment in complete readiness, took up their anchors, and in little more than two hours were all under way, standing towards the enemy with all the sail they could crowd. It was the decided policy of the French commander not, on any account, to hazard a battle, the sole object of the expedition being that of joining a large sea and land force of the Spaniards then waiting at Cape François, in order to proceed against Jamaica with their joint armament, amounting to the overpowering force of near 50 ships of the line, and 20,000 land troops.* This mighty and deep laid scheme, so hostile to the best interest of the British nation, could no otherwise be disconcerted than by the discomfiture of the armament now rising into full view. In proportion to the mo-

* After news arrived of the signing of the preliminaries of peace, the following year, and some courteous intercourse taking place between the two hostile nations, the Marquis de Bouillé, Governor of Martinique, came one day with his staff to dine with our Admiral (Pigot), and amidst the frank conversation which took place after dinner, where I was one of the company, the Marquis told us that something still more formidable awaited us had the war continued, for it had been projected by our allied enemies, that a much greater armament than had ever been known was to have assembled in Courland Bay, Tobago, of such an irresistible magnitude as would have made a sweeping conquest of all our islands to windward and leeward.

mentousness of the object was the anxiety of our commander-in-chief to overtake and attack the enemies of his country, and there has seldom, I believe, occurred in the history of rival nations an occasion on which higher interests, or a deeper stake in point of honour, was to be played for, than what presented itself at this moment. We gained so much upon them, that next morning the van and centre of our fleet, including the flag-ship, had got within cannon shot of the enemy's rear, and a sharp cannonade ensued, which, however proved partial and indecisive, from the falling of the wind, and from a great part of our fleet being becalmed under the high lands of Dominique. In the course of the two next days the enemy, by dint of great efforts, kept far to windward, and would probably have made their escape, had they not been brought down on the 11th, by a movement to save one of their ships which had dropped to leeward, in consequence of being crippled by running foul of another ship in the night. By this casualty we had the inexpressible pleasure at day-break on the 12th, to discover that we were in a situation to weather a large part of the enemy's fleet, which was now reduced to 30 ships, two having been so much damaged by the action of the 9th, that they could not resume their place in the line, and one having been rendered inefficient by the accident above-mentioned. The line-of-battle was formed

in an incredibly short time, the officers of the fleet having acquired the utmost expertness in nautical evolutions in the course of the last two years practice on this station. About half an hour before the engagement commenced, at breakfast on board the Formidable, the company consisting of the Admiral, Sir Charles Douglas, captain of the fleet, (an officer whose functions nearly correspond with those of an adjutant-general of an army,) Captain Simmons, commander of the ship, Lord Cranstoun, a volunteer post-captain, the Admiral's secretary, and myself; the conversation naturally turned upon the glorious prospect of the day, and Lord Cranstoun, coming from the quarter-deck, where he had been viewing the two fleets, remarked, that if ours should maintain its present relative position, steering the same course, close-hauled on the opposite tack to the enemy, we must necessarily pass through their line in running along, and closing with it in action. It was accordingly practised with the most complete success, the commander-in-chief setting the illustrious example in the ship which bore his own flag; for the signal for close action thrown out at the beginning of the action being adhered to in letter and spirit for about an hour and a quarter, under one general blaze of flame and peal of thunder along both lines, the Formidable broke through that of the enemy.* In the act of doing

* I now for the first time, mention here the following inci-

so we passed within pistol shot of the Glorieux of 74 guns, which was so roughly handled, that being shorn of all her masts, bowsprit, and ensign-staff, but with the white flag nailed to the stump of

dent:—about ten minutes before passing through the enemy's line, the Admiral, standing at the starboard gangway, perceiving that we were on the point of coming along side of the Glorieux, the 8th or 10th ship whose fire we had taken and returned, looking quickly round him, and seeing no other officer on the spot, desired me to go to the lower gun-deck with his orders to *raise their metal.* This technical phrase I should probably not have understood, had I not been enabled to catch its import by the recollection of the following couplet in Hudibras:

> Thus cannons shoot the higher pitches,
> The lower you let down their breeches;

for if this holds true so must the converse of it; that is, the muzzles must be lowered by the elevation of the breeches, and the Admiral's meaning could be no other than that of taking the enemy between wind and water. When I returned upon deck we were in the act of passing the Glorieux, as stated in the text. I wish it to be understood, that my motive in this narrative is not merely an emotion of vain glory, and an effusion of levity, which would be ill placed on so grave an occasion, but that I wish to cite it as an evidence in refutation of the Admiral's calumniators, who alleged that he had exposed himself as little as possible, being chiefly in the after-cabin under the poop; (a situation by the bye of greater danger than on the quarter-deck, being exposed to splinters, by which more men are killed and wounded than by the balls;) whereas, the quarter-deck being screened by a barricade of hammocks, is less exposed to danger in every direction, except the musketry from the enemy's tops.

one of the masts,* breathing defiance as it were in her last moments, became a motionless hulk, presenting a spectacle which struck our Admiral's fancy as not unlike the remains of a fallen hero; for, being an indefatigable reader of Homer, he exclaimed, that now was to be the contest for the body of Patroclus. But the contest was already at an end; for the enemy's fleet being separated fell into confusion, a total rout ensued, and victory was no longer doubtful.

