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TREATISE

ONTHE

SCURVY.

IN THREE PARTS.

CONTAINING

An Inquiry into the Nature, Causes, and Cure, of that Disease.

Together with

A Critical and Chronological View of what has been published on the Subject.

By FAMES LIND, M.D.

Physician to his Majesty's Royal Hospital at Haslar near Portsmouth, and Fellow of the Royal College of Physicians in Edinburgh.

The THIRD EDITION, enlarged and improved.

LONDON:

Printed for S. CROWDER, D. WILSON and G. NICHOLLS, T. CADELL, T. BECKET and Co. G. PEARCH, and W. WOORFALL:

MDCCLXXICON

F R U DLS LEAD HINIE TO 11 later in

ADVERTISEMENT.

HIS Treatife now makes its appearance in a third edition, improved by the knowledge and experience acquired from an almost constant attendance, for thirteen years past, on patients afflicted with the scurvy.

Though the disease has of late raged with great mortality in different parts of the world, as will appear from the Supplement, yet perhaps, no fpot whatever has exhibited more numerous or more distreffing cases of it than Haslar hospital: I here frequently visited, during five years of the late war with France *, three or four hundred scorbutic patients in a day; every morning furnished me with original pictures of the disease, in all its various forms and stages, in patients brought from all quarters of the globe: on comparing these with the accounts of authors, I found the difeafe' A 2

^{*} From the year 1758 to 1763.

V ADVERTISEMENT.

difease to be precisely the same in every age, and in every country.

But the outward face of the disease did not alone engage my attention; the dead were carefully inspected; and every medicine, or method of cure, that could be suggested, was tried for the relief of the distressed. The result of these inquiries is now made public: in the Postscript, and a few other parts of this work, I have inserted the substance of four volumes of observations, daily and carefully made in the chambers of the sick.

I have, in some measure, altered my former sentiments, with regard to the great putrefaction of the body, which was supposed to attend this disease; my reasons will appear in the Postscript: but some doubtful theoretical doctrines remain unaltered, as resting on the faith and dissections of other authors, and as being agreeable to the present theories of physic; this may have occasioned several seeming contradictions, which could not easily be avoided; but the theory of this, as well as of many other diseases, is in general merely conjectural,

jectural, and is always the most exceptionable part of a medical performance.

The mischief done by an attachment to delusive theories and false hypotheses, is an affecting truth, as will appear from the perusal of the following sheets. It is indeed not probable, that a remedy for the scurvy will ever be discovered, from a præconceived hypothesis; or by speculative men in the closet, who never saw the disease, or who have seen, at most, only a few cases of it.

What I have been more anxious about, than any theory, is to transmit to posterity a faithful register of all books and observations which have been published on this disease; together with the most effectual means hitherto discovered to check its progress, lessen its violence, and prevent its devastation.

I have, in the Postscript, put my last hand to a work, which in all probability I shall not further enlarge; being perswaded I can carry my researches no further, without launching into a field of conjecture and uncertainty. A work, indeed, more perfect, and remedies more absolutely certain,

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might perhaps have been expected from an inspection of several thousand scorbutic patients, from a perusal of every book published on the subject, and from an extensive correspondence with most parts of the world, whereby a knowledge must have been obtained of every remarkable occurrence in this disease; but, though a few partial facts and observations may, for a little, flatter with hopes of greater success, yet more enlarged experience must ever evince the fallacy of all positive affertions in the healing art.

Est modus in rebus, Sunt certi denique fines.

Hastar Hospital, August 30, 1771.

PREFACE

To the FIRST EDITION,

Published in the Year 1753.

THE subject of the following sheets is of great importance to this nation; the most powerful in her fleets, and the most flourishing in her commerce, of any in the world. Armies have been supposed to lose more of their men by sickness, than by the sword. But this observation has been much more verified in our fleets and squadrons; where the scurvy alone, during the last war *, proved a more destructive enemy, and cut off more valuable lives, than the united efforts of the French and Spanish arms. It has not only occasionally committed surprizing ravages in ships, and proved the total destruction of the most powerful fleets (of which that of Admiral Hosier's, when at the Bastimentos, is a memorable and dreadful instance) but almost elways affects the constitution of failors when long at sea; and where it does not rise to so visible a calamity, yet it may often make a A 4 powerful

Ended ann. 1748.

powerful addition to the violence of other diseases. It is now above 150 years since that great sea-officer, Sir Richard Hawkins, in his observations made in a voyage to the South sea, remarked it to be the pestilence of that element. He was able, in the course of twenty years, in which he had been employed at sea, to give an account of 10,000 mariners destroyed by it. But I flatter myself, that it will appear from the following treatise, that the calamity may be prevented, and the danger of this destructive evil obviated: nor is there any question, but every attempt to put a stop to so consuming a plague, will meet with a favourable reception from the public.

It is a subject in which all practitioners of physic are highly interested. For it will be found, that the mischief is not confined to the sea, but is extended particularly to armies at land; and is a common evil in many parts of the world. This disease, for above a century, has been the supposed scourge of Europe. But how much even the learned world stands in need of farther light in so dark a region of physic, may appear from the late mournful story of the German troops in Hungary, the disaster in Thorn, and from many other relations in this treatist.

tions in this treatife.

What gave occasion to my attempting this work, is briefly as follows.

After the publication of the Right Honourable Lord Anson's voyage, by the Reverend Mr. Walter, the lively and elegant picture there exhibited of the distress occasioned by this difease, in the squadron under that noble and brave Commander, in his passage round the world, excited the curiofity of many to inquire into the nature of a malady accompanied with such extraordinary appearances. It was acknowledged, that the best descriptions of it are met with in the accounts of voyages: but it was regretted, that those were the productions only of seamen; and that no physician conversant with this disease at sea, had undertaken to throw light upon the subject, and clear it from the obscurity under which it had lain in the works of physicians who practised only at land. Some time afterwards, the fociety of furgeons of the Royal navy published their plan for improving medical knowledge, by the labours of its several members; who have opportunities of inspecting Nature, and examining diseases, under the varied influence of different climates, seasons, and soils. I then wrote a paper on the scurvy, with a design

of having it published by them. It appeared to me a subject worthy of the strictest inquiry: and I was led upon this occasion to confult feveral authors who had treated of the disease; where I perceived mistakes which have been attended, in practice, with dangerous and fatal consequences. There appeared to me an evident necessity of rectifying those errors, on account of the pernicious effects they have already vifibly produced. But as it is no easy matter to root out old prejudices, or to overturn opinions established by time, custom, and great authorities; it became therefore requifite for this purpose, to exhibit a full and impartial view of what had hitherto been published on the scurvy; and that in a chronological order, by which the fources of those mistakes might be detected. Indeed, before this subject could be set in a clear and proper light, it was necessary to remove a great deal of rubbish. Thus, what was first intended as a short paper to be published in the memoirs of our medical naval-society, has now swelled to a volume, not altogether suitable to their intended plan.

I cannot, however, upon this occasion, omit acknowledging with gratitude the many excellent practical observations I have been favoured

bers; especially by the ingenious Edward Ives, Esq; of Titchfield; and Dr. John Murray, an eminent physician at Norwich. There are two things that may appear exceptionable in this publication, which I ought here particularly to mintion.

The first is the plan of the work.

I am forry to find myself under a necessity of offering what some of my readers may think very indifferent entertainment, and that at their setting out, in the critical chapters of the first part. But it was not easy to fall upon a method equally adapted to all readers: nor indeed is the arrangement of the several chapters a matter of any great importance. The order here followed, is that in which it ought to be perused by physicians and men of learning, who have made this disease their study, and are previously acquainted with former writings upon it. It was necessary, in order to prevail with some of these gentlemen to peruse the second part with less prejudice against me, to endeavour first to remove such objections as might arise from doctrines imbibed in younger years, in schools and universities. Others, who are not so well acquainted quainted with the subject, I would advise to begin with the second part; which will enable them to form a better judgment of the first. The Bibliotheca scorbutica, or the collection of authors on the scurvy, is placed at the latter end of the book, as proper to be confulted as a dictionary. And it is to be remarked, that when, to avoid repetitions in the first and second parts, an author's name is barely mentioned, recourse must be had to the Alphabetical Index; which points out the page where the title of the book referred to, or its abridgment in part 3. is to be found.

In the order of the chapters, the prevention of the difease precedes its cure: and the first being the most material, I have thrown great part of the latter into it; this method of treating the scurvy suiting it better perhaps than any other. It will appear, that in the plan I have pursued, I had in view an author whose book has met with a general good reception, Austruc de morbis venereis; and were other diseases treated in like manner, it would greatly abridge the enormous, and still increasing number of books in our science.

What may be deemed by critics equally exceptionable with the order of the chapters, are

fome few repetitions. But in certain cases they were necessary, in order to obviate prejudices at the time they might naturally arise, and to enforce the argument.

As to the contents of the book in general:

In the first part, I have endeavoured, by a connected course of reasoning in the several chapters, to establish what is there advanced, upon the clearest evidence, confirmed by some of the best authorities; and have laid aside all systems and theories of this disease which were found to be disavowed by nature and facts. Where I have been necessarily led, in this difagreeable part of the work, to criticife the sentiments of eminent and learned authors, I have not done it with a malignant view of depreciating their labours, or their names; but from a regard to truth, and to the good of mankind. I hope fuch motives will, to the candid, and judicious, be a sufficient apology for the liberties I have assumed.

Dies diem docet.

The principal chapters of the second part, containing a description of this disease, its causes, the means of preventing and curing it, are also founded upon attested fasts and observations, without suffering the illusions of theory

to influence and pervert the judgment. For, that things certain may precede what is uncertain, the theory, and the inferences from it, are placed at the latter end.

In the third part, where I have given an abridgment of what has been written upon the subject by the most celebrated medical authors, and others, I have always endeavoured to express their sentiments with as much clearness and conciseness as I could. I have indeed through the whole aimed at perspicuity rather than elegance of diction, as most proper in a book of science. To know a disease, and to cure it, being the two things most essential to be learned; I have therefore transcribed the symptoms and cure of the scurvy from those authors, where they do not entirely copy from each other.

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TREATISE

ON THE

S C U R

Vince Y.

PART I. Preliminary Discourses.

CHAP. I.

A critical history of the different accounts of this disease.

In the first accounts given us of this disease, by Ronseus, Echthius, and Wierus (a), it is surprising to find, not only an accurate description of it, but an enumeration of almost all the truly antiscorbutic medicines that are known to

the world even at this day.

Ronsfeus, who believed it to be the same disease that is described by Pliny (b), and is said to have afflicted the Roman army under the command of Casar Germanicus, observed, that in his time it was to be met with only in Holland, Friesland, and Denmark; though he had heard of its appear-

(b) Vid. part 3, chap. 1.

⁽a) The first writers on the scurvy. Ronseus and Echthius, though contemporary, wrote separately, without having the benefit of seeing each others works.

appearing in Flanders, Brabant, and some parts of Germany. From feeing some of those countries entirely free from this diftemper, he was induced to ascribe its frequency in other places to their soil, climate, and diet. In order to prove

which, he wrote his first epistle (c).

Echthius seems to be the first who gave rise to the opinion of its being a contagious or infectious disease. He was led into that mistake, by observing whole monasteries who lived on the fame diet, and in the same air, at once afflicted with it, especially after fevers; which no doubt might become infectious in close and confined apartments. He imagined, therefore, that a scurvy might in a manner be the crisis of a fever.

and as fuch deemed it contagious.

But although Wierus very minutely transcribes the fymptoms from this last author, upon this occasion he very justly differs from him. He observes, that the scurvy is not properly the crisis of a fever; but, like many other diseases, may be occasioned after it by a vitiated state of blood, &c. He imagines people were induced to believe it a contagious malady, by frequently feeing whole families feized with it in the fame manner; but this he ascribed to the sameness of their diet. He was however deceived (probably by the authority of Echthius) in thinking, that where the gums were putrid, the difease might be infectious: and accordingly makes it a doubt, whether in some parts of the Lower Germany, where it had lately appeared, it was owing to their diet, or to infection. But it shall

⁽c) Intitled, Quare apud Amsterodamum, Alecmariam, atque alia vicina loca, frequentissime infestet scorbutus?

be fully proved hereafter, that the scurvy is not

contagious or infectious (d).

It may be proper to observe further, that Wierus had described the various and extraordinary fymptoms of this malady, in fo accurate a manner, that the fucceeding authors for a long time did nothing more than copy him. It was a confiderable time after, when Solomon Albertus wrote a large treatife on this subject, wherein he assumes great merit to himself in discovering a symptom not taken notice of by any author, and which he had once or twice observed in this disease, viz. a rigor or stiffness of the lower jaw. However, Wierus still continued in the greatest esteem and reputation; and his book was deemed the standard on this subject, even till the time of Eugalenus, who gives it that just character, and refers to it almost entirely for the cure. Wierus then must be allowed to have been a good judge of this diftemper: and as he was a person of eminent learning, as well as probity (which his writings on this and many other fubjects fufficiently shew) his word may be relied upon, when he tells us, that in his time this disease was peculiar to the inhabitants of the countries upon the north feas: he had never met with it in Spain, France, or Italy; nor was it to be seen in the large tract of Upper Germany: and as to Afia and Africa, if ever it appeared there, it would no doubt be in fuch places as lay adjacent to the sea; where the situation, gross diet, and bad water, might give rife to it, in the fame manner as they do in the countries where it prevailed. These were not conjectures in our author;

author; for he was a great traveller, and had visited all the places he talks of (e). A book written in those times by him, De prastigiis demonum, adds much to his reputation; as it shews he was neither so weak, nor credulous, as some later writers on the scurvy.

Brunnerus, who may be deemed the next judicious author after him on this subject, observed, that in his time, when the use of wine was become more common, the scurvy was not so frequent as formerly, even in those countries where

it prevailed much.

Notwithstanding which, in a very short time after, we are surprised with accounts of this supposed contagion having spread far and wide. In less than thirty years after Wierus, Solomon Albertus, in his dedication to the Duke of Brunswick, after some very pathetic declamations on the vices of the times, observes, that he had met with the scurvy every where; and that it prevailed in Missia, Lusatia, on the borders of Bobenia and Silesia, &c.

However, the disease as yet still retained the same face; its symptoms and appearances being the same. For though this author (who practised in a place where Wierus says the scurvy was uncommon) had discovered one extraordinary symptom, before mentioned, sometimes accompanying it; and which certainly was but very rarely to be seen, as it escaped the observation of every one but himself: yet in other respects, he, as well as his contemporary writers, gives us the same account of it as Wierus had done; and particularly, that the putrid gums and swelled legs

legs were the most certain and only characteristic

signs of it (f).

But eleven years after him, we are likewise acquainted by Eugalenus, with the surprizing rapidity with which this contagious distemper had made its progress over almost the whole world. And what is still more remarkable, the face of the disease was in a few years so much changed, that the putrid gums and swelled legs were no longer characteristic signs of it, as it often killed the patient before these symptoms appeared (g). And it is highly probable from the histories of above 200 cases of patients given in his book, wherein mention is made of the gums being affected in one person only, that such symptoms did now but rarely, if at all, occur.

This difease had also become more violent and malignant, as he gives us to understand in different parts of his performance: all which he would persuade us to have proceeded from a very

fingular cause (b).

But besides the physical reason which he affigns, he is likewise pleased to introduce some moral

(f) Signa mali hujus charasteristica non alia sunt, præter duo illa (quorum supra meminimus) gemina, symptomata pathognomica appellata, indubia morbi indicia, viz. stomacace et sceletyrbe. Cætera symptomata ancipitia sunt et vaga. Alberti historia scorbuti, p. 546.

(g) P. 10. and 211. The Ansterdam edition of Eugalenus,

published in the year 1720, is here quoted.

(b) P. 250. where talking of the pox and scurvy as both modern diseases, Utrique etiam peculiare hoc nostro seculo suit, ut quam longissime latissimeque sua pomæria disatent et dissundant, atque procul à generationis suæ locis et terminis, ad incognita et remota loca excurrant evagenturque, atque sub diametrali linea, quâ sibi invicem, sub polorum oppositione, opposita sunt, se mutud quasi complestantur, et inter se virus ac venenum suum communicent. Ita sit ut hodie etiam Germanie, Angliæ, Galliæ, bic morbus innotescat; apud quos antea ne quidem auditum ejus nomen suit.

confiderations to account for the greater frequency and malignity of this diftemper, and the extraordinary fymptoms which he ascribes to it. In one place (i) he attributes its irregular appearances to the operation of the devil. But in another, he thinks this new and furprizing calamity fent, by divine permission, as a chastisement for the fins of the world. And as he really thought himself (as appears through the whole treatise) the most fagacious detector of this Proteus-like mischief, lurking under various and surprising appearances, he very religiously thanks Heaven

for the important discovery (k).

As Eugalenus's book has been often reprinted in different parts of Europe, has been recommended by the greatest authorities, Boerhaave, Hoffman and others, and is looked upon at this day as the standard author on our subject, in the first edition of this treatise I employed several pages (which I fince have judged unnecessary to reprint) in a critical inquiry into the propriety of its contents and the merit of its author. I observed at great length wherein he differs in his account of this disease from all preceding authors; for as to those who succeeded him, they did little more for some time than copy him. But for this I must here refer to the abridgment of his work in part 3.

The

(i) P. 81.

⁽k) Quod ideo permittere Deus videtur, ut hoc modo iram suam adversus peccata ostendat, dum novis et inusitatis morbis et ægritudinibus, nunquam prius cognitis ac visis, mortale genus in ira sua visitat et castigat; ut etiam vulgus nostras, morborum novitate admonitum, intelligat differentes hujus temporis febres ac morbos esse, ab iis qui ante aliquot annos homines afflixerunt. Agamus igitur Deo gratias, quòd pro sua infinita misericordia ac clementia tam benignè eos nobis revelare dignatus fit, p. 222.

The different accounts and descriptions of the fame disease by *Eugalenus* and the preceding authors, as they will there appear, can be accounted

for but in two ways.

This diftemper must, in a very short time after the first accounts of it were published, have made an incredible progress, become an universal calamity, and assumed quite a new appearance and different symptoms. This was the opinion of Eugalenus; who, although he has given such a new and different relation of it, yet tells us expressly it was the stomacacia of Pliny, the disease described by all other authors under the name of scurvy; with whom he agrees in assigning the same causes and cure. For which last, in particular, he refers us to these authors.

Or we may suppose, that this author might be mistaken, in thinking the disease he has described, to be precisely the same with that which was formerly known by that appellation: yet perhaps there may be found some analogy or resemblance betwixt what he deemed such, and the former accounts we had of the scurvy; so that they may be said to border on each other. Or at least he has given this denomination to a complication of various symptoms first described by himself; and thus has characterised under the name of scurvy, a particular disease, or class of diseases; in which he has been followed by succeeding authors.

Upon the first supposition, before we can give entire credit to him, and believe so great an alteration to have happened in this distemper, it is necessary we should know what grounds he had for his opinion, and what reasons induced him to believe, that so many diseases, various and opposite in their appearances, were nothing more B 4

than the scurvy lurking under different forms. It is at least required, that there should have been in the effects or appearances of the difeases, some distant analogy or resemblance left; otherwise there will be a ftrong prefumption that here he

might be mistaken.

But instead of pointing out to us any such fimilarity or resemblance betwixt the diseases he has described, and the real scurvy as described by all others before him; he has fallen upon a most extraordinary method of proving their identity, by assuming for pathognomonic or demonstrative scorbutic signs, such symptoms as had never been observed in the disease before, viz. such a state of urine and pulse as is entirely different from the description given of them by the most accurate writers (1).

Now, upon a supposition that the pulse and urine, like the rest of the symptoms, had alsovaried in this distemper from their former appearances, it was then incumbent upon him to

prove

(1) Vid. part 3. chap. 2. Forrestus tells us, that in this malady the state of the urine deserves no regard; and wrote three books to prove it fallacious. Although Reusnerus does not in this agree with Forrestus; yet he, as well as Wierus, differs widely from Eugalenus in the description of the urines in this difease. As to the state of pulse described by Eugalenus, which he afferts to be the most constant concomitant of this distemper, p. 30. it is remarkable, he is the first author who mentions such a condition of pulse to have ever been observed in the scurvy.

Notwithstanding all which, the pulse and urine, or either of them, convince Eugaleuus of the existence of the scurvy, though in other respects the symptoms should differ from it as much as the plague does from a dropfy. Sufficiant ad denotandam mali causam quæ ab urina et pulsu indicia sumuntur, p. 120. De his omnibus, certum à pulsu & urina, vel ab horum alterutro, indicium est, minimèque fallax, p. 89. Citra alia indicia, non semel ad morbi cognitionem nos sola urina deduxir.

prove the identity of these diseases by other marks, and not by those symptoms wherein the difease differed from itself.

In a former edition of this treatife I enumerated the feveral other figns he gives of fcorbutic difeases, which were properly reduced into two

classes, viz.

1/2, Such symptoms as the before-mentioned conditions of pulse and urine, which never were remarked in the fourvy by any but himself; and feem indeed more peculiar to other diftempers:

2dly, Such as are common to this difease with many others. But these he seems to rely upon no further, than to corroborate the proofs he had

from the pulse and urine.

As thefe are the principal marks and diagnoftics of the diseases described by Eugalenus; among which there are not to be found any of those fymptoms which the authors preceding him thought absolutely necessary to demonstrate the existence of the disease which they had described under the name of fcurvy; and as Eugalenus assumed for demonstrative and constant signs of this disease, such as were never before observed in the true fcurvy, nor are ever feen to occur in it at this day, (as afterwards will be more fully proved:) we must necessarily conclude, that he has described a different disease; which appears from his whole treatife. We need but mention the comparison once more in this respect with the authors who preceded him. Reusnerus wrote but four years before him; and has collected into a volume of confiderable bulk, almost all that had been written upon the scurvy. After describing the putrid guns and spots, he expresses himself thus. "These are the demonstrative signs of the scurvy,

without whose appearance the disease cannot

" fubfift (m)."

It may be faid, that though the diseases were not precisely the same, yet Eugalenus under the same name has characterised a certain disease, or species of diseases, in which he has been followed by all other authors. This leads me to the most distinguishing characteristic of all the diseases described in his book, and which is to be met with almost in every page, (n) viz. its being a disease not properly described by the ancients: to which he often adds, its not submitting to the cure prescribed for it by those old authors.

He recommends the perusal of his book to such only as are conversant in the writings of the ancient *Greek* and *Roman* physicians (0); otherwise he observes they will never be able to distinguish old diseases from the new: all which, or what he imagined to be such, he has promiscuously classed, without any other distinction, under

the general name of scurvy.

The true idea this author entertained of the scurvy, by which the reader may be enabled

to

(m) Et hæ signa sunt scorbuti pathognomica, quæ sine rei in qua sita sunt interitu abesse nequeunt. Reusneri exercitat. de

scorbuto, p. 328.

(n) Viz. Nam si quis nobis in his regionibus morbis occurrat rarus, vel etiam aliquis veteribus cognitus, sub aliis, et diversis, atque plurimum ab eorum descriptione discedentibus signis, statim mendacem ejus speciem suspectam habere oportet, et huc atque ad hunc morbum cogitationes dirigere, diligenterque cum morbi mores, et causas ejus antecedentes, tum pulsum et urinam explorare, taliane sint quæ huic morbo conveniant, eumque quadam sua proprietate exprimant et demonstrent. Soon after adding, Non video quis præterea dubitationi locus esse possit, nist perpetuò cogitationibus nostris oberrare et incertum vagari velimus, p. 179.

(0) P. 227.

to judge what particular disease, or species of diseases, he characterised, is precisely this.

He feems to have been of opinion, with an eminent physician of that age, who takes occasion from Solomon's saying, there was nothing new under the fun, to affert, that all diftempers were the same formerly as at present. To this our author, however, makes two exceptions, in the pox and scurvy, (p. 250); where he imagines that the one travels from the north, the other from the fouth; and that, upon their meeting, they communicate and intermingle their poison with each other. But he was entirely unacquainted with hysteric and hypochondriac complaints, and a train of others now going under the name of nervous disorders. He knew very little of the rheumatism, rickets, and many others; which, if at all, are very imperfectly described by the ancients. Hence, whenever fuch cases occurred, with this peculiarity, of not being described in ancient authors, he directly pronounced them scorbutic.

Thus, he imagined, that the scurvy might assume the form of almost all diseases incident to the human body: or, in other words, that the numerous and various distempers described in his book, from the plague to a simple intermitting sever, might be produced by this one scorbutic cause; and that each of these manifold diseases might subsist singly and separately, without the appearance of any symptom formerly observed in the scurvy described by others; or even any one symptom common to those described by himself, except the appearances in the urine and state of the pulse.

But a difference of climates must needs have a great influence, even on the same diseases:

hus

thus we find the crises and appearances of fevers and other distempers, to vary in these cold climates, from the description given of them in more fouthern countries, where the ancients practifed. These and other incidental circumstances, necessarily induce a variation in the indications of regimen and cure. This our author makes no allowance for: but when the most common and usual malady deviated in the least from the account given of it by those accurate authors, especially when it did not yield to the method of cure directed by them; all fuch irregular and untoward fymptoms he likewise referred to the scorbutic taint.

Now, whether the disease was altogether and purely scorbutic, or the scurvy was joined or complicated with another malady, no cure could poffibly be made in either case, without the common and specific antiscorbutic herbs; which, upon the last supposition, were to be compounded with other medicines proper for these diseases, and which, according to his own account, proved always fuccessful (p).

The vanity and prefumption of this author are indeed intolerable, when he affures us, that he would cure beginning confumptions in fourteen days (q); palsies in five days (r), often in four, but in fourteen at most (s); violent tooth-achs in a few hours (t); fevere quartan agues in ten days, otherwise not curable in a year (u). In

(5) P. 63. (q) P. 192. (r) Obf. 16, et 23. (t) P. 52. (u) P. 40.

⁽p) In his omnibus, cum, propter multiplicem symptomatum varietatem raritatemque, caufam subesse raram, et veteribus incognitam, considerarem; post varias habitas mecum deliberationes, et diligentem pulsuum urinarumque examinationem, tandem scorbuto adjeribendam inveni, conjecturam meam ac coxacuon de his, comprobante selici curationis eventu, p. 30.

fhort, according to him, no difease is any longer incurable; and by his means the art of physic

is restored to credit and reputation (w).

His extreme ignorance in physic, appears, among many other instances, from his taking a proneness to faint in child-bed women for a demonstrative sign of the scurvy (x). In a man of seventy years, he judged a mortification of the foot to be scorbutic, by the black and purple spots which appeared upon the mortiste part; and the small, weak, and unequal pulse, naturally to be expected in such a situation (y).

He feems to have known no other distinction betwixt the venereal disease and scurvy, but the

pulse (z), and sometimes the urine (a).

All the fucceeding authors, for a confiderable time after Eugalenus, follow him most religiously and minutely in their description of this disease. So great a compliment is paid him by Marvinus Horstius, and Sennertus, that they copy out of him with a scrupulous exactness, not only the many symptoms he describes peculiar to the malady (and especially his great dependence on the pulse

(w) Futurum enim est, ut in morbi notitiam deductus, paucis diebus gravissimas quasque sebres sit curaturus, quibus nulla prius veterum prosuit curatio. Soon after adding, Quæ, quia à nemine hactenus satis animadversa sunt, quod sciam, binc sactum esse arbitror, quòd tantopere vilescere apud nos et in his regionibus medicina cæperit, utpote quæ nullius sebris curationem certò promitteret, p. 36.

And repeating the same remark in another place, Hoc sine arrogantia dicere possium, me certam harum sebrium curationem promittere omnibus audere, qui nostris præceptis ac monitis obtemperare, et in assumendis hisce medicamentis constitum nostrum sequi non detrectant: siquidem (absit arrogantia dicto) non minus certo barum sebrium curatio mihi nota est, atque digitorum numerus. Obs. 56.

(x) P. 194, 197. Item, Obf. 11. (y) P. 108. (z) P. 51. (a) P. 263. Vid. p. 60, 126, 137.

pulse and urine, for ascertaining its existence); but where he or his editors, in their extraordinary relations of fcorbutic cases, mention some very uncommon and fingular appearances, these are likewise added by them to the proofs of the scurvy. Such extraordinary cases were attributed to this evil, as perhaps are not to be paralleled in the records, I may fay the legends,

of physic.

But what additional observations they themfelves made, may be feen in the proper place (b). Their merit feems chiefly to have confifted in furnishing us with cures, or at least with many medicines for the different diseases described by Eugalenus. However, as an apology for Sennertus, he informs us, that he transcribed chiefly from this last author, because the scurvy was not a disease so frequent or common in his own country (c).

Eugalenus

(c) Tractatus de scorbuto, p. 140. To give the reader some idea of the consequence of such writings, and the high efteem these authors gained by their works; we find Moellenbroek, who pretended likewise to write upon this disease, or at least a species of it, setting out in his introduction thus. Immo nullus ferè jam morbus est, cui Se non adjungat scorbutus; unde nist antiscorbutica interdum reliquis admisceat medicamenta, vix eos curabit medicus. Quod in praxi mea expertus sum non rarò. Et novi aliquos, qui scorbutum ejusque antidota negligentes, in morborum curatione, suum non potuerunt obtinere scopum: ac propterea meo exemplo edocti, maximo cum ægrorum suorum emolumento, eadem postea exhibuere. Quamvis autem valde frequens sit scorbutus, symptomatibus tamen variis oculatissimos sæpe medicos illudit et decipit; immo ex mille medicis (ut scribit Frentag. cent. 1. observ. 99.) ne ternos quidem invenias scorbuti sat gnaros, ut ut se fingant Æsculapios. Hic tantæ ægrotorum strages, tanta mortalitas, tanta archiatrorum, necdum gregariorum errata; ut statuas mercantur Fracostoriana splendidiores, ære perenniores, viri clarissimi Sennertus et Martinus, (adderem ego Gregorium Horstium) qui, penicillo plus quam Apelleo, medicorum opprobrium nobis depinxerunt. Meruisset pyramidem Eugalenus, ni curationem subticuisset.

Eugalenus had not talents sufficient to form any sort of theory for illustrating the nature of the many diseases referred by him to the scorbutic taint. The principles he assumes upon particular occasions of obstructions in the liver and spleen, overslowing of the black bile, and corruption of the humours, are all borrowed from other authors, lamely explained by him, and often contradicted in his book. Sennertus's hypothesis consutes itself. So it was left to Dr. Willis, with the assistance of Dr. Lower, to clear up a subject that lay under very great obscurity, by reducing the whole into an ingenious system, which continues established and adopted even at this day.

It may be worth while to take notice, that until Eugalenus's time, as before mentioned, putrid gums and fwelled legs were the characteristic figns of the scurvy. This last author made them to be a small, quick, and unequal pulse, together with a peculiar state of urine (d.) But such a condition of pulse is not mentioned by Willis to have been observed in any of the cases he gives to illustrate his account of this disease; nor is it so much as mentioned in his book, except under the title of the irregular pulse (e), which is said to occur only in the most inveterate scurvy (f). And although he lays great stress on the appearances in the urine (g); yet here he in some respects likewise differs from Eugalenus (h).

There is another very material difference in their accounts of this disease. Eugalenus found it in his time very easy to remove (i). Accordingly, his book abounds with some very speedy and miraculous cures. Whereas now the scurvy is

become

⁽d) Vid. part 3. (e) P. 228, Amsterdam edition. (f) P. 254. (g) P. 256. (h) Page 229. (i) Cognito morbo, facili curatur. Eugalen. p. 140.

become much more obstinate, proceeds from various and opposite causes, requiring very different methods of cure; the simple antiscorbutic herbs being by no means fufficient to remove it.

Willis having given a very different account of this disease from all others; as will appear by comparing the fymptoms described by each in the third part of this treatife; in my first edition I examined what fingular and diftinguishing marks and characteristics he gave of such a variety of distempers, in order to their being with any manner of propriety classed under one denomination, and referred to the difease we are now treating of. I there proved, that the figns given by him of the fcurvy (k), are at best but doubtful and equivocal, if not mostly false and contradictory to former accounts; and observed, that in his manner of giving a detail of almost all distempers incident to the human body, in a progression from the head to the foot, without any distinguishing marks to know when they proceeded from the fcurvy, and when from other causes, he has acted much more irrationally than Eugalenus; who, although he ascribes as many diseases to the scorbutic taint, yet gives the peculiar characteristics of pulse and urine proper almost to each; by which they may be known to proceed from that, and no other cause, which Willis no where does.

He indeed opens a little the mystery of his book towards the conclusion of it, in the relation of the case of a nobleman, which seems to have been as different from the scurvy as from the pox. " As this case, says he, cannot properly be re-" ferred to any other disease, it may justly be " deemed fcorbutic (1)."

Dr.

Dr. Willis is copied by most of the succeeding authors, especially by Charleton; by Hoffman, in the distribution of the symptons; and by Boerhaave, in the grand distinction into a hot and cold scurvy, in the process of cure, as also in the medicines prescribed for it. But those already mentioned, having been deemed the standard and original writers on this subject, I shall not trouble the reader with any farther animadversions upon them or their followers. I am persuaded, that many other observations will naturally occur to those who peruse Part III. of this treatise with attention.

What were the fentiments of a most judicious physician, may be seen by looking into Sydenbam; what were the dreadful consequences of such writings, will appear by looking into Kramer: but how many unhappy patients must have suffered in this disease before the slaughter of thousands at a time (m) began to open the eyes of mankind, is too melancholy a subject to dwell upon!

We are now arrived to a period of time, when many diffinctions and divisions were introduced and made in the fcurvy. An inquiry into the propriety of these, we shall make the subject of

the following chapter.

CHAP. II.

Of the several divisions of this disease, viz. into scurvies cold and hot, acid and alcaline, &c.

A Uthors had now gone on for near feventy years (a), by collecting from each other and adding something themselves to make up a c

⁽m) Vid. Kramer. (a) From an. 1604, when Eugalenus wrote.

very extraordinary number of scorbutic symptoms. They had ascribed to this modern calamity, almost every distemper or frailty (b) incident to the human body; fo that no room was here left for farther invention.

The daily experience of practitioners, and their observations in physic, must soon have convinced them of the inefficacy of one uniform method of cure. The fimple antifcorbutic remedies, how much foever extolled by Eugalenus, failed to remove the many, various, and complicated disorders that were classed under the name of feurvy. Thus they found themselves under a confequent necessity of having recourse to different distinctions at first, divisions and subdivifions afterwards, of the malady. And as the fhops abounded with antifcorbutic medicines of different and opposite virtues, taken from all parts of the animal, mineral, and vegetable kingdoms, it was proper to distinguish for what particular fymptoms, diseases, or stages of the difease, each was peculiarly adapted.

But it may be asked, In what disease did such distinctions become so necessary? And it evidently appears, in that alone which was first deferibed by Eugalenus, and from him transcribed by Horstius and Senhertus; and has been described by Willis, and his copier Charleton. But if the critical remarks that have been made upon these original authors are admitted, the diffinctions made here are founded in abfurdity; and the former chapter is a sufficient confutation of them. These indeed, when first introduced by Willis, were not univerfally received. Chameau,

⁽b) Omnes qui ex senio moriuntur, moriuntur etiam ex Scorbuto. Dolaus.

with great strength of reason, confutes Willis's

hypothesis; as many others have done.

But of multiplying divisions and classes of the scurvy there became no end. In which Gideon Harvey, physician to king Charles II. seems to

have exceeded all others (c).

This writer and Charleton are the only authors who deliver the fymptoms peculiar to the different kinds of scurvies, by which they may be known and distinguished from each other (if we except a very modern writer, viz. Dr. Nitzsch (d), who has thought proper to introduce many groundless divisions and subdivisions first made by himself in this disease). Whereas others found this task too difficult for them; and that it was much easier to give a long detail of symptoms and diseases; leaving it to the sagacity of their readers to apply sewer, more, or all of them, to the different species of scurvies constituted by them. For this purpose, it was alone sufficient that their theories were rightly understood; as

(c) He makes above twenty different species, such as a flatulent, a cutaneous, an ulcerous, a painful scurvy, &c. a mild or malignant scurvy, an English or Dutch scurvy, a sea or land scurvy, &c. &c. New Discovery of the Scurvy,

cap. xv.

(d) Vid. part 3, chap. 2. The observations in his book are sufficient of themselves to consute the division of this discase into a hot and cold scurvy. The truth of the matter is this, when the doctor was sent to Widurg, anno 1732, he seems to have been strongly prepossessed with an opinion of this distinction; and in his paper very unjustly blames the surgeons in the place for not having attended to this scholastic division of scurvies. But when by farther experience in a very great number of patients he had acquired a more persect knowledge of the disease, one cannot help remarking what pains he takes still to support this sanctful distinction, in order to justify the aspersions thrown upon the surgeons in Wiburg.

when the fulphurs abounded in the blood, and when they were depressed; when this vital fluid was too hot or cold, or inclined to an acid, alcaline, and briny acrimony, or an oily rancidity.

