

A treatise on the scurvy. 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 ... / [James Lind].

Contributors

Lind, James, 1716-1794.

Publication/Creation

London : S. Crowder [etc.], 1772.

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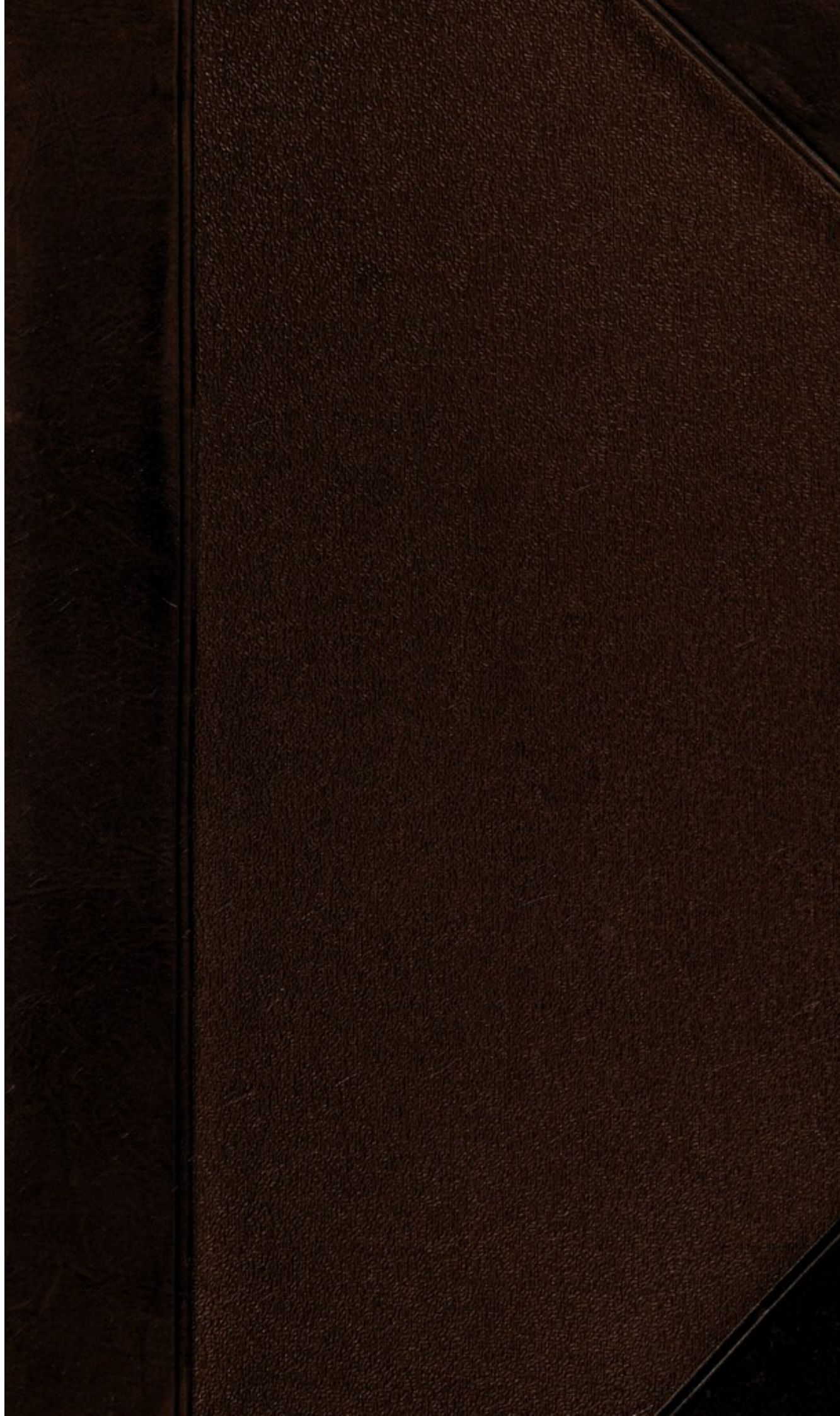
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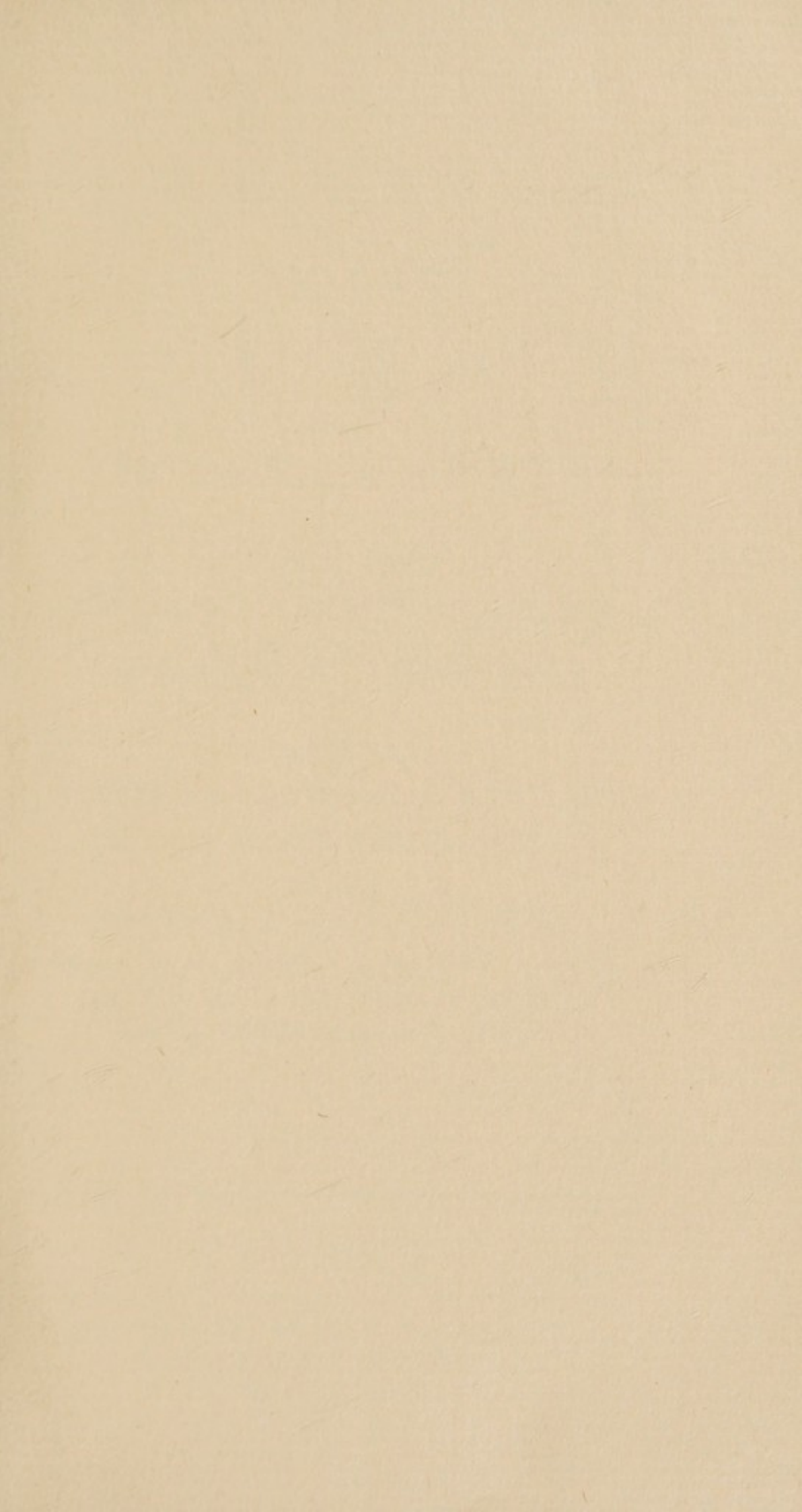


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A
T R E A T I S E
O N T H E
S C U R V Y.
I N T H R E E P A R T S.

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 JAMES 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.

L O N D O N :
Printed for S. CROWDER, D. WILSON and G.
NICHOLLS, T. CADELL, T. BECKET and Co.
G. PEARCH, and W. WOODFALL.
MDCCLXXII.

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IN THE PARTS



Together with
A General and Chronological View of what
has been published on the subject

BY
H. J. W. D. M. D.
Physician to the Military Hospital at Exeter,
and Fellow of the Royal
College of Physicians in Edinburgh.

THE THIRD EDITION, CORRECTED AND IMPROVED.

LONDON:
Printed by G. W. Wood, 25, Abchurch Lane, in the City of London.
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THIS Treatise 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 spot whatever has exhibited more numerous or more distressing cases of it than *Hasslar* 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

* From the year 1758 to 1763.

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disease 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,

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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 præ-conceived *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 persuaded 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 assertions in the healing art.

*Est modus in rebus,
Sunt certi denique fines.*

Haslar Hospital,
August 30, 1771.

P R E F A C E

To the FIRST EDITION,

Published in the Year 1753.

*T*HE 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 always affects the constitution of sailors when long at sea; and where it does not rise to so visible a calamity, yet it may often make a

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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 physick 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 physick, may appear from the late mournful story of the German troops in Hungary, the disaster in Thorn, and from many other relations in this treatise.

What

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 disease, in the squadron under that noble and brave Commander, in his passage round the world, excited the curiosity 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 society of surgeons 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

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 consult several 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 visibly 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 requisite 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 sources 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

voured with by some of its most worthy members ; 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 mention.

The first is the plan of the work.

I am sorry 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 consulted 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 disease 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
some

some 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 disagreeable part of the work, to criticise 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 such 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 facts 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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A
T R E A T I S E
ON THE
S C U R V 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 *Ronsseus*, *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.

Ronsseus, 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 *Cæsar Germanicus*, observed, that in his time it was to be met with only in *Holland*, *Friesland*, and *Denmark*; though he had heard of its

B appear-

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

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

appearing in *Flanders*, *Brabant*, and some parts of *Germany*. From seeing some of those countries entirely free from this distemper, 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 same 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 such deemed it contagious.

But although *Wierus* very minutely transcribes the symptoms 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 seeing whole families seized with it in the same 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 disease 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 be

(c) Intituled, *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 symptoms of this malady, in so accurate a manner, that the succeeding authors for a long time did nothing more than copy him. It was a considerable time after, when *Solomon Albertus* wrote a large treatise 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 distemper: and as he was a person of eminent learning, as well as probity (which his writings on this and many other subjects sufficiently 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 seas: 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 *Asia* and *Africa*, if ever it appeared there, it would no doubt be in such places as lay adjacent to the sea; where the situation, gross diet, and bad water, might give rise to it, in the same manner as they do in the countries where it prevailed. These were not conjectures in our

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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 præstigiis 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 surpris'd with accounts of this suppos'd 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 *Misnia*, *Lusatia*, on the borders of *Bohemia* 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 practis'd 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

(e) Vid. *Melchior Adam in vita Wieri.*

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 disease 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 singular cause (*h*).

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

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con-

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

(*g*) P. 10. and 211. The *Amsterdam* edition of *Eugalenus*, published in the year 1720, is here quoted.

(*h*) P. 250. where talking of the pox and scurvy as both modern diseases, *Utrique etiam peculiare hoc nostro seculo fuit, ut quàm longissimè latissimèque sua pœria dilatent et diffundant, 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 mutuò quasi complectantur, et inter se virus ac venenum suum communicent. Ita fit ut hodie etiam Germani e, Angliæ, Galliæ, hic morbus innotescat; apud quos antea ne quidem auditum ejus nomen fuit.*

considerations to account for the greater frequency and malignity of this distemper, and the extraordinary symptoms 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 surprizing calamity sent, by divine permission, as a chastisement for the sins of the world. And as he really thought himself (as appears through the whole treatise) the most sagacious detector of this *Proteus* like mischief, lurking under various and surprizing appearances, he very religiously thanks Heaven for the important discovery (*k*).

As *Eugalemus'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 since 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 idèò permittere Deus videtur, ut hoc modo iram suam adversus peccata ostendat, dum novis et inusitatis morbis et ægitudinibus, 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 sit, p. 222.

The different accounts and descriptions of the same disease by *Eugalenus* and the preceding authors, as they will there appear, can be accounted for but in two ways.