The remainder of the day was spent in desultory actions of single ships, as must naturally happen in a chace. It was late in the day when the Ville de Paris struck her colours. The ships immediately engaged with her at that moment were the Barfleur, the flag ship of Sir Samuel Hood, the second in command, and the Russell commanded by captain Saumarez. The Formidable was right astern, and having come within shot,

* This was no doubt the act of the French officers; for though we had proofs of the inferiority of their seamen to ours in point of bravery, the same cannot be said of their commanders, who are as highminded men as any in the world. We found among the prisoners many persons of distinguished birth. The Glorieux was commanded by Viscomte D'Escars, of the House of Fitz-James, as remarkable for his intrepid courage, as for his rooted hatred to the English name and nation. On boarding her our officers found that he had been killed in the battle, and they were shewn the stains of blood on the gunnel where his body was thrown over-board. There were among the captive officers two of the celebrated family of St. Simon, the Viscomte de Betisy, and others.

was yawing in order to give the enemy a raking broadside, when Sir Charles Douglas and I, standing together on the quarter-deck, the position of our ship thereby opened a view of the enemy's stern, between the foresail and jib-boom, through which we saw the French flag hauled down; upon which we, forgetful of what was due to decorum in that place, stupified as it were by an ecstacy of joy, rushed into each others arms in a hearty embrace.

Now was the point of time, had the exultation of victory permitted, to have reflected with what wisdom, foresight, good judgment, gallantry, and zeal, this campaign had been planned and executed from the time that Lord Rodney left his station in September the year before, to the present crisis. It was by virtue of the seasonable and powerful reinforcements he brought from England, that a naval force, the largest that has ever before or since been assembled on a foreign station, was brought into operation on this momentous day, and by the masterly handling of which the spirit of the nation was revived, its honour retrieved, and the war brought to an auspicious and consolatory termination, after a series of humiliations by sea and land, and the mutilation of the Empire by the loss of its colonies. And whatever faults may have been imputed to the minister at the head of the Naval Department,* through the virulence of party and faction,

* The Earl of Sandwich.

peculiarly prevalent at that period of British history, the highest praise was due to him for the general efficiency of the navy, which was maintained during that war, and for that main point of the administration of it, the judicious distribution of the force, as eminently exemplified at this time.

But to return from this digression. It is natural at first sight to impute this success to the numerical superiority of six ships; but it was computed by Sir Charles Douglas (the most enlightened and scientific naval officer with whom I was ever acquainted,) that the sum total of the weight of the broadside of the French fleet exceeded that of the British fleet by 4396 pounds: and though the number of our guns exceeded that of theirs by 156, their lower-deck batteries, in ships of 74 guns and upwards, consist of 36 pounders, which, according to the difference of the pound of the two nations, are equal to our 42 pounders, and gave the enemy the above-mentioned preponderance of metal on the whole amount. The difference in the number of men was still more considerable; for besides that the French have a much greater complement of men to the same tonnage, they had the assistance of a large body of land forces.

The only cause therefore that can be assigned for British superiority in this and many other naval encounters, can be no other than the close-

ness of the action, an advantage, however, which being mutual and equal, can be available only to that party which possesses the moral pre-eminence of undaunted courage, and the consequent physical superiority of a better sustained fire; and this was never more fully exemplified and proved than in the present instance. In breaking the line, the Formidable passed so near the Glorieux that I * could see the cannoneers throwing away their sponges and hand-spikes, in order to save themselves by running below, while our guns were served with unflinching animation. Another

* Having but little knowledge, and no practice in surgery, and as there was the full complement of medical officers on board, I requested the Admiral's leave to absent myself from the quarters assigned me, and to remain with him on the quarter-deck during the action. It occurred to me also, that I might possibly be of some use in this spot in case of any severe injury threatening life from effusion of blood, and for this purpose I carried some tourniquets about me of a simple construction; but no such accident occurred on the quarter-deck of the Formidable. Captain Bayne, of the Alfred, killed in the action of the 9th of April, expired by a profuse loss of blood from the leg, which took place while he was carried to the cockpit, so that the timely application of a tourniquet might have saved the valuable life of that excellent officer. The tourniquets alluded to, consisted merely of a piece of leather, somewhat stiff but flexible, about the breadth of the hand, and long enough to embrace the limb, with slits to admit a piece of broad tape; a piece of linen or calico rolled so as to act as a compress to the artery, and a cylindrical piece of wood to twist the tape in the act of applying the instrument. Would it not be advisable at all times that some intelligent person, a warrant or petty

advantage of close fight is, that more of the shot tell in this situation, though they are much less destructive both to ships and men, unless, according to the recommendation of Robins, in his work on Gunnery, a smaller charge of powder should be used in close action. Distant shot, in consequence of their momentum being spent, make large chasms in a ship's side, shivering whole planks, and causing innumerable splinters, more destructive to men than the ball itself; whereas a near shot cuts so clean, that it makes an orifice even less than its own diameter, and without producing splinters. The average proportion of wounded to killed is about three to one; but this ratio will vary, according to the distance and the charge of powder.*

officer, quartered on the quarter-deck, should carry in his pocket some such instrument, particularly in large ships, on account of the distance of the cock-pit? He need not be a medical officer; and the only instruction necessary would be to point out to him the situation of the great artery in the thigh and arm: or with this information alone, the blood might be stopped by a handkerchief tied tight, or a compress.