The first and best authors (e), whose method of cure was simple, uniform, and for the most part fuccessful, having consequently no occasion for fuch various distinctions, universally ascribed the malady to a fault in the spleen. They mistook this disease for a very different one described by Hippocrates (f). But it being supposed, that the scurvy since their days, had by contagion (g) diffused itself over the whole world, infected the child unborn (b), and that few escaped this modern calamity (i), as a pimple appearing on the fkin was thought to indicate this mischief lurking in the blood; to support these ill-grounded conceits, theories were invented, galenical, chymical, and mechanical, according to the whim of each author, and the philosophy then in fashion.

First, The galenical qualities of heat and cold, which Willis describes a sulphureo-saline, and a salino sulphureous state of humours; and which the more modern writers have distinguished by the appellation of alcaline and acid scurvies, were introduced; and the distinction continues to this day. By which they mean, that the scurvy occurs in different constitutions and habits of body,

or

(e) Ronffeus, Wierus, Echthius, Albertus, Brucæus, Brun-(f) Vid. part 3. chap. 1. nerus, &c.

⁽g) Tacite serpit insidiosum virus ab hospite in hospitem, spiritus, lecti, mensæ, poculorum communione. Charleton, p. 17. Contagium celere. Boerhaave.

⁽b) Fuere qui liberis suis scorbutum legarent jure possidendum, hereditario. Charleton, p. 17. Vid. Willis, p. 242.

⁽i) Nemo ferè hodie ab eo plane immunis existit. Dolai Encyclopædia. See chap, 1. p. 30.

or at different times; proceeding from as oppofite causes as can well be imagined; as from heat and cold, or the opposite qualities of an acid and alcali: and accordingly the different kinds of it require the most different methods of cure; what proves salutary in one species, being experienced hurtful, nay, poisonous in another. This was the consequence of Eugalenus's book,

and other like writings.

It must be owned, the general name of a disease does not always lead us to the true nature of it. The habit of the body, and many other circumstances, are carefully to be examined; as also, the different degrees and stages of it, together with whatever other peculiar symptoms may occur, in order to furnish just prognessics, proper indications, and a rational method of cure. But the divisions and distinctions that have been made here, are not only altogether unnecessary and perplexing, but have a pernicious tendency to confound it with other diseases, between which there is not the least analogy to be found.

The term cold or acid scurvy, is often met with in conversation, and frequently in the writings of very great physicians. Now I take it for granted, that they who use this term, do it in the same sense as the most eminent writers on the scurvy who first introduced it, and have explained its meaning. It will therefore be sufficient for my purpose, to shew in what sense it was understood by them, and indeed by all who

have attempted to explain it.

Soon after Eugalenus's book was published, it was found he had described in it many symptoms of the bypochondriac disease. Accordingly, Senvertus, in the presace to his so much esteemed

C 3 treatife,

mean

treatife, tells us, as an apology for having transcribed from this author, that if we live in a country where the fcurvy is not very common, we should at least learn from his book many symptoms of the hypochondriac disease. Yet what is furprising, this author, as well as all other systematic writers, has described the latter, in other parts of his works, as altogether different from

the fcurvy.

These authors, by confounding the two diseafes, occasioned the utmost perplexity to succeeding writers on the subject. Willis, and all the followers of Eugalenus, maintain that the fcurvy was nearly allied to the hypochondriac disease. But to set limits to both, and determine wherein they differed, puzzled authors not a little. Some thought they were fo closely connected as not to be described separately (k). The excellent Riverius, who knew little of this diftemper but from books, conjectured it to be the hypochondriac difease, complicated with a certain malignity. Some were of opinion it was this last when beginning. But the more general notion of these miltaken authors (1) was that the melancholic malady often terminated in the fcurvy, as being the last and most exalted degree of it. The most judicious, such as Drs Pitcairn and Cockburn (the last of whom especially had great opportunities of being acquainted with the fcurvy) tell us plainly, that if any thing is meant by the term of a cold scurvy, it is nothing else but the hypochondriac disease. And any person will be convinced, that this is truly the case, by looking into Charleton; who must

⁽k) Ettmullerus, Dolaus, &c. (1) Moellenbroek, Barbette, Deckers. &c.

mean that, if he means any thing; and is the only writer of character who has distinguished the acid scurvy by its symptoms and cure (m).

But it is certainly paying too great, a compliment to Eugalenus, to extend this denomination to the hypochondriac disease, or any species of it, to pestilential severs, cancers, buboes, &c. as he has done. Nor is it sufficient to alledge, that time and custom have given a fanction to such terms; as this is complimenting ignorance and custom, in a manner no way consistent with the im-

provement of arts and sciences.

The hypochondriac diftemper, according to Sydenham (n), is the fame in men, that hyfteric diforders are in women. In this, with fome little variation, most physicians agree with him. But such diseases have no manner of connection with the scury: their seat and cause in the human body, and especially their symptoms, are widely different; so that there is hardly to be found one symptom in either, which is common to both.

It is indeed furprifing, that some very eminent authors should have endeavoured to persuade us, that from such opposite causes, as heat and cold, or alcaline and acid salts abounding in the body, not only the same series of symptoms should arise (for if they do not, they should certainly have noted which were peculiar to each) but that then likewise the same state of the blood should also exist. Thus, the learned Boerhaave and Hossman, after giving a very regular detail

(n)- Vid. Differ. epistol. ad Gul. Cole.

⁽m) P.40. He fays, it is so nearly allied to the melan-chelia hypochondriaca, as to differ from it only in certain degrees.

of fymptoms, wherein they widely differ from each other, both agree in affigning one only immediate cause of all scurvies; which they suppose to be an extraordinary separation of the ferous or watery part of the blood from the thicker part or crassamentum; the former being dissolved, thin, and acrid; whilft the latter, on the grumous part, is too thick and viscid. From the predominancy of different acrimonious falts (n), or oils (0) in the too thin ferous humours, the fcurvy was to be denominated, according to Boerhaave, either muriatic, acido-austere, fætidalcaline, rancid-oily, &c. (p)

Bur

(n) See the state of the blood in the scurvy, in a post-

fcript now added to this third edition.

The ferum is fo far from being acrimonious, in this difease, that it is rather more insipid than the serum of healthy blood.

(o) Vix equidem plura sulphurum saliumque genera in bermeticorum ergasteriis, quam in sanguine scorbuticorum est

reperire. Charleton, p. 58.

(p) Boerhaave having described the symptoms peculiar to the beginning, progress, and end of the malady, it may be asked, To which of the different scurvies are the symptoms (Aph. 1151.) and their fo regular progression to be applied? It would appear, to all of them, not only by his description in this manner, but by the prescriptions in his Materia medica; where for example, putrid gums, the pathognomic fign of the malady, as will afterwards be shewn, are supposed to occur both in the hot and cold fcurvy, which are the most opposite species of the disease. Vid. Aph. 1163.

The whole indeed confifts of scraps taken from different authors. He has picked the symptoms out of one book, Sennertus's collection, as he acquainted the pupils in his lectures; the cure out of another, viz. Willis. But it will appear to any person who peruses the authors from whom he has borrowed the description of the symptoms, viz. Echthius, Wierus, &c. that they described a very different disease from what Willis did. Dr. Willis's method of cure may perhaps be rationally applied to the difeases he described; but

But the affuming of fuch chymical principles as the foundation of a method of cure, from a prefumption of the predominancy of fuch falts and oils, or of an acid or alcaline tendency in the blood in this difease, is exceptionable on many accounts.

We may allow the predominancy of fuch falts. or the existence of such an humour in the stomach and intestines, as may be supposed to have the physical marks and properties of what is faid to be acid or alcaline. But as the blood of no living animal was ever found to be either acid or

alcaline,

but is by no means adapted to the malady characterised by

the first writers on the scurvy.

I have been told, that Boerhaave has described a cacochymia under the appellation of fourwy. But if any thing else is meant besides a scorbutic cacochymia, which must be the fame thing as the difease called scurvy, why misapply and confound terms? This must occasion a confusion of the things themselves; and hath produced very dreadful consequences, of which I will give but one instance. Mercury may be reputed a poison in the scurvy; Kramer gives an account of 400 men destroyed by it (See Dr. Grainger's letter, part 2. chap. 21): yet Boerhaave recommends it; and in fuch a state of the malady (Aph. 1151. n. 4.) where it must certainly become a very deadly one. This fatal mistake has been copied from him, and even inforced by his authority. See Heucher.

It is true, he fays, what is proper for one fcurvy is a poifon in another. But this is not eafily reconciled with the causes he assigns of the disease; all which (except the cort. Peruv. which is a good antiscorbutic) would seem, either ' separately or jointly, to produce fimilar effects. Let us suppose, for a moment, they produced very different effects; what criterion have we to distinguish, by his aphorisms on this disease, a poisonous from a falutary medicine? As I have before observed, he delivers the most regular uniformity of appearances; and the pathognomic figns feem to be the

same in every species of scurvy.

To fo great an authority, which, as far as is confiftent with truth and the good of mankind, I shall always respect,

alcaline (2), it is hard to grant the existence of fuch qualities, latent there, when they do not manifest themselves by any signs in the body, from which we can be affured of their existence. These, according to all the authors of such theories, ought principally to be in the alimentary canal. But, in the highest degree of the hot, putrid, and what is called the alcalescent scurvy, there is generally neither loss of appetite, putrid belchings, nor any other marks, delivered by those authors, as proofs of an alcalescent tendency in the stomach and intestines: nor is there commonly any præternatural thirst, or heat of the body, supposed always to accompany an al-

may be opposed a much greater, viz. the experience of a physician who had the greatest opportunity perhaps any one ever had, of being conversant with scorbutic patients; woful experience gained by being witness to the death of many thousands, when Boerhaave's Aphorisms on this subject were of no use to him: Non nisi unica species veri scorbuti datur, eaque fætida, putrida, &c. Gravissimus est error, quamlibet cacochymiam, imo etiam cachexiam, &c. scorbutum putare, quam verus scorbutus species cacochymiæ singularis sit. Kramer epistol. p. 27, 28. Such indefinite terms are indeed but a subterfuge for ignorance, and have been long a reproach to the art of medicine. Antiquorum cocochymia, et modernorum scorbutus, aqualia habent fata; nam nomen suum in omnibus illis affectibus dare debent, ubi causæ morborum et symptomatum nullo alio vocabulo exprimi possunt. Et sic tanquam asylum ignorantiæ bæc nomina consideranda veniunt. Junckeri conspectus medicinæ, tab. 69.

(z) Although the recent urine of those who took Mrs. Stephens's medicine was found to effervesce with acids, yet this experiment by no means authorifes us to conclude that the blood of fuch people was alcaline, for very obvious reafons. It however furnishes one of the strongest arguments against the opinion of putrid scurvies being of an alcalescent nature; as pills made of foap, garlic, and fquills, was the common medicine given by our most experienced navy-furgeons, and used at several hospitals, particularly at Gibraltar, for recovery of many thousand seamen half-rotten in

this difease.

calescent state of the blood. On the contrary, such people have for most part a good appetite, without any heat or drought, even till their death.

One would naturally have expected here, especially in the muriatic or brine scurvy, as it is denominated (which in another place shall be proved altogether a chimerical diffinction), a violent thirst, a vehement desire of watery and diluting liquors. These also would feem the most rational and effectual remedies, in fuch a faline state of blood, at least upon chymical principles. Accordingly, a great chymift, Hoffman (a), though he admits different falts in the blood as the cause of scurvies, observes, that nothing can be fo ridiculous as the laboured and anxious pains taken to correct these by opposite salts. "For (fays he) I will prove it to a demonstra-"tion, there is but one way, and it is the fafest " and most effectual, to correct morbid salts of " any kind; that is, by diluting them fufficiently "with water." His reasoning is at least plausible, it being certain water is the proper menstruum and solvent of all salts.

But to bring this matter to a conclusion: Such theories are entirely overthrown, upon having recourse to experience, the only test by which they must stand or fall. We find in practice, that in sea-scurvies which were deemed hot, putrid, and have been referred to the alcaline class, the hot alcalescent plants, viz. cresses, onions, mustard, and radishes, prove serviceable. These, from such theories, have been condemned by authors, as noxious and pernicious in the highest degree.

But

But the contrary is demonstratively evinced, by the deplorable case of the sailor left behind at Greenland, related by Bachstrom and others, who was cured by fcurvy grafs alone (d); and by the experience of all our naval hospitals, where fuch fourvies are daily removed by fresh flesh broths; wherein are put great quantities of celery, cabbage, colewort, leeks, onions, and other alcalescent plants. There occurs such patients every spring in Greenwich hospital, who are cured by the juice of English scurvy-grass, without the addition of any one ingredient to abate its pungency and acrimony (e): but in fuch cases all acid fruit and herbs are likewise experienced to be of great benefit. In a course of experiments on the effects of different medicines in the fcurvy, I have given at Haslar hofpital to one man, who has been extremely ill of it, the volatile falt of bartsborn, to the quantity of two scruples every day for a fortnight, and to another in an equally bad condition, fixty drops of the weak spirit of vitriol daily for the same length of time, yet have not been able to per-ceive any remarkable difference in their effects on the disease. So that the uncertainty of such theories plainly appears. Upon the faith of which, many improper chymical preparations, and especially opposite salts highly extolled in fuch cases, have been recommended and adminiftered

⁽d) Though it is not so acrid as our scurvy-grass, yet it has a tendency that way. See a letter concerning the Green-land scurvy-grass, part 2. chap. 5. which is a sufficient confutation of the vulgar error, that acids alone are proper in such scurvies.

⁽e) Communicated by Dr. David Cockburn, physician to that hospital.

nistered in the scurvy, to the manifest detriment of the patient. Be it remembered, Chymia egregia ancilla medicina, non alia pejor domina.

CHAP. III.

Of the distinction commonly made into a land and sea scurvy.

HIS disease has been always most common at sea. It is well known there in the present age, by reason of the frequent voyages to the most distant parts of the world. But as many were supposed to die at land of the scurvy, though none of the most equivocal and uncertain, much less the usual symptoms of the marine disease, appeared; it became necessary, in order to save the credit of the physician, and to justify his opinion of the disease, to pronounce it the land-scurvy, or a species of scurvy different from that at sea.

This is a distinction often made in conversation, and sometimes in books. But in order to judge of its justness and propriety, it may be necessary to premise, that such appearances or symptoms, as are peculiar to the nature of a malady, and are more constantly experienced to accompany it, are called its pathognomic or demonstrative signs; and these constitute the greatest medical evidence which can be obtained of the identity of diseases. Besides which, it is a corroborating proof of their sameness, if they proceed from similar causes: And, lastly, if they are removed by the like medicines or method of cure.

If, As to the pathognomic figns of this difcase: If we compare its symptoms as described by Echthius, Wierus, and all other authors till the time of Eugalenus (g), with the accounts given of them in books of voyages, particularly the extraordinary narrative of what happened in Lord Anson's voyage round the world (b), we shall perceive an entire agreement in the essential figns of the distemper, and appearances so singular as are not to be met with in any other.

Now this evil the medical writers have described as peculiar to certain countries. They tell us of its prevailing one year over all Brabant. (i); fome years in Holland (k). Forrestus, though he had frequent opportunities of feeing it in failors, yet in all his histories gives us but one case of a mariner. His most faithful accounts of this malady, are illustrated by patients who had always lived at land; fome of whom must have been afflicted in a very high degree, as they dropped down dead fuddenly, to the furprise of their relations; of which he gives an instance. Dodonæus (1), a very accurate writer on the scurvy, relates no cases of it in sailors, but in people on shore, particularly in a person who contracted it in prison (m).

It is indeed remarkable, that the first just defeription published of this disorder in *Europe*, was in an account of its raging in besieged towns,

by

⁽g) Vid. Part 3.

⁽b) Ibid. (i) Dodonæus, Forrestus.

⁽k) Ronsseus.(l) Praxis medic. et observationes.

⁽m) Yet elsewhere, Ángli maritimis commerciis dediti, et nautæ potissimum, stomacace affliguntur. Sive id sit cerevissæ potu ex palustribus aquis costæ, sive ex aëris putredine, cælique nebulis aut vaporibus, hujus nostri instituti explicare non est. Historia stirpium.

by the historian Olaus Magnus (n), where it was attended with fuch fymptoms as occur always at fea. We have likewife about the fame time a very elegant picture of it drawn by Adrian Junius,

a physician and historian in Holland (o).

Moreover, the fea-scurvy is called by several authors the Dutch distemper; especially by the celebrated Francis Gemelli Careri, who has wrote the best voyages in the Italian language. The French formerly gave it the name of the land evil (p). And indeed the symptoms of the malady are at this day uniform and the same, both at sea and land; in Holland (q), Greenland (r), Hungary (s), Cronstadt (t), Wiburgh (u), Scotland (w), &c. which sufficiently evinces the absurdity of the affertion advanced by several authors, that since the first accounts of it were published, the face and appearances of the calamity have been greatly changed.

2dly, As to the causes of this disease; they are the same on both elements: for it will be

fully

(n) Vid. Part 3. chap. 1.

(p) Vid. Dellon's voyage aux Indes orientales.

(q) Vid. Dr. Pringle's observations on the diseases of the army, p. 10.

(r) Act. Haffnien. vol. 3. obs. 75. (s) Kramer.

(t) Sinopæus. (u) Nitzsch.

(w) Vid. Dr. Grainger's ingenious account of the scurvy at Fort-William, part 2. chap. 2.

⁽o) Hollandiæ itaque peculiari dono Natura dedit proventum lætum Britannicæ herbæ (which he afterwards calls cochlearia) quam præfentanei remedii vim præbere in profliganda sceletyrbe et stomacace experiuntur, cun incolis, exteri quoque: quibus malis dentes labuntur, genuum compages solvitur, artus invalidi siunt, gingivæ putrescunt, color genuinus, et vividus in facie disperit, livescunt crura, ac in tumoreme laxum abeunt. Histor. Bataviæ, cap. 15.

fully proved (x), that there is not to be found any one cause productive of it at sea, which is not also to be met with at land; though such causes, by subsisting longer and in a higher degree, usually give rise to its greater violence in that element.

It is indeed a fufficient and just confutation of many writers on the scurvy, that they pretend to describe a malady to which seamen are peculiarly fubject, and which they fay proceeds from the diet used at sea, bad water, and sea-air. Yet their affertion, That the disease described by them (viz. Eugalenus (y), Willis, and their followers)

(x) Part 2. chap. 1. (y) Eugalenus practifed at Embden, and other places of East-Friesland; where the cold, thick, and moist air, the raw unwholesome waters used by the inhabitants along that tract of the fea- coast, and the crassus et nauticus victus (as he terms it) occasioned the scurvy to be an universal disease. But it must be granted, that the fcurvy never was so epidemic or fatal there as in ships and fleets. All the causes he assigns as productive of it, do subsist at times in a much higher degree at sea than at land. I have had 80 patients out of the number of 350 men afflicted with it; and have feen a thousand scorbutic persons together in an hospital, but never observed one of them to have the diseases described by Eugalenus. Nor did I ever hear of a practitioner at sea, where it would have been most allowable, who assumed his principles; and supposed, that almost all diseases there must be complicated with the scorbutic virus; that the most extraordinary and uncommon which occurred at fea (as was supposed at Embden and Hamburgh) were, this mischief lurking under deceitful appearances; and that fuch diseases could not be cured without a mixture of antiscorbutics, which seldom failed to remove This last, surely, could never have escaped the observation of our many ingenious navy-surgeons, and of our phyficians and furgeons to naval hospitals; some of whom had feldom less than a thousand patients from the sea. Mr. Ive's ingenious journal (placed at the end of chap. 1. part 2.) is a proof of the variety of diseases which occur there, without

is properly a marine disease, is refuted by the observation of all practitioners at sea. And the same may be said of the different species of scurvies alledged by *Boerhaave* to proceed from the causes above-mentioned.

But a heavier charge lies against them. When the true fcurvy does really occur, their writings, fo far from being useful, are rather hurtful to practitioners; which I think needs no farther proof, than Kramer's letter to the college of phyficians at Vienna. Their doctrines have perverted the judgment of even some of the best writers. I shall instance only Sinopæus. That author has taken his description of the disease from nature and observation; but unluckily, his medicines from those authors; otherwise I am morally certain, the calamity would not have arisen to the height it did at Cronstadt, and usually does every spring; where it seems to be abated annually more by change of weather, than the skill of physicians.

3dly, The cure of fcorbutic diseases contracted either at land or sea, is entirely the same. This will appear to any person who peruses Backstrom's and Kramer's observations, and several other histories related in this treatise. And every practitioner who has treated such cases, must be fur-

ther

without the least connection with the scurvy. If it often killed the patient (as it would seem always to have done in Friesland) before the gums and legs were affected, or the spots appeared; this likewise must have escaped our observation. But though Eugalenus may be justly condemned as the parent of these absurdities, greater mischief, however, has been done by succeeding authors, from their digesting them into a system. Such remedies and cures have been directed, as are not only altogether unserviceable, but for the most part highly pernicious.

ther convinced of it; as the first remedies which were cafually found out by the vulgar, and are recommended by the first and purer writers on the subject, have preserved their reputation and

esteemed virtues even to this day.

Lastly, If to such convincing proofs it may be necessary to add authority, I shall beg leave to quote a very great one. The learned Dr. Mead (z) informs us, that incited by the extraordinary events published in Lord Anson's voyage, to make a full enquiry into this whole affair, he had not only the honour of discoursing with his Lordship upon it, but had also been favoured with the original observations of his ingenious and skilful furgeons; and, upon the whole, he found, that this disease at sea was the same with the fcurvy at land; the difference being only in the

degree of malignity.

If objectors should reply, That tho' the seafcurvy often occurs at land, and, as has been demonftratively proved, is the only difease that was described by the first writers on the subject, as a malady peculiar to the marshy and cold countries which they inhabited; yet that they, nevertheless, understand by what may be termed, in contradiffinction to the other, a land-scurvy, a disease, or class of diseases, different from the appearance of the marsh or marine scurvy: then it is incumbent upon them, and would be much for the benefit of mankind, to define, describe, and characterise this singular species, and distinguish it from the appearances of the said disease, either at land or sea. This they must know has not been attempted by any author in physic. The greatest modern writers, viz. Boerhaave, Hoffman,

posed

Hoffman, and Pitcairn, have made no fuch diftinction, either in the causes or signs of the disease, nor indeed in any part of their description of it. And I mention these last, as having had a very extensive practice, besides the advantage of perusing all books written before them on the

fubject.

It may be faid, That there are certain diforders, as different eruptions on the skin, ulcers, a species of tooth-ach, &c. which, for a considerable time, have passed under the character and denomination of scorbutic; a term introduced by our predecessors in the science, and which most practitioners have agreed to make use of at this day, and which there may perhaps be a necessity of retaining, as it is not easy to assign a proper appellation to every disease, or case of a patient.

This reason is commonly urged. In answer to which I shall, first, inquire, how or when this term came first to be so generally applied, or whence such ulcers, the itch, &c. were denominated scorbutic? I think it will admit of no doubt, that it was first applied to such ulcers and eruptions on the skin as did not readily yield to the skill of the practitioner (a). Dr. Musgrave (b) informs us, that all Europe was so much alarmed with the apprehensions of this evil in the last century, as appears from the prescriptions of physicians in those times, that the whole art of physic seems to have been employed in grappling with this universal calamity, which was supposed to mingle its malignity with all other difeases whatever. Thus the term was originally im-

(a) Vid. Sydenham.

⁽b) De arthritide symptomatica, p. 98.

posed through ignorance, and a mistaken opinion of the prevalence of the scurvy. There would indeed be fome difficulty in conceiving how men of fuch wild fancies, as were they who have been deemed the principal authors on the scurvy, and to whom we are indebted for this general name, could ever get into possession of that degree of fame which they have acquired, did we not experience how much the world is disposed to admire whatever surprises; as if we were endued with faculties to fee through ordinary follies, while great abfurdities strike with an aftonishment which overcomes the powers of reason, and makes improbability even an additional motive to belief. There are few now who fet so small a value upon their time, as to read these authors; and by that means their merit is little examined into, and is admitted upon the credit of others.

2dly, If it be urged, That the denomination of fuch difeases ought still to be retained, as being now generally adopted; I answer, That, upon the same principles, the most ridiculous terms in any art may be vindicated. Lord Verulam, and the first reformers of learning in Europe, met with this very objection. The learned ignorance of that age lay concealed under a veil of unmeaning, unintelligible jargon. But, in order to make way for the restoration of solid learning, it was found necessary to expunge all fuch terms as were contrived to give an air of wisdom to the imperfections of knowledge.

It may be believed, that there are few people who have had opportunities of reading more upon this subject than I have done; and that there are few books or observations published

upon the disease, that have not fallen under my inspection. If I could, with any manner of propriety, have characterifed any other species of scurvy than that which is the subject of this treatife, I should have consulted the security of my character more, than in advancing an uncommon doctrine, as all novelties are exposed to opposition. But, in attempting a thing of that fort, I did not find two authors agree who founded their doctrine upon facts and observations. observed, that ten different practitioners pronounced ten cases to be scorbutic, which, upon examination, did not bear the least resemblance or analogy to each other. Upon this occasion, I might have followed the example of some writers (a); and difliking the former diffinctions made, might have introduced others, accommodated either to the opinion of the country, and thus, by adopting vulgar errors, have endeavoured to establish and confirm them; or to fome new principles; and fo might have multiplied abfurdities, in like manner as any private practitioner does, who thinks he has a right to term what he pleases a scurvy; though the propriety of the appellation cannot be justified from the acceptation of it, by the most authentic authors of facts and observations, nor has any foundation in the genuine principles of physic.

It may be faid, That the world would reap great advantage by having a compleat treatife of the causes, cure, &c. of the many diseases which commonly go under the denomination of the scurvy. But this is not an easy task: and it might as well be expected, that an author, who lived in a country, or at a time, when the most obstinate

D₃ and

and uncommon appearances were ascribed to witchcraft, and had taken pains to banish such ignorant conceits, should be able to account for the various distempers and phænomena ascribed to that imaginary evil. It has been usual for ignorant and indolent practitioners, to refer such cases as they did not understand, or could not explain, to one or other of these causes; according to the observation of a very learned and late practitioner (d).

With regard to the necessity of retaining the name, as if an unmeaning term was as requifite in physic, as pious frauds in certain religions: Si vulgus vult decipi, decipiatur. If the good of mankind will have no effect upon these gentlemen, I am afraid no other argument will. We shall however lay before them a view of the fatal effects produced by the use of such vague and

indefinite terms.

1st, Young practitioners in physic being provided with fuch a general name as that of the feurvy, comprehending almost all diseases, think themselves at once acquainted with the whole art of medicine; as they may be furnished with numerous cures for it from many Pharmacopaias or books of prescriptions with which the present age abounds. Hence a variety of cases are every. day vulgarly deemed and erroneously treated as scorbutic.

2dly,

⁽d) Mos adeo invaluit, ut hodie medici imperitiores, si quando ex cerus signis neque morbum nec causam ejus ritè possunt cognoscere, statum scorivium prætendant, et pro causa scorbuticam acrimoniam accusent. Deinceps non rarò accidit, ut adfectus quidam jæpe plane singularis, cui portentosa spastico-convulsiva junguntur sympiomata, in artis exercitio occurrat; et tum usu recepium est, ut illam vel ad fascinum vel ad malum scorbuticum rejiciant. Fred. Hoffman. med. systemat. tom. 4. p. 369.

2dly, Older practitioners, by referring many various and uncommon difeafes to fuch imaginary causes (e), deprive the world of the true improvement of their art: which can only be expected from accurate histories of different cases, faithfully and honeftly stated; and distinguished from each other, with the fame accuracy that botanical writers have observed in describing different plants. The ancients have been at great pains to distinguish the diseases of the skin, which at this day make up a very numerous and confiderable class, and have indeed treated that subject with prolixity. But the moderns have classed almost all of them under that one very improper denomination of the scurvy (f), even from the highest degree of the leprous evil, to the itch and common tetters; and with these have confounded the pimpled face, fcall head, most eruptions on the skin usual in the spring, the erysipelas, or St. Anthony's fire, &c. nay most obstinate ulcers, especially on the legs, and va-DA

(e) Notandum est, quod quando multa symptomata numerantur, tunc esse cogitandum de nomine congeriem morborum indicante, ut scorbuius. Waldschmid praxis medicine rationalis.

(f) The learned Dr. Pringle very justly observes the impropriety of the appellation of feurvy generally given to the itch, various kinds of impetigo, &c. and remarks, that in the marshy parts of the Low Countries, where the true scurvy is most frequent, and of the worst kind, the itch is a distemper unknown. A real scurvy, says he, imports a slow, but general resolution or putrefaction of the whole frame; whereas the scabies, impetigo, or leprosy, will be found to affect those of a very different constitution. The true scorbutic spots are of a livid colour, not commonly scursy, or raised above the skin, &c. Vid. chapter on the itch, in Observations on the diseases of the army.

In his Appendix he observes, that the muriatic and putrid feurvy are properly the same thing, and that the supposed species of acid scurvy is at least very improperly deno-

minated,

rious other disorders of the most opposite genius to the true scurvy, have been supposed to proceed from it. The different causes of which various distempers cannot be with propriety reduced under any division of the scurvy as yet made, nor from thence the peculiar and distinct genius of each known and ascertained; which, however, is absolutely necessary towards under-

taking their cure.

3dly, and lastly, It has a most fatal influence on the practice. Thus the original and real disease has been lost and confounded amidst such indefinite distinctions and divisions of it, that it is fometimes not known by the best practitioners, when it really occurs. To this was owing the loss of so many thousand Germans in Hungary (g), not many years ago; where the physicians to that army, together with the whole learned college of physicians at Vienna, assisted by all the books extant on the subject, were at a loss how to remedy this dreadful calamity. And for this reason many unhappy people are daily injudiciously treated at land, as must have been observed by every one acquainted with the distemper. Thence likewise pernicious methods have been recommended at sea. and too often put in practice.

CHAP. IV.

Of the scurvy being connate, hereditary, and infectious.

Arious have been the opinions concerning the causes and propagation of this evil. Some believed it to be connate, and the dreadful feeds

feeds of it transmitted from scorbutic parents, and that fometimes it was derived from a scor-

butic nurse.

Horstius (a) had so very accurate a discernment, as to find, that the grandfather might infect the grandchild, though his own fon escaped the infection. He ascribes the spreading of the contagion in Holland, to the custom of salutation by kiffing; and pities the poor infants, whom every person must salute, to avoid giving offence to the family. He is not at all furprised, that the calamity was so frequent in the Hanse Towns, and in the Lower Saxony, as they used but one cup at table; where there was feldom wanting fome fcorbutic person with putrid gums, who with his spittle might infect the whole company. Sennertus afferts it to be infectious from venereal embraces, and mentions an instance of its being communicated even from a dead body. Boerbaave, Hoffman, and almost all authors, make it a very infectious poison; and Charleton was of opinion, that more got it in this way than in any other.

Several of these chimerical opinions deserve no ferious confutation. It is indeed far from being probable, that this is what may properly be called an hereditary or connate disease; as we seldom in practice see it rise to a great height, without the influence of some obvious external causes; and experience shews, that when the taint is but flight and beginning, it may for the

most part be quickly and easily subdued.

It is a matter of more consequence, to be rightly informed whether it is really contagious, as hath been confidently afferted by most authors.

The

The effect of contagious poisons can only be known à posteriori, and by no reasoning deduced à priori. So that these authors should have given us attested histories of persons infected in this manner, where the other causes that always produce the disease had no influence. But no such histories are to be found. On the contrary, where-ever the calamity has been general, it was known to proceed from strong and universal causes; and, in the times of its most destructive ravage, persons properly guarded against the influence of these causes, were not seized with it. Thus, when it lately raged with fuch a remarkable devastation among the Germans in Hungary, the physician to that army (b) was surprised to find that not one officer, even the most subaltern. received the infection.

At sea likewise, where the frequency of the distemper gives the greatest opportunities of determining this point, it never has been deemed infectious. If it had been fo, it could not there have escaped observation. Taught by fatal experience, the speedy progress and great havock that all contagious distempers, viz. fevers, fluxes, &c. make among a number of men so closely confined, it is common to use many precautions to prevent their spreading. They separate the diseased from the rest of the crew, destroy the bedding and cloaths of those who die, send immediately on shore patients afflicted with such diseases upon coming into port, and afterwards smoak and clean the ship. But long and conftant experience having fufficiently convinced them, that the scurvy is not infectious, no such precautions are ever taken. In flight cases, and

even where the gums are very putrid, the men are often kept on board, and cured; there being no inftance of fuch perfons ever infecting the reft of the crew, or of those who are sent on shore carrying the infection into the hospitals; though, upon many other occasions, the patients of these hospitals suffer extremely by contagious diseases introduced amongst them.

In a prevailing scurvy at sea, the indisposition attacks, in a regular order, such people as are predisposed to it by manifest causes. It is for a long time confined at first to the common seamen: and though the officers servants are at such times often afflicted with it, while using the same cups and dishes with their masters; yet it is but rare to see this disease in even a petty officer.

I could produce many inflances, and well attefted facts, which prove beyond all doubt, that drinking out of the fame cup, lying in the fame bed, and the closest contact, does not communicate this diffemper. But to multiply proofs of a thing so universally known, is needless.

Nor is this disease communicated by infection from those that die: for the dissections made at *Paris* (c), of the most putrid scorbutic bodies, do not appear to have produced any such effect.

From whence we may judge how much authors have been mistaken, when they imagined this dreadful calamity to have diffused itself by contagion over the whole world, after it had quitted its native seat in the cold northern climates.

TREATISE

ON THE

S C U R V Y.

PART II.

CHAP. I.

The true causes of the disease, from observations made upon it, both at sea and land.

HE fcurvy feems to be induced most frequently by the agency of certain external causes; which according as their existence is permanent or casual, according to the degree of violence with which they act, and according to their different combinations, give rise to a discase more or less epidemical, and of various degrees of malignity.

Thus, where the causes productive of it are general, and violent in a high degree, it becomes an *epidemic* or universal calamity, and rages with great and diffusive virulence: as happens often to seamen in long voyages;

fome-

fometimes to armies (a), very lately to the German foldiers in Hungary (b); frequently to troops when closely besieged, as to the Saxon garrison in Thorn (c), the besieged in Breda (d), in Rochelle, as also Stetin (e): and at other times to whole countries; as in Brabant, in the year 1556 (f); and in

Holland, ann. 1562 (g).

adiy, Where these causes are fixed and permanent, or almost always subsisting, it may be there said to be an endemic or constant disease; as in Iceland, Groenland (b), Cronfadt (i), the northern parts of Russia (k); and in most northern countries as yet discovered in Europe, from the latitude of 60 to the north pole. It was also formerly in a peculiar manner endemic in several parts of the Low Countries, in Holland and Friesland; in Brabant, Pomerania, and the Lower Saxony (l); and in some places of Denmark (m), Sweden, and Norway (n), especially upon the sea-coasts.

Lastly, Where the causes are less general and confined to a few, it may be there said to be sporadic, or a disease only here and there to be met with; as in Great Britain

and

⁽a) Vid. Nitzsch. (b) Vid. Kramer. (c) Bachstrom. (d) Vander Mye.

⁽e) Krameri epistol. p. 23. (f) Dodonaus, & Forrestus. (g) Ronsseus. (h) Herman. Nicolai. Vid. ast. Hassin. (i) Sinopaus.

⁽k) Vid. Commerc. literar. Norimb. an. 1734, p. 162. (l) Wierus, Ronsseus, &c.

⁽m) Vid. Concilium facultatis medica Haffn. de scorbuto.

⁽n) Brucaus.

(o) and Ireland, several parts of Germany, &c. Now, by considering the peculiar circumstances, situation, and way of life of these people; and by attentively observing, what at any time gives rise to this disease, what is seen to remove it, and what to increase or mitigate its malignity, we shall be able to form a judgment, not only of the principal causes productive of it, but likewise of the subordinate, or those that in a less degree may contribute their influence. We shall begin with considering the situation of those at sea, among whom it is so often an epidemic calamity.

In the proof of the identity of this disease on both elements (p), I observed that the causes productive of it at sea, were to be found also at land, in a less degree: but before determining what are the true causes of its being so often epidemic at sea, it may not be amiss to consider those causes to which it has been commonly but falsely ascribed.

Many (q) have ascribed this disease to the great quantity of sea-salt, necessarily made use of by seamen in their diet; and it has been therefore denominated a muriatic scurvy.

Whether this falt, instead of producing the scurvy, may not, on the contrary, from a power

⁽o) Vid. Dr. Grainger's account of the scurvy at Fort-William.

⁽p) Part 1. chap. 3.
(q) Lister. exercitatio de scorbuto. Vanswieten Comment. in Aph. Boerh. 1153, &c.

a power of refisting putrefaction become the means of preventing it for some time, I shall not take upon me to determine, as my experiments do not authorife this conclusion; though they plainly prove, that it neither causes the distemper, nor adds to its malignity. For in the cruises after mentioned, where the fcurvy raged with great violence, it was then a fashionable custom to drink the falt-water, by way of gentle physic. I have been told, that Admiral Martin, and feveral officers in his fleet, continued the use of it during a whole cruife. I had at that time feveral patients under a purging course of this water, for the itch, and obstinate ulcers on their legs; and have experienced very good effects from it, especially in the last case: yet none of those people, after continuing this course for a month, had the least fymptom of the scurvy.