This distemper 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

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

But instead of pointing out to us any such similarity 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 also varied 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 disease. As to the state of pulse described by *Eugalenus*, which he asserts 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 *Eugalenus* of the existence of the scurvy, though in other respects the symptoms should differ from it as much as the plague does from a dropsey. *Sufficient 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 deduxit, p. 23.*

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

In a former edition of this treatise I enumerated the several other signs he gives of scorbutic diseases, which were properly reduced into two classes, *viz.*

1st, Such symptoms as the before-mentioned conditions of pulse and urine, which never were remarked in the scurvy by any but himself; and seem indeed more peculiar to other distempers:

2^{dly}, Such as are common to this disease 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 these are the principal marks and diagnostics of the diseases described by *Eugalenus*; among which there are not to be found any of those symptoms which the authors preceding him thought absolutely necessary to demonstrate the existence of the disease which they had described under the name of *scurvy*; and as *Eugalenus* assumed for demonstrative and constant signs of this disease, such as were never before observed in the true scurvy, nor are ever seen 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 treatise. 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 considerable bulk, almost all that had been written upon the scurvy. After describing the putrid gums and spots, he expresses himself thus. “These are the demonstrative signs of the scurvy,
“ with-

“ without whose appearance the disease cannot
“ subsist (m).”

It may be said, 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 (o); 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 hæc 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 convenient, eumque quadam suâ proprietate exprimant et demonstrent.* Soon after adding, *Non video quis præterea dubitationi locus esse possit, nisi perpetuò cogitationibus nostris oberrare et incertum vagari velimus,* p. 179.

(o) P. 227.

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

He seems 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 sun, to assert, that all distempers 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 south; 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 such 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 fever, 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;

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 southern countries, where the ancients practised. 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 such irregular and untoward symptoms 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 possibly 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 successful (*p*).

The vanity and presumption of this author are indeed intolerable, when he assures us, that he would cure beginning consumptions 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*); severe quartan agues in ten days, otherwise not curable in a year (*u*). In short,

(*p*) In his omnibus, cum, propter multiplicem symptomatum varietatem raritatemque, causam subesse raram, et veteribus in-
cognitam, considerarem; post varias habitas mecum deliberati-
ones, et diligentem pulsum urinarumque examinationem, tandem
scorbuto adscribendam inveni, conjecturam meam ac σοχασμὸν
de his, comprobante felici curationis eventu, p. 30.

(*q*) P. 192.

(*r*) Obs. 16, et 23.

(*s*) P. 63,

(*t*) P. 52.

(*u*) P. 40.

short, according to him, no disease 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 mortified part; and the small, weak, and unequal pulse, naturally to be expected in such a situation (*y*).

He seems to have known no other distinction betwixt the venereal disease and scurvy, but the pulse (*z*), and sometimes the urine (*a*).

All the succeeding authors, for a considerable time after *Eugalenus*, follow him most religiously and minutely in their description of this disease. So great a compliment is paid him by *Martinus 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 febres sit curaturus, quibus nulla prius veterum profuit curatio.* Soon after adding, *Quæ, quia à nemine hætenus satis animadversa sunt, quod sciam, hinc factum esse arbitror, quòd tantopere vilescere apud nos et in his regionibus medicina cæperit, utpote quæ nullius febris curationem certò promitteret, p. 36.*

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

(*x*) P. 194, 197. Item, Obs. 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 scorbutic cases, mention some very uncommon and singular 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 say the legends, of physic.

But what additional observations they themselves made, may be seen in the proper place (*b*). Their merit seems chiefly to have consisted 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

(*b*) Part 3. (*c*) *Tractatus de scorbuto*, p. 140.

To give the reader some idea of the consequence of such writings, and the high esteem 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 nisi antiscorbutica interdum reliquis admisceat medicamenta, vix eos curabit medicus. Quod in praxi mea expertus sum non rarè. 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 archiætrorum, necdum gregariorum errata; ut statuas mereantur Fracostorianâ splendidiore, 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, overflowing 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 confutes 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 *swelled legs* were the characteristic signs 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, facile 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 sufficient to remove it.

Willis having given a very different account of this disease from all others; as will appear by comparing the symptoms described by each in the third part of this treatise; in my first edition I examined what singular and distinguishing 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 disease we are now treating of. I there proved, that the signs given by him of the scurvy (*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 scurvy, 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 referred to any other disease, it may justly be deemed scorbutic (*l*).”

Dr.

(*k*) *Willis*, cap. 3, p. 247.

(*l*) P. 334.

Dr. *Willis* is copied by most of the succeeding authors, especially by *Charleton*; by *Hoffman*, in the distribution of the symptoms; and by *Beerhaave*, 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 sentiments of a most judicious physician, may be seen by looking into *Sydenham*; 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 distinctions and divisions were introduced and made in the scurvy. An inquiry into the propriety of these, we shall make the subject of the following chapter.

C H A P. II.

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

AUthors had now gone on for near seventy years (*a*), by collecting from each other and adding something themselves to make up a
C
very

(*m*) Vid. *Kramer*.
Eugalenus wrote.

(*a*) From an. 1604, when

very extraordinary number of scorbutic symptoms. They had ascribed to this modern calamity, almost every distemper or frailty (*b*) incident to the human body; so 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 simple antiscorbutic remedies, how much soever extolled by *Eugalenus*, failed to remove the many, various, and complicated disorders that were classed under the name of *scurvy*. Thus they found themselves under a consequent necessity of having recourse to different distinctions at first, divisions and subdivisions afterwards, of the malady. And as the shops abounded with antiscorbutic 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 symptoms, diseases, or stages of the disease, 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 described by Eugalenus, and from him transcribed by Horstius and Sennertus; 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 distinctions made here are founded in absurdity; and the former chapter is a sufficient confutation of them. These indeed, when first introduced by *Willis*, were not universally received. *Chameau*,
with

(*b*) *Omnes qui ex senio moriuntur, moriuntur etiam ex scorbuto.* *Dolæus.*

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 symptoms 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 fewer, 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 2

when

(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 confute the division of this disease into a hot and cold scurvy. The truth of the matter is, this, when the doctor was sent to *Wiburg*, 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 perfect knowledge of the disease, one cannot help remarking what pains he takes still to support this fanciful distinction, in order to justify the aspersions thrown upon the surgeons in *Wiburg*.

when the *sulphurs* abounded in the blood, and when they were depressed; when this vital fluid was too hot or cold, or inclined to an *acid*, *alkaline*, 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 successful, having consequently no occasion for such 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 (*h*), and that few escaped this modern calamity (*i*), as a pimple appearing on the skin 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 *alkaline* 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*) *Ronsseus, Wierus, Echthius, Albertus, Brucæus, Brunnerus, &c.* (*f*) Vid. part 3. chap. 1.

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

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

(*i*) *Nemo ferè hodie ab eo planè immunis existit.* *Dolæi Encyclopædia.* See chap. 1. p. 30.

or at different times; proceeding from as opposite causes as can well be imagined; as from heat and cold, or the opposite qualities of an *acid* and *alkali*: 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 prognostics, 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 *hypochondriac disease*. Accordingly, *Senertus*, in the preface to his so much esteemed

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

These authors, by confounding the two diseases, occasioned the utmost perplexity to succeeding writers on the subject. *Willis*, and all the followers of *Eugalenus*, maintain that the scurvy 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 so closely connected as not to be described separately (*k*). The excellent *Riverius*, who knew little of this distemper but from books, conjectured it to be the hypochondriac disease, complicated with a certain malignity. Some were of opinion it was this last when beginning. But the more general notion of these mistaken authors (*l*) was that the *melancholic malady* often terminated in the scurvy, 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 scurvy) 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 mean

(*k*) *Ettmullerus, Dolæus, &c.*

(*l*) *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 fevers, cancers, buboes, &c. as he has done. Nor is it sufficient to alledge, that time and custom have given a sanction to such terms; as this is complimenting ignorance and custom, in a manner no way consistent with the improvement of arts and sciences.

The hypochondriac distemper, according to *Sydenham* (*n*), is the same in men, that hysteric disorders are in women. In this, with some little variation, most physicians agree with him. But such diseases have no manner of connection with the scurvy: 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 surprising, that some very eminent authors should have endeavoured to persuade us, that from such opposite causes, as heat and cold, or *alkaline* 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 *Hoffman*, after giving a very regular detail
C 4 of

(*m*) P. 40. He says, it is so nearly allied to the *melancholia hypochondriaca*, as to differ from it only in certain degrees.

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

of symptoms, wherein they widely differ from each other, both agree in assigning 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; whilst the latter, on the grumous part, is too thick and viscid. From the predominancy of different acrimonious salts (*n*), or oils (*o*) in the too thin ferous humours, the scurvy was to be denominated, according to *Boerhaave*, either *muriatic*, *acido-austere*, *fætid-alcaline*, *rancid-oily*, &c. (*p*)

But

(*n*) See the state of the blood in the scurvy, in a post-script now added to this third edition.

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

(*o*) *Vix equidem plura sulphurum saliumque genera in hermeticorum ergasteriis, quàm 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 so 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 sign of the malady, as will afterwards be shewn, are supposed to occur both in the hot and cold scurvy, which are the most opposite species of the disease. Vid. *Aph.* 1163.

The whole indeed consists 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 diseases he described;
but

But the assuming of such chymical principles as the foundation of a method of cure, from a presumption of the predominancy of such salts and oils, or of an acid or alkaline tendency in the blood in this disease, is exceptionable on many accounts.

We may allow the predominancy of such salts, 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 said to be *acid* or *alkaline*. But as the blood of no living animal was ever found to be either acid or alkaline,

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 *scurvy*. But if any thing else is meant besides a scorbutic *cacochymia*, which must be the same thing as the disease 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. 2.): yet *Boerhaave* recommends it; and in such 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 enforced by his authority. See *Heucher*.

It is true, he says, what is proper for one scurvy is a poison in another. But this is not easily 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 similar 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 salutary medicine? As I have before observed, he delivers the most regular uniformity of appearances; and the pathognomic signs seem to be the same in every species of scurvy.

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

alkaline (z), it is hard to grant the existence of such qualities, latent there, when they do not manifest themselves by any signs in the body, from which we can be assured 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 alcalescent

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 fœtida, putrida, &c. Gravissimus est error, quamlibet cacochymiam, imo etiam cachexiam, &c. scorbutum putare, quam verus scorbutus species cacochymiae 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, æqualia 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 ignorantiae hæc 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 authorises us to conclude that the blood of such people was alkaline, for very obvious reasons. It however furnishes one of the strongest arguments against the opinion of putrid scurvies being of an alcalescent nature; as pills made of soap, garlic, and squills, was the common medicine given by our most experienced navy-surgeons, and used at several hospitals, particularly at *Gibraltar*, for recovery of many thousand seamen half-rotten in this disease.

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 distinction), a violent thirst, a vehement desire of watery and diluting liquors. These also would seem the most rational and effectual remedies, in such a saline state of blood, at least upon chymical principles. Accordingly, a great chymist, *Hoffman* (a), though he admits different salts in the blood as the cause of scurvies, observes, that nothing can be so ridiculous as the laboured and anxious pains taken to correct these by opposite salts. "For (says he) I will prove it to a demonstration, there is but one way, and it is the safest and most effectual, to correct morbid salts of any kind; that is, by diluting them sufficiently 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 alkaline 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

(a) *Medicin. ration. system. tom. 4. part. 5. cap. 1.*

But the contrary is demonstratively evinced, by the deplorable case of the sailor left behind at *Greenland*, related by *Backstrom* and others, who was cured by scurvy-grass alone (*d*); and by the experience of all our naval hospitals, where such scurvies 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 such 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 scurvy, I have given at *Haslar* hospital to one man, who has been extremely ill of it, the *volatile* salt of *hartshorn*, to the quantity of two *scruples* every day for a fortnight, and to another in an equally bad condition, sixty drops of the weak spirit of *vitriol* daily for the same length of time, yet have not been able to perceive 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 such cases, have been recommended and administered

(*d*) Though it is not so acrid as our scurvy-grass, yet it has a tendency that way. See a letter concerning the *Greenland* 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 medicinae, non alia pejor domina.*

C H A P. III.

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

THIS 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.