* There has been no opportunity for instituting a comparison on these elements for a good many years, till it occurred at the battle of Navarino, 20th Oct. 1827. The following is the statement of the killed and wounded of the three allied powers, taken from the London Gazette, pages 2325 and 2529; among the British, 75 killed, 197 wounded; among the French, 43 killed, 142 wounded; among the Russians, 59 killed, 139 wounded;—that is, the proportion on the British side of the killed to wounded was that of 1 to 2.6; on the French side that of 1 to 3.3; and on the Russian side that of 1 to 2.3. The

As this part of the narrative appears at first sight to bear little or no relation to the subject of health and disease, does not the author run the risk of laying himself open to the censure incurred by that law of sound criticism, which decrees it to be a violation of unity and good taste, thus to bring together subjects of an incongruous nature; for what two things can be so incongruous, nay (it is to be hoped,) so opposite in their nature and scope, as war and physic? And does he not also expose himself to the charge of vain glory; for what motive, it may be said, could he have, but that of ostentation, for obtruding matters in this place which it was so much out of character for him to touch upon?—Be it so.—He would be guilty of gross affectation were he to deny, that though it would perhaps better become him, at this stage of his existence, and bending, as he now is, under the weight of years and affliction, to subdue and repress as hitherto all such light-mindedness; he does never-

difference in favour of the British as compared to the French is considerable enough to deserve notice, both absolutely and comparatively. In relation to the Russian, the comparative view is so small as not to deserve notice, but the absolute difference is very greatly in favour of the British. If these statements were to be admitted as tests of comparative prowess, it would perhaps be invidious to found it on the British and French relative numbers of killed and wounded; but upon the whole, the most fair comparison, and the most favourable to the British, would be the absolute number killed, viz. 75 British, 59 Russians, and 43 French.

theless feel some degree of pride and satisfaction in looking back on that early part of his life, in which it was his lot to witness, and to act a humble part, in scenes of high moment and interest to the welfare of the state, and the character of the British arms. But he hopes to shew his reader, that there is perhaps more connection than he is immediately aware of, between those actual incidents of war which have been described, and the duties of medical officers: for, besides what has just been stated regarding the different effect of close and distant action on the number and nature of wounds, there are other particulars in which the casualties of battle are connected with the state of sickness and wounds.

1st. A great share of the extraordinary degree of health exhibited in the Table for the month of April, 1782, seems clearly imputable to the influence of success on the spirits of the men. It is related, that when the fleet under Admiral Matthews, in the year 1744, was off Toulon, in the daily expectation of engaging the combined fleets of France and Spain, there was a general suspension of the progress of sickness, particularly of the scurvy, from the influence of that generous flow of spirits with which the prospect of battle inspires British seamen. But if the mere prospect and ardent expectation of battle, without any happy result, could have such a sensible effect, what must be the effect of the ele-

vation of mind created by the exultation of VICTORY, a victory in which the naval glory of our country was revived and retrieved, after a series of misfortunes and disgraces, which had well nigh extinguished the national pride and spirit in every department of service. The plain and honest, though unthinking seaman, is not less affected by this, than the more enlightened lover of his country. Even the invalids at the hospital manifested their joy by hoisting shreds of coloured cloth on their crutches.* This is the place, therefore, to remark of what importance it is in point of health, to support the spirits of men, depression of mind not only damping their courage, but being favourable to the invasion of disease in every form. There is, perhaps, no disease which low spirits are so apt to produce as the sea scurvy. It is important, therefore, to encourage such innocent and salutary recreations, as music and dancing. It is a common, and I believe, a true remark, that the French have a great advantage over us in this respect, being by nature gifted with constitutional gaiety. But even

* Sir James Macgregor, Director General of the Medical Board of the Army, in his interesting work entitled Medical Sketches, adduces a like example of the happy effect of an exalted state of mind in sustaining hardship and fatigue in the army of India, while crossing the Desert in their route to Egypt in the year 1801. I have mentioned a like fact in the account of my mission to Walcheren in the year 1809.