But to prove beyond all doubt, that feafalt is not the occasion of the scurvy, I took two patients with very putrid gums, swelled legs and contracted knees, to whom I gave half a pint of salt-water, and sometimes more, every day for a fortnight: at the expiration of which time, I was not sensible of their being in the least worse; but sound them in the same condition as those who had taken no medicine whatever (r). From

⁽r) This experiment, of giving scorbutic persons saltwater, has been often tried; and some have thought they received benefit from it. See chap. 4.

which I am convinced, that fea-falt, at least the drinking of falt-water, by no means disposes the constitution to this disease.

I do not here mean, nor does it follow from what has been faid, that although feawater has no bad influence upon the fcurvy, a diet of falt flesh and fish is equally innocent. The contrary of which will appear in the fequel. The brine of meats, in particular, is of a different quality from either purified fea-falt or falt-water; for we find that this falt may be so intangled by the animal oils, especially in falt pork, that it is with great difficulty difengaged from them after many washings, and the most plentiful dilution. So that as this faline quality is inextricable from fuch food, it is rendered improper in many cases to afford that foft, mild nourishment, which is required to repair the waste of the body. It is remarkable, that the powers of the human machine can animalife other falts; that is, convert them into the ammoniacal fort, or that of its own nature: while the fea-falt feems to elude the force of our folids and fluids; and retaining its own unchangeable nature in the body, is to be recovered unaltered from the urine of those who have taken it. Thus, fea-falt has no effect in producing this difease; whatever meats hardened and preserved by it may have, by being rendered of hard and difficult digeftion, and

and improper for nourishment. And this is farther confirmed by the daily experience of feamen; who upon the first scorbutical complaint are generally debarred the use of every thing that is the least salted: notwithstanding which the disease increases with great violence: while at other times, it breaks out when there is plenty of fresh meat on board; as was the case in Lord Anson's ships, on their leaving the coast of Mexico (s). Nor have the faline effluvia from that element an effect to produce this difease; as there are few workmen in any business so healthy as those who make sea-salt from the sea-water, and are. continually exposed to the warm vapour in drying and purifying that falt. It has also been observed, that those who work night and day in the falt-pits in Poland, and who even live in them, are not in the least subject to the scurvy; on the contrary, they are remarkable for the health and vigour of their constitutions (t).

Others.

(s) Vid. Part 3. chap. 2. Dr. Mead, who was thoroughly acquainted with their fituation, observes, that, upon that occasion, fresh meat, and plenty of wholesome rain-water, did not at all avail them. Discourse on the scurvy, p. 100.

. That falt meats have fometimes no share in occasioning this difease, is demonstrable from the many Germans in Hungary destroyed by it, who eat neither falt beef nor pork; on the contrary, they had fresh beef at a very low price. Vid. Krameri epist. p. 33.

The foldiers in the Russian armies also had no falt provi-

fions. Vid. Nitzsch.

(t) Vid. Hoffman, tom. 3, cap. 9, p. 57. De efficacia ac wtilitate falis communis, &c.

Others, again, have supposed such to be the constitution of the human body, that. health and life cannot be preserved long, without the use of green herbage, vegetables and fruits; and that a long abstinence from these, is alone the cause of the

disease (u).

But if this were truly the case, we must have had the fcurvy very accurately defcribed by the antients; whose chief study seems to have been the art of war; and whose manner of befieging towns was generally by blockade, till they had forced a furrender by famine. Now, as they held out many months. fometimes years, without a supply of vegetables: we should, Product, have heard of many dying of the scurvy, long before the magazines of dry provisions were exhausted. The continuance of those fieges far exceeded most of our modern ones; even the five months blockade of Thorn, upon which Bachfrom has founded this supposition. It would likewise be a much more frequent disease in every country, than it really is: for there are persons every where, who, from choice, eat few or no green vegetables; and some countries are deprived of the use of them for five or fix months of the year; as is the case of many parts in the highlands of Scotland, Newfoundland, &c. where, however, the fcurvy is unufual.

It would be tedious to give many instances, they being well known, of ships crews continuing feveral months at fea, upon their ordinary diet, without any approach of the fcurvy. I have been three months on a cruife, during which time none of the seamen tasted vegetables or greens of any sort; and although for a great part of that time, from want of fresh water, their beef and pork were boiled in the fea-water, yet we returned into port without one scorbutic complaint. I have known messes, as they are called, of feamen, who have lived, during a whole voyage of three years, on the ship's provisions, for want of money to purchase better fare, especially greens; and who were so regardless of health, as to expend what little money they could procure, in brandy and fpirits: fo that a few onions, or the like, was their whole sea-store; and a meal of vegetables was feldom eaten by them, above twice or thrice in a month, during the whole voyage: notwithstanding which, they have kept free from the scurvy.

But it was remarkable, in the two cruifes afterwards to be mentioned, in his Majesty's ship the Salisbury, where I had an opportunity of making observations on this disease, that it began to rage on board that ship, and indeed all the Channel squadron, upon being less than six weeks at sea; and after having lest Plymouth, where plenty of all sorts of

E 2

greens

greens were to be had; by which, as one would have thought, the failors had fufficiently prepared their bodies against the attack of this malady. Yet here, in so short a time as two months, out of 4000 men in that fleet, 400 at least became more violently afflicted with the scurvy (w), than could reasonably have been expected, had they all been debarred the use of vegetables for fix months on shore, like the highlanders, and many others. And what puts it beyond all doubt, that the difease was not occasioned folely by the want of vegetables for fo short a time, is, that the same ship's company of the Salifbury, in much longer cruifes, kept quite free from the distemper, where their circumstances as to want of fresh vegetables were fimilar. It was observable, that in the longest cruise she made, there was but one fcorbutic patient on board, who was attacked

⁽w) Upon the return of the fleet to Plymouth, Dr. Huxbam makes the following remark in the month of July, 1746. Terribilis jam sævit scorbutus inter nautas, præcipue quos secum reduxit Martin, classis occidentalis præsectus. Excruciantur perplurimi ulceribus fædis, lividis, sordidis, ac valde sungosis: mirum est profesto et infolitum, quam breve tempore spongiosa caro, sungi ad instar, his ulceribus successit, etspaulo ante scalpello derasa, eaque interdum ad magnitudinem enormem. Non solum miseris his, at vere utilibus bominibus, per se insensa est maxime scorbutica lues, sed et illos etiam omni pene morbo, qui ab humorum corruptione pendet, obnoxios admodum reddit; febribus nempe putridis, malignis, petechialibus, pessimo variolarum generi, dysenteriæ cruentæ, bæmorrhagiis, &c. Multo magis adeò bonis his fuit exitio quam bellieum sulmen! Observationes de aëre et morbis epidemicis.

with the disease after having had an intermitting fever. We were out at that time from the 10th of August to the 28th of October; which was a continuance of twelve weeks at fea, and confequently as long an abstinence from vegetables.

So that although it is a certain and experienced truth, that the use of greens and vegetables is effectual in preventing the disease, and extremely beneficial in the cure; and thus we shall fay, that abstinence from them, in certain circumstances, proves the occasional cause of the evil: yet there are unquestionably to be found at sea, other strong fources of it; which with respect to the former (or want of vegetables) we shall hereafter distinguish by the name of the predisposing causes to it. The influences of which latter, at times, must be extremely great, as in the case of Lord Anson's squadron in passing round Cape Horn (x), to produce so universal a calamity; from which hardly any one feems to have been exempted, attended with the mortality of above one half of them, when they had been but little more than three months at fea; while whole countries are observed to live on the same, nay even a less wholesome diet; and many people for years abstain from vegetables, without almost any inconvenience.

Some have alledged this to proceed from fomething noxious in the confined and polluted

⁽x) Vid, Part 3, chap. 2.

luted air of a ship; and the stagnation of the bilge-water in the hold has been accused as a main cause of the distress. But had this last the effects presumed, they would be most fenfibly felt by those who are most exposed to it, viz. the carpenters; who at fea are often obliged to measure, every four hours, the quantity of bilge-water; and do then and at other times in mending the pumps, fuffer very great inconveniences, being almost suffocated by it: nay instances are not wanting where they have been killed at once with this noxious vapour, to which they lie the nearest when in bed. Yet it does not appear. from my own experience, nor from the accounts which I have been able to collect, that they are more liable to the scurvy than others on board.

As to any other inconveniencies from filth, or want of cleanliness, in a close place, and where the perspiration of a multitude of people is pent up and confined; they are not peculiar to ships, but common to all crouded jails, hospitals, &c. and whatever bad effect such a vitiated air may have on this disease, yet it is certain the scurvy is not the usual and natural consequence of it. This is the more particularly to be noted in order to determine the genuine effects of this peculiar evil disposition of air; which are a malignant contagious fever, sometimes known by the name of the jail-distemper. This is almost

almost the only disease observed in the transport-ships which daily carry over numbers of people to Virginia, sew or none of whom become scorbutic; as likewise in ships that have been crouded with soldiers. And when many persons are long confined together in a ship under close-shut hatches, they may at length be seized with this sever without any approach of the scurvy amongst them; unless, as may sometimes be the case, the body, weakened and exhausted by the preceding sickness, is afterwards rendered more susceptible of the scorbutic taint, where other causes productive of the scurvy prevail.

In the latter end of the year 1750, the government contracted with a Dutch master of a vessel to carry over 200 Palatines to our colony in Nova Scotia. The cruel Dutchman, contrary to express orders, confined these poor people below, and would not permit them to come so often upon deck as was requisite for their health; by which means they contracted this malignant sever, which killed one half of them. And here it was remarkable, there was not one of these people who, after recovering at sea, or upon land, was afflicted with the scurvy, nor had they any such distemper in the ship (y).

(y) Communicated by Mr. Ives. This contagious pertechial fever was as a plague to the ship Dragon, of 60 guns, and 400 men, for the space of six months. During which

The scurvy by itself is often experienced to make great ravage where the air has been properly renewed and ventilated, and the whole ship kept clean and sweet. I have been told, that the Namur's crew, in their expedition to the East-Indies, though very healthy at the Cape of Good Hope, were attacked with the fcurvy at the time they arrived at Fort St. David's, notwithstanding the use of Sutton's machine (z): though Lord Anson's ship was kept uncommonly clean and sweet after they left the coast of Mexico; yet the progress of their misery was not at all retarded by it. And, what is further pretty remarkable, we know, that the fcurvy may.

time I feldom or never had in my lift lefs than fixty or feventy patients. Many of them relapsed a third and fourth time. It was a dreadful, painful scene! Not a fifth part of our people escaped. My first mate, Mr. Blincow, soon died of it. Another gentleman, whom our necessities obliged the Commodore to warrant as mate from another ship, died also. My other mate, Mr. Thomas Peck, (present surgeon to the fick and wounded at Deal) narrowly escaped with life. To these losses I must add my own dear brother, feveral other gentlemen of the quarter-deck, and fixty of our stoutest and best sailors. Yet, amidst all this danger, through the providence of God, I escaped untouched, to the surprise of all who knew our circumstances, and the fatigue I underwent, when for most part destitute of all asfistance. But I have not seen one instance of this illness having been complicated with the scurvy, or of the scurvy feizing a man recovered from that fever for at least fix months afterwards; which was indeed one of the longest intervals we ever enjoyed freedom from it.

(z) When accounts were received from Admiral Bescawen, of the good state of health his squadron enjoyed at the Cape, it was ascribed to the benefit derived from these useful pipes; though their preservation from the scurvy

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may be perfectly cured in the impure air of a ship; of which the following is a

memorable instance.

His Majesty's ship the Guernsey brought into Lisbon, after a cruise off Cadiz, 70 of her crew afflicted with this difease. Many of them were far advanced, even in the last stages of it. The plague at this time raging at Messina, it was with great difficulty our ships could obtain pratique in any port: so that it was found impracticable to land them. There was another very difagreeable circumstance. For, in order to conceal fo great a number of fick from the vifit of the officers of health, they were under a necessity of shutting them up for some time together in a close place. For this purpose they were with great difficulty removed into the Captain's store-room; where there is generally worse air than in any other part of the ship. This was performed with imminent danger to many of their lives. Several of them, though moved with extreme

in particular seems to have been owing chiefly to their having had a good passage, and touching at different places, where proper refreshments were procured them by their brave commander. Upon their arrival at Fort St. David's, the men of war were as much afflicted with the scurvy, as any of the other ships, who were not provided with the machine.

The case of our annual Greenland ships, who are so well sitted, large, and convenient, and carry no more men than are just sufficient to navigate them, puts it beyond all doubt, that confined putrid air, bad provisions and water, have often no share in producing this disease. For confirmation of which, see an account of them, part 2. chap. 5.

caution, were feized with dangerous fits of fainting; whose preservation was owing to the judgment of their ingenious surgeon, andto the liberality of the Captain, who, upon this occasion, ordered them to be plentifully supplied with rich cordial wines. But every one of these men recovered on board by proper treatment before they left the place, without being landed. The ship lay strict quarentine a fortnight. After which they were obliged to be extremely circumspect in allowing even those who were pretty well recovered, to go on shore; as their unhealthy countenances might have betrayed their situation to the Portuguese. This ship had no ventilators: and it is natural to suppose there might be some remissness in the article of cleanliness where there was fuch a number of fick, who, notwithstanding, all recovered.

The learned writer (a) of Lord Anson's voyage, after clearly evincing the fallity of many speculations concerning this disease, and justly exploding some opinions which usually pass current about its nature and cause, is pleased modestly to offer a very plausible and ingenious conjecture, well deferving consideration. " Perhaps a distinct and ade-" quate knowledge of the fource of this disease may never be discovered. But, in general, there is no difficulty in con-" ceiving,

⁽a) The Reverend Mr. Walter.

ceiving, that as a continued supply of fresh air is necessary to all animal life, and as this air is so particular a sluid, that without losing its elasticity, or any of its obvious properties, it may be rendered unfit for this purpose, by the mixing with it some very subtile, and otherwise imperceptible essuades; it may be conceived, I say, that the steams arising from the ocean may have a tendency to render the air they are spread through, less properly adapted to the support of the life of terrestrial animals, unless these steams are corrected by essuades the land alone can supply."

Ît must be allowed, that the air, which is a compound of almost all the different bodies we know, has many latent properties, by which animals are variously effected, and these we neither can at present, nor perhaps ever shall be able to investigate. We do not even know certainly what this pabulum vitæ is in thatfluid, which preferves and supports animal life. The only means then we have to judge of the existence of such an hidden quality as may be supposed peculiar to the air of the ocean, must be from its effects. These, upon this supposition, ought to be most noxious, and most fensibly perceived, in the middle of wide oceans and at the furthest diftance from continents and islands, where there is the greatest want of land-air, and of

its vital influences, which may be prefumed fo necessary to support the life of terrestrial animals. But it is found, that ships cruising upon certain coasts, at a very small distance from the shore, where the air consequently differs widely from that of the main ocean, as being impregnated with many particles from the land, and is almost the same with that of fea-port towns, are equally, if not more afflicted with this disease, than others are in croffing the ocean. And it will be found univerfally to appear in a much shorter time, and rage with greater violence (all circumstances being otherwise alike) in a squadron cruifing in the narrow feas of the Baltic and English Channel, or upon the coasts of Norway and Hudson's Bay, than in another continuing the fame length of time in the middle of the Atlantic ocean. We often observed our Channel cruisers quickly overrun with the fcurvy; while their conforts, fitted out at the same port, and consequent-ly with the same state of provisions and water, soon leaving them, and stretching into the main ocean upon a voyage to the Indies, or upon a much longer cruise off the Canaries or Cadiz, keep pretty free from it. For my own part, I never could remark any alteration upon our scorbutic patients, while we continued for many days close upon the French shore, with the wind or air coming from thence, or when at a greater distance from

from any land, we kept the middle of the Channel: and yet, in either of those stations, difference of weather had a remarkable in-

fluence upon scorbutic complaints.

Nay, ships and fleets, without going to sea, are often attacked by this disease while in harbour. Thus when Admiral Matthews lay long in Hieres bay with his fleet, many of the seamen became highly scorbutic; on which account some hundreds were sent to Mahon hospital. And the same has happened to our fleets when at Spithead, and even when lying in Portsmouth harbour. This disease is not indeed peculiar to the ocean, there being many instances of its raging with equal violence at land (b).

From what has been faid, it appears, that the strong predisposing causes to this calamity at sea, are not constant, but casual. For though it should be granted, that the sea air gives always a tendency to the scurvy, yet the disease proves often highly epidemic and fatal in very short voyages, or upon a very short continuance at sea, to crews of ships who, at other times, have continued out much longer, cruising in the same place, and in similar circumstances with respect to water and provisions, and yet have kept entirely free from it. Thus

Lord.

⁽b) Vid. the case of the German troops in Hungary, of the Russian armies, of the garrison in Breda, part 3, and garrison of Fort William, &c.

Lord Anson cruised four months, waiting for the Acapulco ship, in the Pacific ocean; during which time, we are told, the men continued in perfect health: when, at another time, after leaving the coast of Mexico, in less than seven weeks at sea, the scurvy became highly destructive notwithstanding plenty of fresh provisions and good water on board. And when it raged with such uncommon malignity in passing Cape Horn, it destroyed above one half of his crew, in less time than they had kept at sea in perfect health, in the before-mentioned cruise.

I had an opportunity in two Channel cruises, the one of ten weeks, the other of eleven, ann. 1746 and 1747, in his Majesty's ship the Salisbury, a fourth rate, to fee this disease rage with great violence. And it is remarkable, that though I was on board in feveral other long Channel cruifes, yet we never had but one scorbutic patient, except in these two. In them the scurvy began to rage after being a month or fix weeks at fea; when the water on board, as I took particular notice, was uncommonly fweet and good; and the state of provisions fuch as could afford no fuspicion of occafioning fo general a fickness, being the fame in quality as in former cruises. And though the fick were, by the generous liberality of that great and humane commander, Lord Edgcumbe, daily supplied with fresh provisions,

provisions, such as mutton-broth and fowls, and other meat from his own table; yet, at the expiration of ten weeks, we brought into *Plymouth* 80 men, out of a complement of 350, more or less afflicted with this disease.

Now, it was observable, that both these cruises were in the months of April, May, and June; when we had, especially in the beginning of them, a continuance of cold, rainy, and thick weather: whereas in our other cruifes, we had generally very fine weather; except in winter, when the cruifes were but short. Nor could I assign any other reason for the frequency of this disease in these two cruises, and our exemption from it at other times, but the influence of the weather; the circumstances of the men, ship and provisions, being in all other respects alike. I have more than once remarked, that after great rains, or a continuance of close foggy weather, especially after florms with rain, the scorbutic patients generally grew worse; but found a mitigation of their symptoms and complaints, upon the weather becoming drier and warmer for a few days. And I am certain it will be allowed, by all who have had an opportunity of making observations on this disease at sea (c), or will attentively consider

(c) Extract of a letter from Mr. Murray.

Of the feveral antecedent or efficient coufes of the fcurvy, it is not to be doubted, but a moist air, or hazy, cloudy wea-

der the fituation of seamen there, that the principal and main predisposing cause to it, is a manifest and obvious quality of the air, viz. its moisture. The effects of this are perceived to be more immediately hurtful and pernicious in certain constitutions; in

ther, is among the principal. A particular instance of which happened in a cruise we went upon in the Canterbury, along with another ship; after having lain six months in Louisburg harbour, where the seamen had great plenty and variety of fish, and where we were properly victualled with found provisions, and very good bread and water. We cruifed not far from the Bahama Islands; the weather for most part was flormy, foggy, and very wet. Before we had been at fea a month, the scurvy was very epidemical on board both ships : .. and in fix weeks we had 50, the other (the Norwich) 70 patients in this disease: whereas at another time, in different weather, we were at fea nigh as many months, before this disease appeared, which even then was not so epidemical.

The particulars of that cruife were as follow:

We sailed 29th November from Cape Breton, and in two days were in lat. 43° 181; and by the 11th of December were in 29° 561, near which latitude we kept cruifing to the 7th of January. During which time the winds were so variable, that it was hard to tell which point of the compass they inclined most to, or continued longest in. The weather was extremely cold, foggy, and moith, the beginning of the month; but grew gradually warmer as the latitude decreased. But that its moisture continued, will appear from the following account of rainy days, which you have here, with the other state of the weather. December. Rain from the 1st to the 5th; 7th, 11th, 16th, 18th, 21st to 23d; 27th, 29th. Fresh gales 1st, 2d, 3d, 4th, 6th, 7th, 10th, 11th, 14th to 25th; 27th to 31st. Thunder and lightning 3d and 29th.— A fog the 1st. - Most part of the month cloudy and hazy. 1745, January. The weather this month was in general more moderate; but, confidering our latitude, not very warm. Rain the 2d, 6th, 10th, 13th, 15th, 16th, 18th, 19th, 24th, 25th, 26th, 31st. Weather cloudy for seven days, but no fogs. Calm the 2d. Fresh breezes 6th, 7th, 9th, 10th, 12th, 16th to 20th; 24th, 25th, 26th, 31ft.

those who are much weakened by preceding fickness; in those who, from a lazy inactive disposition, neglect to use proper exercise; and in those who indulge a discontented melancholy disposition: all which may be reckoned the fecondary disposing causes to this dreadful and fatal disease.

Supposing the same state of air both at fea and land, the inconveniencies which persons suffer in a ship during a damp wet feafon, are infinitely greater than people who live at land are exposed to; these latter having many ways of guarding against its pernicious effects, by warm dry cloaths, fires, good lodging, &c. whereas the sailors are obliged not only to breathe in this air all day, but fleep in it all night, and frequently in wet bed-cloaths, the ship's hatches being necessarily kept open. And indeed one reason of the frequency of the fcurvy in the above cruifes, was no doubt often carrying up the bedding of the ship's company to the quarter deck (a); where

The diseases depending upon this weather, were at first, plethoræ, from the sudden change from cold to warmth; some acute fevers; and particularly two ardent ones, which carried off the patients. About the end of December, people began to complain of the scurvy; and before the middle of January we had 16 patients in that disease; and by the 25th, when we arrived at St. Thomas, we had no less than 50 patients in it; and our confort the Norwich 70.

(a) On the appearance of an engagement, the sides of this deck are lined with bedding, to defend the men from

the musquetry.

it was fometimes wet quite through, and continued fo for many days together, when, for want of fair weather, there was no op-

portunity of drying it.

No person sensible of the bad effects of fleeping in wet apartments, or in damp bedcloaths, and almost in the open air, without any thing fufficiently dry or warm to put on, will be furprized at the havock the fcurvy made in Lord Anson's crew in passing Cape Horn, if their fituation in fuch uncommon and tempestuous weather be properly confidered.

During fuch furious storms, the spray of the fea raifed by the violence of the wind, is dispersed over the whole ship; so that the men breathe, as it were, in water for many weeks together. The tumultuous waves incessantly breaking in upon the decks, and wetting those who are upon duty, are also continually fending down great quantities of water below; which makes it the most uncomfortable wet lodging imaginable: and, from the labouring of the ship, it generally leaks down, in many places, directly upon their beds. There being here no fire or fun to dry or exhale the moisture, this moift, stagnating, confined air below, becomes most offensive and intolerable. When fuch weather continues long, attended with fleet and rain, as it generally is, we may eafily figure to ourselves the condition

of the poor men; who are obliged to fleep in wet cloaths and damp beds, the decks being covered with water below them; and there to remain only four hours at a time; till they are again called up to fresh fatigue, and hard labour, and again exposed to the washing of the sea, and rains. The long continuance of this weather seldom fails to

produce the scurvy at sea.

As to its breaking out so immediately in those ships, upon their leaving the coast of Mexico (d), this was not only owing to their finding fo few refreshments, especially fruits and vegetables fit to be carried to fea, at the harbour of Chequetan; but also to the incessant rains they had in their passage to Asia, and the great inconveniencies that necessarily must attend so long a continuance of fuch weather at fea. To which it may be added, that, by observations made on this difease, it appears, that those who are once afflicted with it, especially in so high a degree as that fquadron was, are more subject to it afterwards than others. I remember, that many men who returned to England with Lord Anson, and afterwards went to fea in other ships, were much more liable to the fcurvy than others.

It was however remarkable here, that though the calamity began fo very foon after

F 2 their

their leaving land; yet, in fo tedious a passage as four months, it did not rage with that mortality as in passing Cape Horn: nor did it acquire so great a virulence, as appears by its being so quickly removed upon their landing. And this was owing to the absence of another cause, which is found greatly to inforce and increase the distress, viz. cold; the combination of which with moisture is, upon all occasions, experienced to be the most powerful predifposing cause to this malady; though indeed the latter of itself is found sufficient to produce it. And here frequent washing and cleaning of the ship, as was observed, did not stop the progress of the disease; because it did not remove the cause, any more than Sutton's machine is found to do; which only renews the air, without correcting its moisture.

Now, any person who has sufficiently considered the situation of men exposed for many weeks to stormy, rainy, or perpetual soggy, close weather at sea, will not by this time be surprised at our assigning dampness or moisture, as a principal cause of the frequency and virulency of this disease upon the watry element. And this is not only agreeable to my own experience, but is confirmed by all just observations that were ever made on this distemper. In the first just account we had of it in Europe, which was from Olaus

Olaus Magnus (e), it is remarked, That cold damp lodgings contributed greatly towards its production; that its malignity was always increased by cold and raw exhalations from the wet and damp walls of houses; whereas people living in drier apartments, were not equally subject to it. And accordingly we find, that petty officers, who fleep in close berths, as they are called, with canvas hung round, by which they are sheltered from the inclemency of the weather; as also seamen who go well clothed, dry, and clean, though using the same diet with the rest of the crew, are not so soon feized with it. This is the principal reason why officers obliged to live on the ship's provisions, as the warrant-officers often do (with this difference, that they drink a greater quantity of brandy and spirits, which, as shall be mentioned afterwards, should in a particular manner dispose them to this disease) by lying in warm dry cabbins, and going better cloathed, are feldom attacked with the fcurvy; unless during its most violent rage, and when the common failors have been previously almost destroyed by it.

It is observable, that such a situation as that of the common seamen which has been described, together with the use of such

F 3 improper

⁽e) Quoted at large, part 3. chap. 1.

improper diet as shall hereafter be mentioned, produces the scurvy in any climate: but its violence will be always greatly augmented by the addition of cold. Thus we find it a much more frequent difease in winter than in fummer, and in colder than in warmer climates. Ships that go to the north, as to Greenland, and up the Baltic, have been peculiarly subject to it; whereas it is generally owing, in fouthern latitudes, to the continual rains which fall there at certain feafons, and more particularly to the great length of those voyages. In such fair-weather climates ships are sometimes becalmed for weeks together; and thus the failors become quite indolent, and from want of due exercise on that watery element, are attacked with the fcurvy.

Although a combination of moisture with cold, is the most frequent and genuine source of this disease; yet a very intense degree of cold, such as is experienced in *Greenland*, Canada, &c. may have an effect solely to produce this calamity, as it has at all times a most pernicious influence in heightening its malignity. This may be proved by the

following occurrence.

In the year 1759, the Northumberland and Prince of Orange ships of war, spent the winter at Halifax, where the men being well supplied with fresh provisions were in perfect health. On the 22d of April 1760, they

they failed for *Quebec* during excessive cold weather, and in a few days were over-run with the scurvy, so that in a short passage of twenty-sive days, several died of it; and on their arrival, the *Northumberland* had 100, and the *Prince of Orange* 200 men

very ill of the difeafe.

But to proceed, the qualities of the moift seaair will certainly be rendered still more noxious, by being confined in a ship without due circulation; as the air at all times in this state lofes its elafticity, and is found highly prejudicial to the health and life of animals; but becomes much more fo where stagnating water is pent up along with it. It is likewife heated in ships by passing through the lungs of many people and impregnated with various effluvia. Hence arife the eagerness and longings of scorbutic people in such circumstances, for the land air, and the high refreshment they feel upon being put on shore; but this is no more than what the vapour of fresh earth and the fmell of the green fields would afford to a person after being long confined in a close, damp, unwholesome air; as that of a prison, dungeon, or damp apartment at land; and what we all feel, upon taking in the fresh country air, perfumed with the various odours of nature, after being obliged to breathe in a large populous city.

I come, in the next place, to an additional, and extremely powerful cause, observed at sea

to occasion this disease, and which concurring with the former, in progress of time, seldom fails to produce it. And this is, the want of fresh vegetables and greens; either, as may be supposed, to counteract the bad effects of the before-mentioned fituation of feamen; or rather, and more truly to correct the quality of fuch hard and dry food as they are obliged to make use of. Experience indeed fufficiently shews, that as greens or fresh vegetables, with ripe fruits, are the best remedies for it, so they prove the most effectual preservatives against it. A want of them at fea, together with a long confinement within the narrow limits of a moist damp ship, are the true causes of its fo general and fatal malignity upon that element.

The diet which people are necessarily obliged to live upon while at sea, was before assigned as the occasional cause of the disease, as in a particular manner it determines the effects of the before-mentioned predisposing causes to the production of it. And there will be no difficulty to conceive the propriety of this distinction, or understand how the most innocent and wholesome food, at particular times and in particular situations, will with great certainty form a disease. Thus, if a man lives on a very slender diet, and drinks water, in the sens of Lincolnshire, he will almost infallibly fall into an ague.

All rules and precepts of diet, as well as the distinction of food into wholsome and unwholfome, are to be understood only as relative to the constitution or state of the body. We find a child and a grown person, a valetudinarian and a man in health, require aliments of different kinds; as does even the same person in the heat of summer and in the cold of winter, during a dry or rainy feason. Betwixt the tropics, the natives live chiefly on fruits, feeds, and vegetables; whereas northern nations find a flesh and solid diet more suitable to their climate. In like manner it appears, I think, very plainly, that fuch hard dry food as constitutes a ship's provisions, or the seadiet, is extremely wholesome; and that no better nourishment could be well contrived for labouring people, or any person in perfect health, using proper exercise in a dry pure air; and that, in fuch circumstances, feamen will live upon it for feveral years, without any inconvenience. But where the constitution is predisposed to the scorbutic taint, by the causes before affigned (the effects of which, as shall be shewn in a proper place (b), are a weakening of the animal powers of digestion) the influence of fuch diet in bringing on this difease, fooner or later according to the slate and constituconflitution of the body, becomes extremely visible.

The first, generally, who feel its effects, are those who are recovering from fome preceding fit of fickness, by which the whole body, as well as the organs of digeftion have been greatly weakened; and are in this condition obliged to use the ship's provisions. Thus in the Salifbury, in May 1747, when there prevailed several inflammatory diforders, particularly peripneumonic fevers or inflammations of the lungs, all who were recovering from them became highly fcorbutic. The next who complained, were the indolent and lazy; fuch as are commonly called fculkers, and use little or no exercise, a principal help to digestion. As the disease gathered strength, it attacked those who had formerly laboured under it, in May 1746; from which the constitution had acquired a tendency to it. It afterwards became more universal; but was confined to the common feamen, particularly to those who were unaccustomed to the sea.

I always observed, it increased in frequency and violence, upon the ship's small-beer being exhausted, and having brandy ferved in lieu of it.

But it will be now proper to inquire into the diet which mariners are necessarily obliged to live upon at sea, as it appears to be the principal occasional cause of the scurvy.

In

In general the fea-diet is extremely hard of digeftion; it confifts of two articles, viz, unfermented mealy or farinaceous substances, and salted or dried sless and fish. Their bread is hard sea biscuit, which undergoes little or no fermentation in baking, and is consequently of much harder and more difficult digestion, than well-leavened and properly-fermented bread.

Their puddings are made of pickled fuet, flour, and water, boiled together, which form a tenacious glutinous paste; requiring the utmost strength of the powers of digestion, to assimilate into nourishment. We find, that weak, inactive, valetudinary peo-

ple, cannot long bear fuch food.

The two other articles of what is called fresh provisions, are first ground oats, boiled to a consistence with water, commonly called burgow, or made into water-gruel in a morning. Of this the English sailors eat but little; though in their circumstances it would seem to be very wholesome, as being the most acescent part of their diet. Secondly, boiled peas; which are of a mild and sostening quality; but are apt in weak stomachs to occasion slatulencies and indigestion. It is evident, that in some cases they must afford gross and improper nourishment.

The feamen are also allowed a proper quantity of salt butter and cheese. The latter of which is experienced to differ ex-

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tremely in its qualities, or in the ease or difficulty with which it is digested, accord-

ing to its strength, age, &c.

The falt beef and falt pork are found by every one's experience to be much harder, and more difficult to digeft, than fresh meats; and, to afford an improper nourishment. No person can live long on a diet of such falt slessh-meats, unless it is corrected by bread, vinegar, or vegetables.

To the above articles, which are the provisions with which our navy is usually supplied, may be added, stock fish, falt fish, dried or *jerked* beef, with other indigestible food often used at sea: all which will have still more noxious qualities when unsound,

or in a corrupted state.

For drink, the government allows, where it can be procured, good found fmall-beer; at other times wine, brandy, rum, or arrack, according to the produce of the country where ships are stationed. Beer and fermented liquors of any fort will be found the best antiscorbutic remedies, and most proper to correct the ill effects of a sea-diet and situation; whereas distilled spirits have a most pernicious influence on this disease.

As I shall have occasion elsewhere (k) to shew the natural consequences of such diet, it will be sufficient here to observe, that though the long continuance and constant

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use of any one particular fort of food, without a change has its inconveniences, and is justly condemned by physicians (1), nature having supplied us with an ample variety, designed no doubt for our use; yet the fact here truly is, that such food as has been mentioned, is at particular times, and in certain circumstances, not properly adapted to the state of the body, and the condition of the digestive powers (m).

Our

(1) Vid. Celsum de medicina.

(m) A late learned Professor was pleased to send me the

following queries.

"May not the scurvy be owing to such a cause as other epidemical diseases; that is, something in the air which we do not know, nor will probably ever know, though we see its various effects in severs, small-pox, measles, plague, &c. And may not this be a modern miasma, as well as what produces some of these diseases? By observations the cause proegumene may be discovered, and by dissections the effects may be observed; but the cause proxima may be yet unknown. In the plains of Stirlingfire the people live mostly on crude pease-meal, have very bad weather, and have great fogs from the low grounds, and from the sea; yet, among the numerous

" poor patients I have from that place, I have not feen one

" with a genuine fcurvy."

An/wer. As to its being a modern miasina; I think this cannot, with any colour of reason, be inserred from the silence of ancient historians, who have mentioned sew or no camp diseases; nor on account of its being imperfectly, if at all, described by ancient physicians, for reasons assigned part 3. chap. 1. The first description of it I have met with, and a very accurate one, is in the year 1260 (vid. part 3. chap. 1.) There is no account of it again until after ann. 1490. Yet we cannot well suppose, that during that period there was no such disease in the world, or that people in such situations as are now to be mentioned, would not be seized with the scurvy.

- Our appetites, if they are not depraved, are, upon this and many other occasions, the most faithful monitors, and point out the quality of fuch food as is fuited to our digestive organs, and to the state and condition of the body. For where there is a disposi-

It is demonstrable from the appearance of the difease in every part of the world, that no state of air whatever is capable of rendering it an universal calamity, without the concurrence of gross indigestible food, and abstinence from green vegetables. I have known the Channel fleet bury a hundred men in a cruise, and land a thousand more afflicted with the scurvy; yet, among the number, there

was not even a petty officer.

In Hungary, where there must have been the strongest disposition in the air to produce the scurvy (Vid. Kramer), not only the officers, and natives of the country, but even the dragoons, by having more pay, and confequently better diet, cloathing, and lodging, though equally subject to the other diseases of the country, yet kept free from the fcurvy. Who were attacked by it? Only the Bohemians, who eat the coarfest and most indigestible food. The Bobemians used no other than what was the ordinary diet of their own country, as we are informed by Kramer. The seamen in the Channel cruifers had the very fame provision as other ships who went upon different stations: yet it is evident one cause in both places was the diet; as a different diet prevented the disease, and change of diet quickly cured it.

Now, there must have been a quality in the air of Hungary different from that of Bohemia; something which rendered a diet harmless in the one country, hurtful in the other. The indisposition of the air in Hungary was very obvious. The difease prevailed only in the spring, and during a wet season; was much more violent in some parts of the country than in others. Kramer enumerates the different places where it raged most, viz. where-ever the soil was damp and marshy. This observation has been made not only in Hungary, but in

other parts of the world.