1st, As to the pathognomic signs of this disease: If we compare its symptoms as described
by

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 (*h*), we shall perceive an entire agreement in the essential signs 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*); some years in *Holland* (*k*). *Forrestus*, though he had frequent opportunities of seeing it in sailors, 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; some of whom must have been afflicted in a very high degree, as they dropped down dead suddenly, to the surprise of their relations; of which he gives an instance, *Dodonæus* (*l*), 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 description published of this disorder in *Europe*, was in an account of its raging in besieged towns,
by

(*g*) Vid. Part 3.

(*h*) Ibid.

(*i*) *Dodonæus*, *Forrestus*.

(*k*) *Ronssæus*.

(*l*) *Praxis medic. et observationes*.

(*m*) Yet elsewhere, *Angli maritimis commerciis dediti, et nautæ potissimum, stomacace affliguntur. Sive id sit cerevisiæ potu ex palustribus aquis coctæ, 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 such symptoms as occur always at sea. We have likewise about the same time a very elegant picture of it drawn by *Adrian Junius*, a physician and historian in *Holland* (*o*).

Moreover, the sea-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 assertion 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.

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

(*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.

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

(*x*) Part 2. chap. 1.

(*y*) *Eugalenus* practised at *Emden*, 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 sea-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 scurvy 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 seen 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 sea (as was supposed at *Emden* and *Hamburg*) were, this mischief lurking under deceitful appearances; and that such diseases could not be cured without a mixture of antiscorbutics, which seldom failed to remove them. This last, surely, could never have escaped the observation of our many ingenious navy-surgeons, and of our physicians and surgeons to naval hospitals; some of whom had seldom 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 scurvy alledged by *Boerhaave* to proceed from the causes above-mentioned.

But a heavier charge lies against them. When the true scurvy does really occur, their writings, so far from being useful, are rather hurtful to practitioners; which I think needs no farther proof, than *Kramer's* letter to the college of physicians 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 scorbutic 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-

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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 casually 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 surgeons; and, upon the whole, he found, that this disease at sea was the same with the scurvy at land; the difference being only in the degree of malignity.

If objectors should reply, That tho' the sea-scurvy often occurs at land, and, as has been demonstratively proved, is the only disease 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 contradistinction 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,

(z) Discourse upon the scurvy, p. 97.

Hoffman, and *Pitcairn*, have made no such distinction, 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 subject.

It may be said, That there are certain disorders, 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 diseases whatever. Thus the term was originally im-

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(*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 some difficulty in conceiving how men of such 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 see through ordinary follies, while great absurdities strike with an astonishment which overcomes the powers of reason, and makes improbability even an additional motive to belief. There are few now who set 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 such diseases 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 such 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

upon the disease, that have not fallen under my inspection. If I could, with any manner of propriety, have characterised any other species of scurvy than that which is the subject of this treatise, 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 sort, I did not find two authors agree who founded their doctrine upon facts and observations. I 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 disliking the former distinctions 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 some new principles; and so might have multiplied absurdities, 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 acceptance of it, by the most authentic authors of facts and observations, nor has any foundation in the genuine principles of physic.

It may be said, That the world would reap great advantage by having a compleat treatise 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

(*a*) Such as *Nitzsche*, *Biffet*, &c.

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 requisite 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 such a general name as that of the *scurvy*, 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 *Pharmacopæias* 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 adèò invaluit, ut hodie medici imperitiores, si quando ex certis signis neque morbum nec causam ejus ritè possunt cognoscere, statim scorbutum prætendant, et pro causa scorbuticam acrimoniam accusent. Deinceps non rarò accidit, ut adfectus quidam sæpe planè singularis, cui portentosa spastico-convulsiva junguntur symptomata, in artis exercitio occurrat; et tum usu receptum 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 diseases to such 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 honestly stated; and distinguished from each other, with the same 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 considerable 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, scall 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 various

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(*e*) *Notandum est, quòd quando multa symptomata numerantur, tunc esse cogitandum de nomine congeriem morborum indicante, ut scorbutus.* Waldschmid praxis medicinæ rationalis.

(*f*) The learned Dr. *Pringle* very justly observes the impropriety of the appellation of *scurvy* 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 scurfy, 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 scurvy are properly the same thing, and that the supposed species of acid scurvy is at least very improperly denominated,

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 undertaking 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 sometimes 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.

C H A P. IV.

Of the scurvy being connate, hereditary, and infectious.

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

(g) Vid. *Krameri epistolam de scorbuto.*

feeds of it transmitted from scorbutic parents, and that sometimes it was derived from a scorbutic nurse.

Horstius (a) had so very accurate a discernment, as to find, that the grandfather might infect the grandchild, though his own son escaped the infection. He ascribes the spreading of the contagion in *Holland*, to the custom of salutation by kissing; and pities the poor infants, whom every person must salute, to avoid giving offence to the family. He is not at all surpris'd, 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 seldom wanting some scorbutic person with putrid gums, who with his spittle might infect the whole company. *Sennertus* asserts it to be infectious from venereal embraces, and mentions an instance of its being communicated even from a dead body. *Boerhaave*, *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 serious 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 slight 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 asserted by most authors.

The

(a) *Traſſatus de ſcorbuto.*

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 such 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 so, 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 smooke and clean the ship. But long and constant experience having sufficiently convinced them, that the scurvy is not infectious, no such precautions are ever taken. In slight cases, and
even

(*b*) *Kramer.*

even where the gums are very putrid, the men are often kept on board, and cured; there being no instance of such persons ever infecting the rest 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 instances, and well attested facts, which prove beyond all doubt, that drinking out of the same cup, lying in the same bed, and the closest contact, does not communicate this distemper. 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,

(c) Vid. *Memoires de l'academie des sciences* 1699. p. 237.

A
T R E A T I S E
ON THE
S C U R V Y.

P A R T II.

C H A P. I.

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

THE scurvy seems 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 disease 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;
some-

sometimes to armies (*a*), very lately to the German soldiers 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*).

2dly, 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* (*h*), *Cronstadt* (*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*) *Dodonæus, & Forrestus.*

(*g*) *Ronssæus.*

(*h*) *Herman. Nicolai. Vid. act. Hassn.*

(*i*) *Sinopæus.*

(*k*) Vid. *Commerc. literar. Norimb. an. 1734*, p. 162.

(*l*) *Wierus, Ronssæus, &c.*

(*m*) Vid. *Concilium facultatis medicæ Hassn. de scorbuto.*

(*n*) *Brucæus.*

(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 salt, 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 I. chap. 3.

(q) *Lifter. exercitatio de scorbuto. Vanswieten Comment. in Aph. Boerb. 1153, &c.*

a power of resisting putrefaction become the means of preventing it for some time, I shall not take upon me to determine, as my experiments do not authorise 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 scurvy raged with great violence, it was then a fashionable custom to drink the salt-water, by way of gentle physick. I have been told, that Admiral *Martin*, and several officers in his fleet, continued the use of it during a whole cruise. I had at that time several 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 symptom of the scurvy.

But to prove beyond all doubt, that sea-salt 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 found them in the same condition as those who had taken no medicine whatever (*r*). From which

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

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

I do not here mean, nor does it follow from what has been said, that although sea-water has no bad influence upon the scurvy, a diet of salt flesh and fish is equally innocent. The contrary of which will appear in the sequel. The brine of meats, in particular, is of a different quality from either purified sea-salt or salt-water; for we find that this salt may be so intangled by the animal oils, especially in salt pork, that it is with great difficulty disengaged from them after many washings, and the most plentiful dilution. So that as this saline quality is inextricable from such food, it is rendered improper in many cases to afford that soft, mild nourishment, which is required to repair the waste of the body. It is remarkable, that the powers of the human machine can animalise other salts; that is, convert them into the *ammoniacal* sort, or that of its own nature: while the sea-salt seems to elude the force of our solids 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, sea-salt has no effect in producing this disease; whatever meats hardened and preserved by it may have, by being rendered of hard and difficult digestion,
and

and improper for nourishment. And this is farther confirmed by the daily experience of seamen ; 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 saline *effluvia* from that element an effect to produce this disease ; 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 salt. It has also been observed, that those who work night and day in the salt-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*).

E

Others,

(*s*) Vid. Part 3. chap. 2. Dr. *Mead*, who was thoroughly acquainted with their situation, 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 salt meats have sometimes no share in occasioning this disease, is demonstrable from the many *Germans* in *Hungary* destroyed by it, who eat neither salt beef nor pork ; on the contrary, they had fresh beef at a very low price. Vid. *Krameri epist.* p. 33.

The soldiers in the *Russian* armies also had no salt provisions. Vid. *Nitzsch*.

(*t*) Vid. *Hoffman*, tom. 3, cap. 9, p. 57. *De efficacia ac utilitate salis 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 scurvy very accurately described by the antients; whose chief study seems to have been the art of war; and whose manner of besieging towns was generally by blockade, till they had forced a surrender by famine. Now, as they held out many months, sometimes years, without a supply of vegetables: we should, no doubt, have heard of many dying of the scurvy, long before the magazines of dry provisions were exhausted. The continuance of those sieges far exceeded most of our modern ones; even the five months blockade of *Thorn*, upon which *Bachstrom* 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 six months of the year; as is the case of many parts in the highlands of *Scotland*, *Newfoundland*, &c. where, however, the scurvy is unusual.

It

(*u*) *Observationes circa scorbutum; auctore Fre. Bachstrom*

It would be tedious to give many instances, they being well known, of ships crews continuing several months at sea, upon their ordinary diet, without any approach of the scurvy. I have been three months on a cruise, 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 sea-water, yet we returned into port without one scorbutic complaint. I have known messes, as they are called, of seamen, 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 spirits: so that a few onions, or the like, was their whole sea-store; and a meal of vegetables was seldom 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 cruises 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 left *Plymouth*, where plenty of all sorts of

greens were to be had ; by which, as one would have thought, the sailors had sufficiently 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 six months on shore, like the highlanders, and many others. And what puts it beyond all doubt, that the disease was not occasioned solely by the want of vegetables for so short a time, is, that the same ship's company of the *Salisbury*, in much longer cruises, kept quite free from the distemper, where their circumstances as to want of fresh vegetables were similar. It was observable, that in the longest cruise she made, there was but one scorbutic patient on board, who was attacked with

(*w*) Upon the return of the fleet to *Plymouth*, Dr. *Huxham* makes the following remark in the month of *July*, 1746. *Terribilis jam sævit scorbutus inter nautas, præcipue quos secum reduxit Martin, classis occidentalis præfectus. Excruciantur per plurimi ulceribus fædis, lividis, sordidis, ac valdè fungosis: mirum est profectò et insolitum, quàm brevi tempore spongiosa caro, fungi ad instar, his ulceribus succrescit, etsi paulò antè scalpello derasa, eaque interdum ad magnitudinem enormem. Non solum miseris his, at verè utilibus hominibus, per se infensa est maximè scorbutica lues, sed et illos etiam omni penè morbo, qui ab humorum corruptione pendet, obnoxios admodum reddit; febribus nempe putridis, malignis, petechialibus, pessimo variolarum generi, dysenteriae cruentæ, hæmorrhagiis, &c. Multo magis adeò bonis his fuit exitio quàm bellicum fulmen! 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 sea, and consequently 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 say, 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 sources 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 seems 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 sea: 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 something noxious in the confined and pol-

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 sensibly felt by those who are most exposed to it, *viz.* the carpenters; who at sea are often obliged to measure, every four hours, the quantity of bilge-water; and do then and at other times in mending the pumps, suffer 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 crowded 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*, few 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 fever 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 fever, 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).

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

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 scurvy 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 scurvy
may

time I seldom or never had in my list less than sixty or seventy 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. *Blinckow*, 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 sick and wounded at *Deal*) narrowly escaped with life. To these losses I must add my own dear brother, several other gentlemen of the quarter-deck, and sixty 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 assistance. But I have not seen one instance of this illness having been complicated with the scurvy, or of the scurvy seizing a man recovered from that fever for at least six months afterwards; which was indeed one of the longest intervals we ever enjoyed freedom from it.

(z) When accounts were received from Admiral *Boscawen*, 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
in

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 *Cadix*, 70 of her crew afflicted with this disease. 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 disagreeable circumstance. For, in order to conceal so great a number of sick from the visit 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 caution,

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 fitted, 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 seized with dangerous fits of fainting; whose preservation was owing to the judgment of their ingenious surgeon, and to 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 such a number of sick, who, notwithstanding, all recovered.