in them, this may be so far subdued by the depressing circumstances of captivity, as to create scurvy without the ordinary exciting causes of that disease, as was remarkable at Porchester Castle and Norman Cross, where the scurvy appeared among the prisoners, although under the use of fresh diet. It is further observable, that this nation bears adversity with more equanimity than the English. An eminent example of this occurred to my own observation in the case of the Comte de Grasse, commander-in-chief of the French fleet, who was taken in the Ville de Paris. When he was conveyed on board of the Formidable the morning after the battle, the first conversation was carried on with Lord Rodney, through Sir Charles Douglas; for our Admiral had never learned to speak French. But Sir Charles being much engaged in the duties of the fleet, beckoned to me to replace him as interpreter, introducing me to the Comte in the following facetious manner: *Permettez moi, mon Géneral, de vous présenter notre médecin en chef, qui est presque assez habile pour faire revivre les morts;* to which the Comte, humouring the *plaisanterie,* answered, *Et peut-être pour faire mourir les vivans.* It fell to my lot chiefly to entertain him during the rest of the day, and his conversation partook of the like affability and good humour.

2dly. Another circumstance in which the detail of warlike operations affects the duties of the medical officers remains still to be mentioned. In some of the actions in the previous part of the war, a great proportion of the killed and wounded had their injuries inflicted by the accidental explosion of gunpowder, from cartridges catching fire, but still more from the powder used for priming, which, according to the custom then in use, was contained in large ox-horns. In one of the battles to windward of Martinique in the year 1780, out of 167 wounded, 46 were scorches from gunpowder, of which 14 proved fatal. The number of such casualties was greatly diminished in the late actions, in consequence chiefly of greater habits of caution acquired in the course of the war. This applied to the fleet in general; but these mischances were still better guarded against in the Formidable and Duke, both of 90 guns, by the use of small priming boxes of tin, as part of the apparatus belonging to locks, and no small additional recommendation to that method of firing guns. The service is indebted for this great improvement to Sir Charles Douglas, who first introduced it into the navy when he was captain of the Duke. The whole, or the greater number of the guns of this ship were furnished with locks, but only a few in the Formidable, and none in any of the other ships. Part of this

method consisted in filling the touch-hole with powder contained in a quill,* which made no more priming powder necessary than what was contained in the small tin box. The eminent and ingenious contriver of this improvement suggested, that it was incumbent on me, as a point of professional duty, to represent these facts to the Board of Ordnance, as one means of saving men from dangerous and fatal injuries. This I accordingly did; and this consideration, in addition to the more obvious advantages in the quickness of firing, and the greater accuracy of direction, may have probably had some share in deciding the adoption of an improvement which has since become universal in the navy.†

Lastly. The only other remark to be made on this subject is, that it has been ascertained by long experience that no refreshment but plain water, ought to be allowed to the men during action;

* Though it is now forty-eight years ago, the anxiety of Sir Charles Douglas in providing a sufficient number of these quills preparatory to the battle, is still fresh in the author's memory, and he distinctly recollects, that 60 of them were expended this morning at the gun to which he was attached.

† Major General Sir Howard Douglas, the son of Sir Charles, seems to inherit a mind congenial to that of his father, being author of a most profound, scientific, and elaborate work, entitled, a Treatise on Naval Gunnery; also the inventor of a new mathematical instrument, said to be of great utility in certain practical operations.

and the expediency of it has been established by the immemorial usage and uniform practice of the British navy. It has been equally ascertained by experience, that in all violent and even protracted bodily exertions, whether from necessity or for wagers, as in long walks, it is found that strongly nutritious food and stimulant liquors, taken either immediately before, or during such trials of vigour, do not sustain but impair the animal powers. This is particularly applicable to men in the heat of action. It would appear that there is something in situations of exertion and danger which infuses a sort of preternatural vigour far surpassing the effect of any corporeal stimulus. When the mind is interested and agitated by warm and generous affections, the body forgets its wants and feelings, and is capable of a degree of labour and exertion which it could not undergo in cold blood. The quantity of muscular action expended in fighting at a great gun for a single hour, is perhaps greater than what is employed for a whole day in ordinary labour; and though performed in the midst of heat and smoke, and with little bodily refreshment, yet the powers of nature are not exhausted nor overstrained; even the smart of wounds is not felt. Though pure cold water was the only refreshment allowed in time of action in the West Indies, it may be advisable in cold climates and seasons, to add a very small portion of spirits, the very idea of

which would give the men more confidence in the efficacy of their beverage. Those who walk for wagers are said to indulge in a tea spoonful of brandy in the small draughts of water which they take from time to time. On this subject it is an instructive remark, well ascertained by experience, that after excessive fatigue, the strength is best and most safely recruited by a slender meal. I have known dangerous fevers brought on by full meals of animal food and fermented liquors in such circumstances. The only circumstances in which artificial cordials are admissible in such cases, are when the body labours under debility, or languor, constitutional or morbid, or where there is eminent danger from profuse hæmorrhage from a wound, in which case it is advisable to administer freely pure spirits, or tincture of opium, in order to prevent the immediate extinction of life.*

After my return to England in the year 1783, I was enabled, from my own notes, and from information derived from the official records at the Navy Office, and at the office of Sick and Wounded Seamen, to make out a statement of the whole loss of lives in the fleet in which I served as physician, from the beginning of 1780 till April 1783, a space of three years and three months.