Moilture was discovered to be one of the causes of this disease by Ronffeus, the very first author who ever wrote expressly upon it. The facts he produces, seem demonstra-.

tion to the scurvy from a long continuance in the moist sea-air, concurring with a glutinous, and too solid diet, nature points out the remedy. In such a situation, the ignorant sailor, and the learned physician, will equally long, with the most craving anxiety, for green vegetables, and the fresh fruits of the earth; from which only relief can be had

tively to prove it; besides having the corroborating evidence of every accurate observation made since his time. which, viz. the experience of two hundred years, we must contradict, by excluding this cause, and referring the scurvy to occult miasmata, or such latent causes in the air as produce fevers, and some other epidemical diseases. There are indeed perhaps but few difeases whose causes are more evident to the fenses, and admit of more express proofs. Stugart, in Germany, was formerly noted for being a place where the feurvy raged much; but, upon drying up a large lake in the neighbourhood of the town, the disease has since quite disappeared. Along the banks of the Rhine, from Dourlach to Mentz, particularly to Philipsburg, it often succeeds large inundations of that river. Sinopæns observed at Cronstadt, that the appearance of the scurvy, and its malignity, always depended upon the wetness of the season; a dry season instantly stopt it.

Where we have such undeniable proofs of the effects of moisture and dryness, I cannot see any reason for having recourse to occult miasmata in the air, or the like imaginary and uncertain agents, for breeding a disease which a person contracts from moist air, or from intense cold, from damp lodgings, and from too solid diet. Such circumstances produce the distemper in every part of the world: and it may effectually be prevented at any time, by living in dry apartments, being well cloathed, and using proper diet.

Though I have called the one the prediffosing, the other the occasional cause of the malady; yet, to speak more properly, they are both of them (viz. diet and moissure) cause prosgumenæ, predisposing causes to the disease. They are each but half-causes, neither of them singly being able to produce it: but both of them concurring, constitute the cause

proxima;

had. Such people in the height of the difease, not only employ their thoughts all day long on satisfying this importunate demand of nature, but are apt to have their deluded fancies tantalised in sleep with the agreeable ideas of feasting upon them at land. What nature, from an inward feeling, makes them thus strongly desire, constant experience confirms to be the most certain prevention and best cure of their disease.

Moreover,

proxima; i. e. all that is requisite and sufficient to form the

scurvy.

As to the case of the people in Stirlingsbire; have they no onions, coleworts, &c.? A mess of broth twice a-week, such as is made by the poorest people in Scotland, of green coleworts, barley, and oats, would probably in some measure have preferved Lord Anson's squadron from the scurvy in passing Cape Horn. It is to be remembered, that these causes must not only conjunctly subsist, and exert their influences together in a high degree; but must act likewise a considerable time without intermission, especially the diet. Change of food has not only a most surprising effect to recover from a very deplorable state in the scurvy, but even the smallest alteration of diet has a wonderful influence in preventing the approach of it. This is evident from what is faid (chap. 5.) of the present healthfulness of our factories at Hudson's bay; where scorbutic miasmata (if any such there be) are not wanting in the air, even at this day; as is plain by the late afflicted condition of Ellis's people (see part 3.), whilft the persons in those factories were quite healthy. It is farther confirmed by a fact which has more than once occurred. In our fleet, when in conjunction with Dutch ships, many of our men have become scorbutic; mean while the Dutch were quite free from it; which was thought to be owing to a mess of pickled cabbage given them now then.

And, for the same reason, viz. a very small difference in the way of living or diet, even the frequent baths of the ancients, might have preserved their troops from the scurvy when quartered in *Pannonia*, the woody, marshy part of *Gaul*, *Germany*, and the *Low Countries*; as is evident from the late

case of the Imperial dragoons.

Moreover, the same causes when subsisting at land, have been found sometimes to give rife to as violent scurvies as those at sea (n). Thus during the fiege of Thorn in the year 1703, feveral thousand Saxons shut up in that city were cut off by it at the latter end of the fiege, they having been blockaded for five months, the feafon appears to have been uncommonly tempestuous and rainy, over most parts of Europe: so that, in this fituation, the inconveniences and hardships they fuffered, must have been equal to those of seamen. They were continually exposed to unwholesome damp weather; their diet was gross and indigestible, as ammunitionbread, falted and dried meats, and other folid and coarse food; which they were at that time obliged to live upon, being deprived of vegetables. We are told (o), that when some few of the coarsest and most common greens were permitted to be brought into the town, by agreement entered into with the enemy, they were voraciously devoured by the officers at the gates, as the greatest delicacies. The inhabitants, indeed, ascribed the calamity to the unwholesome beer in the city. But it was observable, it attacked and cut off first the Saxon garrison, who were most exposed to the inclemency of

(e) Observationes circa scolutum, &c. auctore Fred. En bstrom.

⁽n) Vid. part 3. chap. 2. Vander Mye de morbis Bre-

of the weather, by doing hard duty night and day upon the walls. The inhabitants, who remained in warmer lodgings, were much later taken ill of it; and probably only those, who, upon the garrison's being almost destroyed, were obliged to do military duty. This was a real scurvy; and no sooner the gates were opened, and plenty of vegetables admitted upon the surrender of the town, but the disease quickly disappeared, after having occasioned a very dreadful mortality.

2. The next thing to be confidered, is the peculiar fituation and circumstances of such places and countries where it is found to be a constant or *endemic* disease; which will ferve further to illustrate and confirm what

has been advanced.

It is observed, that an intense degree of cold, such as the inhabitants suffer during the hard winters in *Iceland*, *Groenland*, the northern parts of *Russia*, *Canada*, &c. together with the diet the poor are necessarily obliged to use during that rigorous season, generally gives rise to this disorder.

But it is very certain, that the frequency of this evil in other places, as in the Low Countries, where it formerly greatly prevailed, and whose authors have furnished us with the most accurate observations, was not owing to their cold and northern situation only; for in that case, all people living

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in the same degree of cold, would, cateris paribus, have been equally affected: whereas in the very same climate of Holland, there were many villages and cities, where the same diet was used, that kept entirely free; while others, at no great distance from them,

were extremely subject to it.

Thus Ronsseus (q) takes notice, that in his time it was much more frequent at Amsterdam and Alcmaer, than at Goude and Rotterdam; and at Dort, though in the same climate, and where the inhabitants eat the fame food, it was hardly ever to be feen: but that, univerfally in all parts of the country where the foil was fenny, damp, and marshy, it raged with the greatest violence. This very accurate author observes likewise, the great influence which the weather had upon it; as that a long continuance of foutherly and wefterly winds (r) always occasioned a great frequency of this disease; but that rainy seasons, especially, rendered it quite epidemic and malignant. When this physician wrote, his country was little better than a large morals, exposed to frequent inundations from floods and high tides; which, together with the gross coarse diet used by the Dutch at that time, made the scurvy perhaps the G 2 most

(q) Ronsseus de magnis Hippocratis lienibus, &c. seu vulgo disto scorbuto.

⁽r) These are observed, by Mussichenbroek, to be the moistest winds that blow in Holland. Vid. Element. philosophiæ naturalis.

most frequent disease of their country. But now they are become a rich flourishing republic, and have dried and improved their soil by dikes and drains, and also quite altered their way of living, the disease appears less frequent; and is to be seen chiefly among the poorer fort, who inhabit the low damp parts of the provinces, and continue to live (s) upon salted, smoaked, often rancid, pork, and coarse bread; and who are obliged to drink unwholsome stagnating water. They

(s) I have the pleasure of seeing most of these observations confirmed fince they were first published by the learned Vanswieten, who resided several years in the Low Countries. He has observed many in Holland, who in winter live on salt beef and pork, at the end of that season greatly afflicted with the scurvy. They are generally recovered in the spring, by the use of fresh vegetables and fruits: the disease returning again in winter, upon their returning to use their former diet. But in particular he remarked, that by constantly eating old acrid cheese, their relapse was hastened more than by any other cause.

As for those who were necessarily obliged to live in low moist places, it was hardly possible to cure them by the most powerful medicines. The disease was usually indeed much abated in spring and autumn, by the making use of whey for common drink; but otherwise their condition was truly to be pitied; for even in the slower of youth they lost all their teeth, and were tormented with afflicting pains in their joints, especially when idle in winter; their labours in summer contributed to their relief. Commentar. in Aphor. Boerb. 1160.

He also informs us, that it is usual in Holland, after having taken away the turfs for firing, to throw up a bank about the place when overflown with water. They afterwards draw off the water by means of a mill, and so convert the ground into pasture. But almost all who live near those new-drained lands labour under the scurvy, which is apparent by their bleeding gums and rotten teeth, nay, by their want of teeth long before they grow old. Comment. in Aph. 1150.

They have indeed at times been subject to violent returns of their old distemper; as in several of their wars, when obliged to over-

flow their country with water.

The case is the same in many other countries at present, viz. the Lower Saxony, and other parts of Germany, Sweden, Denmark, and Norway; where, in general, the disease is much less frequent than it was formerly; the face of all these countries, and the manner of their living, being much improved within these last 200 years. They now drink wine more freely (t), brew better ale, live in drier, and more airy commodious houses, and have greatly drained and improved their lands.

But here it may be worth while to remark, that in all those parts where the scurvy was formerly so peculiarly frequent by reason of their marshy and damp situation, together with their gross unwholsome diet, the cold of the climate must certainly have contributed a great deal towards its production. For we observe, that at Venice, whose situation is as damp as most places, the disease is unknown. This seems owing principally to the heat of their climate, which raises the watry vapours to a great height above the surface of the earth, and there disperses them; giving the inhabitants almost constantly serene sine weather: unless it should be rather supposed,

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that their light and wholfome diet, and the great quantity of vegetables eat by the Italians, are sufficient, in the moistest parts of their country, to preferve them from this disease.

I shall now, in the third and last place, conclude with observing the effects of different causes in countries where the scurvy prevails less frequently: in which I shall restrict my observations to Great Britain.

In cold fea-port towns, where the fituation is bleak, low and damp, we generally obferve the inhabitants afflicted with putrid gums, swelled, ulcerated legs, &c. whilst the neighbouring villages, fituated in a fandy dry foil, and purer air, are entirely free from all fcorbutic appearances. In places where they have continual rains, and much moisture, violent scurvies have been observed, as at Fort-William (u).

They who live in fwampy inland foils, near morasses, or incompassed with thick woods and forests; or in countries subject to inundations from lakes or rivers; or where there are corrupted flagnating waters, where the fun has not fufficient influence to elevate their vapours to a proper height above the earth, being continually furrounded with unwholesome fogs and mists, are subject both to scurvies and agues. We may generally observe

⁽u) Vid. Dr. Grainger's account of it while there in the year 1752, chap. 2.

observe them to have a pale wan colour, and scorbutic spots on their skin; to be of a dull, inactive, melancholy disposition; their scorbutic discoloured countenances bespeaking the place of their abode: whereas those who inhabit the mountains, or more dry and healthful places, are remarked to be agile, active, well coloured, and long lived. Those who live in the higher apartments of a house, are observed to be less liable to it than others who live on the ground-floors of even the fame houses. The poorer fort of people, who live in damp vaults and cellars under ground, are most afflicted with symptoms truly fcorbutic; as are likewise they who are confined in dungeons, damp and unwholefome prisons, and spend much of their time fleeping in apartments not fufficiently plaiftered or wainfcotted, where there is a continual moisture and dewy dampness on the stone-walls: an instance of which I faw lately, in a person confined in a jail, who became terribly afflicted with the fcurvy (w).

Different aliments are found by experience to produce the most different effects upon this disease. We see it most common among the poorer fort of people in the before-mentioned situations, who seed much on dried or salted fish and sless, and unfermented mealy substances without using green vegeta-

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bles and fruits (x); and, for want of fresh and wholfome water, use what is either hard and brackish, or putrid and stag-

nating.

Different ways of life have likewife an influence on this difeafe. The lazy and indolent, and those of a sedentary life, as shoemakers, tailors, especially weavers, by reason of their working in damp places, are most fubject to it; while hard labourers, and those who use much exercise, though living on the fame, or even groffer food, keep entirely free. Fishermen, from their way of life, gross food, and habitual use of spirituous liquors, are often scorbutic.

The passions of the mind are found to have a great effect. Those that are of a chearful and contented disposition, are less liable to it, than others of a discontented and

melancholy turn of mind.

Lastly, It has always been remarked, that in fuch circumstances as have been described, the present state of the body has a powerful influence in disposing to this affliction. They who are much exhaufted and weakened by preceding fevers, and other tedious fits of fickness, or they who have obstructions in the bowels (as after agues of the autumnal kind) are apt, by the useof improper diet, to become fcorbutic. Others that labour under a suppression of any natural and necesfary evacuation, as women who have their menses suppressed, especially if the obstruction is occasioned by fear or grief, are more subject than others in similar circumstances to this disease; as they are likewise at the time that these naturally leave them.

The following abstract from the ingenious Mr. Ives's journal, containing a history of the disease that occurred on board the Dragon, serves to confirm many things which have been advanced.

1743. July. We have been free from the fourvy ever fince the latter end of April. Lay all this month at Mahon, where the weather was exceffively hot. Our men wrought hard, and drank much wine and spirits. The disorders of the foregoing month increased, with great inflammations. These were fevers with inflamed torfils, pleurisies, and peripneumonies. Sent 17 men to hospital.

August. Continued at Mahon. The people received some prize-money, which did not mend their health. The same disease prevailed as in July, but proved fatal to none. Towards the end of the month sluxes took place of severs.

Sent 18 to hospital.

September. Part of this month at Mahon, part at fea. The weather in the beginning was variable, with rains; towards the latter end moderate and hot. The difease peculiar to it was the dysentery: it continued with the patient for the most part 5 or 6 weeks, but proved fatal to none.

We

We had also some slight fevers, rheumatisms, and

agues.

October. Mostly at sea. The weather pretty moderate, though changeable. Rain and wind the 17th and 18th of the month. My fick-lift was made up chiefly of men recovering from the fluxes of the last month. The disorder peculiar to this was the rheumatism; which however did not prove obstinate. We had also 2 or 3 quartan agues, which continued for feveral months.

November. Partly at fea, partly at Gibraltar. From the 1st to the 10th, fresh easterly winds blew often, with rain. The whole month was fqually, but dry towards the latter end. On the 8th day, 6 or 8 people were taken with pains in their head, shiverings, and sometimes a vomiting. The next day they were feverish. On the 3d or 4th they complained of an universal prickling under the skin, and had a short uneasy cough. On the 5th or 6th they were covered with little red fpots like flea-bites, with fore and watery eyes. On the 8th they either fweated plentifully, or had a loofeness; and then they were fure to do well foon; though fome spit, and others were relieved by urine. 20 feized with this species of measles, all recovered. Rheumatisms still continue.

December. Lay at Gibraltar. It was in general a cold, wet, ftormy month. The fick-lift contained various, but not material complaints. Towards the latter end of it we had appearances of an approaching feurvy, although at Gibraltar (y). Sent 22 to hospital.

⁽v) Not for want of the vital influences of land air, as thips here lie closely furrounded with the land,

1744. January. It was an extreme cold and ftormy month, with almost constant rain. On the 8th we had a violent gale, with thick weather. The storm continued the 9th, with much rain. From the 13th to the 27th the season was uncommonly tempestuous with rain.

On the 8th day we left Gibraltar, growing daily worse in the scurvy. On the 10th day 50 scorbutic patients were on the sick-lift, and by the 20th they were increased to 80. Many of them were now extremely bad, with hard contracted limbs, ulcerated legs, putrid gums, stinking breath, offensive stools, thortness of breath,

On the 30th of fanuary my lift stood thus. Very bad in the scurvy 55. Scorbutic sluxes 6. Scurvy with cough 10. Scurvy with ulcers 10. Scorbutic asthma 1. Scorbutic hæmoptoe 1. Scorbutic hæmorrhoides 1. Other disorders not scorbutic, chiefly colds 6. Sick in all 90. The ship at sea till towards the latter end of the month she arrived at Hieres bay.

February was a cold, flormy, and rainy month. The weather, especially in the beginning and latter end of it, was extremely rough and un-

comfortable.

From the 3d of this month to the 10th, the fick were on the ordinary days on which they are allowed falt beef and pork, ferved with fresh meat, and broth with greens in it; in all about 5 times.

Upon coming into the bay of *Hieres*, our men understood the enemy's fleets and ours were very foon to engage. There appeared not only in the healthy, but also in the fick, the highest marks of fatisfaction and pleasure: and these last mended surprisingly daily; insomuch that on the 11th

of February, the day we engaged the combined fleets of France and Spain, we had not above 4. or 5 but what were at their fighting-quarters. From the 11th to the 15th few or none took notice of their illness. On the 15th my lift stood thus. Recovering from the scurvy 30. Scorbutic complaints in the first stage 5. Bad in the fcurvy 4. Ulcers 4. Pleurify 1. Flux 1. Lumbagines 2. Agues 2. Coughs and cold 11. Sick in all 61 (z).

N. B. No person has been sent on shore for cure since December; and I do not find that above I has died. When we got to Mahon the latter end of the month, my fick-lift was greatly increafed; those who were so much mended before, having relapsed, I here put all the sick to

hospital.

March. It was in general a cold, windy, and rainy month. When it did not rain, it was commonly cloudy and hazy. In the latter part of it, the wind was more moderate: but on the last day of the month we had a strong gale, though without rain. We spent all this month at Mabon; where we now and then had a fresh patient in the scurvy, whom I always put on shore. 5 or 6 fcorbutic men who had coughs, are now in deep confumptions. Towards the latter end of the month coughs and flight fevers prevailed.

April. On the 1st and 2d day the weather was stormy. From the 3d to the 7th squally, with

⁽²⁾ A surprising instance of the influence of the passions of the mind on this disease! For I think no person can ascribe the alteration of the fick-list from 30th of January to 15th February to five fervings or messes of broth. May not the relapses afterwards have been greatly occasioned by the unfortunate engagement on the 11th February? The Dragon however that day did her duty.

rain. From the 8th to the 12th moderate and fair. From the 12th to the 20th fresh gales, with rain. From 20th to 26th calm and fair. From thence to the end of the month close rainy weather, but warm. We were this month at sea on the coasts of France, Savoy and Genoa. In the beginning of the month the coughs and colds increased; and towards the middle and latter end of it, they were attended with inslammation and danger. 4 or 5 had peripneumonic symptoms, 1 of whom died. 3 or 4 had high severs with delirium, &c. 1 of whom died also. In the latter end of the month we had two troublesome ophthalmias.

May. The weather was very warm; fometimes fair, at other times hazy and rainy. We spent this month at sea as in the last, and on our pas-

fage to Mahon.

The diforders differed little from those in April, though not fatal to any. I should have mentioned, that in the latter end of last month 2 or 3, who in other respects were perfectly healthy, complained of an universal cutaneous itchy eruption. More were seized with it this month, and it proved very troublesome. One of them catched cold, fell into a fever, and had near died; but at last was saved by nature throwing out a second time the peccant matter on the skin.

June. Although we were at Mahon, where the weather was very hot, and our men worked hard; yet our inflammatory complaints did not increase, but rather lessend. Towards the middle, and in the end of the month, a gentle diarrhœa pre-

vailed throughout the ship's company.

Left Mahon the 14th of June, and arrived at

Gibraltar the 30th.

July. The weather was excessive warm, and for most part clear and dry. On the 3d we left Gibraltar, and on the 19th or 20th arrived at Lisbon.

A few have still gentle diarrhœas; but, in ge-

neral, a very healthy month.

August. The weather was for most part hot and dry, except the 21st day, which was foually, with heavy rains. We lay all this month at Lisbon, where the men were ferved with fresh provisions and greens twice a-week from the city. They had here the finest opportunity of being provided with all manner of vegetables. We continued fill healthy, with now and then a flight diarrhœa.

September. From the 1st to the 4th we had high winds; but from the 5th to the 14th the wind was very moderate. All this first part of the month the weather was cloudy, hazy, and rainy, with a good deal of lightning. From the 15th to the end of the month the winds were moderate, and weather very changeable, being for most part cloudy and rainy, with some intermediate days fair, and generally warm. Left Lisbon the 3d; got to Gibraltar the 15th.

Though a healthy month, yet, towards the middle and latter end of it, we had now and then a scorbutic patient. Sent 9 to hospital, for

different complaints.

October. Except a few days of good weather and eafy gales, it was a very windy, rainy and foggy month; fometimes hot, at other times cold.

We were much alarmed at the fudden appearance of the fcurvy (a). On the 13th I put on **fhore**

⁽a) Not owing to abstinence for so very short a time from vegetables. Their late supply at Liston, was a thing uncommon to them.

shore 24 people. We left Gibraltar the 14th; and when we came the length of Minorca, having received orders to proceed further, I fent 20 men in the scurvy also by the Portsmouth storeship, to Mahon hospital.

November. From the 1st to the 11th, we had cold fair weather, with variable winds. The remaining part of the month was remarkably bad, with high, piercing, cold winds, much rain, and

fome fnow.

We arrived at *Vado* the 20th, and failed from thence the 29th. Upon our arrival there we had

50 men in the fcurvy (b).

December was also a very cold, windy, and wet month; with but few intermissions of little wind, and fair weather.

1745. January was much the same as the former month. We had but eight days in it that

were moderate and fair.

When we arrived at Vado, as before-mentioned, on the 20th of November, I gave to every fcorbutic patient one China orange, and three apples; and continued to do fo daily till the 5th of December, when the apples being all gone, they had only the continuance of an orange, which lasted to the 7th of December. On the 22d of November they had fresh slessh-broth. On the 27th they had the same with turnips boiled in it; and again on the 29th November, 1st and 2d December; which was the whole supply of fresh meat and vegetables we got at Vado. On the 8th of December, being then off Sardinia, Captain Watson (c) agreeable to his wonted humanity,

⁽b) Putrid air could have but little influence during fo cold a feafon.

⁽c) Late Vice Admiral of the Red.

gave mutton-broth to 21 of our men; the 13th he did the fame to 45. Now follow the remarks

in my diary.

[November 29. The scorbutic people in general, mend much. Those whose limbs were contracted, grow pliable; their rotten gums become founder; shortness of breath, &c. better (d).

December 2. They continue to mend much.

December 5. The weather not fo cold fince we left Vado.

December 6. All are recovering from the scurvy. December 25. My sick-list contained but 30; and these almost well, and recovered from the

scurvy.

January 6. We are still at sea; the weather cold and wet; and for 9 days past have been in want of wine for the people. The scorbutic patients are relapfed, and more are added to the fick-lift, being unfit for duty.

Fanuary 8. Anchored at Mahon; put to hof-

pital 59 in the scurvy.]

February. A cold uncomfortable month, which we spent at Mahon; where we had now and then a case in the scurvy; but more towards the end of it, with feverish symptoms. Sent 5 to hof-

pital.

March. The weather this month was warmer, but inconstant. The winds moderate. Left Mabon the 17th; arrived at Gibraltar the 22d. The lift was pretty numerous, composed of valetudinarians taken from Mahon hospital, and one or two fevers. Sent to hospital at Gibraltar 14.

April. The one half of this month was fair, the other half rainy, cloudy, and foggy; but

generally warm.

We

We had some, though not many, ill of coughs and colds. One old man died of a fever. Left Gibraltar the 6th, carrying along with us all our people from the hospital, where they were badly supplied with vegetables and fresh meat. We were in hopes of doing better for them at Lisbon, or on the coast of Portugal; where we continued cruising all this month.

May. The weather was moderate and warm, without much rain, though fometimes hazy.

Spent this month at fea.

In the middle and latter end of it, several were ill of scurvies, others of fluxes. We got no refreshments from the land for the poor people brought from hospital. And the sick must have suffered much, had not Captain Watson supplied them. He caused four of his sheep to be killed for their use; and gave up entirely (as indeed was his wonted custom under such distress) every drop of milk his cow afforded for their benefit.

June. Boisterous winds blew continually from the north, which occasioned very uncomfortable weather at sea; and kept the air pretty cool, until the 13th we arrived at Lisbon, very ill in the scurvy (d). Here three or four died of it.

July. We continued at Liston. All have not yet got free of their scorbutic complaints; several have scorbutic fluxes; others have diarrheas and dysenteries, without any symptoms of the scurvy. Towards the latter end of the month, several had severs.

August. Slight fevers, but especially diarrheeas and dysenteries, still prevail. Mr. Mauberty our H car-

⁽d) This weather must have proved very hard upon the weakly men taken from Gibraltar hospital.

of the symptoms of the scurvy. Part II. carpenter, died of the dysentery. 22d of this month we left Lisbon, and sailed for England. Had then 20 sick on my list.

CHAP. II.

The diagnostics, or symptoms.

IN order to observe greater accuracy in the description of a disease attended with so many and various symptoms, these might have been properly enough ranged under three classes.

The first, Containing the most common and constant symptoms; such as may be said to be essential to the nature of the scurvy.

The fecond, Such as are more casual and accidental; proceeding not so much from the genius of the distemper, as from the state of air, or habit of the body at the time, or from the determination of other causes.

And the third, Some extraordinary and uncommon symptoms, that sometimes, though but seldom, have happened in it; and which occur only in the highest and most virulent state of this disease, from the peculiar idiosyncrasy of the patient, its combination with other malignant diseases, or from other incidental circumstances.

But, for the fake of greater perspicuity, I chuse rather to describe the symptoms in the order in which they generally appear, and

as peculiar to the feveral stages of the disease; and shall distinguish, as I go along, those which are more constant or effential, from the less frequent or adventitious.

The first indication of the approach of this disease, is generally a change of colour in the face, from the natural and usual look, to a pale and bloated complexion; with a list-lessness to action, or an aversion to any fort of exercise. When we examine narrowly the lips, or the corners of the eye, where the blood-vessels lie most exposed, they appear of a greenish tinge. Mean while, the person eats and drinks heartily, and seems in perfect health; except that his countenance and lazy inactive disposition may portend an approaching scurvy.

This change of colour in the face, although it does not always precede the other fymptoms, yet generally attends them when advanced. Scorbutic persons for the most part appear at first of a pale or yellowish hue, which becomes afterwards more darkish or

livid (a).

Their former aversion to motion degenerates soon into an universal lassitude, with a stiffness and seebleness of their knees upon

H 2 ufing

⁽a) Mr. Murray's remark.—They commonly appear of a melancholy and fullen countenance; such also is their disposition of mind. So that dejection of spirits may justly be reckoned a cause as well as symptom of the future malady.

100 Of the fymptoms of the scurvy. Part II.

using exercise; with which they are apt to be much fatigued, and soon put out of breath. This lassitude and difficulty of breathing upon motion, are observed to be among the most constant concomitants of

the distemper.

Their gums foon after fwell, and are apt to bleed upon the gentlest friction. Their breath is then offensive; and upon looking into their mouth, the gums have an unusual livid appearance, are soft and spungy, and become afterwards extremely putrid and fungous, one of the most distinguishing signs of the disease. They are subject not only to a bleeding from the gums, but from other parts of the body,

especially at the nose.

Their skin at this time feels dry, particularly on the legs. In many, especially if feverish, it is extremely rough; in some it has an anserine or goose-skin appearance; but most frequently it is smooth and shining. And, when examined, it is found covered with several reddish, bluish, or more frequently black and livid spots, equal with the surface of the skin, resembling an essentiation of blood under it, as it were from a bruise. These spots are of different sizes, from the bigness of a sentil to that of a handbreadth, and larger. But the last are more uncommon in the beginning of the distemper; they being usually then but small,

and

Chap. II. Of the symptoms of the scurvy. 101

and of an irregular roundish figure. They are to be seen chiefly on the legs and thighs; often on the arms, breast, and trunk of the body; but less frequently on the head and face.

Many have a fwelling of their legs; which is first observed on their ancles to-wards the evening, and hardly to be perceived next morning: but, after continuing a short time in this manner, it gradually advances up the leg, and the whole member becomes cedematous; with this difference only in some, that it is more painful, also does not so easily yield to the singer, and retains the impression of it longer than a true cedema.

These are the most constant and essential symptoms of this malady in the progress of its first stage. But a diversity is sometimes observed in the order of their appearance. Thus, when a person has had a preceding sever, or a tedious sit of sickness, by which he has been much exhausted, the gums for the most part are first affected, and a lassitude constantly attends; whereas, when one has been consined from exercise by having a fractured bone, or from a bruise or hurt, these weak and debilitated parts become almost always first scorbutic (d). As for example,

ture

⁽d) Mr. Ives.—As was the case of John Thomas, marine, belonging to the Dragon, who, on the 18th of August, 1742, got, by a musket-ball from the Spaniards, a very bad frac-

if a patient labours under a strain of the ancle, the leg, by becoming swelled and painful, and soon after covered with livid spots, gives the first indication of the disease. And as old ulcers on the legs are very frequent among seamen, in this case likewise the legs are always first affected, and these ulcers put on the scorbutic appearance, although the patient seems otherwise perfectly healthy, and preserves a fresh good colour in his face.

The distinguishing characteristics of scorbutic ulcers are as follow. They do not afford a good digestion, but a thin sætid matter, mixed with blood; which at length has the true appearance of coagulated blood lying caked on the surface of the ulcer, and is with great difficulty wiped off, or separated from the parts below. The slesh underneath these sloughs feels to the probe fost or spungy. No irritating applications

are

ture of the os bumeri, with great comminution. Eight or ten large pieces of the bone were cut in upon, and taken away, and the bone shivered quite to its head. By the end of November following, a union was brought about by means of an intervening callus, and a found skin brought over almost all the incisions. He had nearly recovered his slesh and strength lost under the discharge and consinement, being daily supplied with fresh provisions by the bounty of the officers. Upon the scurvy breaking out in December, his supply of fresh provisions was stopt, and given to more necessitous objects, as was thought, he being then pretty healthy. Upon which he fell into a bad scurvy: the first symptom of which that appeared, was the breaking out of the late wounds in his arm. He sunk under the discharge, and died at Mahon hospital.

Chap. II. Of the symptoms of the scurvy. 103

are here of any fervice: for though fuch floughs be with great pains taken away, they are found again at next dreffing, where the fame bloody appearance always prefents itself. Their edges are generally of a livid colour, and puffed up with excrescencies of luxuriant flesh arising under the skin. When too tight a compression is made, in order to keep those excrescences from arising, they are apt to have a gangrenous disposition; and the member never fails to become fwelled, painful, and for the most part fpotted. As the difease increases, they at length come to shoot out a foft bloody fungus, which the failors express by the name of bullocks liver: and indeed it has a near refemblance, in confiftence and colour, to that fubstance when boiled. It often rises in a night's time to a monftrous fize; and although destroyed by caustics or the knife (in which last case a plentiful bleeding generally enfues) is found at next dreffing as large as ever. They continue however in this condition a confiderable time, without tainting the bone.

The flightest bruises and wounds of scorbutic persons degenerate sometimes into such ulcers. Their appearance, on whatever part of the body, is singular and uniform, and they are easily distinguished from all others, by being so remarkably offensive, bloody, and fungous, that we cannot here but take

H 4

notice

notice of the impropriety of referring many inveterate and obstinate ulcers on the legs, with very different appearances, to the scurvy; which are generally best cured by giving mercurial medicines: whereas that medicine, in a truly scorbutic ulcer, is the most dangerous and pernicious that can be administered.

But to proceed: The first remark to be made upon this difeafe, is, that whatever former complaint the patient has had (especially bruises, wounds, &c.) or whatever present disorder he labours under; upon being afflicted with the scurvy, his old complaints are renewed, and his present rendered worse. Scorbutic people, as the disease advances, are feldom indeed free from complaints, especially of pains; though they have not the same seat in all, and even in the same person often shift their place. Some complain of an universal pain in their bones, as they express it; most violent in their limbs, and fmall of the back, and especially in their joints and legs. But a most frequent seat of their pain is in fome part of the breast; a tightness and oppression there, with pain felt upon coughing, being usual symptoms in this disease. And as scorbutic pains in general are very liable to move from one place to another, fo they are always exasperated by motion of any fort, especially the pain of the back; which,

Chap. II. Of the symptoms of the scurvy. 105 which, upon this occasion, proves very troublesome.

The next thing observable here, is, that people of scorbutic habits are very liable to other disorders which rage at the same time with the scurvy, or even to accidental dis-

eases which may occur.

Thus I remarked a confiderable difference in the symptoms of the disease in the two cruises ann. 1746 and 1747. In the latter, when fevers from cold of the pleuritic fort prevailed, it tended chiefly to affect the breast with a tightness, oppression, and cough, by which a very tough phlegm was with great difficulty brought up. The fits of coughing were not constant, but extremely fatiguing; and this was an universal complaint. Several at this feafon were feverish; we had none in a falivation, and the fluxes were mild and eafily cured. Whereas in the year 1746, when a different species of difeases prevailed, occasioned by the unwholfome newness of the ship's timbers, and fluxes were frequent, the fcurvy proved more virulent and fatal. Its worst, most common, and troublefome fymptoms, were falivations and bloody fluxes, especially the latter; of which one died, and eight or ten more were landed at Plymouth in a very low and exhausted condition. I did not at that time remark any of them to be feverish, and their breasts were but slightly affected.

One

One man was feized with the scurvy in both cruises; in the first he laboured under a salivation and then a bloody slux, in the second a severe cough was his principal

complaint.

I believe indeed it will univerfally be found, that, in the progress of this distress, the breast is always more or less affected, unless the body be in a lax state. The pain shifts from one part of it to another, often to opposite sides, and is at first perceived upon coughing only: but when the disease is farther advanced, it commonly sixes in a particular part, most frequently in the side; where it becomes extremely severe and pungent, so as to affect the breathing; a dangerous symptom in this disease (e).

The head is feldom or never affected with pain, unless the patient is feverish. As to fevers it may indeed be doubted whether there be any such as are purely and truly scorbutic. The disease is altogether of a chronic nature, and fevers may be justly reckoned amongst its adventitious symptoms. I have been told by a very skilful surgeon, who has had opportunity of seeing some hundred scorbutical cases, and those

of

⁽e) Mr. Murray's remark.—This pain in fome measure answers to the description of the pleuritis notha; and, like it, is sometimes but not always to be relieved by blisters: I have likewise often observed a pain of the breast, I think mostly in the left side, in scorbutic sluxes, and always found it mortal.

Chap. II. Of the symptoms of the scurvy. 107 of the worst kind, that he remarked very few of them to be attended with severs; which, to the best of his remembrance,

always proved mortal (f).

I observed before, that, in the year 1746, none of our scorbutical patients were feverish: but, in the cruise in the year 1747, several had the fever in the beginning of the distemper. The symptoms were not so violent nor inflammatory in scorbutic patients as in others. In two or three it assumed an intermitting form; and in this state I observed it to be altogether mild, and without danger.

One person having an obstinate ulcer on his leg, about the beginning of May 1747, they both became painful and swelled, and his ulcer truly scorbutic. On the 12th of that month he was seized with a pretty smart fever; which abated the next day, but returned regularly every third day for five weeks, till he arrived at Plymouth. His gums were putrid; he had a pain in

his

⁽f) Ives.—I cannot fay I have ever feen an instance of it: for I do not remember, nor can I find in my journals, one case of a person advanced in the scurvy being seized with a fever. I entirely agree with you, that this disease is purely chronic. Ulcerated lungs is a common consequence of the scurvy; and where there has been a violent cough and stitches preceding, 'tis certain I may have perceived the pulse to have quickened, and possibly to an increase of heat in the skin: yet these circumstances seemed to me altogether symptomatic, and not properly to be denominated a sever with the scurvy.

his breast, together with a cough, and the other scorbutic symptoms usual at that season.

Lastly, According to the habit and conflitution of the patient, there will occur
likewise some little diversity in the state of
the body in this disease: some through the
whole course of it being regular enough
while others are apt to be very costive; but
generally scorbutic persons are inclinable to
have loose stools at times. The urine I
found to be extremely various at different
times, even in the same patient; except
that it is generally high coloured (b). The
pulse likewise varies according to the habit
of the patient, and state of the disease;
being most commonly slower and seebler
than in health.

The true scorbutic spots, as was said before, are flat, and equal with the surface of the skin. I have sometimes, however, observed the legs, at the same time when greatly swelled, covered with dry scurss or scales, and frequently there appear on the skin small eruptions of the dry miliary kind.

In the fecond stage of this disease, the patients most commonly lose the use of their limbs; having a contraction of the tendons

in

⁽b) Mr. Murray's remarks.—The urine of almost all scorbutic persons, when let stand, gathers an oily saline scum atop.

Chap. II. Of the symptoms of the scurvy. 109 in the ham, with a swelling and pain in the joint of the knee. Indeed a stiffness in these tendons, and a weakness of the knees, appear pretty early in this disease, generally terminating in a contracted and swelled joint. They are subject to frequent languors; and when long confined from exercise, are apt to faint upon the least motion of the body; which are the most peculiar, constant, and essential symptoms of this stage.

Some have their legs greatly swelled, and covered with one or more large livid spots, or blotches; others have hard swellings there in different places, extremely painful; and others I have seen, without any swelling, have the calf of the leg (k) as hard

as a stone.

They are apt, upon being moved, or exposed to the fresh air, suddenly to expire. This happened to one of our men when in the boat, going to be landed at *Plymouth* hospital. It was remarkable he had made shift to get into the boat without any affistance, while many others were obliged to be carried out upon their beds. He had the scorbutical colour in his face (1), with complaints in his breast. He panted for about half a minute, then expired (m).

Scor-

(k) Mr. Ives .- And thighs too.

(1) Mr. Murray's remark .- In this stage I have seen

livid maculæ, or spots, on the face.