The learned writer (a) of Lord *Anson's* voyage, after clearly evincing the falsity 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 deserving consideration. “ Perhaps a distinct and adequate knowledge of the source of this disease may never be discovered. But, in general, there is no difficulty in conceiving,

(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 fluid, 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 subtle, and otherwise imper-
 “ceptible effluvia; 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 effluvia of another kind, and which
 “perhaps the land alone can supply.”

It 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 that fluid, which preserves 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 noxi-
 ous, and most sensibly perceived, in the mid-
 dle of wide oceans and at the furthest dis-
 tance from continents and islands, where
 there is the greatest want of land-air, and of
 its

its vital influences, which may be presumed so 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 sea-port towns, are equally, if not more afflicted with this disease, than others are in crossing the ocean. And it will be found universally to appear in a much shorter time, and rage with greater violence (all circumstances being otherwise alike) in a squadron cruising in the narrow seas of the *Baltic* and *English Channel*, or upon the coasts of *Norway* and *Hudson's Bay*, than in another continuing the same length of time in the middle of the *Atlantic* ocean. We often observed our *Channel* cruisers quickly overrun with the scurvy; while their consorts, fitted out at the same port, and consequently 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 influence 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 said, 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 see this disease rage with great violence. And it is remarkable, that though I was on board in several other long *Channel* cruises, yet we never had but one scorbutic patient, except in these two. In them the scurvy began to rage after being a month or six weeks at sea; when the water on board, as I took particular notice, was uncommonly sweet and good; and the state of provisions such as could afford no suspicion of occasioning so general a sickness, being the same in quality as in former cruises. And though the sick 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 cruises, we had generally very fine weather; except in winter, when the cruises 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 storms 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 several antecedent or efficient causes of the scurvy, it is not to be doubted, but a moist air, or hazy, cloudy weather,

der the situation 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 those

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 sound provisions, and very good bread and water. We cruised not far from the *Bahama Islands*; the weather for most part was stormy, foggy, and very wet. Before we had been at sea a month, the scurvy was very epidemical on board both ships; and in six weeks we had 50, the other (the *Norwich*) 70 patients in this disease: whereas at another time, in different weather, we were at sea nigh as many months, before this disease appeared, which even then was not so epidemical. The particulars of that cruise were as follow:

We sailed 29th *November* from *Cape Breton*, and in two days were in lat. $43^{\circ} 18'$; and by the 11th of *December* were in $29^{\circ} 56'$, near which latitude we kept cruising 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 moist, 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. 174⁶, *January*. The weather this month was in general more moderate; but, considering 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, 31st.

The

those who are much weakened by preceding sickness; 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 *secondary disposing causes* to this dreadful and fatal disease.

Supposing the same state of air both at sea and land, the inconveniencies which persons suffer in a ship during a damp wet season, 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 sleep 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 scurvy in the above cruises, was no doubt often carrying up the bedding of the ship's company to the quarter deck (*a*); where
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it

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 consort 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 sometimes wet quite through, and continued so for many days together, when, for want of fair weather, there was no opportunity of drying it.

No person sensible of the bad effects of sleeping in wet apartments, or in damp bed-cloaths, and almost in the open air, without any thing sufficiently dry or warm to put on, will be surprized at the havock the scurvy made in Lord *Anson's* crew in passing *Cape Horn*, if their situation in such uncommon and tempestuous weather be properly considered.

During such furious storms, the spray of the sea raised 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 sending 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 sun to dry or exhale the moisture, this moist, stagnating, confined air below, becomes most offensive and intolerable. When such weather continues long, attended with sleet and rain, as it generally is, we may easily figure to ourselves the condition
of

of the poor men ; who are obliged to sleep 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 so few refreshments, especially fruits and vegetables fit to be carried to sea, 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 such weather at sea. To which it may be added, that, by observations made on this disease, it appears, that those who are once afflicted with it, especially in so high a degree as that squadron 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 sea in other ships, were much more liable to the scurvy than others.

It was however remarkable here, that though the calamity began so very soon after

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their

(*d*) Part 3. chap. 2.

their leaving land; yet, in so 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 predisposing 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 foggy, close weather at sea, will not by this time be surpris'd 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 sleep 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 seized 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 cabins, and going better cloathed, are seldom attacked with the scurvy; unless during its most violent rage, and when the common sailors 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

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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 disease in winter than in summer, 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 southern latitudes, to the continual rains which fall there at certain seasons, 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 sailors become quite indolent, and from want of due exercise on that watery element, are attacked with the scurvy.

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 sailed 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-five days, several died of it; and on their arrival, the *Northumberland* had 100, and the *Prince of Orange* 200 men very ill of the disease.

But to proceed, the qualities of the moist sea-air 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 loses its elasticity, and is found highly prejudicial to the health and life of animals; but becomes much more so where stagnating water is pent up along with it. It is likewise heated in ships by passing through the lungs of many people and impregnated with various effluvia. Hence arise 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 smell 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 situation of seamen; or rather, and more truly to correct the quality of such hard and dry food as they are obliged to make use of. Experience indeed sufficiently 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 sea, together with a long confinement within the narrow limits of a moist damp ship, are the true causes of its so 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 fens of *Lincolnshire*, he will almost infallibly fall into an ague.

All rules and precepts of diet, as well as the distinction of food into wholesome and unwholesome, 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 season. Betwixt the tropics, the natives live chiefly on fruits, seeds, 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 such hard dry food as constitutes a ship's provisions, or the sea-diet, 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 such circumstances, seamen will live upon it for several years, without any inconvenience. But where the constitution is predisposed to the scorbutic taint, by the causes before assigned (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 such diet in bringing on this disease, sooner or later according to the state and constitution

(b) Chap. 6.

constitution of the body, becomes extremely visible.

The first, generally, who feel its effects, are those who are recovering from some preceding fit of sickness, by which the whole body, as well as the organs of digestion have been greatly weakened; and are in this condition obliged to use the ship's provisions. Thus in the *Salisbury*, in *May* 1747, when there prevailed several inflammatory disorders, particularly peripneumonic fevers or inflammations of the lungs, all who were recovering from them became highly scorbutic. The next who complained, were the indolent and lazy; such as are commonly called *sculkers*, 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 seamen, 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 served 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 sea-diet is extremely hard of digestion ; it consists of two articles, *viz.* unfermented mealy or farinaceous substances, and salted or dried flesh 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 suet, 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 people, cannot long bear such 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 acedcent part of their diet. Secondly, boiled peas ; which are of a mild and softening quality ; but are apt in weak stomachs to occasion flatulencies and indigestion. It is evident, that in some cases they must afford gross and improper nourishment.

The seamen are also allowed a proper quantity of salt butter and cheese. The latter of which is experienced to differ extremely

tremely in its qualities, or in the ease or difficulty with which it is digested, according to its strength, age, &c.

The salt beef and salt pork are found by every one's experience to be much harder, and more difficult to digest, than fresh meats; and, to afford an improper nourishment. No person can live long on a diet of such salt flesh-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, salt 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 sound small-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 sort 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
use

(*k*) Chap. 6. on the theory of the disease,

use of any one particular sort of food, without a change has its inconveniences, and is justly condemned by physicians (l), 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

(l) *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 fevers, small-pox, measles,
“ plague, &c. And may not this be a modern *miasma*, as
“ well as what produces some of these diseases? By obser-
“ vations the *causæ proegumenæ* may be discovered, and by
“ dissections the effects may be observed; but the *causa*
“ *proxima* may be yet unknown. In the plains of *Stirling-*
“ *shire* 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 seen one
“ with a genuine scurvy.”

Answer. As to its being a *modern miasma*, I think this cannot, with any colour of reason, be inferred from the silence of ancient historians, who have mentioned few 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.

It

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

It is demonstrable from the appearance of the disease 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 consequently better diet, cloathing, and lodging, though equally subject to the other diseases of the country, yet kept free from the scurvy. Who were attacked by it? Only the *Bohemians*, who eat the coarsest and most indigestible food. The *Bohemians* used no other than what was the ordinary diet of their own country, as we are informed by *Kramer*. The seamen in the *Channel* cruisers had the very same 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 disease 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.

Moisture was discovered to be one of the causes of this disease by *Rousséus*, the very first author who ever wrote expressly upon it. The facts he produces, seem demonstratively

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. All 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 diseases whose causes are more evident to the senses, and admit of more express proofs. *Stugart*, in *Germany*, was formerly noted for being a place where the scurvy 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. *Sinopæus* 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 predisposing*, the other *the occasional cause* of the malady; yet, to speak more properly, they are both of them (*viz.* diet and moisture) *causæ proegumæ*, 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 *causa proxima*;

had. Such people in the height of the disease, 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 *Stirlingshire*; 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 preserved 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 said (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.), whilst 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 and 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 rise to as violent scurvies as those at sea (*n*). Thus during the siege of *Thorn* in the year 1703, several thousand *Saxons* shut up in that city were cut off by it at the latter end of the siege, they having been blockaded for five months, the season appears to have been uncommonly tempestuous and rainy, over most parts of *Europe*: so that, in this situation, the inconveniences and hardships they suffered, must have been equal to those of seamen. They were continually exposed to unwholesome damp weather; their diet was gross and indigestible, as *ammunition-bread*, salted and dried meats, and other solid 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

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(*n*) Vid. part 3. chap. 2. *Vander Mye de morbis Bredanis, &c.*

(*o*) *Observationes circa scorbutum, &c. auctore Fred. Bachstrom.*

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 considered, is the peculiar situation and circumstances of such places and countries where it is found to be a constant or *endemic* disease; which will serve 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

in the same degree of cold, would, *cæteris 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 *Ronssæus* (*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 same food, it was hardly ever to be seen: but that, universally in all parts of the country where the soil 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 southerly and westerly 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 morass, 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

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most

(*q*) *Ronssæus de magnis Hippocratis lienibus, &c. seu vulgo dicto scorbuto.*

(*r*) These are observed, by *Musschenbroek*, 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 sort, 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 unwholesome stagnating water. They

(s) I have the pleasure of seeing most of these observations confirmed since they were first published by the learned *Vanfwieten*, 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 flower 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 overflow 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 unwholesome 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 fine weather: unless it should be rather supposed,

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that

(*t*) *Vid. Brunneri tractat. de scorbuta.*

that their light and wholesome diet, and the great quantity of vegetables eat by the *Italians*, are sufficient, in the moistest parts of their country, to preserve 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 sea-port towns, where the situation is bleak, low and damp, we generally observe the inhabitants afflicted with putrid gums, swelled, ulcerated legs, &c. whilst the neighbouring villages, situated in a sandy dry soil, and purer air, are entirely free from all scorbutic 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 swampy inland soils, near morasses, or encompassed with thick woods and forests; or in countries subject to inundations from lakes or rivers; or where there are corrupted stagnating waters, where the sun has not sufficient influence to elevate their vapours to a proper height above the earth, being continually surrounded 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 same houses. The poorer sort of people, who live in damp vaults and cellars under ground, are most afflicted with symptoms truly scorbutic ; as are likewise they who are confined in dungeons, damp and unwholesome prisons, and spend much of their time sleeping in apartments not sufficiently plaistered or wainscotted, where there is a continual moisture and dewy dampness on the stone-walls : an instance of which I saw lately, in a person confined in a jail, who became terribly afflicted with the scurvy (*w*).

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

bles and fruits (*x*); and, for want of fresh and wholesome water, use what is either hard and brackish, or putrid and stagnating.

Different ways of life have likewise an influence on this disease. 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 subject to it; while hard labourers, and those who use much exercise, though living on the same, or even grosser 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 such circumstances as have been described, the present state of the body has a powerful influence in disposing to this affliction. They who are much exhausted and weakened by preceding fevers, and other tedious fits of sickness, or they who have obstructions in the bowels (as after agues of the autumnal kind) are apt, by the use of improper diet, to become scorbutic. Others that labour under a suppression of any natural and necessary

(*x*) Vid. two cases in *Fife*, chap. 2 & 5.

fary evacuation, as women who have their *menfes* 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 scurvy ever since the latter end of *April*. Lay all this month at *Mabon*, where the weather was excessively 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 tonsils, pleurifies, and peripneumonies. Sent 17 men to hospital.

August. Continued at *Mabon*. 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 fluxes took place of fevers. Sent 18 to hospital.

September. Part of this month at *Mabon*, part at sea. The weather in the beginning was variable, with rains; towards the latter end moderate and hot. The disease 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 sick-list 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 several months.