* See this subject more fully treated, in my Diseases of Seamen, and in a work entitled Elements of Medical Logic.

It came out as follows:

Died of disease - - -	3200
Killed in battle - - -	640
Died of wounds - - -	500
Total	4340

It is a very general and true remark, that in war more perish by disease than by the sword: in the present case the proportion is about three to one. We find the same remark made by ancient historians. Arrian, in his Narrative of the Expedition of Alexander the Great into India, makes the following remark: Οἱ δὲ ξυμπονοῦντές τε ἔτι καὶ ξυγκινδυνεύοντες, αυτοί τε καὶ ἡ Μακεδονικὴ στρατιὰ, τοὺς μὲν εν ταῖς μάχαις ἀπολωλέκασιν, οἱ δὲ ἐκ τῶν τραυμάτων ἀπόμαχοι γενημένοι, οἱ πλέιστοι δὲ νόσῳ απολώλασιν. Arrian, Hist. Alexand. Expedit. l. v. c. 26.*

Those who were lost at sea in ships of war in the hurricane of 1780, and in the great Atlantic storms in 1780 and 1782, in the former the Thunderer and two frigates, and in the latter the Ville de Paris, Glorieux, and Hector, captured ships of the line, besides the Ramillies and Centaur, each of 74 guns, were lost, are not included in this

* The only exception to that I ever knew or read of, is what occurred in Egypt. Sir John Moore, who commanded one of the brigades, in answer to some inquiries of mine regarding the climate of that country, informed me under his own hand, that the number of killed, though not greater than what was usual in other campaigns, was greater than that by sickness, including even the plague, of which some of the soldiers died.

statement. The number of men who perished at these disastrous periods amounted to near four thousand.

It has appeared, from what has been stated in the preceding article of this volume, how greatly the health of the navy has improved since the period which is the subject of this article. While I was a medical commissioner of the navy, I compared the numbers admitted into Haslar and Plymouth hospitals during the five years of war with France in the American contest, with the first five years of the late revolutionary war. I found, that in the former the number admitted exceeded that in the latter by 27,000, though a greater naval force was kept up in the latter, and a greater proportion of it on home service, than in the like space of time in the preceding war; and in 1811, a still more advanced period of the late war, I was informed by Dr. Baird, inspector of naval hospitals, that on comparing the five years then elapsed with the first five years of the war which began in 1793, he found that the amount of sickness and mortality of the latter was four times that of the former.

The assignable causes of these mighty improvements, which, while they are so highly conducive to the vital interests of the nation, may be considered as proud triumphs achieved in the cause humanity, have been—

1st. The manning of the navy at the com-

mencement of the late war with less impressing, and with circumstances less conducive to the engendering and diffusing of infection, than in former wars.

2ndly. The better observance of cleanliness, ventilation, dryness, and sobriety, in consequence of the general conviction of officers, of the necessity of these to the preservation of health; and that the due attention to them made an essential and indispensable part of their duty, even more than of medical officers, since they had it more in their power to enforce those salutary practices, on which prevention depends.

3dly. The general supply of lemon juice, so judiciously and liberally allowed to ships of war since the year 1795. By this the scurvy has been so entirely eradicated, or rather prevented, that there are now surgeons of the navy of long standing, who have never seen a case of it; and it has been already mentioned, that in less than eighteen months after the general supply of it, Lord Spencer did not find a single case of it in Haslar hospital.

4thly. The regulations established by the Medical Board of the Navy, in the last years of the last century, already alluded to.

Lastly. The superior encouragement given to medical officers, which has had the effect of procuring a better educated class of men.

In order to render the advantage of the study of health in the present times, as compared with former ages, more palpable, I shall extract from history a few instances of those expeditions by sea, which have either been totally frustrated, or nearly so, by the neglect or ignorance of the means of preserving health.

The life at sea being more artificial than that at land, affords greater latitude for good and bad management in the conduct of health. The losses and miscarriages of expeditions on this element, have by the records of history been both more numerous and more grievous than those by land. There is one disease, the scurvy, which has affected armies so rarely, and in so small a degree, that it may be reckoned peculiar to the sea service, of which it used to be the greatest scourge. Sir Richard Hawkins, an eminent commander and navigator, in the reign of Queen Elizabeth, mentions that in the course of twenty years, he had known of ten thousand men having perished by this disease; a prodigious number, when we reflect that the navy then was not more than a twentieth part of what it now is. The expedition to the West Indies and North America, in the year 1693, consisting of two ships of the line and six frigates, under Sir Francis Wheeler, miscarried in the attack on Martinique, through the force being weakened by diseases; and in his voyage to England, the companies of his ships were so weakened by mortality from scurvy and

fever, that there were hardly hands enough to bring the ships to anchor on their arrival there. But perhaps the most disastrous instance of the baneful effects of sickness in the public service, is in the expedition of Admiral Hosier, consisting of seven ships of the line, to the West Indies, to protect the trade in the year 1726. He buried his ships companies twice over, and in place of quelling and coercing the Spaniards, he was set at defiance and insulted by them, and died of a broken heart.* The expedition to the same quarter under Admiral Vernon, in 1740, was hardly less calamitous. The sufferings and dangers of Commodore Anson's crew, as well as those of the Portuguese, have been already adverted to.