⁽m) Mr. Ives.—Of this I have feen many inflances, when they are imprudently brought up from the orlope to the fresh air. The utmost caution and circumspection are here requisite.

110 Of the symptoms of the scurvy. Part II.

Scorbutic patients are at all times, but more especially in this stage, subject to profuse bleedings from different parts of the body; as from the nose, gums, intestines, lungs, &c. and from their ulcers, which generally bleed very plentifully. Many at this time are afflicted with a constant flux, accompanied with exquisite pain; by which they are reduced to the lowest and most weakly condition: while others I have seen, without either a purging or gripes, discharge great quantities of pure blood by the anus.

The gums are for the most part over-run with sprouting luxuriant slesh, having an intolerable degree of stench and pain; they are somewhes deeply ulcerated, and have a gangrenous aspect. The patient is hardly able to open his mouth, and with his face and jaws swelled, resembles a person labouring under a severe tooth-ach. But I never remarked, except in cases of salivations, the back part of the throat or upper part of the mouth, much affected; and I believe the lips seldom or never are. The teeth most commonly become quite loose, and often fall out; but a caries of the jaw-bone does but seldom follow.

A scorbutic caries happens only, when the outer lamella, or plate of a bone is broken off. Ulcers may otherwise continue long on the legs, without affecting the bone; unless when the scurvy is in a very

violent

violent degree, so that the cellular substance of the bone itself is affected. A very uncommon case; which is generally attended with an excruciating pain, and always with an enlargement of the bone, followed with painful spreading ulcers, and an internal caries of the most malignant kind (n).

Most, although not all, even in this stage, have a good appetite, and their senses entire, though much dejected, and low-spirited. When in bed, many make no complaint, either of pain or sickness, unless afflicted with a flux or salivation. This last indeed I am inclined to think would happen but seldom, were it not occasioned by the administration of some mercurial medicine (o) in the cure of ulcers, or other scorbutical complaints where it is often injudiciously administered; which, in such cases, in extreme small quantity, produces a copious and dangerous salivation, almost always attended with bloody stools.

These

(n) Mr. Murray.—I never observed a carious bone to follow, but where there was a fever and most virulent scurvy.

⁽o) Mr. Ives.—Did you, in 1746, give mercurials? If not, how do you account for the falivations that happened then? They would appear to me to have been purely fcorbutic. I do not remember an inflance of any confiderable falivation in the fcurvy. Anjwer. It appears from my diary, that we had then three patients in a falivation, viz. Rice Meredith, Robert Robinson, and John Hearn. The two first had taken gentle doses of mercurius alcalisatus, and about half a dram of mercurial pill, but there is no mention of their having been given to Hearn. I am pretty clear he took no mercury.

112 Of the symptoms of the scurvy. Part II.

These succeed each other alternately; so that the spitting generally ceases for a day or two, while the patient is racked with gripes and bloody stools; which being stopt for a short

time, the falivation again returns.

It is not eafy to conceive a more dismal and diversified scene of misery, than what is beheld in the third and last stage of this calamity; it being then that the anomalous and more extraordinary symptoms commonly occur, which are always accompanied with an extreme degree of weakness. It is not unusual at this time, for such persons as have had ulcers formerly healed up to have them break out asresh: while in others the skin of their swelled legs often bursts, particularly where soft, painful, livid swellings, have been first observed; and these degenerate into the soul, bloody ulcers, formerly described (0). Some few at this period sink

The breaking out of wounds afresh, is also a frequent, though not a constant symptom. I have often seen large

ffusion

⁽o) The appearances here mentioned, are not constant, though often observed. I have seen many patients, sent on shore in the scurvy, from a large sleet of ships; sew of whom were afflicted with ulcers: slight excoriations were easily healed, and some ulcers had neither a bloody nor spungy surface. At other times, I have remarked patients, especially such as came from the East or West-Indies, whose predominant scorbutic symptoms, seemed to be large, bleeding, livid, sungous ulcerations; with which the legs, and even other parts of the body were overspread, and the putrefaction was sometimes so exceedingly great as to endanger a mortification or a carious bone.

Chap. II. Of the fymptoms of the scurvy. 113 fink under profuse evacuations of dissolved blood, by stool and urine, from the lungs, nose, stomach, hæmorrhoidal veins, &c.(p): while the disease more frequently in others gives rise to a jaundice, dropsy, or confirmed melancholy and despondency of mind; as also to violent colics, obstinate costiveness, &c. The fatal termination of this disease in a dropsy is very usual: dropsies of the breast and belly are most frequent, those of the scrotum and cellular membrane are less dangerous.

Towards the close of this malady, the breast is most commonly affected with a violent and uneasy straitness and oppression, and an extreme difficulty of breathing; accompanied sometimes with a pain under the sternum or breast-bone, but more frequently in one of the sides: while in others, without any complaint of pain, re-piration becomes quickly contracted and laborious, ending in sudden, and often unexpected death.

Many more fymptoms might be here added that at times have been observed, especially towards the close of this most virulent disease. And we shall have no occasion to

effusions of red or black blood, under the scar of a former wound, which still continued firm. The effect of cold at New-York in the winter, 1759, was very remarkable. The wounds of many of the English officers and soldiers, which had been healed up, in some for months, in others a whole year, broke out, and bled a-fresh, occasioned entirely by the intense cold of the climate.

(p) Ives .- All which I have often feen.

be furprised even at the most extraordinary which have been related by authors, when we come, in its proper place (q), to view the

true state of the body at this period.

As the appearances on the skin in such as are afflicted with the scurvy are numerous and various, I shall in this third edition, attempt to class all the different spots, or eruptions on the surface of the body, which I have remarked in many thousand scorbutic patients at Hastar hospital.

These outward appearances may be reduced into such as are smooth, or even with the surface of the skin, and such as are raised

above it.

Of the first kind are what may be called (perhaps not improperly) the *Petechial*, being numerous, small, distinct, round spots of blood, of various tinges, from red to livid, and sometimes black, which render the skin

rough to the touch.

2dly. Large livid or blue marks and blotches; fuch indeed appear to have all the intermediate colcurs between red and a deep black, and are fometimes of a yellow hue. Mistakes may be made in regard to these stains, as semetimes the colour, or red die, is very slight, or only a few faint red, or purple streaks are just perceptible on the thighs, legs, or ancles, which may be mistaken for the production of another disease.

Or when a great part of the limb thus becomes

Chap. II. Of the symptoms of the scurvy. 115

be to mistake the appearance for a St. Anthony's fire or a true inflammation. The scorbutic blotch is however distinguished by being accompanied with less pain and heat, and by inclining more to a livid hue than the St. Anthony's fire, which is always of a bright red, and is attended with great heat and more acute pain to the touch.

3dly. In the scurvy the parts are sometimes quite black, which may be injudiciously taken for a mortification. I have frequently feen cases, in which the fore-part of the leg has been of a shining red, like a true inflammation, but of a darker hue, and furrounded with edges of a lemon colour; in the middle of it were broad black spots, and in one or two places fmall ichorous bladders. notwithstanding such alarming appearances, I never once faw a true mortification occur in the fcurvy, unless it proceeded from a highly virulent ulceration. Nay, I believe a mortification or even suppuration in such cases is very uncommon. Scorbutic blotches are fometimes further distinguished, by giving no pain unless after exercise, and when presfed hard, and by being frequently streaked with mixtures of various colours; the affected parts are often hard, though not swelled. In feveral negroes, whom I have visited when afflicted with this difease, it was easy to distinguish the scorbutic spots from the natural colour of their skin.

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Athly. Hard broad blotches, which often make their appearance alone, accompanied with no other fcorbutic eruption. These are always of a dark livid, or faint red colour, resembling the description given by authors of plague boils: they are to be seen on the thighs, legs, arms, &c. and are distinct, similar, and often very numerous: to the touch they feel hard, and to the eye appear raised though not so; the body of the patient seems as if he laboured under the black leprosy.

Of prominent appearances I have observed

various kinds.

The first and most usual are the miliary, which appear chiefly on the legs and thighs; they are generally more florid and red than the common anserine appearance of the skin: when dying away they have the true white anserine appearance, and frequently leave a red fpeck behind them. Sometimes they are black like grains of gunpowder blown into the flesh; at other times, of a purple colour. They feel very rough to the touch, and to the eye appear thick, and elevated; they may be perceived on the furface of the large black spots, and are often intermingled with the small flat petechial spots. In some they refemble elevated fpots of blood, but do not bleed even when rubbed.

are overspread with large spots of a darkish

Chap. II. Of the symptoms of the scurvy. 117 or livid colour, of the fize of a half crown piece, with a tawny coloured eschar, or hard black ash film on the top. These exactly refemble a wound or ulcer badly healed, with its cicatrix ready to fall off. The black eschar or scurf is at first thin; it becomes thicker and then drops off, leaving a large hard purple blotch. A watery humour fometimes iffues from underneath the fcab before it falls off, but these blotches seldom or never degenerate into ulcers. Sometimes the skin looks as if it was affected with a fcurfy black leprofy. This appearance differs from the livid blotches formerly mentioned, by having always a loofe film or fcab on the top.

3dly. On the trunk, and even on the face, there often appear black or livid rough marks, refembling those left after the small pox, or a withered pimple of that size. When they scale off they leave behind them rough scales or a black speck like the leprosy.

Athly. Sometimes there arise in a few hours large, hard, circumscribed, and painful tumors, or swellings; most commonly on the back of the hands, of the natural colour of the skin.

5thly. In a few recovering from the scurvy, I have observed on the body, an eruption of numerous small pimples, containing a purulent matter, and in others dry scurs on the head and face.

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I shall

118 Of the symptoms of the scurvy. Part II,

I shall conclude this chapter with an account of some particular scorbutic cases.

(s) " Since the first edition of your trea-" tife was published, I have met with two remarkable instances of fevers preceding fcurvies fo closely, that the latter feemed to prove a crisis to the former. One was a young lady who had long laboured under ulcers of the legs; these being dried up, she caught a fevere cold, which was followed by a peripneumony or inflammation of the lungs and delirium; upon a crifis by fweat, her delirium went off, and of a fudden her gums fwelled, all her teeth became loofe, and her jaws fo con-" tracted and tense, without any remarkable " fwelling, that she could neither move them nor swallow but with the utmost difficulty. "The fever immediately disappeared; and " having by proper gargles, fomentations, &c. abated the severity of the symptoms, orange-juice, with a decoction of the bark, effected a cure. The other was a young man feized with the symptoms of an inflammatory quinfy, where the fever ran fo high, that I was obliged to make copious and repeated evacuations by bleeding, purging, blistering, &c. The fever abated on the fourth day, as also the pain " in his throat; but he complained of a fore mouth, and that he had a rash come out

Chap. II. Of the Symptoms of the Scurvy. 119 " on his legs. Looking into his mouth I " found his gums loofe and flabby, and his "breath remarkably feetid, and upon his " legs the true scorbutic spots. I ordered " him agargle of tinet. rofar. & tinet. myrrb. " fweetened with mel rofar. and directed 66 him to eat a Seville orange or two every " day, which cured him in a short time. " Both these cases occurred in the spring, " 1754, when I remarked the scurvy more " epidemical here, at Wells, than I ever knew " it at land. It chiefly affected those who " lived in damp places, and was doubtlefs " rendered more frequent by the extraor-"dinary moisture, coldness, and backward-

" ness of that spring season."

(t) Lieutenant John A— of marines, aged 40, was formerly extremely healthy, though much at fea; where he had feldom or never eat of falt provisions, officers tables being generally well provided with better fare. He had lately returned from some Channel cruises to the westward; where, as usual, he had not eat of any thing falt, having a natural aversion to such food. One day, to his great surprise, he observed about the middle of one of his legs a considerable protuberance upon the fore-part of it; and, taking down his stocking, found a bluish insensible swelling. Next morning it was increased to the size of a large walnut, and

in two or three days the skin broke, and it became a genuine scorbutic ulcer, with the liver-like excrescence. After which began also other symptoms; change of colour, tightness in the breast, putrid gums, and, what was very threatning to his life, an obfinate constipation of the bowels, attended with intolerable gripings.

He took country-lodgings; and, being properly treated, in about fix weeks, or two

months, recovered.

Letter from Dr. JAMES GRAINGER (u), physician in London, late surgeon to Lt.-Gen. Pulteney's regiment.

Have extracted from my notes the following brief description of the scurvy, which prevailed ann. 1752 among the six companies of our regiment quartered at Fort-William.

I had then an opportunity of feeing it in near 100 patients; and must ingenuously own, it was there I learned my first lesson

upon the disease.

My predecessor had not informed me, that this was a disorder of that garrison; it was a subject of which I had read much, but knew little; so that the first I treated, had well nightfallen a martyr to improper prescription.

The

anoma!

⁽u) The ingenious author of Historia febris anomal. Batav. ann. 1746, Sc.

Chap. II. Dr. GRAINGER's Letter. 121

The pains the foldier complained of, appeared to me rheumatic. This I the more eafily gave into, as at that time this difease was actually frequent. He was bled, and treated accordingly; upon which his pains grew worse than ever, and no wonder. I began to talk seriously to him, and upbraided him with having pretended complaints more than real. But he soon gave me evident marks of genuine distress. Livid spots on the thighs, rotten, bleeding gums, and his offensive breath, quickly convinced me, that I had mistaken his case, and consequently the method of cure.

At aliquis malo fuit usus in illo.

The scurvy now began to spread, and I

profited by my former inattention.

Its first appearances were, a lassitude, breathlessness upon the least quickness of motion, and a taste in the mouth peculiarly disagreeable: these were soon followed by spungy, painful gums, bleeding from the slightest touch; feetid breath; pains always of their thighs, frequently of their legs, sometimes of their loins, seldom of their arms. All these parts were sometimes discoloured with purple spots, which as the disease increased, grew black and broad. The fore parts of the legs and thighs chiesly suffered. The former I have seen all livid,

the latter very closely spotted. Neither were much fwelled, yet both were harder than usual; and so extremely painful, that the gentlest touch gave agony. Unless these were speedily checked, the disease gained ground, their faces grew strangely fallow, their teeth loofened, palate and back parts of the mouth ulcerated, asthma increased: they fell away, flept little, old ulcers broke out again, they cried out when turned in bed, and fometimes fainted upon motion of their body.

What furprifed me most, was that their appetite, even in these deplorable circumstances, was not greatly impaired; and that none of them could properly be faid, though thirsty, to be in a fever. All of them were rather costive; and their urine, though not copious, was always vastly feetid and thick, in those especially who complained of their loins. Most of them were continually spitting; and a fmall quantity of mercury occa-

fioned a dreadful falivation.

A foldier who laboured under the venereal difease, with a scorbutic habit of body, used but a drachm of crude mercury, by way of unction, one evening. Next morning I found him in a true mercurial falivation. The fpitting went on, increasing until the tenthday; when the infide of his mouth, lips, and cheeks, became excessively swelled. The stench of his mouth was intolerable to

all

all about him. He every day fpit out a quantity of fœtid blood, part of his gums, and tœth. He lost almost all the latter; and what was very remarkable, they were found preternaturally enlarged. His urine was extremely fœtid, thick, and almost black. He often fainted away. In short, the poor fellow was reduced to the most deplorable condition, and with great difficulty escaped. It was three months afterwards before he was sit for duty (u).

The scurvy began in March, raged in April, declined in May, and left us before the middle of June. Ninety during that period had scurvies at Fort-William; while there were only two soldiers out of four companies seized with it at Fort-Augustus, and but one in a Captain's command at the barracks of Bernera. These three indeed were very ill. No officer had it in any of

thefe garrifons.

I imputed the malady to the following causes. 1mo, Constant moist, rainy weather. 2do, Salt provisions from December till near the end of May, salt butter, cheese, oat-meal. 3tio, Few or no vegetables; little, bad, or no milk. 4to, Indifferent water. 5to, Hard duty. The 1st, 3d, 4th, 5th causes prevailed less at Fort-Augustus and Bernera; and therefore these places had not their proportion of scorbutic patients,—(w)

This

⁽u) Vid. Monita Siphylica, auct. Jac. Grainger, p. 4.

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This disease is in several parts of Scotland called by the name of the black legs. It has often been very fatal to the miners at Strontian in Argyleshire. Not long ago many of them died of it, with this remarkable symptom, that the belly was at length covered with large scorbutic blotches. This Dodonæus (x), a good author on the scurvy, long ago observed to be a mortal symptom.

I am informed of a certain noble family, whose feat in the country is bleak, and exposed to the sea, where they have been universally afflicted with spungy, putrid gums,

fwelled legs, ulcers, &c.

Lately a gentleman confined in jail at Edinburgh, complained of a swelling of his legs. Upon examination, they were found covered with black and bluish spots; soon after his gums became extremely soft and fungous. His case being neglected a caries of the lower jaw ensued; for which he was put under my care.

A navy-furgeon residing in Fife, in passing through Backbaven, was desired to visit two poor sishermen who were extremely ill. He found them in a miserable condition indeed! Their gums were excessively swelled, their bodies spotted, and they were altogether deprived of the use of their limbs, by a swelling in the joint of the knee; in

one

Chap. II. Of the symptoms of the scurvy. 125

one of them the tendons in the ham were contracted, and quite hardened. The gentleman acquainted them with the nature of their disease, and by a proper prescription restored them soon to health.

I have been favoured with feveral letters by different gentlemen, giving an account of the unfortunate and fometimes fatal errors they have fallen into by mistaking this disease. But as I chuse now rather to publish my own faults than the misfortunes of others, I must ingenuously own (hoping it may be for the future benefit of practitioners) that before I had learned the nature and fymptoms of the scurvy from observation, two patients fell under my cure; in one of whom the difease proved fatal, and in the other extremely tedious, owing in all probability to improper treatment. At least were such cases to occur to me at present, I would treat them in a very different way.

A gentleman, after a tedious falivation, in which he had used a large quantity of mercury, was reduced to great weakness of body, and afflicted with a tremulous disorder of his limbs, for which he took several doses of prepared crude antimony. Though seemingly much mended in his health and looks, he soon after became afflicted with a swelling of his legs; and as his teeth had not been fastened, several of them dropped out. He was put upon a course of restoratives,

viz. a bitter steel-wine with an electary of the bark and gum guajac. After using them for ten days he was feized with a purging, upon which account they were laid afide, and aftringents with el. vitrioli prescribed. Soon after this, the tendons in the ham became fo rigid, that his legs were bent quite back, and in this pitiful condition he was deprived of the benefit of all exercise. When the flux had left him, recourse was again had to his former restorative medicines. Ointments, steams, and fomentations were used to his contracted joints, but all to no purpose. At this time the putrefaction in the mouth was fo great, that a caries of the jaw bone was fuspected. The disease still gained ground, he was fuddenly feized with a large watery fwelling of the fcrotum, and a hardness and fullness of the belly. An infusion of mustard feed, nutmegs, and falt of wormwood in white-wine was administered. Various other unfuccessful methods were tried, but he died in about three months after his having been first afflicted with the scurvy.

Another patient, who had kept the house for some days with a severe cough and disorder in the breast, was, upon these complaints leaving him, seized with rheumatic pains in his arms and legs, being otherwise in perfect health. He took several sweating medicines without any sensible relief; and for a considerable time thirty drops of ol.

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tereb. three times a-day; and afterwards half a drachm of flor. fulph. twice a-day: notwithstanding which the pains encreased, and became more universal. He at length observed his skin all over spotted. The fpots were of a purple colour, and became daily more numerous; the pains in fome parts were relieved by the eruptions, but he now complained much of an universal weariness and an increase of the pains in his joints. He underwent a course of æthiops mineral and g. guajac with decost. lignor. Blifters were applied to his joints. A new fymptom appeared, viz. a fort of bloody flux, but not attended with pain. He afterwards became greatly dejected in mind, and was fubject to faintings. All this time the scorbutic fpots continued out upon his body. Another person being upon this occasion consulted, the case was pronounced to be nervous. Castor. Sal. C. C. cephalic pills, tinet. sacra, epispastics, &c. were prescribed without procuring more than a temporary relief. At last, upon hearing fome unexpected good news, which obliged him to go into the country, he found himself considerably relieved; and after having undergone a very tedious course of medicines, was foon recovered by change of air, warm weather, proper exercife, drinking whey, and taking a gentle laxative when needful.

Extract of a letter received from Dr. Huxham, late physician in Plymouth.

N answer to your question, whether we meet with many truly scorbutic cases in Devonshire and Cornwall, amongst those who constantly live at land, I assure you we meet with very many patients of that kind, and even of fuch as are deeply afflicted with it, especially in low marshy grounds, and situations nearly bordering on the fea, or the falt marshes. A very great number in particular are constantly found at Dartmouth, which lies exceedingly low, damp, and cold, and is very little favoured with the fun, especially in the winter months; as also at Loque and Foy in Cornwall we are in pretty much the like fituation. In these places the scurvy is as it were endemic from the lower degrees of it, viz. pustular eruptions, itching spungy gums, fallow complexion, laffitude and inactivity, weak pulse, black and blue spots up and down the arms, legs, thighs, &c. a foul greafy urine loaded greatly with falinofulphureous falts, to its greatest degree of virulence, accompanied with fungous, livid, bleeding gums, horribly stinking breath, a fallow bloated countenance, vast dejection of fpirits and faintings, a swelled belly, gripes, the bloody flux, profuse hæmorrhages from various parts, a difficulty of breathing, especially

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especially upon the least motion, very large black, blue, yellow spots, swellings, contractions, and stiffness of the lower limbs, and sordid, spungy, livid ulcers on the legs, &c. with a load on the breast, and an anxiety

scarce to be expressed.

I find this disorder chiefly among those who drink heavy fulfome malt liquors, fuch as we generally have in this country, who eat very few vegetables, and live mostly on flesh and fish, eating them not only at dinner but supper; that lead inactive lives, and indulge too much in eafe and appetite: nay, many of our fedentary tradefmen very often fall into it, when they constantly drink the gross ale and beer of this country, and live chiefly on fish and falt provisions. On the contrary, the active, laborious husbandman, who drinks chiefly cyder, eats much herbage, fruits, &c. and breathes a free, open, country air, feldom or never is afflicted with it.

CHAP. III.

The prognostics.

OR the better understanding of this, and some of the following chapters, it becomes necessary to make a distinction, which is to be attended to. It is, That this disease may be either adventitious, or constitutional;

K artificial

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artificial (if I may be allowed the term) or natural to the patient. The first is the case of most seamen, and of all sound constitutions, either at fea or land, where it proceeds from fuch obvious external causes as were before-mentioned (a); in whom it is an artificial or adventitious disease. But there are likewise many to be met with, living at land, who, from very flight causes, are liable to become scorbutic; and that from a certain indisposition of their own body: and in fuch the malady is to be deemed constitutional, or natural to the patient. Though in whatever manner it is produced the diftemper is still the same, and the like method of cure is proper for its removal; fo I shall have no occasion to mention this distinction again; but am here to advertise the reader, that several of these prognostics are chiefly applicable to the adventitious fcurvy.

Persons who have been weakened by other preceding distempers, such as severs or fluxes; or by tedious confinement and cures, as those who have undergone a salivation, are of all others most subject to this disease. Intermitting severs in a particular manner dispose

the constitution to it.

Those who have formerly been afflicted with it, are much more liable to it, in similar circumstances, than others.

Different feafons variously affect scorbutic fymptoms. At land they become troublesome,

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when the winter's rain and cold begin to fet in after the autumnal equinox; cold, moist, open winters greatly inforce the disease; but by the return of warm dry weather, scorbutic complaints are much miti-

gated.

Where the indisposition is but beginning, and even when the gums have been pretty much tainted, there are numerous instances of a perfect recovery, without having the benefit of fresh vegetables; provided the patient is able to use due exercise. But when long confined to bed and prevented from using exercise, by stiffness or swelling of the legs, weakness, or other causes, the evil, where green vegetables or fruits cannot be procured, for the most part increases; and when it is advanced to what I have called the fecond stage, is hardly to be cured without their assistance. Of this many instances might be produced, particularly from the hospital at Gibraltar; where several died most piteous objects notwithstanding they had the benefit of the land-air, and plenty of excellent fresh-flesh broths; when a small quantity of greens every day, might in all probability have faved many lives.

This disease, when adventitious, may in its first, or even its second stage, be cured by fresh greens and proper treatment (especially by the use of oranges and lemons) on board a ship, either in harbour or at sea.

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The

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The symptoms related to occur in the last stage are of all others the most dangerous; viz. violent oppression of the breast, obstinate costiveness, sharp pains in the side, and frequent faintings; but especially a great difficulty of breathing.

At sea, where no greens, fresh meats, or fruits are to be had, the prognostics in this disease are sometimes deceitful: for persons that appear to be but slightly indisposed, are apt to be suddenly and unexpectedly seized

with some of its worse symptoms.

Their dropping down dead upon an exertion of their strength, or change of air, is not easily foretold; though it generally happens after a long confinement in a foul air.

The first promising appearance in bad cases, when fruits or greens are first allowed, is the belly becoming lax; these having the effect of very gentle physic: and if in a few days afterwards the patients become greatly relieved, it is almost an infallible sign of their recovery; especially if they bear gentle exercise, and change of air, without being liable to faint. If the vegetable aliment restores them in a few days to the use of their limbs (b), they are then past all danger of dying

⁽b) Mr. Ives.—The contraction of their knees fometimes cannot be cured; as happened to one of our marines, Samuel Norton, who although he recovered from the other fymptoms of a deep feurvy, yet never did of this contraction; and upon that account was discharged as an invalid from the service, with his heel almost touching his buttock.

Chap. III. Of the prognostics of the scurvy. 133

at that time of this disease; unless afflicted with a bloody flux or disorder in the breast. These two often prove fatal, and are the most obstinate to remove of all the scorbutic symptoms.

The blackness of the skin, or spots, upon recovery, go off nearly in like manner as marks from bruises, growing gradually yellow, from the circumference to the center; the natural colour of the skin returning in

the fame manner.

A virulent fcorbutical taint, where the breaft has been much affected, often ends in a confumption; at other times in a dropfical difposition; or, what is more frequent, swelled and ulcerated legs. Such persons are likewise subject, in different periods of their life afterwards, to habitual rheumatisms, pains and stiffness in their joints; and sometimes to eruptions on the skin (c).

As the prognostics in this disease are sometimes deceitful; I shall subjoin three cases, remarkable for the different progress, and

continuance, of the distemper.

In the month of May, 1760, I visited a foldier terribly afflicted with the scurvy. He was thought to be dying, and was incessantly calling out for death, to relieve him of his

K 3 anguish.

⁽c) Mr. Murray's remark.—The gums especially are left considerably affected, either by being eat away, and leaving the teeth too bare; or remaining lax, and covering too much of them; and being subject to bleed on the slightest touch.

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anguish. I never beheld a more miserable object, nor a person in such acute pain.

After lamenting with tears, his wretched and agonizing condition, he informed me, that he had been first seized, about two months before, with a fevere pain in his back; which he imputed to hard labour. He had however continued to do the military duty, until about fix days before I faw him, when a hardness and blackness appeared on the infide of his arm; foon after his knees became fwelled, and fo painful as to confine him entirely to his bed. After which the difease encreased with an amazing rapidity. Upon examining his body, I found the joints of both knees swelled, contracted, and immoveable; the pain in those parts was fo exquifite, as well as in his back, arms, and indeed throughout his whole body, that the least attempt towards a change of posture was almost insupportable to him. His pains were incessant, both night and day, so that he never flept till towards morning, and even then his agony permitted him but very short repose.

Both legs and arms were of a livid hue. His right arm indeed was quite black from the elbow to the wrift. In the left arm, the wrift fill retained its motion, but a black flain, furrounding the elbow, had rendered that joint altogether inflexible, and the most gentle touch of it gave excruciating pain.

The

Chap. III. Of the prognostics of the scurvy. 135

The night before I faw him, a foft white fwelling had rose suddenly on the back of his right hand, which was also extremely painful to the touch. The flexor tendons of that wrift were as hard as wood, and quite motionless. A large hard swelling without any discolouration, surrounded the first joint of his right thumb. His legs were quite black, and on some parts of them arose small watery bladders, with almost the appearance of a mortification. His ancles, though not discoloured, were racked with violent pain. His legs, arms, and thighs, were covered with numerous raifed spots, in some places red, in others black; while livid and red flat specks of a larger fize, feeling rough, and falling off in scales, spread themselves over his back, breaft, and hips: he appeared a leper in his body.

Though the fpots on the trunk were not fo numerous, nor fo much elevated above its furface, as the miliary pimples on his extremities, yet no part but the head feemed unaffected. His pulse was feeble and quick;

his tongue moist.

This is a case, where, by a most rapid progress of the scurvy, a person in the full vigour of youth, was reduced in the short period of a few days, to the greatest misery and affliction. His recovery was as remarkably sudden, for in three weeks he returned to his duty.

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Some

136 Of the prognostics of the scurvy. Part II.

Some weeks afterwards, he accosted me in the street, with a salute of thanks, for the care I had taken of him; but I could not recollect his person. He then appeared a robust healthy vigorous man of 22 years, and had no other remains of the scurvy, but an eruption on his back, and breast, of numerous pimples, white on the top, and discharging when broke a watery humour which gave him no uneasiness.

In contrast to the former I shall subjoin another case, where the progress of the dif-

ease was remarkably slow.

On the 21 June, 1760, John Macgottin was landed at Haslar, from the Richmond frigate, who had laboured under the fcurvy above 12 months. He was first seized on the coast of North America, April, 1759, with a gnawing pain in his ancle. That joint grew fo extremely weak, that he compared himself to a person, who after a long journey on foot, could neither stand nor walk. His legs swelled much towards evening, Other scorbutic signs appeared afterwards, especially a boil upon his right knee, which discharged blood and purulent matter. The difease continued to harass him till the frost began in winter, when he thought himfelf fomewhat better.

But in March, 1760, when the thaw came on, the scurvy suddenly attacked him, with greater violence than ever. And on the first

of

Chap. III. Of the prognostics of the scurvy. 137

of April he was fent to the hospital at Halifax, where he languished six weeks, growing every day worse. When his ship, the Richmond, was ordered to England, he carnestly desired to return in her. His request was granted, and being taken out of bed, he was carried on board, and after a sive weeks

paffage landed at Haslar hospital.

Being put to bed with fome difficulty, I found his spirits revived at the pleasing idea of being on shore again. He told me his body was tolerably well, and that all his complaints were confined to his legs. This poor man, upon the least motion of his body, even in bed, fell into long and dangerousfits of fainting, attended with violent fweats, which hung upon him in large drops, warm at first, then turning cold and clammy. His whole skin was tinged with yellow. The pain in his back was troublesome, but not so acute as the pains in his lower extremities, which prevented his having any fleep in the night. His legs were much extenuated, of a dark red colour, and overspread with elevated spots of the same hue. His ancles were of a dark livid die, and hard. This hardness and colour extended over the soles of his feet even to his toes, which were quite black. He had also a cough, and the scorbutic pain of the breast, in its usual feat. His face was bloated, and fwelled. forepart of his gums was ulcerated, corroded,

and

138 Of the prevention of the scurvy. Part II.

and wasted away; the other parts were spungy, jagged, and detached from his teeth. Notwithstanding this severe accumulation of complicated misery, his disease soon took a favourable turn, and in two months he was perfectly reestablished in health, and dischar-

ged from the hospital.

Francis Gennard, a Frenchman, for three years was feldom or never free from this difease. He was a patient at Hastar hospital in the beginning of the year 1759, and went from thence to fea, where, though he abstained entirely from falt food, and lived chiefly on biscuit boiled in water, with wine, yet the fcurvy encreased upon him to a great height. On which account he was fent to Hallifax hospital, there he remained three months, and left it without being cured. On the 13 November of the same year, he was again fent to Haslar hospital, where he continued two months, in which time he was confiderably relieved, but at last discharged as unfit for the fea fervice.

CHAP. IV.

The prophylaxis, or means of preventing this difease, especially at sea.

OR the preventing of this disease at land, a warm, dry pure air, with a diet of easy digestion, consisting chiefly of a due mix-

ture

ture of animal and vegetable substances (which is found to be the most wholesome food, and agreeable to the generality of mankind) will

for the most part prove sufficient.

Those who are liable to it by living in marshy wetfoils, and in places subject to great rains and fogs; and others who inhabit unwholesome damp apartments, as the lower floors and cellars of a house in winter, should remedy these inconveniencies by keeping constant fires, to correct the hurtful moisture; which will still prove more effectual for the purpose, if made of aromatic woods. is rather adviseable for persons threatened with this malady, to remove into dry, chearful, and better-aired habitations. Their principal food in fuch a case should be broths made of fresh flesh-meats, together with plenty of recent vegetables, if they can be procured; otherwife of preferved roots and fruits. Their breadought to be made of wheat-flour, fufficiently leavened, and well baked; and at their meals they are to drink a glass of good found beer, cyder, wine, or the like fermented liquor. The observance of these directions, together with moderate exercise, cleanliness of body, and contentment of mind, procured by agreeable and entertaining amusements, will prove sufficient to prevent this disease from rifing to any great height, where it is not deeply rooted in the constitution.

In towns or garrisons when besieged, offi-

cers should take care that the beds, barracks, and quarters for the foldiers, be kept dry, clean, and warm, for their refreshment when off duty; and that their men be fufficiently provided with thick cloaks and warm cloaths, for shelter against the inclemency of cold, and rains, when necessarily exposed to them. The ammunition-bread should be light, and well baked, and their other provisions as found and wholesome as possible. To correct the too gross and solid quality of these, they would do well to join vegetables, even the most common, and fuch as are to be met with on the ramparts, with their other food. This precept becomes still more necessary, when the garrifon's provisions in store are spoiled or unfound; in which case the use of vinegar is recommended by feveral authors. Backfrom's advice, of fowing the feeds of the antifcorbutic plants (a), so that they may grow up with the grass on the ramparts, will, upon this occasion, be found very beneficial. They can indeed be under no difficulty in procuring fome of the most falutary of them at all times, if they are provided with their feeds, such as the garden-creffes; which in a few days, even in their apartments, will supply them with a fresh antiscorbutic salad. When the army is in the field, they generally meet with fuch plenty of wholesome vegetables, as are fufficient to prevent this disease from becoming

coming fatal to many of them, except in

desert and depopulated countries.

But the prevention of this calamity at fea, and the prefervation of a truly valuable part of mankind, viz. the feamen of all nations, from its fatal and destructive malignity in long voyages and cruises, is what in a particular manner demands our attention, and has exercised the genius of some of the most eminent physicians in all parts of Europe

for above a century past.

A German who had acquired a confiderable fortune in the East-Indies, by being Dutch Governor of Sumatra, was so sensibly touched with pity and humanity for the many afflicted failors he had observed in this disease, that, imagining the art of chemistry, which at that time made a great noise in the world, might probably furnish some remedy for their relief, he erected and endowed a perpetual professorship of that science at Leipsic. He nominated his countryman Dr. Michael, a very great chemist, who was the first university professor of chemistry in Europe; and remitted him a considerable sum of money, in order to bear the expence of his experiments, with a promise of a much greater, in case he succeeded in the discovery of a remedy for prevention of the scurvy at sea. The Doctor spent an incredible deal of time and labour in preparing the most elaborated chemical medicines.

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medicines. Volatile and fixed falts, spirits of all forts, essences, elixirs, electaries, &c. were yearly sent over to the East-Indies; nay, even the quintessence (which became afterwards a celebrated specific for the scurvy in Germany) of the chemical oil of the seeds of scurvy-grass. But all proved inessections

Bontekoe recommended to the Dutch failors a strong alcaline spirit; Glauber (b) and Boerhaave, a strong mineral acid, viz. the Spirit of sea salt. The Royal navy of Great Britain has been supplied, at a considerable expence to the government, by the advice of an eminent physician, with a large quantity of elixir of vitriol; which is the strong mineral acid of vitriol combined with aromatics. Wine vinegar was likewise prescribed upon this occasion by the college of physicians at London, when confulted by the Lords of the Admiralty; which differs from all theformer, being a mild vegetable acid procured by fermentation. Vinegar has been indeed much used in the fleet at all times. Many ships, especially those fitted out at Plymouth, carried abroad with them cyder for this purpose, upon the recommendation of the learned Dr. Huxham. The latest proposal to the Lords of the Admiralty was a magazine of dried spinage prepared in the manner of hay. This was to be moistened and boiled in their food. To which

it was objected by a very ingenious physician (c), That no moisture whatever could restore the natural juices of the plant lost by evaporation, and, as he imagined, altered by a fermentation which they underwent in

drying.

Moreover, all the remedies which could be used in the circumstances of sailors, that at any time have been proposed for the many various diseases going under the name of a scurvy at land, have likewise been tried to prevent and cure this disease at sea: the effects of several of which, besides the before-mentioned, I have myfelf experienced, viz. falt-water, tar-water, decoctions of guajac and sassafras, bitters with winter's bark, and fuch warm antiscorbutics as can be preferved at fea; viz. garlic, mustard-seed, pulv. ari comp. and spirit of scurvy-gras; which last was formerly always put up in sea-medicine chests. I have also in various stages, and for different fymptoms of this distemper, made trial of most of the mineral and fossil remedies which have been recommended for the fcurvy at land; fuch as mercury, steel, antimony, vitriol,

⁽c) Dr. Cockburn.—The Doctor's judgment is fully confirmed by experience. We find the college of physicians at Vienna sent to Hungary great quantities of the most approved antiscorbutic herbs dried in this manner; which were found to be of no benefit. Many of these would have their virtues as little impaired by drying as spinage, e.g. marsh tresoil. Kramer tried almost every species of dried herbs to no purpose. Vid. part 3. chap. 2.