November. Partly at sea, partly at *Gibraltar*. From the 1st to the 10th, fresh easterly winds blew often, with rain. The whole month was squally, 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 spots like flea-bites, with sore and watery eyes. On the 8th they either sweated plentifully, or had a looseness; and then they were sure to do well soon; though some spit, and others were relieved by urine. 20 seized with this species of measles, all recovered. Rheumatisms still continue.

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

(y) Not for want of the vital influences of land air, as ships here lie closely surrounded with the land,

1744. *January.* It was an extreme cold and stormy 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-list, 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, shortness of breath, &c.

On the 30th of *January* my list stood thus. Very bad in the scurvy 55. Scorbutic fluxes 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, stormy, and rainy month. The weather, especially in the beginning and latter end of it, was extremely rough and uncomfortable.

From the 3d of this month to the 10th, the sick were on the ordinary days on which they are allowed salt beef and pork, served 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 soon to engage. There appeared not only in the healthy, but also in the sick, the highest marks of satisfaction and pleasure: and these last mended surprisingly daily; insomuch that on the 11th
of

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 list stood thus. Recovering from the scurvy 30. Scorbutic complaints in the first stage 5. Bad in the scurvy 4. Ulcers 4. Pleurisy 1. Flux 1. *Lumbagines* 3. Agues 2. Coughs and cold 11. Sick in all 61 (2).

N. B. No person has been sent on shore for cure since *December*; and I do not find that above 1 has died. When we got to *Mabon* the latter end of the month, my sick-list was greatly increased; 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 scorbutic men who had coughs, are now in deep consumptions. Towards the latter end of the month coughs and slight fevers prevailed.

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

(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 sick-list from 30th of *January* to 15th *February* to five servings 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 inflammation and danger. 4 or 5 had peripneumonic symptoms, 1 of whom died. 3 or 4 had high fevers 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; sometimes fair, at other times hazy and rainy. We spent this month at sea as in the last, and on our passage to *Mahon*.

The disorders 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 caught 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 lessened. Towards the middle, and in the end of the month, a gentle diarrhœa prevailed throughout the ship's company.

Left *Mahon* the 14th of *June*, and arrived at *Gibraltar* the 30th.

July

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 general, a very healthy month.

August. The weather was for most part hot and dry, except the 21st day, which was squally, with heavy rains. We lay all this month at *Lisbon*, where the men were served 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 still healthy, with now and then a slight 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 easy gales, it was a very windy, rainy and foggy month ; sometimes hot, at other times cold.

We were much alarmed at the sudden appearance of the scurvy (*a*). On the 13th I put on shore

(*a*) Not owing to abstinence for so very short a time from vegetables. Their late supply at *Lisbon*, 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 sent 20 men in the scurvy also by the *Portsmouth* storeship, to *Makon* 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 some snow.

We arrived at *Vado* the 20th, and sailed from thence the 29th. Upon our arrival there we had 50 men in the scurvy (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 scorbutic patient one *China* orange, and three apples; and continued to do so 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 flesh-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, gave

(b) Putrid air could have but little influence during so cold a season.

(c) Late Vice Admiral of the Red.

gave mutton-broth to 21 of our men; the 13th he did the same 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 sounder; shortness of breath, &c. better (*d*).

December 2. They continue to mend much.

December 5. The weather not so cold since 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 relapsed, and more are added to the sick-list, being unfit for duty.

January 8. Anchored at *Makon*; put to hospital 59 in the scurvy.]

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

March. The weather this month was warmer, but inconstant. The winds moderate. Left *Makon* the 17th; arrived at *Gibraltar* the 22d. The list was pretty numerous, composed of valetudinarians taken from *Makon* 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

(*d*) This Mr. Ives justly ascribes to oranges and apples.

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 sometimes hazy. Spent this month at sea.

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 *Lisbon*. All have not yet got free of their scorbutic complaints; several have scorbutic fluxes; others have diarrhœas and dysenteries, without any symptoms of the scurvy. Towards the latter end of the month, several had fevers.

August. Slight fevers, but especially diarrhœas 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.

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

C H A P. 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 *second*, 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 sake of greater perspicuity, I chuse rather to describe the symptoms in the order in which they generally appear, and

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as peculiar to the several stages of the disease; and shall distinguish, as I go along, those which are more constant or essential, 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 listlessness to action, or an aversion to any sort 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 symptoms, 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 feebleness of their knees upon

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using

(*a*) *Mr. Murray's remark.*—They commonly appear of a melancholy and sullen 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.

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 soon after swell, 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 spongy, 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 effusion of blood under it, as it were from a bruise. These spots are of different sizes, from the bigness of a lentil 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

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 swelling of their legs; which is first observed on their ancles towards 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 œdematous; with this difference only in some, that it is more painful, also does not so easily yield to the finger, and retains the impression of it longer than a true œdema.

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 fever, or a tedious fit 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 confined 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,
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(*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 fracture

if a patient labours under a strain of the ankle, 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 foetid 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 flesh underneath these floughs feels to the probe soft or spongy. No irritating applications are

ture of the *os humeri*, 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 sound skin brought over almost all the incisions. He had nearly recovered his flesh and strength lost under the discharge and confinement, 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 *Mabon* hospital.

are here of any service: for though such floughs be with great pains taken away, they are found again at next dressing, where the same bloody appearance always presents 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 swelled, painful, and for the most part spotted. As the disease increases, they at length come to shoot out a soft bloody *fungus*, which the sailors express by the name of *bullocks liver*: and indeed it has a near resemblance, in consistence and colour, to that substance when boiled. It often rises in a night's time to a monstrous size; and although destroyed by caustics or the knife (in which last case a plentiful bleeding generally ensues) is found at next dressing as large as ever. They continue however in this condition a considerable time, without tainting the bone.

The slightest 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

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 disease, 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 seldom 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 small of the back, and especially in their joints and legs. But a most frequent seat of their pain is in some 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, so they are always exasperated by motion of any sort, especially the pain of the back; which,

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 diseases which may occur.

Thus I remarked a considerable 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 sort 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 season were feverish; we had none in a salivation, and the fluxes were mild and easily cured. Whereas in the year 1746, when a different species of diseases prevailed, occasioned by the unwholesome newness of the ship's timbers, and fluxes were frequent, the scurvy proved more virulent and fatal. Its worst, most common, and troublesome symptoms, were salivations 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 seized with the scurvy in both cruises; in the first he laboured under a salivation and then a bloody flux, in the second a severe cough was his principal complaint.

I believe indeed it will universally 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 fixes 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 seldom 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
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(*e*) *Mr. Murray's remark.*—This pain in some measure answers to the description of the *pleuritis notba*; 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 fluxes, and always found it mortal.

of the worst kind, that he remarked very few of them to be attended with fevers; 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
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(*f*) *Ives*.—I cannot say I have ever seen 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 fever with the scurvy.

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

Lastly, According to the habit and constitution 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 feebler 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 scurfs or scales, and frequently there appear on the skin small eruptions of the dry miliary kind.

In the second stage of this disease, the patients most commonly lose the use of their limbs; having a contraction of the tendons
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(*b*) *Mr. Murray's remarks.*—The urine of almost all scorbutic persons, when let stand, gathers an oily saline scum atop.

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 assistance, while many others were obliged to be carried out upon their beds. He had the scorbutical colour in his face (*l*), with complaints in his breast. He panted for about half a minute, then expired (*m*).

Scor-

(*k*) *Mr. Ives.*—And thighs too.

(*l*) *Mr. Murray's remark.*—In this stage I have seen livid *maculæ*, or spots, on the face.

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

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 flesh, having an intolerable degree of stench and pain; they are sometimes 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
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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.

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(*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 salivations that happened then? They would appear to me to have been purely scorbutic. I do not remember an instance of any considerable salivation in the scurvy. *Answer.* It appears from my diary, that we had then three patients in a salivation, *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.

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 salivation again returns.

It is not easy 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 afresh: 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 foul, bloody ulcers, formerly described (*o*). Some few at this period sink

(*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 fleet of ships; few of whom were afflicted with ulcers: slight excoriations were easily healed, and some ulcers had neither a bloody nor spongy 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, fungous 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.

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

sink 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: drop-sies 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, respiration becomes quickly contracted and laborious, ending in sudden, and often unexpected death.

Many more symptoms 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

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be

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 seen,

be surpris'd 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 *Haslar* 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; such indeed appear to have all the intermediate colours between red and a deep black, and are sometimes of a yellow hue. Mistakes may be made in regard to these stains, as sometimes 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

becomes red, a more dangerous error would 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 seen 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 surrounded with edges of a lemon colour; in the middle of it were broad black spots, and in one or two places small ichorous bladders. Yet notwithstanding such alarming appearances, I never once saw a true mortification occur in the scurvy, 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 sometimes further distinguished, by giving no pain unless after exercise, and when pressed hard, and by being frequently streaked with mixtures of various colours; the affected parts are often hard, though not swelled. In several negroes, whom I have visited when afflicted with this disease, it was easy to distinguish the scorbutic spots from the natural colour of their skin.

4thly. Hard broad blotches, which often make their appearance alone, accompanied with no other scorbutic 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 speck 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 surface of the large black spots, and are often intermingled with the small flat petechial spots. In some they resemble elevated spots of blood, but do not bleed even when rubbed.

2dly. In other patients, the legs and thighs are overspread with large spots of a darkish

or livid colour, of the size of a half crown piece, with a tawny coloured eschar, or hard black ash film on the top. These exactly resemble 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 sometimes issues from underneath the scab before it falls off, but these blotches seldom or never degenerate into ulcers. Sometimes the skin looks as if it was affected with a scurfy black leprosy. This appearance differs from the livid blotches formerly mentioned, by having always a loose film or scab on the top.

3^{dly}. On the trunk, and even on the face, there often appear black or livid rough marks, resembling 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.

4^{thly}. 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.

5^{thly}. 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 scurfs on the head and face.

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

(s) “ Since the first edition of your treatise was published, I have met with two remarkable instances of fevers preceding scurvies so closely, that the latter seemed 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 severe cold, which was followed by a peripneumony or inflammation of the lungs and delirium; upon a crisis by sweat, her delirium went off, and of a sudden her gums swelled, all her teeth became loose, and her jaws so contracted and tense, without any remarkable swelling, 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 seized with the symptoms of an inflammatory quinsy, where the fever ran so 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 sore mouth, and that he had a rash come out
“ on

“ on his legs. Looking into his mouth I
 “ found his gums loose and flabby, and his
 “ breath remarkably foetid, and upon his
 “ legs the true scorbutic spots. I ordered
 “ him a gargle of *tinct. rosar.* & *tinct. myrrh.*
 “ sweetened with *mel rosar.* and directed
 “ 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 doubtless
 “ 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 sea; where he had seldom
 or never eat of salt 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 salt, hav-
 ing a natural aversion to such food. One day,
 to his great surprise, he observed about the
 middle of one of his legs a considerable pro-
 tuberance 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 threatening to his life, an obstinate constipation of the bowels, attended with intolerable gripings.

He took country-lodgings; and, being properly treated, in about six weeks, or two months, recovered.

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

I 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 seeing 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 nigh fallen a martyr to improper prescription.
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(u) The ingenious author of *Historia febris anemal. Batav. ann.* 1746, &c.

The pains the foldier complained of, appeared to me rheumatic. This I the more eafily gave into, as at that time this difeafe was actually frequent. He was bled, and treated accordingly; upon which his pains grew worfe than ever, and no wonder. I began to talk ferioufly to him, and upbraided him with having pretended complaints more than real. But he foon gave me evident marks of genuine diftreffs. Livid fspots on the thighs, rotten, bleeding gums, and his offensive breath, quickly convinced me, that I had miftaken his cafe, and confequently the method of cure.

At aliquis malo fuit ufus in illo.

The fcurvy now began to fpread, and I profited by my former inattention.

Its firft appearances were, a laffitude, breathleffnefs upon the leaft quicknefs of motion, and a tafte in the mouth peculiarly difagreeable; thefe were foon followed by fpongy, painful gums, bleeding from the flighteft touch; foetid breath; pains always of their thighs, frequently of their legs, fometimes of their loins, feldom of their arms. All thefe parts were fometimes difcoloured with purple fspots, which as the difeafe increafed, grew black and broad. The fore parts of the legs and thighs chiefly fuffered. The former I have feen all livid,
the

the latter very closely spotted. Neither were much swelled, 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 loosened, palate and back parts of the mouth ulcerated, asthma increased; they fell away, slept little, old ulcers broke out again, they cried out when turned in bed, and sometimes fainted upon motion of their body.