Since the middle of the last century, no expedition by sea can be said to have miscarried from the prevalence of disease alone: but in the course of the seven years war and the American war, six general engagements took place in the East Indies, every one of which were *drawn battles.* Is it not presumable that some of these might have proved *victories,* had it not been for the deficiency of hands in consequence of mortality and disease. The great difficulty, and even impossibility of replacing men on remote service, forms an additional motive for the study of health in distant and unhealthy climates. Lascars and Chinese were indeed from necessity, employed in ships of

* See Charnock's Biographia Navalis.

war in the East Indies, to supply the great loss of seamen; but these feeble Asiaticks were found to be miserable substitutes for British seamen, whether for going aloft or at the guns. The late revolutionary war may be said to form a contrast with all preceding wars in point of health, and to this its unexampled glories are in no small degree indebted. And it is to be hoped that the methods of securing this invaluable blessing are now so rooted in the practical habits, experience, and convictions of naval officers of all descriptions, that those scenes of misery and disaster which have been quoted from history, and which rend the heart in the narration, can never recur, should the nation ever again be involved in war, which in the common course of human affairs, can hardly be doubted.

THE END.

Printed by William Nicol, Cleveland-row, St. James's.

1	15	4	2	5	2	0	1	6	0	0
0	1	0	0	4	6	40	0	70	154	0
§	13	§	§	§	§	§	§	§	§	§
0	3	0	0	1	3	0	0	8	0	0
0	147	40	0	2	13	3	1	8	7	0
0	4	3	0	0	8	1	0	1	1	0
0	2	0	0	1	1	0	0	0	1	0
0	0	0	0	1	2	0	0	5	0	0
0	2	0	0	§	§	§	§	§	§	§
9	307	49	9	46	149	57	5	480	198	4

are marked thus §,

TABLE I.

Shewing the Number of each Disease on board on the First of each Month, the Numbers se

SHIPS' NAMES. N. B. those marked *, arrived with Lord Hood.	FEBRUARY, 1781.									MARCH.									APRIL.					
	Fever.			Flux.			Scurvy.			Fever.			Flux.			Scurvy.			Fever.			Flux.		
	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.
Sandwich - -	8	0	0	4		0	2	0	0	8	3	1	4	0	0	2	2	0	6	0	2	9	1	1
* Barfleur - -	8	0	1	4	0	1	3	0	0	28	4	0	35	0	0	5	27	2	24	0	0	25	0	0
* Gibraltar - -	25	0	2	4	0	0	4	0	0	8	1	0	0	0	0	6	22	0	0	0	1	0	0	0
Triumph - -	0	0	1	1	0	1	21	8	0	3	0	0	2	0	1	24	18	1	0	0	1	3	0	2
Centaur - -	2	0	0	2	0	0	20	0	8	7	0	0	4	0	0	50	0	8	2	0	0	3	1	0
Torbay - - -	6	0	0	11	0	0	1	0	0	7	0	0	8	0	0	8	0	0	6	0	0	8	0	0
Monarch - -	13	0	3	13	0	0	2	0	0	5	0	0	4	0	0	1	0	0	8	0	4	17	0	0
Terrible - -	2	0	0	10	0	0	1	0	0	2	0	0	9	0	2	3	0	0	0	0	0	10	0	0
Montagu - -	40	0	8	14	0	5	4	0	0	§	§	5	§	§	3	§	§	1	§	§	§	§	§	§
Alfred - - -	4	0	0	4	0	0	4	0	1	25	0	0	8	0	1	56	16	2	11	0	0	26	0	1
Russel - - -	0	0	0	7	0	2	2	1	0	7	0	0	8	2	0	0	61	5	0	0	0	4	0	1
Alcide - - -	1	0	1	9	0	0	1	0	0	1	0	0	1	0	0	15	0	0	1	0	0	3	0	0
* Invincible	0	0	0	0	0	0	0	0	0	6	1	0	1	0	0	5	6	0	4	0	0	4	0	0
Resolution - -	1	0	0	7	0	1	0	0	0	6	0	0	5	0	0	1	0	0	5	0	0	8	0	2
Shrewsbury -	8	0	0	0	1	1	6	7	0	5	0	1	6	0	0	0	0	0	4	3	0	0	0	0
Ajax - - -	8	0	1	6	0	5	3	0	1	2	0	2	10	0	5	6	0	6	4	0	1	15	4	2
* Princessa - -	8	0	1	3	0	1	0	0	0	6	0	5	2	0	0	4	102	2	6	0	0	1	0	0
Intrepid - -	18	1	1	10	4	0	1	0	0	10	0	0	9	0	0	0	0	0	9	§	§	13	§	§
* Belliqueux -	11	0	0	10	0	5	0	0	0	3	1	2	52	0	1	0	1	0	0	0	0	3	0	0
*Prince William	21	0	0	17	0	0	4	0	0	23	12	0	47	62	5	6	10	0	19	2	0	147	40	0
* Panther - -	2	0	0	4	0	0	0	0	0	5	0	0	8	0	0	4	0	0	2	0	0	4	3	0
Triton - - -	7	0	0	15	2	0	14	0	0	3	2	0	12	2	0	6	0	0	2	0	0	2	0	0
Hyena - - -	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Cyclops - -	4	1	0	3	0	0	0	1	0	4	0	0	3	0	0	0	0	0	2	0	0	2	0	0
Total - - -	197	2	19	158	7	22	93	19	10	174	24	16	238	67	18	202	265	27	115	5	9	307	49	9