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and fulphur. But, before I mention the refult of these experiments, and the observations made upon the effects of feveral remedies that have been most approved of in this disease, it may not be amiss to take notice, that the want of fuccess hitherto in preventing this fatal malady at sea, seems chiefly owing to these two causes.

If, The methods of preservation have been put in practice too late; that is, when the difease had already made its appearance; it being generally then that elixir vitriol, vinegar, cyder, and other antifcorbutic medicines, were administered: whereas certain precautions feem necessary to prevent the first attacks; it being found, that almost all difeases are easier prevented than removed.

2dly, Too high an opinion has been entertained of certain medicines recommended by physicians at land, rather from a prefumption founded on their theory of the disease, than from any experience of their effects at sea. Indeed the causes which they were supposed to obviate, were often none of the true and real occasions of the distemper. Thus lime-water has been long fince prescribed to correct the too great quantity of fea-falt necessarily used by failors. And the college of physicians at London gave it as their opinion, that Lowndes's falt made from brine, was preferable for falting fea-provisions, to that made of feawater.

water, even to the bay-salt; from a sufpicion of some noxious qualities in this salt which might occasion the scurvy. Spirit of sea salt, elixir of vitriol and vinegar, were deemed proper antidotes to the rank and putrid state of sea-provisions, and water; or perhaps to the putrescent state of the humours in this disease.

But whatever good effect for the last purposes these may be supposed to have had in a fmaller degree; yet experience has abundantly shewn, that they have not been fufficient to prevent this disease, much less to cure it. And the same may be said of many others. The consequence of which is, the world has now almost despaired of finding out a method of preventing this dreadful calamity at fea; and it is become the received opinion, that it is altogether impossible in long voyages, either to prevent or cure it. But it is furprifing, that this ill-grounded belief, fo fatal in its confequences, should have gained credit, when we fee people recovering from this difeafe every day (even in the most deplorable condition, and in its last stages) in a short time, when proper helps are administered. I have already given an instance of seventy people cured in the bad air of a ship, without being landed (d). I shall hereafter produce other instances of this disease being T. cured

cured at fea, though these must have occurred to every person who has had occasion in long voyages to be conversant with scor-

butic cases (e).

But what is sufficient to convince the greatest sceptic, that this calamity may be effectually prevented, is the present health-fulness of Newfoundland, the northern parts of Canada, and of our factories at Hudson's bay. In those parts of the world, the scurvy was formerly more fatal to the first adventurers and planters, than it was ever known at sea; which facts I shall have occasion prefently

(e) Many inflances have already been given in Mr. Ives's journal, part 2. chap. 1. In the year 1759, the Newark, a ship of 80 guns, was almost constantly at sea for nine months. Towards the latter end of that time, after cruising four months off Cadiz, many of the company became much afflicted with the scurvy. All of whom were perfectly

recovered at sea by the following method.

Each patient was allowed an orange and a lemon every day; they eat the pulp, and afterwards with the peel rubbed the swelled and painful parts of their body. For breakfast they had water gruel, for supper slummery with sugar, and wine in both. At dinner they had portable foup, and about ten messes of broth made with fresh beef during the cruife. On the first appearance of the scurvy, they took occasionally for a purge, a decoction of tamarinds with fena, if the following powder, ordered to be taken every night and morning, did not render it unnecessary. Cremoristartari scrupulum, salis tartari semiscrupulum. Misce. This powder was taken in half a pint of the decost. lignorum. An infusion of sage, acidulated with elixir of vitriol, was used for a gargle; fuch as complained of great pains in their limbs took a sweating bolus at bed-time, composed of ten grains of camphire, with double the quantity of theriaca veneta, drinking after it a large draught of decoet. lignor. and at other times, instead of the bolus, from half an ounce to fix drachms of Spiritus mindereri.

fently to mention, and account for. And as it is a fatisfaction to know that this difease may effectually be prevented and cured at fea, so it is likewise an encouragement to the utmost diligence in discovering, and putting in practice, the means proper for these

purposes.

It being of the utmost consequence to guard against the first approaches of so dreadful an enemy, I shall here endeavour to lay down the measures proper to be taken for this end, with that minuteness and accuracy which the importance of the subject, and the prefervation of fo many valuable and useful lives, justly demand; and at the fame time shall, as much as possible, avoid offering any thing that may be judged impracticable, or liable to exception, on account of the difficulty or disagreeableness of complying with it. And, lastly, I shall propose nothing dictated merely from theory; but shall confirm all by experience and facts, the furest and most unerring guides.

What I propose is, first, to relate the effects of several medicines tried at sea in this disease, on purpose to discover what might promise the most certain protection against

it upon that element.

The medicine which fucceeded upon trial, I shall afterwards confirm to be the surest preservative, and most efficacious remedy, by the experience of others.

I shall

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I shall then endeavour to give it the most convenient portable form, and shew the method of preserving its virtues entire for years, so that it may be carried to the most distant parts of the world in small bulk, and at any time prepared by the failors themselves: adding some farther directions, given chiefly with a view to inform the captains and commanders of ships and sleets, of methods proper both to preserve their own health, and that of their crew.

It will not be amiss further to observe, in what method convalescents ought to be treated, or those who are weak, and recovering from other diseases, in order to prevent their falling into the scurvy; which will include some necessary rules for resisting the beginnings of this evil, when, through neglect or want of care, the disease makes its ap-

pearance in a ship.

As the falutary effects of the prescribed measures will be rendered still more certain, and universally beneficial, where proper regard is had to such a state of air, diet, and regimen, as may contribute to the general intentions of preservation or cure; I shall conclude the precepts relating to the preservation of seamen from this disease, with shewing the best means of obviating many inconveniencies which attend long voyages, and of removing the several causes productive of this mischief.

The

The following are the experiments.

On the 20th of May 1747, I selected twelve patients in the fcurvy, on board the Salifbury at fea. Their cafes were as fimilar as I could have them. They all in general had putrid gums, the spots and lassitude, with weakness of their knees. They lay together in one place, being a proper apartment for the fick in the fore-hold; and had one diet common to all, viz. watergruel fweetened with fugar in the morning; fresh mutton-broth often times for dinner; at other times light puddings, boiled biscuit with fugar, &c. and for fupper, barley and raisins, rice and currants, sago and wine, or the like. Two of these were ordered each a quart of cyder a-day. Two others took twenty-five drops of elixir vitriol. three times a-day, upon an empty flomach; ufing a gargle of it for their mouths. Two others took two spoonfuls of vinegar three times a-day, upon an empty stomach; having their gruels and their other food sharpened with vinegar, as also the gargle for their mouth. Two of the worst patients, with the tendons in the ham quite rigid (a fymptom none of the rest had) were put under a course of sea-water. Of this they drank half a pint every day, and fometimes more or less, as it operated, by way of gentle physic: Two others had each two oranges and one lemon given them every day. Thefe they L 3

they eat with greediness, at different times, upon an empty stomach. They continued but six days under this course, having confumed the quantity that could be spared. The two remaining patients, took the bigness of a nutmeg three times a-day, of an electary recommended by an hospital-surgeon, made of garlic, mustard-seed, horse-raddish, balsam of Peru, and gum myrrh; using for common drink, barley-water boiled with tamarinds; by which, with the addition of cream of tartar, they were gently purged three or four times during the course.

The consequence was, that the most sudden and visible good effects were perceived from the use of oranges and lemons; one of those who had taken them, being at the end of six days sit for duty. The spots were not indeed at that time quite off his body, nor his gums sound; but without any other medicine, than a gargle for his mouth, he became quite healthy before we came into Plymouth, which was on the 16th of June. The other was the best recovered of any in his condition; and being now pretty well, was appointed to attend the rest of the sick.

Next to the oranges, I thought the cyder (g) had the best effects. It was indeed

not

(g) Extract of a letter from Mr. Ives.

I judge it proper to communicate to you, what good effects
I have observed in the scurvy, from the use of cyder and sea-

not very found. However, those who had taken it, were in a fairer way of recovery than the others at the end of the fortnight, which was the length of time all these different courses were continued, except the oranges. The putrefaction of their gums, but

water, during the last cruise I made in the western squadron, with my honoured benefactor Admiral Martin. But as I do not pretend to have taken notice of any thing more than merely a palliative benefit from them, I think, without mentioning particular cases, it will be sufficient for me to inform you, that in our preceding cruise with the western squadron, his Majesty's ship Yarmouth, of 70 guns and 500 men, was not only distressed with the scurvy in common with other ships, but, in spite of all my endeavours, lost in it a proportioned number of men. Upon our return from that cruise, I took an opportunity to represent to the Admiral, that as vegetable juices of all forts were from experience found to be the only true antiscorbutics, and I had myself formerly experienced the good effects of apples, it was reasonable to presume that cyder must certainly be of service. This suggestion agreed with fome accounts the Admiral had received from others : and he with great readiness bought, and put under my care, several hogsheads of the best South Ham cyder. During the next cruife, each fcorbutic patient had daily a quart or three pints of cyder; and as many of them as I could prevail on, took twice a-week three quarters of a pint of sea-water in a morning. In all other respects I treated them as I used to do patients in the fcurvy; which you well know from the conversation which has often passed betwixt us on this subject, was with fquill vomits, pills composed of soap, squills, garlic, &c. elixir vitriol. and other medicines fuited to the different stages and symptoms of the malady. In one word, we had, this cruise, as many scorbutic patients as any other ship, in proportion to our complement of men. But although all the rest buried a great many, some to the number of 20, others 30, 40, 50, and upwards; yet the Yarmouth did not bury more than two or three; and these at the latter end of the cruise, all our cyder having been expended for a week or ten Upon our arrival at port, we fent to the hofpital a great many in very dreadful circumstances,

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but especially their laffitude and weakness, were somewhat abated, and their appetite

increased by it.

As to the elixir of vitriol, I observed that the mouths of those who had used it by way of gargle, were in a much cleaner and better condition than many of the rest, especially those who used the vinegar; but perceived otherwise no good effects from its internal use upon the other symptoms. I. indeed never had a great opinion of the efficacy of this medicine in the fcurvy, fince our longest cruise in the Salisbury, from the 10th of August to the 28th of October 1746; when we had but one patient in the scurvy, a marine, who, after recovering from a quotidian ague in the latter end of September, had taken the elixir. vitriol. by way of restorative for three weeks; and yet at length contracted the difease, while under a course of a medicine recommended for its prevention.

There was no remarkable alteration upon those who took the electary and tamarind decoction, the sea-water, or vinegar, upon comparing their condition, at the end of the fortnight, with others who had taken nothing but a little lenitive electuary and cream of tartar occasionally, in order to keep their body lax, or some gentle remedies in the evening, for relief of their breast. Only one of them, while taking the vine-

gar,

gar, fell into a gentle flux at the end of ten days. This I attributed to the nature of the disease, rather than to the use of the medicine.

It may be now proper to confirm the efficacy of these fruits by the experience of others. The first proof that I shall produce, is borrowed from the learned Dr. Mead (b).

" One year when that brave Admiral Sir " Charles Wager commanded our fleet in the " Baltic, his failors were terribly afflicted " with the fcurvy: but he observed, that " the Dutch ships then in company were much more free from this difease. He could impute this to nothing but their different food, which was stock-fish and gort; whereas ours was falt fish and oatmeal (i). He was then come last from the Mediterranean, and had at Leghorn taken in a great quantity of lemons and oranges. Recollecting from what he had often heard, how effectual these fruits were in the cure of this distemper, he ordered a cheft of each to be brought " upon deck, and opened, every day. The " men, besides eating what they would, mixed the juice in their beer. It was also their constant diversion to pelt one 66 66 another with the rinds, so that the deck

⁽b) Discourse on the scurvy, p. 111.

(i) The sirst is seldom now put on board ships of war, and of the last English sailors cat but little.

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"was always strewed and wet with the fragrant liquor. The happy effect was, that he brought his failors home in good health."

I have been favoured upon this occasion, by different gentlemen, with many instances of the like good effects of these fruits in this disease at sea; particularly by Mr. Francis Russel, now surgeon general to the island of Minorca, in a cruise performed by the Princess Caroline off the islands of Sardinia and Corsica; where, according to his relation, some of these fruits got at Vado, preserved great part of the crew, which otherwise must undoubtedly have perished.

An ingenious furgeon being in the Guern-fey ship of war, when extremely distressed by the scurvy (k), has the following observation in his letter upon it. "I have great reason to believe, that several lives were absolutely preserved, when we were at fea, by a lemon squeezed into six or eight ounces of Malaga wine mixed

" with water, and given twice a-day."

I am informed, it was principally oranges which so speedily and surprisingly recovered Lord Anson's people at the island of Tinian. Of which that brave, and experienced commander was so sensible, that, before he left the island, one man was ordered on shore from

⁽k) See the case of that ship, chap, 1. p. 57.

from each mess to lay in a stock of them

for their future preservation.

My ingenious friend Mr. Murray, who has favoured me with fo many useful observations upon this difeafe; and has had the greatest opportunities of being acquainted with it, as he for a confiderable time attended the naval hospital at Jamaica, whilst our great fleets were in the West-Indies, and was likewise surgeon of the Canterbury, expresses himself thus in his letter. "As " to oranges and lemons, I have always found them, when properly and fufficiently used, an infallible cure in every stage and species of the disease, if there was any degree of natural strength left; and where a flux was not joined to the other scorbutic symptoms. Of which we had a most convincing proof, when we arrived at the *Danish* island of *St*. Thomas (1); where fifty patients belonging to the Canterbury, and feventy to the Norwich, in all the different stages of this distemper, were cured in little more than twelve days, by limes alone; " where little or no other refreshments " could be obtained."

Perhaps one hiftory more may fuffice to put this matter out of doubt.

"In the first voyage made to the East"Indies (m), on account of the English
"East-

⁽¹⁾ See the former part of this letter, chap. 1. p. 63, 64.
(1) Vid. Harris's collection of voyages, and Purchas's collection, vol. 1. p. 147.

156. Of the prevention of the scurvy. Part II. East-India company, there were employed four ships, commanded by Captain James Lancaster their General, viz. the Dragon, " having the General and 202 men, the " Hector 108 men, the Susan 82, and the "Afcension 32. They left England about the 18th of April; in July the people were taken ill on their passage with the scurvy; by the 1st of August, all the " ships, except the General's, were so thin " of men, that they had scarce enough to hand the fails; and, upon having a con-" trary wind for fifteen or fixteen days, "the few who were well before, began also to fall fick. Whence the want of hands was fo great in these ships, that 66 the merchants who were fent to dispose of their cargoes in the East-Indies, were obliged to take their turn at the helm, and do the failors duty, till they arrived at Saldania (n); where the General fent his boats, and went on board himself, to affift the other three ships; who were in fo weakly a condition, that they were hardly able to let fall an anchor, nor could they hoift out their boat without his affistance. All this time the General's ship continued pretty healthy. The reafon why his crew was in better health " than the rest of the ships, was his having " the juice of lemons; of which the Gene-

" ral having brought fome bottles to fea, he gave to each, as long as it lasted, three

" fpoonfuls every morning fasting. By this he cured many of his men, and pre-

" ferved the rest: so that although his ship

"contained double the number of any of

"the others; yet (through the mercy of

"God, and to the preservation of the other

" three ships) he neither had so many men

" fick, nor lost so many as they did."

Here indeed is a remarkable and authentic proof of the great efficacy of juice of lemons against this disease; as large and crouded ships are more afflicted with it, and always in a higher degree, than those that are small and airy. This little squadron lost 105 men by the scurvy. Upon its afterwards breaking out among them when in the East-Indies, in a council held at sea it was determined, to put directly into some port where they could be supplied with oranges and lemons, as the most effectual and experienced remedies to remove and prevent this satal calamity.

I cannot omit upon this occasion observing, what caution is at all times necessary in our reasoning on the effects of medicines, even in the way of analogy, which would feem the least liable to error. For some might naturally conclude, that these fruits are but so many acids, for which tamarinds, vinegar, sp. sal. el. vitriol. and others of the

fame

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same class, would prove excellent succedanea. But, upon bringing this to the test of experience, we find the contrary. Few ships have ever been in want of vinegar, and, for many years before the end of the late war, all were supplied sufficiently with el. vitriol. Notwithstanding which, the Channel fleet often put on shore a thousand men terribly afflicted with this difease, besides fome hundreds who died in their cruifes. Upon those occasions tar-water, salt water, vinegar, and el vitriol. with many other things, have been abundantly tried to no purpose: whereas there is not an instance of a ship's crew being ever afflicted with this difease, where the before-mentioned fruits were properly, duly, and in fufficient quantity, administered.

Some new preservative against the scurvy might in this treatise have been recommended; several indeed might have been proposed, and with great shew of the probability of their success; and their novelty might perhaps have procured them a favourable reception in the world. But these fruits have this peculiar advantage above any thing that can be proposed for trial, that their experienced virtues have stood the test of near 200 years. They were providentially discovered, even before the disease was well known, or at least had been described by physicians. Ronseus, the sirst writer

writer on this subject, mentions them (q); and observes, that in all probability the *Dutch* sailors had by accident discovered the efficacy of this remedy, when afflicted with the scurvy, in their return from *Spain* loaded with these fruits, especially oranges. Experience soon taught them, that by thus eating part of their cargo, they might be restored to health. And if people had been less assiduous in finding out new remedies, and trusted more to the efficacy of these fruits, for preventing this satal pestilence to seamen, the lives of many thousand sailors, and others (r), (especially during the last war) might in all probability have been preserved.

We are told, that at the fiege of *Thorn*, when this calamity raged with great violence in the town, it was the last and most earnest petition of the diseased, that some of these

fruits

(q) Epist. 2.

(r) Vid. Kramer's observations, part 3. chap. 2. the best ever made on this disease; which abundantly confirm all that is here advanced. In a book published afterwards he makes the following remarks. The scurvy is the most loathsome disease in nature; for which no cure is to be found in your medicine chest, nor in the best-furnished apothecary's shop. Pharmacy gives no relief, surgery as little. Beware of bleeding; shun mercury as a poison: you may rub the gums, you may grease the rigid tendons in the ham, to little purpose. But if you can get green vegetables; if you can prepare a sufficient quantity of the fresh noble antiscorbutic juices; if you have oranges, lemons, or citrons; or their pulp and juice preserved with sugar in cases, so that you can make a lemonade, or rather give to the quantity of three or sour ounces of their juice in whey, you will, without of er statement of the pulp and in the pulp and in the pulp and in the pulp and in the preserved with sugar in cases, so that you can make a lemonade, or rather give to the quantity of three or sour ounces of their juice in whey, you will, without of er statement of the pulp and in the pulp

fruits might be permitted to enter their gates, as the only hopes of life, and last comfort of the dying patient (s). In this disease, when drugs of all forts are nauseated and abhorred, the very fight of these fruits raise the drooping spirits of the almost expiring patient. I have often observed (upon feeing scorbutic patients landed at our naval hofpitals) that the eating of them was attended with a pleasure easier to be imagined than described. Hence Lord Delawar, a very great fufferer in this disease (in the relation of his case to the Lords and others of the council of Virginia) very pathetically expresses himself thus. "Heaven has kindly or provided these fruits as a specific for the " most terrible of evils (t)."

As oranges and lemons are liable to fpoil, and cannot be procured at every port, nor at all feafons in equal plenty; and it may be inconvenient to take on board fuch large quantities as are necessary in ships for the preservation of the men from this and other diseases; the next thing to be proposed, is the method of preserving their virtues entire for years in a convenient and small bulk. It is done in the following easy manner.

Let the fqueezed juice of these fruits be well cleared from the pulp, and purified by standing for some time; then poured off from

the

⁽s) Bachstrom observ. circa scorbutum, p. 15. (t) Purchas, vol. 4. p. 16.

the gross sediment: or, to have it still purer, it may be filtrated. Let it then be put into any clean open vessel of china or stone-ware, which should be wider at the top than bottom, fo that there may be the largest surface above to favour the evaporation. For this purpose a china bason or punch-bowl is proper, and generally made in the form required; all earthen glased vessels are unfit, as their glasing will be dissolved by the acid. Into this pour the purified juice; and put it into a pan of water, upon a clear fire. Let the water come almost to boil, and continue nearly in that state (with the bason containing the juice in the middle of it) until the juice is found to be of the consistence of a thick fyrup when cold. The flower the evaporation of the juice the better; and it will require at least twelve or fourteen hours continuance in the bath heat, before it is reduced to a proper confishence.

It is then, when cold, to be corked up in a bottle for use. Two dozen of good oranges, weighing five pounds four ounces, will yield one pound nine ounces and a half of pure juice; and when evaporated, there will remain about five ounces of *rob* or extract; which in bulk will be equal to less than three ounces of water. So that thus the acid, and virtues of twelve dozen of lemons or oranges, may be put into a quart bottle,

and preferved for feveral years.

I have

I have now some of the extract of lemons which was made four years ago. And when this is mixed with water, or made into punch, few are able to distinguish it from the fresh squeezed juice mixed up in like manner; except when both are present, and their different tastes compared at the same time; when the fresh fruits discover a greater degree

of fmartness and fragrancy.

If it be judged of any confequence to preferve the perfect fragrancy of the fruit, I have found, by experiments, that there are feveral ways of doing it. They who intend this extract for making punch, may infuse some of the fresh peel of the oranges or lemons into the spirit before it is used. I have known fome who distil brandy themselves from their spoiled wines, throw these peels into the still. Either of the methods makes a most agreeable and fragrant punch with the rob. The effential oil of the rind is thus fo fubtilifed, and incorporated with the spirit, as to be itself converted as it were into a purer spirit. And it will not then have the heating quality, nor affect the head afterwards so much as the simple oil may do, when taken in too great a quantity.

But, for this purpose, I find it is sufficient to add a very small quantity of the outer peel to the extract a little before it is taken off the fire, and there will be all that is requisite to make it entirely equal to the freshest fruit;

in so much that the nicest taste will hardly be able to distinguish any difference. Its virtues (as must appear to any one so far conversant in chemical principles, as to know there is nothing more lost here than water, with a scarce perceptible acid) will be found nothing inferior to the fresh fruit (x).

In this manner prepared, it must be kept in bottles, where it will remain good for several years. When made in a proper place and season, it will come very cheap; and our navy may be supplied with it at a much easier rate than any thing as yet proposed. Thus the rob of limes may be prepared in the East or West-Indies solely by the heat of the sun. Those fruits, which in many parts

(x) This I think cannot be doubted by any person who has used it, or who will take the pains to make proper comparisons and trials with it, and the freshest orange or lemonjuice. Indeed the benefit presumed to be derived from the slavour is so small, that the plain extract is quite sufficient. Officers by putting in a little of the candied peel in their punch, will give it the agreeable slavour wanted. But there is another and very elegant method of obtaining and preserving the entire virtues of the lemon or orange skins. Rub the outside of the skins against a piece of loaf-sugar. The inequalities on the surface of the sugar serve

tial oil is contained. This effence flows plentifully out, and is imbibed by the fugar. When one part of the fugar is fufficiently impregnated and wet, scrape it off with a knife, and put it into a bottle: repeat the same operation until the whole effence is extracted from the rinds. The sugar does not in the least impair or alter its aromatic virtues; and in this manner it will keep good for many years. When mixed with the juice or rob, the whole virtue of the fruit is

obtained.

as a greater, and tear open the little cells in which the effen-

of the world will only cost the labour of pulling them, must be taken from the trees during the rainy months; as for feven or eight months in the year, during the dry feafons, in those countries, their juice is harsh and apt to gripe. A number of them being collected, a fmall flice should be cut off from the fruit at the end next to the stalk, and the juice extracted by means of a lemon squeezer. The juice is then to be put into a well feafoned cask, from which, after standing some days, it may be drawn clear from the fediment at bottom and the fcum at top. If needful, it may be afterwards strained, and then exposed to the heat of the fun in large, flat, evaporating vessels of china or stone-ware, so that in a few days, from twelve quarts of depurated juice, one quart of rob, of the confistence of honey, may be obtained. It will be found extremely wholesome on all occasions, but especially to correct the newly distilled rum and other spirits allowed failors in warm climates, and will not only make them more palatable, but, what is a matter of much greater moment, will convert these poisonous pernicious draughts into a fovereign remedy for, and a preservative against a scorbutic habit of body.

Since the fecond edition of this treatife, feveral accounts have been transmitted to me concerning the efficacy of these fruits in the

fcurvy

Chap. IV. Of the prevention of the scurvy. 165 scurvy at sea, especially during the last war.

Mr. Ilair, now surgeon of the English factory at Lisbon, in a letter dated 8th April, 1760, from on board the Southampton in Quiberon Bay, informs me, "That many of the men in that ship were af-" flicted with the scurvy, as he supposed " from floth and idleness, and a depression " of spirits, from being pent up in a ship, " without having any pleafure, amusements, or variety. But having purchased a quantity of lemons, he daily distributed them to his fcorbutic patients, who were then to the number of ninty three. They fucked the juice, and kept the peels constantly applied to their gums. The effect was " furprifing; many whose spungy and putrid gums wholely covered their teeth, 1 661 and who could not rife from their beds without fainting, were in a few days able to walk the deck, and foon afterwards returned to their duty. Those whose tendons were much contracted, and others who had bleedings at the nofe and mouth, reaped no less benefit from those " fruits."

and you was both a separate boy or

Extract of a letter from Mr. Robert Moubray, furgeon of the America, dated at Pondicherry in the East Indies, 26th September, 1760.

"The scurvy, as I mentioned before, " began about the end of May, and conti-" nued with us till the 8th of July. There were then between 40 and 50 with vari-" ous complaints and appearances of it. " Some having fore mouths and stiff hams with spots; others swellings in the joints of the knees and the ancles, with excruciating pains in the legs; others again fcorbutic ulcers without any other fymptoms. I luckily kept fome lemon juice 56 got at Madeira, and with the affistance of Captain Haldane, who gave me any quantity Iwanted, we palliated the fymptoms; for I ordered the scorbutic patients two spoonfuls of this juice, three times a "day, with a proper diet, in which I followed the directions you was fo kind as to give me. "On the 8th of July we put into Mada-

"On the 8th of July we put into Mada"gascar, a very pleasant fruitful island,

"We here staid fifteen days to water, and refresh the sick, whom we sent on shore."

"And with plenty of oranges, milk, and fresh provisions, made a cure of almost

" the whole, and with the addition of the

" rob of lemons, which I made there, and fresh

" fresh provisions, we compleated the cure " in ten days after we failed. For though " feveral men of weakly constitutions, and " fuch as were aged, had the most violent " fymptoms, yet we lost not a man in that " disease. And, I flatter myself, much

" was due to their being early supplied with

" that efficacious remedy, the juice of le-

" mons and oranges."

Mr. Malcolm, furgeon of the Royal William, informed me, "that having procured, " when at fea, two chefts of lemons and one " of oranges, he cured above 50 men, who " were ill of the scurvy, all of whom return-" ed to their duty two months before they " came into any harbour; and he further " observed, that those, who were restored " to health by those fruits, were not so sub-" ject to a relapfe, as others who obtained " health by means of fresh broths, wine, "flummery, &c. given at fea. His method was to allow each man two lemons " a day; the juice of which they drank " mixed with fmall beer, and the remain-" ing rind and pulp they eat entirely. He " is of opinion that lemons, and even "their juice kept for some time in bottles, "though a little spoilt, exceeds all other 66 remedies in the fcurvy, and may cure it " at fea."

The following relation I received from a person on board the Chichester.

"That M 4

" That ship sailed 6th November, 1759, from Plymouth, and was in the Bay of 66 Biscay till June, 1760. During this long " continuance at fea, several of the people " became fcorbutic. The boatfwain's mate " and one Elder were both very ill, and " were cured by lime juice, ten weeks be-" fore they put into a port. Four patients extremely ill and confined to bed were " restored to health in a fortnight by means of fresh lemons; sixteen others were " cured entirely by lime juice. Some re-" covered by greens got upon the French islands, but not so quickly as the others did by lemons, and the former were much " more liable to relapfe."

The following extract of a letter dated 11th November, 1760, from the Torbay in Plymouth Sound was published in several of the monthly Magazines. " We have been constantly cruifing from "the latter end of July till this time, ha-" ving no fick, except a few fcorbutic, whose fymptoms daily grew worse, till happily relieved by lemons, which our 66 captain bought of a Spaniard at sea, and distributed to them twice a day, which 66 produced fo remarkable a change, that 66 above a dozen with black fwelled and contracted legs, putrid gums, and difficulty of breathing, were in two weeks fo far re-" covered, as to have no appearance of the feurvy left except weakness."

I proceed

I proceed to some farther directions given for the information of commanders of ships, and those who have proper conveniencies, who may relieve the fick, upon occasion, with their stores. And it may be proper to acquaint them, that most berries, and feveral fruits, when gathered two thirds ripe on a dry day, while the fun shines, if put into earthen pots, or rather in dry bottles, well corked, and fealed up, fo that no air or moisture can enter, will keep a long time, and, at the end of a year, be as fresh as when new pulled. These the captains may fupply themselves with at every port in England, from the pastry-cooks shops, with proper directions for their prefervation. Green gooseberries will keep for years, if, after being put into dry bottles, their moifture is exhaled, by putting the bottles flightly corked into a pot of water, which is allowed to come nearly to boil, and continue fo for a little; when a very small quantity of juice yielded by them is to be thrown away, and they are afterwards kept close stopt. These would prove a sovereign remedy for the fick: and, by fuch methods, ships in long voyages, when touching at any place for water and provisions, may likewise lay up a sea-store of berries and fruits.

Various wholfome herbs and roots may likewise be preserved at sea, according to the

the different directions given for that purpose in books of chemistry and confectionary; fuch as fmall onions in a pickle of vinegar, &c. Most green vegetables, as coleworts, leeks, French beans and others. are preserved, if put when dry in clean dry stone-jars, with a layer of falt at bottom: then a thin layer of the vegetable covered with falt, and fo alternately, till the jar is full; when the whole is to be covered with falt and well preffed down with a weight, and its mouth close stopt, that no air or moisture may enter. At using, the falt is to be washed off by warm water; when the vegetable, after keeping a year, will be found fresh and green. I have been told, that in this manner that fovereign remedy, the Greenland fourvy-grass (y), may be preferved, and that pots of it have been brought over quite fresh and green. Another article, which would be of great benefit in the British navy, and may be purchased at an eafy rate for the ship's company, is what the Dutch call zourhool, or four cabbage, which is prepared in the following manner.

In the month of November take the white winter cabbage, cut it in quarters and remove the stalk which runs in the middle of it, then shave it with a large sharp knife into as thin slices as possible;

the

⁽y) Vid. a letter concerning it, chap. 5. also the extraordinary case of a sailor related by Bachstrom.

the Dutch have an instrument for the purpose; the thinner the cabbage is fliced, the better it will be preserved. Grease then the infide of the cask, so as to stop up all the pores, and cover the fides and bottom with a thin paste of leaven'd flour; on the bottom strew first a little falt, then fill up the cask with alternate layers of salt and cabbage, until it is near full. The quantity of falt between each layer of the cabbage must be very small, and care should be taken that each layer of the cabbage, upon being put into the cask, be well beat and strongly pressed down by a wooden pestle or mallet, fo that 200 cabbages may be put into a small cask. On the uppermost layer of cabbage put a cloth, and immediately above that a tight wooden cover, fo as no air may enter. Above this cover put a confiderable weight, to press the cabbage down. When it has flood thus for a fortnight, and the juice of the cabbage is collected at top and becomes four, dip a clean cloth in the juice repeatedly, and wring it out, till in this manner all of it is removed. Then after being washed, the former cloth and cover are again to be replaced, and the pressure renewed, which operation is to be repeated occasionally as the juice becomes offensive, pouring each time a small quantity of water upon the top in place of the offensive juice which is thrown away.

This

This four cabbage will keep good for an East-India voyage; I fent a small cask of them to Newfoundland, and in eight months afterwards had part of them returned to me

good and well relished.

Every common failor ought to lay in a flock of onions. When this flock is exhausted the captains may have recourse to their pickled small onions; and with sowls, mutton, or portable soop, and the source bage before-mentioned, of which the Dutch (2) sell great quantities, they will

be

(2) The Dutch failors are faid to be less liable to the scurvy than the English, owing to this pickled vegetable carried to sea. Vid. Krameri epistolam de scorbuto. A mess of this given twice a-week boiled in their peas, seems all the addition requisite to be made to the present victualling of the navy, for the prevention of the scurvy. It may be objected, That its faltness would rather prove hurtful in this disease. But this objection is sounded upon a very salse opinion, that sea-salt produces the scurvy: the contrary of which has been fully demonstrated, chap. 1. and is confirmed by numberless instances of giving salt water in very bad scurvies, both at sea and land, with great benefit to the patient. See Mr. Ives's letter, p. 150. Dr. Grainger's, chap. 5.

The truth is, that vegetables preferved in this manner, fo far from being falt after duly washing them in warm water, require to be eat with falt: they are thus preferved quite succulent and green. Their virtue is the same as if taken fiesh out of the garden, and the method infinitely superior to the drying of them, like hay, as was proposed; which would entirely destroy their antiscorbutic quality. To the surgeon's necessaries in long and sickly voyages, it would not be amiss to add some boxes of portable soop; and at all times some pots of preserved small onions, together with some French prunes. When the scurvy begins to appear, or even when its approach is apprehended, the

be able to make a broth at fea, almost the same with what is used in our naval hospitals for the recovery of scorbutic patients. I have known several captains, who, by carrying out boxes filled with earth, which stood in their quarter-galleries, were supplied with wholsome salads, after being some months out of harbour. A cask of rich garden-mould put occasionally in boxes on the poop, and sown with the seeds of garden-cresses, would furnish these at any time.

ship's company ought to have some of these onions, or when there are none on board, fome garlic or shellor (supplied them by the surgeon) boiled in their water-gruel; and of this they ought to make a hearty breakfast. They should be put on 1/2 or 1/3 short allowance of falt beef and pork, to be eat with mustard and vinegar, and have a small quantity of ginger given them by the surgeon to mix in their puddings, which will make them much lighter. In lieu of their falt meat, the purser may supply them with cyder, wine, or the spruce beer afterwards recommended; or if they are served with brandy, he may furnish them with fugar and a fufficient quantity of orange-juice to make it into punch. A gallon of orange juice is fold for fix shillings, which allowing an ounce of it to each man in the day, will ferve 128 men, and the expence be three-pence half-penny a week for each; whereas when at 1 short-allowance of beef and pork, there becomes $4\frac{2}{3}$ d. per week due to each man. This overplus of the short-allowance money will be fufficient to enable the purfer to furnish molasses for the punch of the ship's company, as also a mess of either pickled coleworts or four cabbage twice a week. The peas ought always to be ferved out in full allowance, and this mefs would be greatly improved by the addition of dried mint or thyme, garlic, &c. Thus might the scurvy in all probability be prevented in our navy, without putting the government to a farthing expence, by a commutation of provisions and necessaries, at the discretion of the purser and surgeon, and a proper regulation of their diet.

174 Of the prevention of the scurvy. Part II. time. Such seeds will likewise grow on wet cotton.

Befides fresh and preserved fruits and vegetables, fermented liquors of all sorts are found beneficial in this disease. Some of them however are possessed of more eminent antiscorbutic virtues than others. By my own experience, I found cyder the best of any I have had occasion to try. And it would seem an excellent method of preserving other vegetable juices (gooseberries, black-berries, currants, elderberries, or even Seville oranges) to ferment them into made wines or beer. These I am persuaded will be found preservable to many medicated antiscorbutic ales and wines by infusion, that might here be recommended.

It is pretty remarkable that the first northern colonies in America were extremely subject to this disease. Of the first colony sent over to New England, near one half perished by the scurvy in the year 1621. But the French especially upon their first planting Canada and New France, suffered so much by the mortality it occasioned in the winter-season, that they had often thoughts of abandoning their settlement; even the natives were not exempted from the ravage of this cruel evil (a): whereas not only these colonies, but others in a colder and more northern situation, are at present quite

healthy. One would be apt to ascribe this, to the many hardships and inconveniencies infant-colonies are necessarily exposed to; were it not, that we fee many poor people wintering yearly in Newfoundland, where this disease was formerly so fatal, who from poverty suffer equal, if not greater hardships, than the first planters during the feverity of winter. They are, for almost eight months in the year, destitute of fresh vegetables, and live entirely on salt and dried fish, coarse bread, and much worse diet than a ship's provisions. Their air is likewise groffer, colder, and moister, than is commonly the case at sea. Notwithstanding which they keep pretty free from the scurvy. And this is ascribed to their common drink, which is spruce beer.