What surprised me most, was that their appetite, even in these deplorable circumstances, was not greatly impaired; and that none of them could properly be said, though thirsty, to be in a fever. All of them were rather costive; and their urine, though not copious, was always vastly foetid and thick, in those especially who complained of their loins. Most of them were continually spitting; and a small quantity of mercury occasioned a dreadful salivation.

A soldier who laboured under the venereal disease, 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 salivation. The spitting went on, increasing until the tenth day; when the inside of his mouth, lips, and cheeks, became excessively swelled. The stench of his mouth was intolerable to
all

all about him. He every day spit out a quantity of foetid blood, part of his gums, and teeth. He lost almost all the latter; and what was very remarkable, they were found preternaturally enlarged. His urine was extremely foetid, 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 fit 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 these garrisons.

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

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

(*w*) See the remainder of this letter, chap. 5.

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 seat in the country is bleak, and exposed to the sea, where they have been universally afflicted with spungy, putrid gums, swelled 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-surgeon residing in *Fife*, in passing through *Backhaven*, was desired to visit two poor fishermen 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

(x) Vid. Part 3.

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 several letters by different gentlemen, giving an account of the unfortunate and sometimes 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 symptoms of the scurvy from observation, two patients fell under my cure; in one of whom the disease 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 salivation, 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.

viz. a bitter steel-wine with an electary of the *bark* and *gum guajac*. After using them for ten days he was seized with a purging, upon which account they were laid aside, and astringents with *el. vitrioli* prescribed. Soon after this, the tendons in the ham became so 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 so great, that a *caries* of the jaw bone was suspected. The disease still gained ground, he was suddenly seized with a large watery swelling of the *scrotum*, and a hardness and fullness of the belly. An infusion of *mustard* seed, *nutmegs*, and salt of *wormwood* in white-wine was administered. Various other unsuccessful 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. tereb.*

tereb. three times a-day; and afterwards half a drachm of *flor. sulph.* twice a-day: notwithstanding which the pains encreased, and became more universal. He at length observed his skin all over spotted. The spots were of a purple colour, and became daily more numerous; the pains in some 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 *decoct. lignor.* Blisters were applied to his joints. A new symptom appeared, *viz.* a sort of bloody flux, but not attended with pain. He afterwards became greatly dejected in mind, and was subject to faintings. All this time the scorbutic spots 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, *tinct. sacra*, *epispastics*, &c. were prescribed without procuring more than a temporary relief. At last, upon hearing some 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 soon recovered by change of air, warm weather, proper exercise, drinking whey, and taking a gentle laxative when needful.

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

IN 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 such as are deeply afflicted with it, especially in low marshy grounds, and situations nearly bordering on the sea, or the salt 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 sun, especially in the winter months; as also at *Lowe* and *Foy* in *Cornwall* we are in pretty much the like situation. In these places the scurvy is as it were *endemic* from the lower degrees of it, *viz.* pustular eruptions, itching spungy gums, fallow complexion, lassitude and inactivity, weak pulse, black and blue spots up and down the arms, legs, thighs, &c. a foul greasy urine loaded greatly with salinofulphureous salts, to its greatest degree of virulence, accompanied with fungous, livid, bleeding gums, horribly stinking breath, a fallow bloated countenance, vast dejection of spirits and faintings, a swelled belly, gripes, the bloody flux, profuse hæmorrhages from various parts, a difficulty of breathing, especially

especially upon the least motion, very large black, blue, yellow spots, swellings, contractions, and stiffness of the lower limbs, and sordid, spongy, 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 fulsome malt liquors, such 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 ease and appetite: nay, many of our sedentary tradesmen very often fall into it, when they constantly drink the gross ale and beer of this country, and live chiefly on fish and salt provisions. On the contrary, the active, laborious husbandman, who drinks chiefly cyder, eats much herbage, fruits, &c. and breathes a free, open, country air, seldom or never is afflicted with it.

C H A P. III.

The prognostics.

FOR 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;

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artificial

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 sea or land, where it proceeds from such 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 slight causes, are liable to become scorbutic; and that from a certain indisposition of their own body : and in such the malady is to be deemed *constitutional*, or *natural* to the patient. Though in whatever manner it is produced the distemper is still the same, and the like method of cure is proper for its removal ; so 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 scurvy.

Persons who have been weakened by other preceding distempers, such as fevers 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 fevers 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 seasons variously affect scorbutic symptoms. At land they become troublesome when

(*a*) Part 2. chap. 1.

when the winter's rain and cold begin to set 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 mitigated.

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 *second 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 saved 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.

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 at

(*b*) Mr. Ives.—The contraction of their knees sometimes cannot be cured; as happened to one of our marines, *Samuel Norton*, who although he recovered from the other symptoms of a deep scurvy, 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.

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 same manner.

A virulent scorbutical taint, where the breast has been much affected, often ends in a consumption; at other times in a dropfical disposition; 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 soldier terribly afflicted with the scurvy. He was thought to be dying, and was incessantly calling out for death, to relieve him of his
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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,

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 severe pain in his back; which he imputed to hard labour. He had however continued to do the military duty, until about six days before I saw him, when a hardness and blackness appeared on the inside of his arm; soon after his knees became swelled, and so painful as to confine him entirely to his bed. After which the disease 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 so exquisite, 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 slept 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 wrist. In the left arm, the wrist still retained its motion, but a black stain, furrounding the elbow, had rendered that joint altogether inflexible, and the most gentle touch of it gave excruciating pain.

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The night before I saw him, a soft white swelling had rose suddenly on the back of his right hand, which was also extremely painful to the touch. The flexor tendons of that wrist 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 raised spots, in some places red, in others black; while livid and red flat specks of a larger size, feeling rough, and falling off in scales, spread themselves over his back, breast, and hips: he appeared a leper in his body.

Though the spots on the trunk were not so numerous, nor so much elevated above its surface, as the miliary pimples on his extremities, yet no part but the head seemed 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.

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 disease was remarkably slow.

On the 21 *June*, 1760, *John Macgottin* was landed at *Haslar*, from the *Richmond* frigate, who had laboured under the scurvy above 12 months. He was first seized on the coast of *North America*, *April*, 1759, with a gnawing pain in his ankle. That joint grew so 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 disease continued to harass him till the frost began in winter, when he thought himself somewhat 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

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

Being put to bed with some 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 dangerous fits of fainting, attended with violent sweats, 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 sleep 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 seat. His face was bloated, and swelled. The forepart of his gums was ulcerated, corroded, and

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 discharged from the hospital.

Francis Gennard, a *Frenchman*, for three years was seldom or never free from this disease. He was a patient at *Haslar* hospital in the beginning of the year 1759, and went from thence to sea, where, though he abstained entirely from salt food, and lived chiefly on biscuit boiled in water, with wine, yet the scurvy encreased upon him to a great height. On which account he was sent 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 sent to *Haslar* hospital, where he continued two months, in which time he was considerably relieved, but at last discharged as unfit for the sea service.

C H A P. IV.

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

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

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 wet soils, 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. But it is rather adviseable for persons threatened with this malady, to remove into dry, chearful, and better-aired habitations. Their principal food in such a case should be broths made of fresh flesh-meats, together with plenty of recent vegetables, if they can be procured; otherwise of preserved roots and fruits. Their bread ought to be made of wheat-flour, sufficiently leavened, and well baked; and at their meals they are to drink a glass of good sound 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 rising to any great height, where it is not deeply rooted in the constitution.

In towns or garrisons when besieged, officers

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 sufficiently 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 sound 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 such as are to be met with on the ramparts, with their other food. This precept becomes still more necessary, when the garrison's provisions in store are spoiled or unsound; in which case the use of vinegar is recommended by several authors. *Backstrom's* advice, of sowing the seeds of the antiscorbutic 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 some of the most salutary of them at all times, if they are provided with their seeds, 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 such plenty of wholesome vegetables, as are sufficient to prevent this disease from becoming

(*a*) *Vid. Observationes circa scorbutum, &c.* p. 36.

coming fatal to many of them, except in desert and depopulated countries.

But the prevention of this calamity at sea, and the preservation of a truly valuable part of mankind, *viz.* the seamen 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 considerable fortune in the *East-Indies*, by being *Dutch* Governor of *Sumatra*, was so sensibly touched with pity and humanity for the many afflicted sailors 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.

medicines. Volatile and fixed salts, spirits of all sorts, 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 ineffectual.

Bontekoe recommended to the *Dutch* sailors a strong *alkaline* 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 consulted by the Lords of the Admiralty; which differs from all the former, 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

(b) In his book, intituled, *Consolatio navigantium*, &c.

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 myself experienced, *viz.* salt-water, tar-water, decoctions of *guajac* and *sassafras*, bitters with *winter's bark*, and such warm antiscorbutics as can be preserved at sea; *viz.* garlic, mustard-seed, *pulv. ari comp.* and *spirit of scurvy-grass*; which last was formerly always put up in sea-medicine chests. I have also in various stages, and for different symptoms of this distemper, made trial of most of the mineral and fossil remedies which have been recommended for the scurvy at land; such as *mercury, steel, antimony, vitriol,* and

(*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 trefoil. *Kramer* tried almost every species of dried herbs to no purpose. Vid. part 3. chap. 2.

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

1st, The methods of preservation have been put in practice too late; that is, when the disease had already made its appearance; it being generally then that *elixir vitriol*, vinegar, cyder, and other antiscorbutic medicines, were administered: whereas certain precautions seem necessary to prevent the first attacks; it being found, that almost all diseases are easier prevented than removed.

2^{dly}, Too high an opinion has been entertained of certain medicines recommended by physicians at land, rather from a presumption 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 since prescribed to correct the too great quantity of sea-salt necessarily used by sailors. And the college of physicians at *London* gave it as their opinion, that *Lowndes's* salt made from brine, was preferable for salting sea-provisions, to that made of sea-

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water,

water, even to the bay-salt; from a suspicion 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 smaller degree; yet experience has abundantly shewn, that they have not been sufficient 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 sea; and it is become the received opinion, that it is altogether impossible in long voyages, either to prevent or cure it. But it is surprising, that this ill-grounded belief, so fatal in its consequences, should have gained credit, when we see people recovering from this disease 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

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cured

cured at sea, though these must have occurred to every person who has had occasion in long voyages to be conversant with scorbutic cases (e).

But what is sufficient to convince the greatest sceptic, that this calamity may be effectually prevented, is the present healthfulness 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 presently

(e) Many instances 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 flummery with sugar, and wine in both. At dinner they had portable soup, and about ten messes of broth made with fresh beef during the cruise. On the first appearance of the scurvy, they took occasionally for a purge, a decoction of tamarinds with *sena*, if the following powder, ordered to be taken every night and morning, did not render it unnecessary. *Cremoris tartari scrupulum, salis tartari semisrupulum. Misce.* This powder was taken in half a pint of the *decoct. lignorum*. An infusion of sage, acidulated with *elixir of vitriol*, was used for a gargle; such 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 *decoct. lignor.* and at other times, instead of the *bolus*, from half an ounce to six drachms of *spiritus mindererii*.

sently to mention, and account for. And as it is a satisfaction to know that this disease may effectually be prevented and cured at sea, 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 preservation of so many valuable and useful lives, justly demand; and at the same 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 surest 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 succeeded upon trial, I shall afterwards confirm to be the surest preservative, and most efficacious remedy, by the experience of others.

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 sailors themselves: adding some farther directions, given chiefly with a view to inform the captains and commanders of ships and fleets, 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 appearance in a ship.

As the salutary 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 following are the experiments.