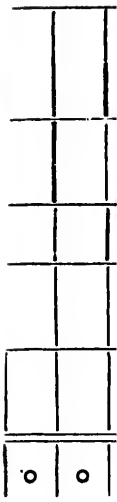
Where the Spaces are marked thus §,

TABLE I.

Month, the Numbers sent to the Hospital, and who died, in the course of the Month.

APRIL.									MAY.									JUNE.								
Fever.			Flux.			Scurvy.			Fever.			Flux.			Scurvy.			Fever.			Flux.			Scurvy.		
Sent to the Hospital.	Died.		On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On boarl.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.	On board.	Sent to the Hospital.	Died.
0	2	9	1	1	2	4	0	2	2	1	10	5	0	5	18	0	2	0	0	3	0	0	10	0	1
0	0	25	0	0	33	0	0	12	3	1	16	1	0	54	10	0	20	0	0	13	0	0	58	0	0
0	1	0	0	0	18	0	0	4	0	0	0	0	0	30	22	4	3	1	0	4	0	0	48	17	0
0	1	3	0	2	12	0	2	0	1	1	0	0	0	13	8	1	1	0	0	0	0	0	6	5	0
0	0	3	1	0	55	1	1	0	0	0	2	0	2	15	4	0	4	0	0	9	0	1	15	0	0
0	0	8	0	0	23	27	[illegible]	[illegible]	0	0	13	7	[illegible]	[illegible]	31	0	16	0	0	6	0	0	9	0	1
0	4	17	0	0	0	0	0	5	2	2	3	0	0	57	11	0	4	3	1	4	0	0	36	5	0
0	0	10	0	0	4	3	1	0	0	1	10	4	0	5	20	0	3	1	0	12	0	0	20	1	0
§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	0	0	§	0	2	§	0	0
0	0	26	0	1	116	44	4	15	10	1	11	3	0	130	25	2	14	§	§	10	0	0	26	0	0
0	0	4	0	1	44	0	3	0	1	0	8	0	0	132	102	4	0	1	0	19	1	0	14	1	0
0	0	3	0	0	8	16	0	0	0	1	1	0	0	40	35	0	4	2	0	5	0	0	26	5	0
0	0	4	0	0	2	0	1	7	0	1	6	8	4	31	54	4	8	0	0	22	0	0	10	1	0
0	0	8	0	2	7	0	1	5	2	0	9	0	0	15	45	2	1	0	0	3	12	0	84	0	2
3	0	0	0	0	4	6	0	3	1	0	5	2	0	22	6	2	3	§	§	4	§	§	20	§	§
0	1	15	4	2	30	5	10	4	1	1	3	0	0	8	0	1	2	0	0	2	0	1	6	0	0
0	0	1	0	0	40	0	1	2	0	0	2	0	1	30	40	2	2	0	0	6	40	0	70	154	0
§	§	13	§	§	1	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§
0	0	3	0	0	2	0	0	0	0	0	2	0	0	2	0	0	2	0	1	3	0	0	8	0	0
2	0	147	40	0	16	7	0	5	5	2	53	5	0	7	4	0	4	4	2	13	3	1	8	7	0
0	0	4	3	0	9	1	0	3	2	0	8	4	0	1	0	0	3	0	0	8	1	0	1	1	0
0	0	2	0	0	0	0	0	3	0	0	4	0	0	0	1	0	2	0	1	1	0	0	0	1	0
0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	1	2	0	0	5	0	0
0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	§	§	§	§	§	§	§	§	§
5	9	307	49	9	428	114	26	76	30	12	166	39	7	641	436	22	101	12	6	149	57	5	480	198	4

[illegible]e Spaces are marked thus §, no Return was made.



0					
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18	8	810	60	32	244

l March, 1782.

millies and the two Frigates.

TABLE II.

Abstract of the Returns for April, 1782.