It is indeed a matter of furprise, and was taken notice of before as the most convincing proof that this calamity may be prevented any where, that the people who reside at our factories in Hudson's bay, are so very healthy; where, according to Ellis's account, they sometimes do not bury one man in seven years out of a hundred that are in their four factories (b): whereas the first adventurers to that part of the world, who wintered in the same places, were almost all destroyed by the scurvy, viz. Capt. Monk's people in 1619 (c), Capt. Thomas Fames's

(b) See voyage to Hudson's bay.

⁽c) Churchill's collection of voyages, vol. 1. p. 541.

Fames's at Charleton island in 1631 (d), and most others who attempted it. A fet of failors, confifting of feven men, was left two winters fuccessively, in the years 1633 and 1634, at Greenland and Spitzbergen, by way of experiment: but every man of them next fpring was found to have died of the scurvy (e). The unhappy fate of those people, who all perished in great misery, and left behind them a journal of their piteous misfortunes, feems to have been owing to the world's ignorance of the diftemper at that time, and the pernicious methods recommended to them for prefervation; which we find were chiefly purging antiscorbutic potions, distilled spirits, viz. brandy, and the like; all which infallibly increased the malady, and hastened their unhappy end.

From these unsuccessful trials it was judged impracticable to pass the winter in those parts. But the following accident afforded the most convincing proof of this mistake. A boat's crew, consisting of eight men, was by chance left behind, and obliged to winter in almost the same place (f). The season proved equally rigorous and severe. The poor men had nothing to trust to for sustenance but what their guns procured, and were

every

⁽d) Harris's collection of voyages, vol. 2. p. 406.

⁽e) Churchill's collection, vol. 2. p. 347. (f) Churchill, vol. 4. p. 745.

every one of them preserved alive, by being unprovided with what might have been deemed the necessary (though in effect pernicious) means of subsistence and preservation. They had no brandy, no coarse hard

biscuit, nor salted flesh-meats, &c.

But what deferves particular attention is, that those who live on the coarfest diet and falted flesh meat while using spruce beer at the same time, are seldom or never afflicted in the coldest and most northern countries. It was observed, that when the custom of drinking wine more freely was introduced into Holland, this diftemper became lefs frequent (g). And among the first cures recommended to the world was wine, with wormwood infused in it (b); which was afterwards long used by way of prevention in Saxony, where this evil was peculiarly frequent (i). Fermented vinous liquors of any kind are indeed very beneficial. But it appears by the experience of the northern American colonies, as also of several other countries, that spruce beer is not only an effectual preservative against it, but an excellent remedy.

The antiscorbutic virtue of the fir was, like many other of our best medicines, accidentally discovered in Europe (k). When

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(b) See part 3. chap. 1. Olaus Magnus.

⁽g) Bruneri tract. de scorbuto.

⁽i) See part 3. chap. 2.

⁽k) Vid. Moellendrock de arthritide waga scorbutica, p. 116. Etmulleri opera, p. 2.

the Swedes carried on a war against the Muscovites, almost all the soldiers of their army were destroyed by the scurvy, having putrid gums, rigid tendons, &c. But a ftop was put to the progress of this disease, by the advice of Erbenius the King's phyfician, with a fimple decoction of fir-tops; by which the most deplorable cases were perfectly recovered, and the rest of the foldiers prevented from falling into it. It also proved an excellent gargle for the putrid gums. From thence this medicine came into great reputation, and the common fir, picea major, or abies rubra, was afterwards called pinus antiscorbutica. Pinus sylvestris, the mountain-pine, has likewise been found to be possessed of very great antifcorbutic virtues, of which a late accident has furnished a convincing proof. In the year 1736 two squadrons of ships fitted out by the court of Russia, for the discovery of a north east passage to China, were obliged to winter in Siberia. One of them commanded by Demetrius Laptiew, not far from the mouth of the river Lena, was attacked by the fcurvy. The men in their diffress by chance found near them this tree growing in the mountains, and experienced it to have a most surprising antifcorbutic virtue. At the same time while Alexius Tschirikow was passing the winter in the river Judoma, a confiderable number of his men were also dreadChap. IV. Of the prevention of the scurvy. 179 dreadfully afflicted with this disease. After various fruitless attempts to discover a remedy able to put a stop to this cruel disaster, he at length accidentally had recourse likewise to the pines which grew plentifully on the mountains, by which all his men were recovered in a few days. In some the medicine proved gently laxative, in others it affected the body so mildly, that its operation was scarce sensible (1).

I am inclined to believe, from the defcription given by Cartier of the ameda tree, with a decoction of the bark and leaves of which his men were so speedily recovered, that it was the large swampy American spruce tree (m). The shrub spruce, of that fort vulgarly called the black, which makes the most wholesome beer, affords a balsam superior to most turpentines, though known

only to a few phylicians.

A fimple decoction of the tops, cones, leaves, or even green bark and wood of these trees, is an excellent antiscorbutic medicine: but it will I am apt to think become much more so when fermented, as in making spruce beer. By carrying a few bags of spruce or its extract to sea, this wholesome

(1) Gemelin flor. Sibiric. p. 181.

⁽m) See part 3. chap. 1. Hackluit's collection of voyages, vol. 3. p. 225. Some have believed it to be the faffafras, others the white thorn; but, in his third voyage, he mentions the white thorn, and makes the ameda to be three fathom in circumference.

drink may be prepared at any time. But where it cannot be had, the common firtops used for fuel in the ship, should be first boiled in water, and the decoction afterwards fermented with molasses, in the common method of making fpruce beer; to which a fmall quantity of wormwood and horseraddish root (which it is easy to preserve fresh at sea) may be added. The juice of the cocoa nut-tree was experienced to be of very great benefit to feveral persons afflicted with the scurvy, on board the Dolphin and Tamer ships of war, in their late voyage round the world. By an Admiralty order a trial was made in those ships of malt made into wort, which was given to feveral patients in the scurvy, without producing any very considerable effect.

In the Swallow floop of war the wort was also tried in her passage round the world, and one person, who was afterwards a patient at Haslar hospital, informed me, that when very ill of the scurvy on board that ship at sea, he was restored to health by the

plentiful use of wort.

We come now to observe what treatment is proper for convalescents, or those who are recovering from tedious fits of sickness, by which they have been greatly exhausted and weakened. Here the prevention of the scurvy will depend much upon two articles, viz. a proper diet and exercise. The former

must

must be adapted to the strength of their digeftion. The latter must be suited to the debilitated state of their body. We find, that when people in this condition at land, and much more so in a ship at sea, are put directly upon a gross diet, they are very apt to become scorbutic. To such we in the first place recommend wheat flour to be given in lieu of falt beef and pork, and even of biscuit. This flour must be well leavened, and baked into fresh bread, inflead of being cooked into puddings and dumplings, as is common; which will be found an excellent restorative at sea; and is, together with vegetables, eagerly longed for by scorbutic persons. It may appear a direction not eafily to be complied with, to people unacquainted with the conveniencies in a ship. But many ships, especially all ships of war, have an oven; and it is a practice with most captains, to have their own bread baked twice or thrice a-week, while at fea. When the patient is extremely weak, a little of this new baked bread should be boiled in water, and made into a panada; adding a few drops of the juice or extract of lemons, and a spoonful of wine.

The other parts of diet should consist of oat-meal and rice gruels, slummery, roasted or stewed apples, and if they can be got, stewed barley, with raisins, or currants, sago and wine, &c. but particularly the

N 3 four

four cabbage, and fmall onions, boiled with the portable foop made weak. Their food and drink ought to be sharpened with the orange or lemon-juice; which at fuch times proves highly grateful, both to the palate and stomach of the patient; who by degrees, as his appetite, but especially as his strength increases, is to be indulged with more folid food: though he would do well to abstain for some time from grosser animal fubftances, and take no other restorative but wine, with the proper vegetable and lightest meally substances. A caution is here requisite, that to the convalescents nourishment should be given often, but in a fmall quantity at a time, fo as not to oppress the organs of digestion.

It is likewise a matter of great importance, that the body weakened by preceding sickness, be by degrees habituated to exercise. Nothing can be more inhumane, than to oblige a poor weak man to undergo more fatigue than his strength can bear; nor any thing more prejudicial to his recovery, than, under the notion of preserving him from the scurvy, to force him too soon to do the ship's duty. On the other hand, a total neglect of exercise is peculiarly productive of this disease. The rule then is, to proportion the continuance and degree of it, to the strength and condition of the patients; to begin with the most gentle and easy at

first,

first, and proceed gradually to the more violent, as they acquire strength. Thus, after being accustomed to sit up some hours through the day in bed, they are then to be allowed to get out of it, and continue fo, as long as their strength, without great weariness or fatigue, will permit. They may next be put into a fling hung below the fore-castle, or betwixt the decks; which will affect them not only by caufing a change of air, but at the same time give spirits and refreshment. They will afterwards be able to bear riding on a thin board laid betwixt two chefts, where the fuccessive concussions of the body will be more fenfibly perceived. And it is to be remarked, that as weak perfons at land generally find the greatest benefit from exercise in a coach, chaise, or on horseback; so the convalescents in a ship, especially scorbutic patients, will receive much more advantage from this exercise, than from walking, running, or any kind of muscular motion, in which a great exertion of strength is required. The reason feems to be, because these latter are attended with a waste and dissipation of spirits; and are generally followed with weariness and fatigue: whereas, by the frequent fucceeding agitations of a jolting machine, the circulation is promoted, and the fibres of the body strengthened, and the weakened animal functions invigorated, without any confi184 Of the prevention of the scurvy. Part II, confiderable loss of spirits, which such peo-

ple cannot well bear.

These and the like exercises are absolutely necessary to prevent the scurvy in those who have hurts, sprained joints, ulcers on their legs, and other complaints which confine them below, and disable them from walking upon deck; in which case they soon become scorbutic, when living on the gross sea-diet.

Others upon recovery may at the same time they practife these exercises, be made to walk a little upon deck, fo as not to overfatigue themselves; and afterwards be put upon fuch duty as their condition will permit them to perform: having recourse, if needful, to elixir of vitriol, bitters, the bark, or steel, according as they may be requisite to perfect their strength and recovery. To which, however, nothing will contribute for much, and at the same time more effectually prevent the scurvy, as bodily exercise; which will be found to agree best with them when the stomach is not full, or rather just before meals. It is observed, that when fcorbutic patients use no exercise, the disease advances very fast upon them at sea: therefore, if they can bear only the most gentle motions, these are often to be practised; and the body is not to be permitted continually to rest, without some fort of action. When confined to bed, frictions may

be

Chap. IV. Of the prevention of the scurvy. 185 be used upon their limbs and body. Let it however be remembered, that too violent exercise is as dangerous and pernicious in this disease as too little.

I proceed now to point out the means of obviating or removing many inconveniencies which occur at fea, especially those which are observed to be productive of this disease. A most powerful and principal cause of which (n), and indeed of many others at sea, is the moisture of the ship, especially during a long continuance of thick close weather, or a stormy and rainy season, the essections when combined with cold; these require in a particular manner to be guarded against, and are either immediately to be corrected, or their essects and consequences prevented.

As to the first: Although we cannot at once remove a person into another climate, or into the land-air; yet we can easily give to the air he breathes, a more salutary quality. Fire made with any of the aromatic woods, or even with common fir or pine, juniper, and the like, effectually corrects a moist state of the air, and at the same time renders it more salutary in other respects. It is observable, that betwixt the tropics, the rainy seasons prove the most unhealthy and dangerous, not only at land, but in

fhips. In this case, without any inconvenience or danger, a clear open fire, properly fecured, when in harbour, might be lighted betwixt decks, to stand upon the batchways in a stove; which would greatly purify the air, and destroy its hurtful moisture at all times, without much increasing the heat, if burnt in an open place. There is certainly less danger, nay, less heat, attending fuch a fire burning for an hour or two in the day, guarded by a centinel, than having fifty or fixty candles lighted in an evening: or burning them constantly night and day in the orlope, and other dark places: whence fuch parts of the ship are continually replete with the naufeous effluvia of rank corrupted tallow. It would feem indeed no difficult matter, to convert even these into medicinal prefervatives against the scurvy, and other diseases proceeding from a bad, moist air, by the addition of some proper aromatic in their composition. The burning of spirits will be of fervice in the fick-apartment. The captains, or those who can afford them, will find the myrtle wax candles the best to use in a moist sea-air.

Next to be confidered, are the best means of preventing the effects and ill consequences of such air, when not corrected by the methods proposed.

Fire, as before observed, is the most certain consumer of humidity. We moreover

find,

find, that the exhalations of aromatics, though, properly speaking, they do not dry up moisture, yet obviate the pernicious effects of it upon the human body. Thus we often observe many asthmatic persons greatly affected with a moist wind, and in a damp season hardly able to breathe; but upon throwing a little benzoin, or the like aromatic gum, on a red-hot iron, by which their chamber is well perfumed, and the air replete with these aromatic particles, they are fenfible of relief, and breathe much more freely. So here I would recommend a most simple and easy operation, to be performed in fuch damp feafons in a ship; which is, putting a red-hot bar of iron into a bucket of tar, which should be moved about, fo that all the ship, once or twice a day, may be filled with this wholesome vapour.

Persons for proper security, during an unwholsome moist state of the air, should go well cloathed, and shift often with dry linen. Dryness and cleanliness of body are excellent preservatives against the scurvy. They should use the sless-brush, or frictions with a dry cloth on their skin; eat a slice of raw onion, or a head of garlic, in a morning before they are exposed to the rains and washings of the sea. Whatever promotes perspiration is useful; and perhaps nothing will do it more effectually at this season than a raw onion. Nor ought

these

these farther precautions to be omitted, of using proper exercise in the day, and having their bedding kept always dry, not binding it up close together till sufficiently aired and dried.

When they are threatened with the approach of this disease, they ought, at going to bed, to promote a gentle sweat, by draughts of water-gruel and vinegar, with the addition of lemon-juice, or its extract. They should use plenty of mustard and onions with their victuals; and may then indulge more freely in the use of fermented vinous liquors, viz. cyder, beer, and wine: but when of necessity obliged to drink spirits, they ought always to dilute them-a little with water, and add the acid of oranges or lemons. These directions will preserve seamen not only from the scurvy, but from many other diseases, as coughs, colds, &c. arising from an obstructed perspiration in a moist air.

The water and provisions being often in fuch an unsound and corrupted condition, as may be supposed to increase the virulence of this disease, it will not be improper to add some considerations for preventing and remedying these inconveniencies.

Water is with difficulty preferved fweet at fea (r); and fometimes cannot even be procured

⁽r) See Dr. Alfton's excellent method of preserving water good and wholesome at sea by quick-lime, part 3. chap. 2.

procured wholesome at places where ships may touch (s). There are two sorts of bad water. The first is, putrid and stinking; the other a hard heavy water that is not putrid, but which will not incorporate with soap, or break peas when boiled in it. Both

are very unwholesome.

Water at fea will fooner or later putrify, according to its various contents, and the manner in which it is kept. It has been experienced, that, by fuming the cafks with burning brimftone, water will keep longer fweet. Some add a little oil of vitriol to it; which likewife preferves it a longer time from putrifying. It is a common practice, and a very good one, to throw a little falt into water while warming; and as it grows hot, there will arife a thick unwholesome feum, which is carefully to be taken off as it cafts up. And this should always be done in boiling oat-meal.

When the water is become putrid and stinking, one manner of sweetening it is, by taking out the bungs of the casks, exposing it to the air, and shaking, and pouring it from one vessel into another. Another way is, by letting it quickly come to boil; taking

care

also Dr. Hales's curious philosophical experiments, and his

directions to preserve water and provisions at sea.

⁽s) In this case the sea-water should be rendered fresh by distillation, agreeable to the methods recommended in the postscript to my Essay on the Diseases of Europeans in hot Climates.

care not to boil it too long, which would expel the most active parts of the water. This will still be rendered sweeter, and more wholsome, when a little of the juice or extract of lemons is added to it; which is much safer for common use, than the spirits of vitriol and sea falt, recommended by some on this occasion. The lemon juice will likewise contribute to precipitate the earthy particles of the water, and the various animalcules with their sloughs, now de-

stroyed by the boiling.

But as this may be found troublesome to do for a whole ship's company, there are other methods of fweetening putrid water: for this purpose the Rev. Dr. Hales recommends blowing showers of air through the water by means of bellows of a peculiar construction. Sometimes, as is observed by my learned friend Dr. Home (s), by keeping fuch water close and warm in a large vessel, it will become fit for use when the process of putrefaction is once over; by which the noxious and putrescent particles having been made quite volatile, will fly off of themselves: as is often the case with the Thames water. A large cask of stinking water closely bunged up, should be put near the fire-place in a ship, and kept in a degree of warmth fufficient to promote this process of putrefaction: the effect of which will

will be, that the putrescent particles rendered thus volatile, will all quickly fly off; and the putresaction by this means being stopt, the water becomes wholsome and fit for use.

Besides this putrid water, sailors are often obliged to use, for want of better, a hard water, as it is called, replete with faline. and earthy particles; which is found to be very unwholfome, though fresh and sweet. To make this wholfome and falutary, the stone filtre used on board several ships is very proper, where the water does not abound with vitriol or fea-falt. But its operation is tedious, and it can never pass a fufficient quantity for the use of a ship's company. Sand is the fittest body for separating these unwholsome particles. Upon this occasion I must again refer to the ingenious essay on the Dunse Spaw (t). This method,

⁽t) P. 120. The Austrian army, when incamped in Hungary, find no good water, unless when on the banks of some great river. So, when obliged to use lake-water, they purify it in this manner. A long small boat is divided into several different apartments by cross partitions. They fill them all, except the last, with sand. The boat is put into the lake. A hole level with the surface of the water is made in the end of the boat, which lets the water into the first division; from this it gets into the second, by a hole made in the bottom of the first partition; from the second it runs into the third, through a hole in the top of the second partition; and so alternately above and below, that it may be obliged to pass through all the sand. At the top of the last division there is a pipe, through which the water comes, at pleasure, as pure as from a fine spring. And thus seamen when abroad meeting with such water, may purify even the hardest kind

192 Of the prevention of the scurvy. Part II. method, however, is troublesome and tedious: for if the fand is fea-fand before it is made use of, it must be purified of all its falts: and it has been found that the fand when used for some time loses its power of foftening water. For other methods of purifying unwholfome water, fee my Essay on preserving the Health of Seamen in the Royal Navy. When the beef and pork are fpoilt, it will be most adviseable not to eat of them; or at least to correct their bad qualities, by using at the same time plenty of vinegar, oranges, lemons, and vegetables. I am afraid any method that might be proposed to sweeten putrid flesh, will be found not eafy to be put in execution at fea.

There are feveral ways generally known of recovering spoiled beer, wines, and other fermented liquors; and as these liquors are all of them antiscorbutic, they are well worth preserving. Yeast should be carried to sea for this and other purposes. When it has grown stale by keeping, a little flour, sugar, salt, and warm beer, are to be mixed with it; or even hot water and sugar only. By adding to it the grounds of strong beer, and

of it. And for the same purpose in a house he proposes some casks divided in the middle, and filled with sand; into the first of these divisions the water may be thrown as into a cistern; the casks ought here to be joined by pipes; and by making it thus circulate through eight or ten divisions filled with sand to the top, a pure spring may be had any where.

and letting the mixture stand a little before the fire, it will serve either to work beer or bake bread. In case there is no yeast on board, honey, sugar, leaven or molosses, may be used to renew the fer-

mentation of liquors.

The dry provisions, such as oat-meal, peas, and flour, are apt to be corrupted and spoiled by weevils, maggots, and by growing damp and mouldy. These destructive vermin may be killed by the fumes of brimstone in a close place. But even then the weevils, when eaten, are found to be very unwholfome, and are faid to have fuch a corrofive quality, as, when applied to the skin in the form of a poultice, to raise blisters like the Spanish flies. When no better provisions can be procured, the flour, oat-meal, or peas, should be put in a heap, and then these vermin will come to the top of it; so that a great number of them may be taken away, and fifted out with the dust. The parcel is to be stirred and heaped again, until as many of them as possible are removed. The oats and peas may be turned over into a wire-sieve, which will let the dust and weevils pass through it.

Sound good bread is the most important article at sea. The biscuit, when mouldy and spoiled, should be put into a warm oven, or under the fire-place, till the moisture is quite exhaled, and the animalcules in it de-

O stroyed.

194 Of the cure of the scurvy. Part II,

ftroyed. These are afterwards to be well beat out of it, and then it may be eat dipt in vinegar. Close casks preserve biscuit and other dry provisions best; and all possible care should be taken to keep them dry, and free from dampness.

CHAP. V.

The cure of the disease, and its symptoms.

F proper precautions were taken for the prevention of this difease, and the rules which have been laid down for that purpose were complied with, we should perhaps seldom hear of the scurvy proving highly epidemical and fatal either at sea or land. But all mankind have not the benefit of a pure wholesome air, and warm dry lodgings, with proper conveniencies to guard against the inclemency of different weather and seasons. Many live upon such gross food as is not properly adapted to their digestive powers, to their constitutions, and the exercise they use, and hence are liable to an attack of the scurvy. It is proper therefore to prescribe the cure of it, as well as the prevention.

Indeed the general method of it, and the best remedies, have already been taken notice of in the former chapter. Experience shews, that the cure of the adventitious scurvy is very

fimple,

simple, viz. a pure, dry, warm, air, with the use of green herbage or wholesome vegetables, almost of any fort; which for the most

part prove effectual.

Hence the first step to be taken towards its removal either at fea or land, is change of air. We are upon this occasion informed by several authors, of an old custom practised in some parts of Norway. They expose fuch as are afflicted with the fcurvy in a neighbouring defart island in the summerfeafon, where they live chiefly on cloudberries (a); and it is remarked, that by eating plentifully of these, together with the change of air, they are restored to perfect health in a very short time. In that country, the fruits gathered by the diseased themselves, are reputed of the greatest virtue. It no doubt is the case, as by this means the patient breathes the falutary country-air in the open fields. Thus a free and pure country-air, with fuch moderate exercise as at the fame time conduces to the agreeable amusement of the mind, is requisite (b).

Their

(a) Fruelus chamamori.

⁽b) Mr. Murray. - What may be called rustication, is the most beneficial exercise. When I was at the island of St. Thomas, all the scorbutic patients who could bear with being moved, were almost every day sent on shore by day-break. Those who could not walk were carried a little way into the woods, where they were laid at their ease in the shade, while those who could walk were allowed to range about the woods, and directed to crop the leaves of the trees

Their food should be of light and easy digestion. The most proper consists of broths or foops made with fresh meat, and plenty of vegetables, viz. cabbage, coleworts, leeks, onions, &c. Fresh and well-baked wheat bread must be given them. Salads of any kind are beneficial; but especially forrel, endive, lettuce, and purstain. To which may be added, scurvy-grass, cresses, or any of the warmer species of plants, in order to correct the cooling qualities of some of the former; as experience shews the best cures are performed by a due mixture of the hotter and colder vegetables. Summer-fruits of all forts are here in a manner specific, viz. oranges, lemons, citrons, apples, &c. For drink, good found beer, cyder, or Rhenish wine, are to be prescribed.

Thus, we have numberless instances of men, after long voyages, by a vegetable diet and good air, miraculously, as it were, recovered from a truly deplorable state of the scurvy, without the assistance of many medicines. For which indeed there is no

great

and shrubs as they went along. Such herbs as they found of a fragrant and aromatic smell, were put into bags. So soon as the heat of the day began to advance, they were all carried aboard. There they had water gruel prepared for breakfast, their pained or rigid limbs were well somented with a decoction of the fragrant herbs which they had pluckt; afterwards they took their lime-juice and a small quantity of rum well diluted; then went to bed for a few hours, where sleep succeeding satigue, contributed its share towards the cure.

great occasion; provided the green herbage and fresh broths keep the belly lax, and pass freely by urine, sweat, or perspiration. But when otherwise, it will be necessary to give a gentle purge at least twice a week, such as a decoction of tamarinds and prunes, adding some diuretic salts; and upon the intermediate days, to sweat the patient in a morning with boluses of camphire and theriac, and warm draughts of decoct. lign.; and, as has been usual in some of our hospitals, give twelve or sisteen grains of pil. scillit. pharm. Edin. twice or thrice through the day.

But it is here to be observed, that though the recovery of such persons seems promising and speedy at first, yet it requires a much longer continuance of the vegetable diet, and a proper regimen, to perfect it, than is commonly imagined. There are many instances of seamen who have been sent from the hospitals, after having been three weeks or a month on shore, to their respective ships, who in all appearance were in perfect health; yet, in a short time after being on board, relapsed, and became highly scorbutic. It were to be wished, that a longer continuance was allowed such men at the hospital, that their cure might be rendered more perfect.

It is indeed frequently experienced, that people once deeply afflicted are extremely apt to relapse into symptoms of this disease, in different periods of their life afterwards.

O 3 There

There are likewise particular persons who from the peculiar tendency and disposition of their constitutions, are, from much slighter causes, more liable than others to fall into the scurvy. In such cases, in order to purify the constitution from this deep-seated scorbutic taint or tendency, besides the diet and regimen before recommended, recourse should be had to other medicinal helps.

But in this place I shall more particularly

deliver,

If, The method proper to remove a fcorbutic habit of body, whether derived from

a former taint, or constitutional.

2dly, The different treatment of scorbutic patients, adapted to the various symptoms of their disease; when the urgency of such symptoms requires a particular attention; but especially when the general method of cure cannot be complied with.

3dly, I shall observe what remedies have been recommended upon good authority, and

are used in different countries.

And, 4thly, Conclude with some necessary

cautions and observations.

To begin with the first of these: In order thoroughly to subdue a scorbutic taint, the medical intentions must be to keep open by gentle evacuations the outlets and emunctories of the body, viz. the belly, urinary passages, and excretory ducts of the skin. And it is remarked, that all these evacua-

tions are most fuccessfully promoted, when

joined with an antiscorbutic diet.

Here milk of all forts, where it agrees with the constitution, is beneficial; as being a truly vegetable liquor; an emulsion prepared of the most succeed wholesome herbs: but whey, by reason of its more diuretic and cleansing quality, is rather preferable. And upon this occasion the fal polychrest. will be found a very useful addition, as it is a mild purgative, an excellent diuretic; and when taken in a small quantity, as from a scruple to half a drachm, well diluted, evacuates plentifully, either by perspiration or urine; according as its operation is directed to the skin or kidneys, by exercise, lying inbed, or keeping the body warmer or cooler.

Goats, of all animals, afford the richest whey, possessed of the greatest antiscorbutic virtues. It contains a most noble, restorative, vegetable balsam, which in a singular manner restores the constitution when weak-

ened and impaired by the fcurvy.

The fucci scorbutici of the Edinburgh and London pharmacopæia's, where the volatile acrimony of the hotter species of plants is qualified by a due quantity of the juice of Seville oranges, are likewise very proper in their season. They will be experienced yet more ferviceable, when made farther diuretic and cleansing, by being clarified with whey. Besides taking them in this manner through

0 4

the day, the patient ought to be sweated in a morning, twice or thrice a-week, by draughts of the faid juices mixed with fack-whey.

Sweat is an evacuation, from which fcorbutic persons find the greatest benefit, especially fuch as have dropfical fwellings. It is what nature pointed out to the northern Indians for the cure of this their winter difeafe (b), and is found by experience to prove a most falutary evacuation in this distemper. It is practifed with remarkable fuccess by the furgeons at the Cape of Good Hope, who have the greatest opportunity of treating fcorbutic feamen (c); is recommended by the first and best writers on this disease (d); feems to have been the most usual way of their giving the antifcorbutic juices.

There are, besides, other herbs, whose juices are here of eminent virtue, fuch as dandelion and fumitory. Many have found great relief folely from the daily and plentiful use of garden cresses. And an antiscorbutic inferior to none, is the juice of the tender fprouting tops of green wheat, in the months of May and June, mixed with the juice of

Seville oranges.

But, during all these courses, scorbutic habits will find great benefit by warm baths, in which the aromatic and fragrant plants have

(b) Vid. Part 3. chap. 1.

⁽c) Vid. Kelben's account of the Cape of Good Hope. (d) Wierus, Albertus, &c.

have been infused, viz. rosemary, marjoram, thyme, &c. and these are preferable to the usual manner of sweating them in stoves or

bagnios (e).

In the winter-time, for the cure of this difease, genuine spruce beer, with lemon and orange juice, is to be prescribed; or an antifcorbuticale by infusion of wormwood, horseradish, mustard-seed, and the like, made gently laxative by an addition of fena. must be drank when pretty fresh or new. But the spring is the most favourable season for a perfect recovery from a fcorbutic habit. The learned Van Swieten fays he has often feen whole families cured of the fcurvy in Holland, by using an ale, for common drink, in a cask of which some heads of red cabbage cut small, twelve handfulls of watercresses, or scurvy-grass, and a pound of fresh horse-radish roots had been previously infused (f).

Several mineral waters in England, particularly those of Harrigate in Yorkshire, have gained the reputation of curing inveterate scurvies, or perhaps more properly obstinate eruptions on the skin, many of which bear a great resemblance to those of the true scur-

vy.

⁽e) Murray.—There is a method of sweating, I do not observe you have taken notice of, and which is said to have proved serviceable to some of the unhappy men in the unfortunate Admiral Hesser's squadron at the Bastimentos, viz. burying the scorbutic limbs in hot sand.

(f) Commentar. in Aphor. Boerh. 1160.

vy. For the cure of these, the Newfoundland spruce beer, made of the black spruce, either fresh or dried, or from its essence, is an excellent medicine. This beer must be drank daily, and the parts affected with the eruption bathed with it night and morning.

Drinking the fea water, with fometimes the addition of a few drops of the vinum-antimoniale, and bathing in it, as also the use of warm sea water baths, have proved

serviceable.

In fuch cases, an ounce and a half of the juice of nettles (a) taken twice a day has been found of great benefit. Sulphur, though prescribed most commonly for only the common itch, is however among the best remedies for most cutaneous diseases; and may be fo mixed with the cream of tartar, as to improve its efficacy. Washes composed of camphire, lemon juice, and mercury, with almond emulsion, have often a very sudden effect in removing pimples from the face and fkin: but fuch washes are to be used with great caution. Preparations of fulphur are the most efficacious, as well as the safest external applications in obstinate eruptions on the fkin.

Having faid this much on the cure of the disease in general, I come secondly, to observe what is proper to be done for the relief and removal of its most urgent symptoms.

For an itching and spunginess of the gums, with loofe teeth, either a tincture of the bark in brandy, or a folution of alum in water will be found ferviceable in putting a stop to the beginning laxity of these parts (g). But, upon the putrefaction increasing, a gargle is to be used of barley-water, and honey of roses acidulated with some of the mineral acids. The spirit of elixir of vitriol is generally prescribed; but some have imagined sp. salis less hurtful to the teeth. The quantity of the acid must be proportioned to the greater or leffer degree of putrefaction in the parts. The fungous excrescencies must be often removed, or, if needful, cut away; and, by frequent washing, the mouth must be kept as clean as possible. Where the ulcers appear deep and spreading, they are to be checked with a touch of spirit of vitriol or of fea-falt, either by itself, or diluted, according as the patient bears it. Tincture of myrrh diluted with water is the best prefervative of the teeth and gums from the fcurvy.

In a spontaneous salivation; or, as is much oftener the case, in a scorbutic habit when a copious spitting has unfortunately been pro-

duced

⁽g) Lac is of great esteem in Germany, for laxity and sponginess of the gums. For this use the lac is boiled in water with the addition of a little alum, which promotes its solution; or a tincture is made from it with rectified spirit. Vid. New Dispensatory, or improvement of Quinsy on the article Lacca.

duced by fome mercurial medicine, where immediate danger is apprehended, fpeedy revulsion must be made from the falivary glands, by blifters applied to different parts of the body, finapisms to the soles of the feet and hams; and by clysters or gentle purges. But the impetus of the blood, is here to be determined, particularly to the pores of the skin: a defect of perspiration, generally attended with a stricture and spasm on the skin in scorbutic habits, being the true cause why the force of the mercury fo powerfully falls upon the falivary glands. For this purpose, boluses of theriac, with camphire, and flor. fulph. are to be given, and repeated every four or fix hours, in order to force a fweat; which proves the best mean of abating the strength of the salivation, and rescuing the patient from the danger of being fuffocated by it. Gargles at the same time must be used, with oxym. scill. to attenuate the glutinous saliva. When by this management the threatening danger is averted, there generally continues, for a confiderable time, a troublefome falivation, with great putrefaction in the mouth; which it is very difficult to put a stop to. It may however be palliated by keeping the belly and urinary passages open with clysters, or by diuretic and gentle physic; avoiding all strong purges. Glutinous medicines are fometimes ferviceable, viz. gum arabic, ichthyocolla,

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thyocolla, &c. diffolved in common drink. Aftringent gargles of alum, and a decoction of the oak-bark, are indifpensably necessary: as also the cort. peruv. and elixir vitriol. taken inwardly. Mean while, the strength of the patient must carefully be supported by warm mulled wines, &c. Such persons, when much exhausted, are to be confined altogether to a milk and vegetable diet.

When the legs are swelled and cedematous, gentle frictions are to be used at first, with warm flannel, or woollen cloths impregnated with the fumes of benzoin. and amber, or any other of the aromatic gums; provided the fwelling be fmall, foft, and not very painful; rolling up afterwards with an eafy bandage from below upwards. But if the legs are much swelled, stiff, and painful, they must be fomented with a warm discutient spirituous fomentation; which will afford some momentary relief, without putting a stop to the progress of the swelling: or what I have found preferable, is the fleam of the fomentation received by the member well covered round with a blanket or cloths. And this operation must be repeated night and morning. It is generally followed with remarkable suppleness and ease to the stiff, painful, and contracted joints. If fuch fwellings are not removed foon after the patient is put upon a vegetable

diet,

diet, the limb should be sweated by burning

of spirits, or with bags of warm falt.

Ulcers on the legs, or any other part of the body, require pretty much the same treatment, viz. very gentle compression, in order to keep under the fungous slesh, and such applications as have been recommended for the putrid gums, viz. mel ros. acidulated with sp. vitriol.ung. Ægyptiac. &c. (b)

Upon this subject, I have been favoured with the following letter from a surgeon of

great experience, the late Mr. Ragget.

Tellicherry Road, in the East Indies, 19th Dec. 1759.

"I went into the Weymouth a few days before the failed from Bombay; where I found many men labouring under the feurvy, with large putrid ulcers, and fome had carious bones. In our passage to the Coromandel coast they became much worse; but as the French squadron was hourly expected, we were permitted to fend only a few of them on shore, so that I had in the ship, above 80 patients afflicted with the scurvy, and bad ulcers. I gave them limes and mangoes, which palliated the symptoms and cured many without the assistance of fresh meat; of which they had in all but four meals.

"In

⁽h) Murray.—I have applied a strong tincture of the bark, and found it of great benefit lately in some scorbutic ulcers.

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"In the months of July and August, I opened near seventy large swellings in the groin, proceeding entirely from the security. These I cured on board. In the latter end of September we went to Madrass, and even there all the sick were not sent on shore. Hence in our passage to this place, our company became dreadfully annoyed with the scurvy. Several of our men from slight accidental scratches on the legs (by a quick putrefaction supervening) had the bone of their legs laid bare a considerable length, in spite of every powerful antiseptic medicine.

" of every powerful antiseptic medicine. " My method of treating fcorbutic ulcers " was to clean the fore, and foment it with a " ftrong decoction of wood ashes and vine-" gar, dreffing with myrrh diffolved in " vinegar, and in some cases where the " floughs were very deep, I dressed with warm oil of turpentine. I remarked, that to make fcarifications down to the circulating fluids occasioned the ulcers to fpread more. I therefore cut only on the " floughs, taking care not to wound any of the found veffels; and I removed as much of the extravafated fluids as I could with a clean fpunge. I gave the patients " vinegar and water for their common drink. During the inflammatory state " of the ulcer, I ordered nitre, and kept 66 the body in a lax state; when the pulse " was lowered, and there was little or no " heat of the skin, I administered the bark,

" allowing as much of it as the stomach

" would bear. If the pulse was very high,

" I bled with great caution. " By purfuing this method I did not lofe one patient of a mortified limb, though "the progress of the putrefaction was some-" times exceedingly rapid, in fo much that a fmall ulcer of the fize of a fix-pence, would fpread in forty eight hours, to eight or twelve inches in circumference, " laying feveral inches of both bones of " the leg quite bare. To exfoliate the " carious bone, I touched it with le Dran's " mercurial water. And if the caries pene-" trated deep, I perforated the bone with a " trephine, at the upper and lower part of " the caries, through its whole depth, " using the water before mentioned, which " will in a short time cause an exfoliation, if " the marrow be not very much affected."

In immoderate bleedings from the gums, nose, &c. the mineral acids, viz. sp. or el. vitrial. are to be given, and often repeated, in fmall quantities at a time; together with

fmall doses of the cort. peruv.

For pain of the limbs, in the fmall of the back, and breaft, and univerfally in most fcorbutic pains, whether fixed or wandering, the oxym. scill. is to be administered in a warm mixture; where wine must supply

the place of a spirituous cordial: and the patient, upon going to bed, should, by warm draughts of water-gruel, with vinegar, or, in place of the latter, the acetum theriacale, endeavour to force a sweat (i).