On the 20th of *May* 1747, I selected twelve patients in the scurvy, on board the *Salisbury* at sea. Their cases were as similar 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 sick in the *fore-hold*; and had one diet common to all, *viz.* water-gruel sweetened with sugar in the morning; fresh mutton-broth often times for dinner; at other times light puddings, boiled biscuit with sugar, &c. and for supper, 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 stomach; using 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 symptom none of the rest had) were put under a course of sea-water. Of this they drank half a pint every day, and sometimes more or less, as it operated, by way of gentle physic. Two others had each two oranges and one lemon given them every day. These

they eat with greediness, at different times, upon an empty stomach. They continued but six days under this course, having consumed 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, horseraddish, 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 fit 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 seawater,

not very sound. 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 sorts 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 some accounts the Admiral had received from others; and he with great readiness bought, and put under my care, several hogsheds of the best *South Ham* cyder. During the next cruise, each scorbutic 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 scurvy; which you well know from the conversation which has often passed betwixt us on this subject, was with squill vomits, pills composed of soap, squills, garlic, &c. *elixir vitriol.* and other medicines suited 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 days before. Upon our arrival at port, we sent to the hospital a great many in very dreadful circumstances.

but especially their lassitude 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 scurvy, since 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 disease, 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 vinegar,

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 sailors were terribly afflicted
 “ with the scurvy: but he observed, that
 “ the *Dutch* ships then in company were
 “ much more free from this disease. He
 “ could impute this to nothing but their
 “ different food, which was stock-fish and
 “ gort; whereas ours was salt fish and oat-
 “ meal (*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 chest 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
 “ another with the rinds, so that the deck
 “ was

(*b*) Discourse on the scurvy, p. 111.

(*i*) The first is seldom now put on board ships of war, and of the last *English* sailors eat but little,

“ was always strewed and wet with the
 “ fragrant liquor. The happy effect was,
 “ that he brought his sailors 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 *Corfica*; 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 surgeon being in the *Guernsey* 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
 “ sea, 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 surprisngly 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 so many useful observations upon this disease; and has had the greatest opportunities of being acquainted with it, as he for a considerable 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 suffi-
“ ciently 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 (l)*; where fifty patients belong-
“ ing to the *Canterbury*, and seventy 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 history more may suffice to put this matter out of doubt.

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

(l) See the former part of this letter, chap. 1. p. 63, 64.

(m) Vid. *Harris's* collection of voyages, and *Purchas's* collection, vol. 1. p. 147.

“ *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
 “ *Ascension* 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 sails; and, upon having a con-
 “ trary wind for fifteen or sixteen days,
 “ the few who were well before, began
 “ also to fall sick. Whence the want of
 “ hands was so great in these ships, that
 “ the merchants who were sent to dispose
 “ of their cargoes in the *East-Indies*, were
 “ obliged to take their turn at the helm,
 “ and do the sailors duty, till they arrived
 “ at *Saldania* (*n*); where the General sent
 “ his boats, and went on board himself, to
 “ assist the other three ships; who were in
 “ so weakly a condition, that they were
 “ hardly able to let fall an anchor, nor could
 “ they hoist out their boat without his
 “ assistance. All this time the General’s
 “ ship continued pretty healthy. The rea-
 “ son 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

(*n*) A bay near the Cape of Good Hope.

“ ral having brought some bottles to sea,
 “ he gave to each, as long as it lasted, three
 “ spoonfuls every morning fasting. By
 “ this he cured many of his men, and pre-
 “ served 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
 “ sick, 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 crowded 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 fatal 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 seem 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
 same

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 disease, besides some hundreds who died in their cruises. 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 disease, where the before-mentioned fruits were properly, duly, and in sufficient 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. *Ronssseus*, the first
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 fatal 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 siege 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 casks, so that you can make a lemonade, or rather give to the quantity of three or four ounces of their juice in whey, you will, without other assistance, cure this dreadful evil. *Krameri medicina castrensis.*

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 sorts are nauseated and abhorred, the very sight of these fruits raise the drooping spirits of the almost expiring patient. I have often observed (upon seeing scorbutic patients landed at our naval hospitals) that the eating of them was attended with a pleasure easier to be imagined than described. Hence Lord *Delawar*, a very great sufferer 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
 " provided these fruits as a specific for the
 " most terrible of evils (*t*)."

As oranges and lemons are liable to spoil, and cannot be procured at every port, nor at all seasons in equal plenty; and it may be inconvenient to take on board such 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 squeezed 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, so that there may be the largest surface above to favour the evaporation. For this purpose a china basin or punch-bowl is proper, and generally made in the form required; all earthen glased vessels are unfit, as their glazing 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 basin containing the juice in the middle of it) until the juice is found to be of the consistence of a thick syrup when cold. The slower 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 consistence.

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 preserved for several years.

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 smartness and fragrancy.

If it be judged of any consequence to preserve the perfect fragrancy of the fruit, I have found, by experiments, that there are several 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 some 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 essential oil of the rind is thus subtilised, 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

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

M 2

of

(*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 lemon-juice. Indeed the benefit presumed to be derived from the flavour 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 flavour 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 as a greater, and tear open the little cells in which the essential oil is contained. This essence flows plentifully out, and is imbibed by the sugar. When one part of the sugar is sufficiently impregnated and wet, scrape it off with a knife, and put it into a bottle: repeat the same operation until the whole essence 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.

of the world will only cost the labour of pulling them, must be taken from the trees during the rainy months; as for seven or eight months in the year, during the dry seasons, in those countries, their juice is harsh and apt to gripe. A number of them being collected, a small slice 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 seasoned cask, from which, after standing some days, it may be drawn clear from the sediment at bottom and the scum at top. If needful, it may be afterwards strained, and then exposed to the heat of the sun 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 consistence 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 sailors 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 sovereign remedy for, and a preservative against a scorbutic habit of body.

Since the second edition of this treatise, several accounts have been transmitted to me concerning the efficacy of these fruits in the
scurvy

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 sloth and idleness, and a depression
“ of spirits, from being pent up in a ship,
“ without having any pleasure, amusements,
“ or variety. But having purchased a quan-
“ tity of lemons, he daily distributed them
“ to his scorbutic patients, who were then
“ to the number of *ninty three*. They suck-
“ ed the juice, and kept the peels constant-
“ ly applied to their gums. The effect was
“ surprising; many whose spungy and
“ putrid gums wholly covered their teeth,
“ and who could not rise from their beds
“ without fainting, were in a few days
“ able to walk the deck, and soon after-
“ wards returned to their duty. Those
“ whose tendons were much contracted, and
“ others who had bleedings at the nose and
“ mouth, reaped no less benefit from those
“ fruits.”

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

45 | “ The scurvy, as I mentioned before,
 “ began about the end of *May*, and continued with us till the 8th of *July*. There
 “ were then between 40 and 50 with various 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 scorbutic ulcers without any other symptoms. I luckily kept some lemon juice got at *Madeira*, and with the assistance of Captain *Haldane*, who gave me any quantity I wanted, we palliated the symptoms; 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 so kind as to give me.

“ On the 8th of *July* we put into *Madagascar*, 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 provisions, we compleated the cure
“ in ten days after we failed. For though
“ several men of weakly constitutions, and
“ such as were aged, had the most violent
“ symptoms, 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*, surgeon of the *Royal Wil-*
liam, informed me, “ that having procured,
“ when at sea, two chests 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 relapse, as others who obtained
“ health by means of fresh broths, wine,
“ flummery, &c. given at sea. His me-
“ thod was to allow each man two lemons
“ a day; the juice of which they drank
“ mixed with small 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
“ remedies in the scurvy, and may cure it
“ at sea.”

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

22+
 “ That ship sailed 6th *November*, 1759,
 “ from *Plymouth*, and was in the *Bay* of
 “ *Biscay* till *June*, 1760. During this long
 “ continuance at sea, several of the people
 “ became scorbutic. The boatswain’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 relapse.”

The following extract of a letter dated
 11th *November*, 1760, from the *Torbay* in
Plymouth Sound was published in several
 of the monthly Magazines.

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 “ We have been constantly cruising from
 “ the latter end of *July* till this time, ha-
 “ ving no sick, except a few scorbutic,
 “ whose symptoms daily grew worse, till
 “ happily relieved by lemons, which our
 “ captain bought of a *Spaniard* at sea, and
 “ distributed to them twice a day, which
 “ produced so remarkable a change, that
 “ above a dozen with black swelled and con-
 “ tracted legs, putrid gums, and difficulty
 “ of breathing, were in two weeks so far re-
 “ covered, as to have no appearance of the
 “ scurvy 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 sick, upon occasion, with their stores. And it may be proper to acquaint them, that most berries, and several fruits, when gathered two thirds ripe on a dry day, while the sun shines, if put into earthen pots, or rather in dry bottles, well corked, and sealed up, so 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 supply themselves with at every port in *England*, from the pastry-cooks shops, with proper directions for their preservation. Green gooseberries will keep for years, if, after being put into dry bottles, their moisture is exhaled, by putting the bottles slightly corked into a pot of water, which is allowed to come nearly to boil, and continue so for a little; when a very small quantity of juice yielded by them is to be thrown away, and they are afterwards kept close stoppt. These would prove a sovereign remedy for the sick: and, by such 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 wholesome herbs and roots may likewise be preserved at sea, according to the

the different directions given for that purpose in books of chemistry and confecti-
onary; such as small 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 salt at bottom;
then a thin layer of the vegetable covered
with salt, and so alternately, till the jar is
full; when the whole is to be covered with
salt and well pressed down with a weight,
and its mouth close stopt, that no air or
moisture may enter. At using, the salt 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 sovereign remedy, the
Greenland scurvy-grass (*y*), may be pre-
served, and that pots of it have been brought
over quite fresh and green. Another arti-
cle, which would be of great benefit in the
British navy, and may be purchased at an
easy rate for the ship's company, is what
the *Dutch* call *zourbool*, 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 extra-
ordinary case of a sailor related by *Bachstrom*.

the *Dutch* have an instrument for the purpose; the thinner the cabbage is sliced, the better it will be preserved. Grease then the inside of the cask, so as to stop up all the pores, and cover the sides and bottom with a thin paste of leaven'd flour; on the bottom strew first a little salt, then fill up the cask with alternate layers of salt and cabbage, until it is near full. The quantity of salt 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, so 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, so as no air may enter. Above this cover put a considerable weight, to press the cabbage down. When it has stood thus for a fortnight, and the juice of the cabbage is collected at top and becomes sour, 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 sent 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 sailor ought to lay in a stock of onions. When this stock is exhausted the captains may have recourse to their pickled small onions; and with fowls, mutton, or portable soup, and the four cabbage before-mentioned, of which the *Dutch* (z) sell great quantities, they will be

(z) The *Dutch* sailors are said to be less liable to the scurvy than the *English*, owing to this pickled vegetable carried to sea. *Vid. Kramerii 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 saltness would rather prove hurtful in this disease. But this objection is founded upon a very false 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 preserved in this manner, so far from being salt after duly washing them in warm water, require to be eat with salt: they are thus preserved quite succulent and green. Their virtue is the same as if taken fresh 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 necessities in long and sickly voyages, it would not be amiss to add some boxes of portable soup; 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
ship's

be able to make a broth at sea, 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 wholesome 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-crelles, would furnish these at any time.

ship's company ought to have some of these onions, or when there are none on board, some garlic or shallot (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 $\frac{1}{2}$ or $\frac{1}{3}$ short allowance of salt 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 salt 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 sugar and a sufficient quantity of orange-juice to make it into punch. A gallon of orange juice is sold for six shillings, which allowing an ounce of it to each man in the day, will serve 128 men, and the expence be three-pence half-penny a week for each; whereas when at $\frac{1}{3}$ 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 sufficient to enable the purser 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 served out in full allowance, and this mess 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.

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time. Such seeds will likewise grow on wet cotton.

Besides 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, blackberries, currants, elderberries, or even *Seville* oranges) to ferment them into made wines or beer. These I am persuaded will be found preferable 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.

(*a*) See part 3. chap. 1.

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 see 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 severity 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 grosser, 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 surprise, 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 James's*

(*b*) See voyage to *Hudson's bay*.

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

James's at *Charleton* island in 1631 (*d*), and most others who attempted it. A set of failors, consisting of seven men, was left two winters successively, in the years 1633 and 1634, at *Greenland* and *Spitzbergen*, by way of experiment: but every man of them next spring 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, seems to have been owing to the world's ignorance of the distemper at that time, and the pernicious methods recommended to them for preservation; 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 deserves particular attention is, that those who live on the coarsest diet and salted 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 distemper became less frequent (*g*). And among the first cures recommended to the world was wine, with wormwood infused in it (*h*); 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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(*g*) Bruneri tract. de scorbuto.

(*h*) See part 3. chap. 1. Olaus Magnus.

(*i*) See part 3. chap. 2.