SHIPS' NAMES.	FEVER.				FLUX.				SCURVY.				WOUNDS.				Killed in Action.
	Sick on board on the 1st of the Month.	Put on the List during the Month.	Died.	Sent to the Hospital.	On board on the first.	Put on the List.	Died.	Sent to the Hospital.	On Board on the first.	Put on the List.	Died.	Sent to the Hospital.	On board on the first.	Put on the List.	Died.	Sent to the Hospital.	
* Formidable -	0	6	0	1	2	7	0	0	0	5	0	0	0	37	0	0	16
Barfleur - -	6	20	0	1	5	13	0	1	6	30	0	1	0	37	8	6	10
Prince George -	0	12	2	1	4	18	1	0	0	7	0	0	0	24	3	0	9
* Duke - -	57	78	2	32	0	3	0	0	0	1	0	0	0	60	2	0	13
* Namur - -	5	14	0	2	11	9	0	3	8	5	0	2	0	25	0	0	6
Royal Oak -	1	4	0	0	11	23	0	3	1	1	0	1	0	54	5	15	12
Alfred - -	8	46	1	0	6	14	0	0	15	14	0	2	0	30	0	0	12
Montagu - -	6	11	0	0	8	2	1	5	2	2	0	0	0	25	5	0	14
* Valiant - -	†	10	1	0	†	0	0	0	†	0	0	0	0	37	0	0	10
Monarch - -	5	21	1	0	3	10	0	1	0	1	0	1	0	33	2	1	16
* Warrior - -	0	2	0	0	6	12	0	0	0	0	0	0	0	20	0	0	5
Centaur - -	12	20	0	1	10	15	0	1	5	15	0	0	0	14	0	0	No return.
* Magnificent -	0	21	0	0	0	8	0	0	7	16	0	0	0	20	0	0	6
Bedford - -	11	20	0	0	3	27	0	0	1	10	0	0	0	17	4	0	0
Ajax - -	0	0	0	0	0	0	0	0	0	0	0	0	0	30	1	5	9
Canada - -	0	6	1	0	24	70	2	0	2	8	0	0	1	12	0	0	12
Resolution - -	19	25	1	0	21	27	0	0	0	0	0	0	0	19	2	0	4
* Hercules - -	2	38	0	4	5	18	0	0	0	12	0	2	0	18	0	0	7
Russel - -	3	3	0	0	5	4	0	0	0	1	0	0	4	29	3	1	10
* Fame - -	36	50	0	0	3	8	1	0	0	7	2	0	1	12	2	0	3
Torbay - -	10	10	0	0	0	2	0	0	3	2	0	0	0	25	3	0	10

Resolution - -	19	25	1	0	21	27	0	0	0	0	0	0	0	19	2	0	4
* Hercules - -	2	38	0	4	5	18	0	0	0	12	0	2	0	18	0	0	7
Russel - -	3	3	0	0	5	4	0	0	0	1	0	0	4	29	3	1	10
* Fame - -	36	50	0	0	3	8	1	0	0	7	2	0	1	12	2	0	3
Torbay - -	10	10	0	0	9	2	0	0	3	2	0	0	0	25	3	0	10
Princessa - -	1	2	0	0	2	8	0	3	0	0	0	0	0	19	2	0	3
* Conqueror -	30	†	1	11	0	†	0	0	10	†	0	0	0	23	2	0	7
* Arrogant - -	2	16	0	0	6	33	0	0	4	10	0	0	0	11	0	0	0
* Marlborough -	7	19	2	0	12	21	1	0	0	6	0	0	0	16	1	1	3
* Yarmourh -	0	3	0	0	4	3	0	0	3	3	0	0	0	33	2	0	14
Belliqueux -	43	118	0	6	6	4	0	2	0	3	0	0	0	10	0	0	4
Prince William	4	27	0	0	2	24	0	0	5	18	0	0	1	0	0	0	0
* Repulse - -	20	40	0	0	2	2	0	0	3	2	0	0	0	9	1	0	3
St Albans - -	1	22	0	0	0	6	1	0	0	0	0	0	0	7	1	0	0
* Agamemnon	2	5	0	0	0	1	0	0	0	0	0	0	0	23	7	0	14
* Prothée -	6	13	1	0	5	49	0	0	0	0	0	0	0	24	2	0	5
America - -	2	5	0	0	3	14	0	0	2	0	0	0	1	27	2	0	1
* Anson - -	3	6	0	0	0	26	0	0	1	1	0	0	0	13	0	0	3
* Nonsuch - -	6	11	1	0	0	4	0	0	18	25	0	6	0	2	0	0	3
Alcide - -	2	6	0	2	7	16	0	0	7	0	0	0	0	15	0	3	No return.
Ramillies - -	†	26	1	4	†	6	0	0	†	3	0	3					No return.
Nymph - -	2	7	0	0	8	9	0	0	0	0	0	0					
Flora - -	0	0	0	0	2	0	0	0	0	0	0	0					
Total - -	312	743	15	65	195	516	7	19	103	208	2	18	8	810	60	32	244

N. B. The Ships marked thus *, came from England in February and March, 1782.

All the Ships named in the Table were in the Engagements in April, except the Ramillies and the two Frigates.

In the Spaces marked thus †, no Return was made.