There remain two fymptoms of this difease, which are, of all others, the most obstinate to remove, even though the patient enjoys the benefit of the purest air, with the most proper antiscorbutic food and medicines. P

(i) Extract of a letter from Mr. Murray.

N. B. The letters (a), (b), (c), (d), refer to some remarks subjoined.

Untoward fortune has too often placed me among a number of scorbutic patients, where vegetables and proper diet, and even many necessary medicines, were wanting, and where the very elements were our enemies; and I have spent many melancholy hours confidering what was best to be done to overcome this enemy, and stop the progress of this often fatal, and always loathsome distemper. And although I have feldom cured my patient without vegetables; yet the relief I have given to many, amply rewarded my labour, and the reflection to this day gives me pleasure. I shall first give you my method in general, and then I can produce an instance

of its success.

Many at the time had a miliary fever, which I then judged to be purely scorbutic. But, fince the receipt of your last letter, I have altered my opinion; and submit to your decision, that there is no fuch thing as a fever that may be so termed. I was always averse to bleeding, for the reasons you give; yet if the scurvy was the primary disease (as I then judged it) preceded by high febrile fymptoms, and the habit was originally found or plethoric, I never observed any hurt from the loss of a small quantity of blood; which made a succeeding vomit always more fafe; and this was followed by a purge, either cooling or warm, as fymptoms indicated. Of the first fort were the purging falts, with fal tartar. or tartar. vitriolat. dissolved in decoet. lignorum; or infus. sennæ et tamariandor. dicines. These are, the bloody flux in fome; and in others, a violent dry cough, accompanied with difficulty of breathing, pain and disorders in the breast. last often ends in a consumption: while the former, or flux, is very troublesome to stop, and fometimes also proves fatal.

Scorbutic fluxes are not fuddenly to be flopt. They, however, are to be moderated. The tone of the intestines must be

ftrengthened:

marindor. &c. Of the last kind was infus. amar. cum senna, with the addition of a proper quantity of canella alba.

these were repeated occasionally.

So foon as the symptoms of scurvy appeared, I discharged the use of salt meat; and confined my patients to the vegetable articles of diet on board, with what fresh victuals could be had from the officers tables. Their common drink was decost. lignor. with their allowance of rum (a) put into it. The medical course I put them under, was for most part a neutral mixture of vinegar and fal tartar.; of which I gave from two to four ounces twice or thrice a-day. Spirit. mindereri was beneficial to some; but the small quantity of volatile falts or spirits carried to sea, prevented that from being a general medicine. I have also given a mixture of cremor and fal tartar. with success, and sometimes tartar. vitriolat. (b'). In violent scorbutic pains, diaphoretic anodynes of acet. theriacal. or theriac. andromach. with spirit. minderer. and oxym. scillit. I have found very serviceable: as likewise the last in particular for disorders of the thorax. In visceral obstructions I gave the ferulaceous gums, with gum. guajac. foap, and tartar of vitriol; and sometimes added only gum. guajac. and tartar of vitriol to the squill pills. The liver or spleen, or perhaps both, are sometimes affected, especially that lobe of the first, which stretches over the pylorus. Hence I have known violent pain at the pit of the stomach; and the hardness and pain I have sometimes observed at the fundus of that vifcus, leave no doubt of the pancreas being also obstructed. The mesenteric glands share the same fate. Hence, as observed in your description of this disease, towards the close of it, from these obstructions proceed violent colic-

strengthened: and small doses of rhubarb should be given occasionally; to which a little theriac. or diascord. is always to be: joined, with a view to keep up perspiration; an important point. For this purpose, decoctum fracastor. or boluses of diascord. with other warm and strengthening medicines, are principally to be given; and opium pretty freely. Mean while, the patient is supported with strong rough red wine, diluted, and

pains, jaundice, &c. all which I have feen; as also great tension of the abdomen, lienteries, &c. The appetite then begins to fail, the lungs are affected, respiration becomes contracted, the motion of the heart less vigorous, the circu-

lation languid, and placid death closes the scene.

But to return to my practice at sea: Where there was any topical pain, I fomented with a ley of wood-ashes, in which was boiled camomile and elder flowers, wormwood, rue, &c. and lemon-peel, when it could be got. For the fungous gums, I made a powder of bol. armen. alum. rup. tart. vitriol. and g. myrrh. washing them with infus. salviæ; to which I added alum. rup. and el. vitriol. or sp. sal.; which served also in ulcers, when I added honey. These last I touched frequently with a rag dipt in mel Ægyptiac. rosat. sp. sal. d. et tinet. myrrb. I dressed ulcers of the extremities chiefly with ung. Ægyptiac. mercurial. and liniment. arcæi mixed together. When the patient was altogether free from feverish symptoms, I gave three or four ounces twice a day, along with decoct. lignorum, of the tinct. ad stomachios (c) Phar. Ed.; to which I added mustard-seed and canella alba. When he began to recover, I strenuously insisted on his using exercise, and embrocated the contracted joints or tendons as you direct. Such was my general practice: and the following is an instance of its success.

Benjamin Lovelay, aged 25 years, had a continual fever in September, 1746; for which he was fent to the hospital at Louisburg; and from thence returned, to all appearance well. the 13th October following. On the 30th November (being taken ill the day before) he was feverish, and complained of

a glutinous subastringent diet. I have sometimes given four or five grains of crude alum in a diascord. bolus where the blood was evacuated in great quantity; and when it passed the stomach without ruffling, it generally did fervice. In this last case, tinet. rofar. well acidulated, and other flyptics are necessary.

I know no peculiar treatment proper in the fcorbutic dyfentery, different from what

violent pain in his bones and joints. Upon account of the feurvy being then epidemic, he was very sparingly blooded, took a vomit and was purged. Upon which the fever subfided a little; and there appeared a miliary eruption, foon after followed by the feveral scorbutic symptoms in the greatest degree; to which was added a violent pain in the pit of his stomach, inclining to the right side, often so violent as to make him shriek out. The symptoms continued upon the increase for some time; and at last he grew so bad, as to faint away upon the least motion. The antiscorbutic regimen above described was steadily pursued. His common drink was decott. lignor. acidulated with elixir vitriol. His diet was water-gruel, rice, fago with wine, and sometimes a little fresh broth or meat from the officers table. The feveral forms of medicines already mentioned, were administered as symptoms required; and I think he had almost every symptom belonging to the disease, attended with feverishness, all along till the decline of the distemper; when I added aloes and extract. gentian. to his pills, and begun the use of the tinet. ad stomachic. The bile in most chronical diseases, especially in the scurvy, is defective either in quality or quantity, and fomething must be given to supply its defects. The disease took a turn for the better in the beginning of January, and he returned to his duty on the 22d of February (d).

⁻I shall use the freedom with my ingenious friend to make fome remarks on his letter.

⁽a) Wine would probably have been better.

⁽b) The

has been recommended by authors on that difease, farther than that the use of greens, and especially of the austere and acid fruits, is to be permitted. I am informed by Mr. Christie, formerly surgeon to the naval hofpital at Port-Mahon, that, after trial of many medicines, he found an infusion of ipecacuan. in brandy, given in small quantities, often repeated, the most effectual remedy to remove it. Rhubarb-purges, flomachic bark-bitters, elixir vitriol. or the use of some light steel mineral water, will ferve to perfect a recovery in all scorbutic cases, where the patient has been much exhausted.

For fcorbutic complaints of the breaft, blifters applied to the feat of the pain are proper, together with a milk and vegetable diet, and the plentiful use of oranges and butter-milk. Expectoration must at the fame time be promoted by very small doses

(b) The medicines were no doubt properly adapted in the cases to which they feem to allude; which were fevers and scurvies: these faline neutral draughts being certainly preferable in fuch cases to the soap, squill, and garlic pills, commonly prescribed in scurvies without a sever.

(c) The medicine recommended, is truely an excellent restorative; proper for prevention of the scurvy in such as are recovering from other diseases, and to confirm the strength of scorbutic persons when in the convalescent state. But I must own a like medicine did not agree with those who were in neither of these situations to whom I gave it. Bitters of the terebinthinated kind, though dry and long kept; also all fresh and succulent plants and fruits of this quality, are nevertheless most efficacious antiscorbutics.

(d) The case is curious and singular.

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of oxym. fcillit. administered in solutions of sperma-ceti; while ease and respite from the cough is to be procured every night by

gentle anodynes.

When the scorbutic taint has been entirely fubdued, it sometimes leaves behind it other disorders; which require the same treatment as is proper for them when proceeding from other causes; together with a mixture of antiscorbutic medicines for far-

ther fecurity.

Besides the consumptive disposition already mentioned, a dropfical habit is fometimes the consequence; or, what is more frequent, the legs remain swelled, and ulcerated. In this last case, if the ulcers have been of long standing, sufficient provision being made for healing them up, by purging, and iffues near the part, an electary of the prepared crude antimony may be given, with the addition of æthiops mineral (k); and at the same time a decoction of guajac and fassafras: or, provided they are obstinate, and the gums sufficiently hardened, the patient may undergo a flow and gentle course of mercury. In scorbutic habits, I generally extinguish the mercury with a small quantity

⁽k) Murray.—In some lax habits in warm climates I have known a dose of Spanish soap bring on a salivation. With regard to scorbutic habits, I have observed in them a copious salivation induced by well prepared æthiops mineral, and have sound a large dose of sal diureticus remove it speedily.

quantity of balf. fulph. tereb. and find it succeed well, where the intention is not to raise a copious salivation. A bottle of decoction of the woods must be drank every day at the same time. This, by promoting perspiration, will assist the operation of the mercury. After this course, a few grains of sulph. aur. antim. will perhaps be necessary, evening and morning, or Dr. Plummer's medicine (1), and the continuance of the decoction of woods; which in all probability will complete the cure.

Those who complain, after having been afflicted with the scurvy, of a numbness and pain in their joints, or chronic rheumatic pains, must practise riding, swallow a spoonful of unbruised mustard seed once or twice a day, or be well sweated with a medicine now generally known under the name of Dr. Dover's powder, taken from the quantity of half a scruple to a scruple, every

night at bed-time.

It may be now proper to observe in the third place, what other remedies have been experienced of singular efficacy in this discase, and also such as are most esteemed in the different countries of *Europe*, where the scurvy prevails.

We have a remarkable relation given by Dr. Bernard Below (n) of the great virtue

(1) Vid. Medical Effays, vol. 1.

⁽n) Miscell. curios. medico-physic. academ. naturæ curios, ann. 6 et 7, obs. 22.

of herba vermicularis or wall-pepper, in this disease. He boiled eight handfuls of this herb in eight pints of old ale, to half the quantity, in a close vessel. Of this a warm draught, of three or four ounces, was taken every morning, or every other morning on an empty stomach, which produced the happy effect of curing almost all the foldiers of the army afflicted with this disease; excepting a few, who, by the feverity of the preceding winter, were reduced to a condition past recovery. He remarked, that those who were vomited easily and most plentifully by the medicine, foonest recovered. He made use of this decoction, with the addition of alum and mel. rofat. as a gargle for the gums, which were in all affected and putrid; and by this simple remedy cured above fifty, who had the tendons in the ham contracted, applying the boiled herb warm to the part. He bathed their ulcers with the same decoction, and applied the warm herb also to them.

There is an instance given by Etmuller (o) of the soldiers in a besieged garrison being greatly distressed with this disease, who were all perfectly cured by ruta muraria or white maiden-bair.

Cort. Winteran. first came into repute as an antiscorbutic from the good effects it was observed to have in the cure of Captain Winter's

⁽⁰⁾ Schroderi dilucidati phytologia.

Winter's crew when afflicted with this difease, then in company with a squadron under the command of the celebrated Sir Francis Drake.

Chelidonium minus, pilewort, or little celandine, for its supposed great virtues, has by the Germans been called schorboet rout.

In Holland the turf diggers, who are greatly subject to the scurvy, and from thence afflicted with foul ulcers and swellings in their feet, use as their constant medicine eupatorium cannabinum or hemp agrimony (p). The learned Boerhaave in Holland, is said to have prescribed for the most part to his patients in this disease new churned milk.

I have elsewhere taken notice of the pinus antiscorbutica, the spruce shrub, and their virtues. And we are informed (q) that the Swedes, ever since the surprizing recovery of their troops, when afflicted with this malady, by the use of a decoction of sir tops, esteem it altogether specific in the scurvy. The efficacy of which is surther consirmed by the experience of the people in Siberia, where both the remedy and distemper are very frequent, according to the relation of a late learned and accurate

⁽p) Vid. New Dispensatory, or improvement of Quinjy on the article Eupatorium cannabinum.

⁽q) Vid. Moellenbroek, p. 116. Etmull. Schroderi dilucia dati phytologia, p. 2. See account of it, chap. 4.

traveller (r). But the Danes (s) are faid to esteem most trifolium palustre or marsh trefoil; which they administer sometimes by itself, at other times with the addition of scurvy-grass.

In Groenland, where this difease is extremely frequent, we are told by a gentleman (t) who twice visited the country, that the natives make use of scurvy-grass (u) and

(r) Tenellas pini summitates vulgus Sibiriæ pro infallibili antiscorbutico remedio habet. Gmelin Flor. Sibiric. p. 178. (s) Vid. Act. Haff. vol. 3. obs. 75. Etmull. Schrod. dilucid. phytol. p. 104. Simon Pauli digress. de vera causa febrium scorbuti, &c.

(t) Hermannus Nicolai. Vid. Act. Haffn. vol. 1. obs. 9.

(u) Extract of a letter.

The ships who are annually employed in the whale-fishery, are of all others the best fitted out, both as to the variety and quality of their food; the voyage is short, and the seamen kept much in action: fo that bad water and decayed provisions can scarcely fall to their share. Yet it is well known, that there is no part in the world where ships crews are so liable to the scurvy, as in the polar circle. Those who are feized on their first entrance into the cold, find an increase of their fymptoms when got into the ice. The attack of the malady is here more fudden, and its progress more rapid, than any where else. The patient has seldom any cure or alleviation till the weather foftens: for the month of July is very moderate, which is almost the only pause of winter; and at this time the fcurvy-grass steps in, and performs incredible wonders. I have been an eye witness to many fcorbutics who have recovered in a few days, from what one would judge an irrecoverable state, by a plentiful use of this Greenland salad. It is much coveted by the found as well as fick. Our field and garden scurvy-grass are bitter and pungent; this is mild and esculent, resembling our sea scurvygrass, or cochlearia minima ex montibus Wallia. It is said to acquire a pungency, if transplanted into warmer countries; but

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and forrel together; and that these two herbs, put with barley or oats in broths made of fowls, or the slesh of rein-deer, have an effect to recover the diseased most surprisingly in a short time, even after hav-

ing lost the use of their limbs.

The Norway cure affords the only wellattested instance, of this distemper being fuccefsfully removed by what would feem so different from the nature of vegetables, as a fossil or earth. It is related by authors of undoubted credit (w), particularly by Petræus (x); and feems to have been known before Eugalenus had confounded most other diseases with the true scurvy; as it is taken notice of in the year 1624 by Sennertus, when Eugalenus's writings, in all probability, might not have reached Norway. It is a reddish or blackish earth, dug up near Bergen; of which, from half a drachm to a drachm is the dofe; and it is faid to operate by fweat, and cure the patient in a short time.

I shall

but this circumstance I much doubt. However, be that as it will, its efficacy in the scurvy is there an undoubted and daily experienced truth; and it may be justly deemed one of the most powerful antiscorbutics in the world. Vegetable food prevails over the sea-scurvy in all parts; but this reinstates in as many hours, as any other course requires days. I cannot dismiss these reslections, without observing how kind and provident Nature has been in the plentiful supply of this sovereign plant every where in that country. Ubi morbus ibi remedium, is an observation of antiquity; and no where more justly verified than in the present case.

(w) Vid. Wormii musæum; Bartholini epist. cent. 1. n. 89.

(x) Vid. Differt. harmonic.

I shall now conclude what I have to fay on this head with the following cautions and observations.

1/t, As to evacuations: It is to be observed, that this difease, especially when advanced, by no means admits of bleeding; even although the most acute pains, a high degree of fever, and dangerous hæmorrhages, would feem to indicate it. Nor does it admit of violent purges, which are often injudiciously administered in its commencement. The body should at all times be kept open, but chiefly by laxative food, when green vegetables cannot be obtained, viz. by barley and currants, stewed prunes, &c.; or with a decoction of tamarinds and cream of tartar, a little lenitive electary, feawater, and the like. As to vomits, though I never have had any great experience of their effects; yet, by the observation of others, squill-vomits have been found ferviceable.

2dly, Persons in the advanced stages of this disease, are not, without great caution, to be exposed to a sudden change of air; or brought up from lying a-bed below in the hold of a ship, to the fresh air, in order to their being landed. On this occasion, though feemingly pretty hearty, a glass of wine should be given them well acidulated with lemon or orange juice; which is like-wife the best cordial in their fainting sits. When

When they drop down feemingly dead, it were to be wished, that some methods were tried for their recovery; such as putting them into a warm bed; using strong stimulants, and frictions; blowing into the lungs, anus, &c. An uncommon degree of sloth and laziness which constantly accompanies this disease, is often mistaken for the wilful effect of the patient's natural disposition. This has proved fatal to many; some of whom, when obliged by their officers to climb up the shrouds have been seen to expire, and fall down from the top of the mast.

3dly, After a long abstinence from greens and fruits, a scorbutic person should be treated like one almost starved to death; that is, not permitted for a few days to eat voraciously, or surfeit himself with them; otherwise he may be apt to fall into a flux, which

often proves mortal.

Lastly, There are but few medicines carried out in a surgeon's sea-chest, which are of service in this disease. Those of the fossil or mineral kind, such as steel, antimony, and especially mercury, do manifest harm. Opiates when necessary, as in sluxes, must be given always of the warmest kind; and agree best, when, before or during their operation, a stool is procured: after which the patient is to be refreshed with wine. Where the breast was much affected, I always gave them in a draught of squill-mix-

ture; or, in case the stools were not very frequent, I added a few grains of vitriolated tartar to the opiate bolus, in order to procure a discharge that way.

After trial of many medicines, there are

but two I can principally recommend.

The first is the bark infused in wine. I gave at the same time a decoction of guajacum, with the addition of liquorice roots, which prevented the heart burn that the decoction otherwise occasioned. The bark did not always agree with the stomach; but where it did, I observed a more favourable appearance upon the gums and ulcers: and in two instances where a mortification was produced by too tight a roller, the suppuration next day was much mended. It was of use in falivations and hæmorrhages, but rather hurtful in fluxes. Warm draughts of the decoction gave always relief, if the patient fweated; in which case the bark also agreed better.

Another excellent medicine, is the oxym. scill. from which I have experienced extreme good effects. It generally kept the body lax, and promoted the secretion of urine. It gave relief to many of their complaints, particularly those of the breast, from which scorbutic patients are seldom free. I had formerly gathered a great quantity of this root when at Minorca; and having made the oxym. scillit. gave it to most of

Chap. V. Of the cure of the scurvy. 223 our patients in the year 1747, at the rate of one ounce, in the space of twenty-four hours, which gave great relief to their complaints (a).

Conclusion of Dr. GRAINGER's letter (see p. 120.) giving an account of scurvies at Fort-William.

mever used the lancet, unless the patient was uncommonly plethoric; and then a very small quantity of blood answered the purpose. I have seen fellows, who have often borne the loss of twenty ounces, faint when only six were drawn from them at this time. Upon standing, it did not separate, but appeared like the blood in malignant severs, altogether dissolved and of a livid colour. Some of the symptoms, vomits of ipecacuan. rather increased, viz. pains, faint-ishness, difficulty of breathing, bleeding of the gums, &c. Indeed it was lucky that the stomach seldom required their administration.

Purgatives, however, were found highly beneficial, though repeated every third day.

They

⁽a) The eminent antifcorbutic virtue of the squill or seaonion, at the same time that it confutes the groundless opinion of the ill effects of acrid medicines in the scurvy, in some measure confirms the efficacy of what has been recommended in the foregoing chapter, and has been so often experienced beneficial for prevention, viz. common onions, and even garlic, as in some respects they are all of similar virtues.

They not only removed the troublesome fymptoms arising from costiveness; but their operation, though fometimes pretty brisk, I never observed to impair the patient's strength, but always remarkably to abate their excruciating tortures. Although I gave at first an infusion of jalap; yet, obferving that it occasioned bloody stools, I afterwards exchanged it for a ptifan of fena, with cream of tartar; which feemed to anfwer better. One man drank falt-water every other day, and found it a ferviceable purge. Would it cure the fcurvy?

But these, though useful, were not able alone to cope with the distemper. An attentive confideration of its symptoms seemed to shew it was putrid. On this I founded my practice; and had foon the pleafure to find, that fuccess confirmed my conjecture.

The medicines I chiefly used, were, el. vitriol. to the quantity of half a dram twice a day, in water; or sp. nitr. dul. in a smaller dose. A gentle sweat was also procured by a bolus of camphire and nitre, of each half a fcruple, given every night. For this purpose too they were allowed to drink plentifully of warm fage tea; which, with the affiftance fometimes of a glass of mulled claret, feldom defeated our intentions. they did not fweat, an increase of very fætid urine supplied happily that discharge. Greens were proper; but as they could not

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be had, broths made of young flesh, kid, &c. with barley, were indulged them; whilst camomile drank like tea, afforded a truly medical breakfast. The good effect of this management was soon visible in all.

Ulcers of the gums, &c. not only required the continuance of the prescribed measures, but the bark, and cleanfing gargles, were found indispensible auxiliaries. I have applied blifters to the pained members. The practice did not answer. They brought on a gangrenous disposition in one man; which bark, and the strongest antiseptics, with difficulty put a stop to; and in all rather increased their pain. The following epithems were found highly anodyne. R. sp. è bordeo elicit. acet. acerr. ana lib. i. sp. tereb. lib. ss. sal. tart. unc. ss. M. The milder was, brandy and vinegar p. a. camphire and foap q. s. With one or other of these. the discoloured and pained places were bathed.

Their gums at the same time were not neglected. The pain of them made the men extremely importunate for relief. Of all the applications at that time used, I found the greatest service from tobacco-juice and tincture of myrrh and aloës, rubbed on them several times a-day. Alum-water, and oak-bark decoction restored their usual firmness.

In two weeks time, fometimes fooner, the fymptoms began to abate, the fpots turned Q brown,

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brown, and in four week they complained only of weakness. This, bathing in the sea, and aromatic bitters with steel, soon removed. I had the good fortune not to lose a single man.

CHAP. VI.

The theory of the disease.

E come now to explain the effects upon the human body of the several causes which are found to give rise to the scurvy. First, An intense degree of cold, such as we have sometimes during severe winters in our own country, but especially such as the crews felt who wintered at Spitzbergen and Greenland, and is common in the winters in Groenland and Iceland, is experienced to be among the predisposing causes to this disease.

The obvious effect of cold on the human body is, to constringe the whole external habit, to dry and corrugate the skin; and all statical experiments prove, that cold obstructs or diminishes insensible perspiration. People of robust constitutions by exercise may be made to perspire much more during cold weather, than at other times; but in weak persons, or those that use no exercise, and universally in all who cannot bring themselves into a degree of heat exceeding that of the atmosphere, perspiration will be lessened.

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lessend, according to the different degrees of cold to which their body is exposed; and which, when very intense, entirely stops this necessary evacuation. Hence such as use exercise, and keep warm, during cold winters, are not so subject to scorbutic complaints, as those who are weak and use none.

But it must be remarked, that cold joined with driness and purity in the air, by keeping up a due degree of tension in the solids, is not naturally productive of this diseases? It may indeed be supposed, that when the cold becomes very intense, as in the winter in Greenland, or the northern parts of Canada, the vital or animal heat of the body may be fo overcome by it, that the digestive faculties are chilled and enervated; and the folids being overbraced by fo high a degree of cold, may at last lose their tone or elafticity. But by all faithful and accurate observations made on this disease, moisture is experienced to be the principal predisposing cause of it. This indeed of itself is fufficient to dispose the constitution to the fcurvy in any climate, even the warmest. It is observable, that, in warm climates, the crews of ships at sea are liable to this disease, when the hot weather, by which the fibres of the body are much relaxed, is fucceeded by great and inceffant rains usual in these latitudes, or when the season proves

very

very unconstant. The disease is there likewife much owing to the great length of these fouthern voyages. But, otherwise, it is not near fo frequent a calamity as in colder climates; the bad effects of moisture being rendered much more pernicious when combined with cold. Upon the whole, whatever shuts up the pores of the skin, and impedes or lessens perspiration, is highly

productive of this disease.

Sanctorius, in feveral places, describes such a state of air, and its effects, as is often met with at fea: "Too cold, windy, or " wet air, lessens perspiration" (b). He - had before enumerated almost all the causes. which obstruct this evacuation, and occasion the disease, viz. "aër frigidus, cænosus, et "bumidus, natatio in frigida, gross viscid" food, and a neglect of exercise" (i); but observes the consequence of perspiration being obstructed by fuch a moist gross air is, "That it converts the matter of transpira-" tion into an ichor; which being retained, " induces a cachexy" (k). He afterwards paints out the fcorbutic cachexy, when defcribing the effects of humidity, or of fuch an indisposition of air as produces the scurvy: " Here perspiration is stopt, the passages of " it clogged, the fibres are relaxed; and the " transpiration retained, proves hurtful, and " induces a fenfible weight in the body" (1). But,

⁽b) Aph. 200. (k) Aph. 146.

⁽i) Aph. 67. (l) Aph. 148.

But, for the better understanding of these aphorisms, it may be proper to observe, that, upon the state of the atmosphere, the ftrength and weakness of the fibres of our body in a great measure depend. Too moist an air not only stops up the pores of the Ikin, but weakens and relaxes the whole fystem of solids. Hence, during a rainy cloudy feason, all the members of the body feel heavy, the appetite is diminished, the pulse of the heart and arteries is more feeble, and every one is fensible of a languor of strength, and a lowness of spirits. And moisture, by weakening the spring and elasticity of the air, renders it unfit for the many falutary purpofes obtained by respiration.

I come next to observe other causes, which have great influence in disposing to this disease; such as indolence, close confinement,

or a fedentary and inactive life.

Every one, from experience, must be sensible how much exercise contributes to the health of the body, as well as to chearfulness of mind. It is necessary to keep up that due degree of firmness and tension in the solids, upon which the strength and soundness of a constitution depend: the whole process of animal digestion, as well as all the secretions, depend upon this strength and firmness of the vessels and organs of digestion. Whenever the tone

Q₃ of

of these is relaxed and weakened, which is most effectually done by keeping the body long at rest, or by neglect of due exercise, there must follow a desiciency in the vigour and strength of the digestive powers, so that the body is not duly nourished, nor the secretions rightly performed.

The same state of things will likewise occur in those who have been much weakened by a preceding sit of sickness. Here such a diet is necessary to prevent the scurvy, as is adapted to the weakness of the body, as requires the gentlest action of the organs to digest and assimilate, and the smallest

force to forward in its passage.

These being the predisposing causes of this disease, it plainly appears, that the effects produced by them, are, a relaxation of the tone of the animal fibres, a weakening of the powers of digestion, together with a stoppage of perspiration. These may receive confirmation, by observing, that some of the passions of the mind, as fear and sorrow, which have been assigned as causes of the scurvy, and are frequently its effects, act with the same remarkable influence on the organs of digestion and perspiration, as they were found to have on this disease in Lord Anson's crew (o). But as the mechanical effects

⁽⁰⁾ Compare Sanct. aph. 456. 458. 460. 461. 462. 463. 469. 474. 478. with Lord Anjon's voyage, p. 101. edit. 5.

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effects of these passions upon the humanbody would require too long a discussion for this place, I shall refer to the authors who

have expresly treated of them (p).

I proceed to observe what farther effects are produced by what has been assigned as the occasional cause of the scurvy, viz. a gross and viscid diet in such circumstances as have been described, and the want of fresh greens or vegetables, which are found so effectually to check the violence of this disease.

I imagine it would be unnecessary to infift long in shewing how, in the unavoidable hardships that sometimes attend seamen in long voyages, or the besieged shut up in towns; as likewise in times of scarcity or famine, or when people at any time use putrid flesh or fish, mouldy bread, or unwholesome waters; how, I say, such corrupted substances may disorder the organs of digestion and produce a scorbutic taint. Indeed though these may tend to increase it, and often concur with other causes at sea to render the disease highly virulent; yet it is certain, the fcurvy appears most frequently where fuch food has no share in producing it; its most common occasional cause being the gross viscid diet before described (q).

Q4 How-

⁽p) Vid. a medical differtation on the passions of the mind; and Robinson on the food and discharges of human bodies, p. 77.
(q) Part 2. chap. 1.

However all general rules or precepts which can be given for diet, are to be understood only as relative to the constitution or state of the body at the time. In particular the viscidity and tenacity, or the solidity and hardness of food, in all animals, ought to be proportioned to the strength of the powers of digestion. I mean by these, the whole collected powers or faculties of the body, by which it assimilates into its own animal nature, various forts of aliment.

The tenderer or fofter flesh is made by keeping for some time without salt, it is found to be the easier of digestion: but by being long hardened and dried with salt, its most nutritious parts, either sly off, or are fixed. Experience shews, that flesh long salted is of very difficult digestion. It requires perfect health, together with exercise, plenty of diluting liquors, vinegar, and many other correctors, to subdue it.

As to fea biscuit, pudding, and other unfermented, mealy, or farinaceous substances, it is certain nothing can be more wholsome than the mealy seeds of several plants, as wheat, barley, rice, &c. as also several of the leguminous plants. They afford so wholsome a nourishment, that they are used by the generality of mankind for the greatest part of their sood. But some of these substances, in particular wheat-

flour,

flour, requires a previous fermentation, in order to attenuate the viscidity which it acquires by being mixed with water; which, otherwise, people in the best health, and with the strongest force of digestion, find a difficulty in doing. Few can live altogether on ship puddings, dumplings, or the like, without being sensible of an oppression and uneasiness. But especially weak and exhausted people cannot well receive the necessary nourishment from such species of the mealy substances, until subdued by sermentation, or by some other method, by which they become lighter food.

Upon the whole, the case of scorbutic patients appears plainly to be a weakened and relaxed state of solids, with such a condition of the blood as naturally proceeds from a want of a proper nourishment and from a stoppage of perspiration. The frequent cedematous swellings of their legs, sometimes of their face and of other parts of the body, denote the state of their solids; their bleeding gums and ulcers the condition of their blood; and their spotted, dry, and rough skin prove a stoppage of perspi-

ration.

Now, in such a state, it may be asked, What is proper to be done? Their perspiration cannot well be restored by the common sweating medicines: for though they may give a momentary relief to such people, and

in fome few cases a crude humour may thus be pushed through the skin in so relaxed a state of solids; yet such a humour goes off generally, and more naturally, by urine. Nor can the lax solids be braced up to advantage, while the juices are unsound, and assimilation and nutrition wanting: so that exercise, stimulants, bark, steel, and astringents, will not cure them. Nor will a diet of even fresh slesh broths remove a high and virulent degree of this disease, without the assistance of green vegetables.

We are upon this occasion told a very remarkable story by Sinopæus (y). "There "are whole nations in Tartary who live "altogether on milk and sless. These people are never seized with the small-"pox; but, on the other hand, are subject to violent scurvies, which at times sweep off as great numbers as the small-pox does of other nations." He had sour of them (two men, and two women, who had been taken prisoners) in the hospital at Cronstadt, in the year 1733. The scurvy being epidemic there that spring, these poor people became afflicted with it, fell into profuse hamorrhages, and every one of them died.

This leads me to inquire into the virtues of fresh green vegetables, which seem so necessary to correct the bad qualities of other dry and hard food, and are experi-

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enced fo effectually to prevent, and often

cure this distemper.

Recent vegetables, fresh plants and fruits, are of a more tender texture than animals; and their parts being more eafily separable, they yield more readily to the dividing powers of our organs. There is no other particular virtue in which they all agree; a greater diversity of qualities being found in vegetable than in animal substances. But, besides what has been mentioned, vegetables have great and peculiar virtues in this disease, arising from a combination of various qualities; of which all vegetables poffess one or more, in a greater or less degree; and do from thence accordingly become more or less antiscorbutic.

It is to be remarked, that, in most properties here requisite, vegetables differ from animal substances. That there is a considerable difference in the constituent principles of vegetables and animals, is plainly

proved by their chemical analysis.

Many plants are of an acescent quality; whereas animal substances, on the contrary, are almost all of an alcalescent, or perhaps rather a putrescent nature. It would indeed appear, that man, both from the structure of his organs of digestion and appetite, was defigned to feed both on animal and vegetable fubstances. But though we perceive a person in health, and of a sound state of 5

body,

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body, has a wonderful faculty of converting almost all forts of alimentary substances into nourishment; yet experience shews, that no man can long bear a diet entirely of slesh and fish without nauseating it, unless corrected by bread, salt, vinegar, and acids.

One quality entering the most perfect antiscorbutic composition, is a vegetable acescency; acids of any kind are found useful; such as vinegar, spirits of salt and vitriol; though far from being sufficient either to prevent or cure the scurvy, as wanting some other properties much more

necessary than acidity.

If it be faid, That fcurvy-grafs, creffes, and other acrid alcalescent plants, are found highly antifcorbutic; it must likewise be remembered, that they are not perhaps altogether fo efficacious as the acescent fruits; or at least become much more so by the addition of lemon-juice, oranges, or a little forrel; which last the Greenlanders (a) are taught by experience to join with them for their cure: these herbs not only strengthen the tone of the flomach and invigorate the organs of digestion, but restore the suppressed perspiration, promote a copious flow of urine, and encrease every secretion in the body, which is the most effential quality of an antiscorbutic composition. That they strengthen the powers of digestion appears not

only from the quick increase of appetite occasioned by them, but from the belchings of wind which frequently follow each dose (b). The increased secretions are obvious to the fenses. Whatever then promotes the secretions, as fquills; or whatever, Sanctorius observes, either perspires itself, or affists the perspirations of other food, as most of the acrid antiscorbutics, prove beneficial. And for this purpose he recommends some of the best of them, viz. onions and garlic (c), ale (d), wine moderately used (e); and in particular well-baked bread (f). These, according to his remarks, not only perspiring freely themselves, but by promoting the digestion and affimilation of groffer foods, fit them also for this secretion.

Another property peculiar to many green vegetables, and especially to the riper fruits, which are found so beneficial here, is, that fermentative quality, by which they become acid, although originally they had no acefcent tendency. We evidently fee in this difeafe

⁽b) Kramer observed, that in a thousand patients he had cured by the juices of scurvy-grass and cresses, each dose of the juices occasioned prodigious belchings and wind. It was so uncommon, that he imagined it proceeded from the active and volatile falts of the herbs fet loose in the stomach; to which he ascribed their cure. He therefore strictly injoined his patients, to prevent as much as possible these salts from making their escape in this wav.

⁽c) Aph. 283. (d) Aph. 282. (e) Aph. 369. (f) Aph. 210.

disease the good effects of spruce beer, cyder, ale, wine, and other vinous liquors, prone to fall into this state in the stomach; on the contrary, the pernicious effects of distilled spirits, which check such a fermentation. And I am of opinion, that this is somehow necessary to the perfection of animal digestion.

As animal digestion is a process fui generis, which no chemical operation has been found to imitate; none being able to convert food into chyle, or that into blood; all we can infer from experience, is, that in certain cases, as in the scurvy, vegetable juices and fruits of this tendency are found necessary to perserve health and life. If sless, or animal substances, promote this process in the stomach, as would seem by some late experiments (b); we may from thence conclude, slessh-sloops with the plentiful addition of vegetables to be eminently antiscorbutic, which daily and incontestable experience sufficiently confirms.

Upon the whole, it follows, and will be found true in fact, that the more any food, drink, herbs, or medicine, partake of any of the aforefaid qualities, the more antifcorbutic they become; but that the most perfect and effectual remedies are found in a composition of different ingredients, each possessing in a high degree one or other of those virtues, from the combination of which,

which, a vegetable, stomachic acid may refult. Such an acid, ready prepared, is to be had in a certain degree in oranges, and most ripening sub-acid fruits; from whence they become the most effectual perservatives against this distemper.

CHAP. VII.

Dissections.

HE appearances upon inspecting the body of such as died of the scurvy are here distinguished under different numbers, for the convenience of making proper references to them in the following

chapter.

No 1. contains the observations made by Lord Anson's surgeons upon the blood of their patients, and upon the dissection of dead bodies, in the several stages of this distemper at sea. No 2. a dissection made upon one of faques Cartier's crew (a). No 3. to 21. inclusive, is Mr. Poupart's account of many, and very accurate diffections of scorbutic bodies, in the hospital of St. Lewis at Paris, in the year 1699 (b).

No I.

⁽a) See Part 3. chap. 1.
(b) Etranges effèts du scorbut arrivez à Paris, par M.
Poupart. Memoirs de l'academie des sciences, 1699, p. 237.