(*k*) Vid. Moellenbroek de arthritide vaga 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 stop was put to the progress of this disease, by the advice of *Erbenius* the King's physician, with a simple decoction of fir-tops; by which the most deplorable cases were perfectly recovered, and the rest of the soldiers 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 antiscorbutic 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 scurvy. The men in their distress by chance found near them this tree growing in the mountains, and experienced it to have a most surprising antiscorbutic virtue. At the same time while *Alexius Tschirikow* was passing the winter in the river *Judoma*, a considerable number of his men were also

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 (*l*).

I am inclined to believe, from the description given by *Cartier* of the *amedá* 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 sort vulgarly called the *black*, which makes the most wholesome beer, affords a balsam superior to most turpentine, though known only to a few physicians.

A simple 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

N 2

drink

(*l*) *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 *sassafras*, others the white thorn; but, in his third voyage, he mentions the white thorn, and makes the *amedá* to be three fathom in circumference.

drink may be prepared at any time. But where it cannot be had, the common fir-tops 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 spruce beer; to which a small 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 several 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 several patients in the scurvy, without producing any very considerable effect.

In the *Swallow* sloop 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 digestion. 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 salt beef and pork, and even of biscuit. This flour must be well leavened, and baked into fresh bread, instead 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 easily 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 sea. 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, flummery, roasted or stewed apples, and if they can be got, stewed barley, with raisins, or currants, sago and wine, &c. but particularly the

four cabbage, and small onions, boiled with the portable soup made weak. Their food and drink ought to be sharpened with the orange or lemon-juice; which at such 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 solid food: though he would do well to abstain for some time from grosser animal substances, and take no other restorative but wine, with the proper vegetable and lightest mealy substances. A caution is here requisite, that to the convalescents nourishment should be given often, but in a small quantity at a time, so 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 so, as long as their strength, without great weariness or fatigue, will permit. They may next be put into a sling hung below the fore-castle, or betwixt the decks; which will affect them not only by causing 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 chests, where the successive concussions of the body will be more sensibly perceived. And it is to be remarked, that as weak persons 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 seems 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 succeeding agitations of a jolting machine, the circulation is promoted, and the fibres of the body strengthened, and the weakened animal functions invigorated, without any

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considerable loss of spirits, which such people 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 practise these exercises, be made to walk a little upon deck, so as not to over-fatigue themselves; and afterwards be put upon such 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 so 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 scorbutic 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 sort of action. When confined to bed, frictions may
be

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 inconveniences which occur at sea, 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 effects of which are rendered still more pernicious when combined with cold; these require in a particular manner to be guarded against, and are either immediately to be corrected, or their effects 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 ships,

(*n*) See part 2. chap. 1.

ships. In this case, without any inconvenience or danger, a clear open fire, properly secured, when in harbour, might be lighted betwixt decks, to stand upon the *hatchways* 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 such a fire burning for an hour or two in the day, guarded by a centinel, than having fifty or sixty candles lighted in an evening; or burning them constantly night and day in the orlope, and other dark places: whence such parts of the ship are continually replete with the nauseous effluvia of rank corrupted tallow. It would seem indeed no difficult matter, to convert even these into medicinal preservatives 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 service in the sick-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 considered, 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 sensible of relief, and breathe much more freely. So here I would recommend a most simple and easy operation, to be performed in such damp seasons in a ship; which is, putting a red-hot bar of iron into a bucket of tar, which should be moved about, so that all the ship, once or twice a day, may be filled with this wholesome vapour.

Persons for proper security, during an unwholesome 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 flesh-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 such 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 preserved sweet at sea (*r*); and sometimes cannot even be
procured

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

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 sea will sooner or later putrify, according to its various contents, and the manner in which it is kept. It has been experienced, that, by fuming the casks with burning brimstone, water will keep longer sweet. Some add a little oil of vitriol to it; which likewise preserves it a longer time from putrifying. It is a common practice, and a very good one, to throw a little salt into water while warming; and as it grows hot, there will arise a thick unwholesome scum, which is carefully to be taken off as it casts 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 wholesome, 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 salt, 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 destroyed by the boiling.

But as this may be found troublesome to do for a whole ship's company, there are other methods of sweetening 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 such 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 sufficient to promote this process of putrefaction: the effect of which
will

(s) In his ingenious Essay on the *Dunfermline* Spaw, p. 119.

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will be, that the putrescent particles rendered thus volatile, will all quickly fly off; and the putrefaction by this means being stopt, the water becomes wholesome 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 saline, and earthy particles; which is found to be very unwholesome, though fresh and sweet. To make this wholesome and salutary, the stone filtre used on board several ships is very proper, where the water does not abound with vitriol or sea-salt. But its operation is tedious, and it can never pass a sufficient quantity for the use of a ship's company. Sand is the fittest body for separating these unwholesome 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
of

method, however, is troublesome and tedious; for if the sand is sea-sand before it is made use of, it must be purified of all its salts: and it has been found that the sand when used for some time loses its power of softening water. For other methods of purifying unwholesome water, see my Essay on preserving the Health of Seamen in the Royal Navy. When the beef and pork are spoilt, 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 easy to be put in execution at sea.

There are several 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 molasses, may be used to renew the fermentation 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 unwholesome, and are said to have such a corrosive 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 sifted 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 destroyed.

stroyed. 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.

C H A P. V.

The cure of the disease, and its symptoms.

IF proper precautions were taken for the prevention of this disease, 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
simple,

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

Hence the first step to be taken towards its removal either at sea 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 such as are afflicted with the scurvy in a neighbouring desert island in the summer-season, where they live chiefly on *cloud-berries* (*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 salutary country-air in the open fields. Thus a free and pure country-air, with such moderate exercise as at the same time conduces to the agreeable amusement of the mind, is requisite (*b*).

O 2

Their

(*a*) *Fructus chamæmori.*

(*b*) *Mr. Murray.*—What may be called *rufication*, 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
and

Their food should be of light and easy digestion. The most proper consists of broths or soups 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 *sorrel*, *endive*, *lettuce*, and *purslain*. 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 sorts are here in a manner specific, *viz.* oranges, lemons, citrons, apples, &c. For drink, good sound 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 fomented 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 fatigue, 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 fifteen 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,

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,

1st, The method proper to remove a scorbutic habit of body, whether derived from a former taint, or constitutional.

2^{dly}, 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.

3^{dly}, I shall observe what remedies have been recommended upon good authority, and are used in different countries.

And, 4^{thly}, 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

tions are most successfully promoted, when joined with an antiscorbutic diet.

Here milk of all sorts, where it agrees with the constitution, is beneficial; as being a truly vegetable liquor; an emulsion prepared of the most succulent wholesome herbs: but whey, by reason of its more diuretic and cleansing quality, is rather preferable. And upon this occasion the *sal 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 in bed, 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 weakened and impaired by the scurvy.

The *succi 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 serviceable, when made farther diuretic and cleansing, by being clarified with whey. Besides taking them in this manner through

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

Sweat is an evacuation, from which scorbutic persons find the greatest benefit, especially such as have dropfical swellings. It is what nature pointed out to the northern *Indians* for the cure of this their winter disease (*b*), and is found by experience to prove a most salutary evacuation in this distemper. It is practised with remarkable success by the surgeons at the Cape of *Good Hope*, who have the greatest opportunity of treating scorbutic seamen (*c*); is recommended by the first and best writers on this disease (*d*); seems to have been the most usual way of their giving the antiscorbutic juices.

There are, besides, other herbs, whose juices are here of eminent virtue, such as dandelion and fumitory. Many have found great relief solely from the daily and plentiful use of garden cresses. And an antiscorbutic inferior to none, is the juice of the tender sprouting 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. *Kolben'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 disease, genuine spruce beer, with lemon and orange juice, is to be prescribed; or an antiscorbuticale by infusion of wormwood, horse-radish, mustard-seed, and the like, made gently laxative by an addition of senna. It must be drank when pretty fresh or new. But the spring is the most favourable season for a perfect recovery from a scorbutic habit. The learned *Van Swieten* says he has often seen whole families cured of the scurvy in *Holland*, by using an ale, for common drink, in a cask of which some heads of red cabbage cut small, twelve handfulls of water-crelles, 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 scurvy.

(*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 *Hofier's* squadron at the *Bastimentos*, *viz.* burying the scorbutic limbs in hot sand.

(*f*) *Commentar. in Aphor. Boerb.* 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 sea water, with sometimes 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 such 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 so 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 skin: but such washes are to be used with great caution. Preparations of sulphur are the most efficacious, as well as the safest external applications in obstinate eruptions on the skin.

Having said 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

(a) *Urtica urens*.

For an itching and funginess of the gums, with loose teeth, either a tincture of the bark in brandy, or a solution of alum in water will be found serviceable 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 lesser 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 sea-salt, either by itself, or diluted, according as the patient bears it. Tincture of myrrh diluted with water is the best preservative of the teeth and gums from the scurvy.

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

(*g*) Lac is of great esteem in *Germany*, for laxity and funginess 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 some mercurial medicine, where immediate danger is apprehended, speedy revulsion must be made from the salivary glands, by blisters applied to different parts of the body, sinapisms 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 so powerfully falls upon the salivary glands. For this purpose, boluses of *theriac*, with camphire, and *flor. sulph.* are to be given, and repeated every four or six hours, in order to force a sweat; which proves the best mean of abating the strength of the salivation, and rescuing the patient from the danger of being suffocated 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 considerable time, a troublesome salivation, 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 sometimes serviceable, *viz. gum arabic, ichthyocollo,*

thyocolla, &c. dissolved in common drink. Astringent gargles of alum, and a decoction of the oak-bark, are indispensably 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 œdematous, 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 swelling be small, soft, and not very painful; rolling up afterwards with an easy 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 steam 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 such swellings are not removed soon after the patient is put upon a vegetable diet,

diet, the limb should be sweated by burning of spirits, or with bags of warm salt.

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 flesh, 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 she sailed from *Bombay*; where I
 “ found many men labouring under the
 “ scurvy, with large putrid ulcers, and some
 “ 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
 “ send 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

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

“ In the months of *July* and *August*, I
 “ opened near seventy large swellings in
 “ the groin, proceeding entirely from the
 “ scurvy. These I cured on board. In
 “ the latter end of *September* we went to
 “ *Madrafs*, and even there all the sick were
 “ not sent on shore. Hence in our passage
 “ to this place, our company became dread-
 “ fully 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.

“ My method of treating scorbutic ulcers
 “ was to clean the sore, and foment it with a
 “ strong decoction of wood ashes and vine-
 “ gar, dressing with myrrh dissolved in
 “ vinegar, and in some cases where the
 “ sloughs were very deep, I dressed with
 “ warm oil of turpentine. I remarked,
 “ that to make scarifications down to the
 “ circulating fluids occasioned the ulcers to
 “ spread more. I therefore cut only on the
 “ sloughs, taking care not to wound any
 “ of the sound vessels; and I removed as
 “ much of the extravasated fluids as I could
 “ with a clean sponge. I gave the patients
 “ vinegar and water for their common
 “ drink. During the inflammatory state
 “ of the ulcer, I ordered nitre, and kept
 “ the body in a lax state; when the pulse
 “ was

“ 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 pursuing this method I did not lose
 “ one patient of a mortified limb, though
 “ the progress of the putrefaction was some-
 “ times exceedingly rapid, in so much that
 “ a small ulcer of the size of a six-pence,
 “ would spread in forty eight hours, to
 “ eight or twelve inches in circumference,
 “ laying several 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.*
vitriol. are to be given, and often repeated,
 in small quantities at a time; together with
 small doses of the *cort. peruv.*

For pain of the limbs, in the small of the
 back, and breast, and universally in most
 scorbutic pains, whether fixed or wandering,
 the *oxym. scill.* is to be administered in a
 warm mixture; where wine must supply
 the

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 symptoms of this disease, 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 considering 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 seldom 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, since the receipt of your last letter, I have altered my opinion; and submit to your decision, that there is no such 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 symptoms, and the habit was originally sound or plethoric, I never observed any hurt from the loss of a small quantity of blood; which made a succeeding vomit always more safe; and this was followed by a purge, either cooling or warm, as symptoms indicated. Of the first sort were the purging salts, with *sal tartar.* or *tartar. vitriolat.* dissolved in *decoct. lignorum*; or *infus. sennæ et tamarindor.*

P

dicines. These are, the bloody flux in some; and in others, a violent dry cough, accompanied with difficulty of breathing, pain and disorders in the breast. This last often ends in a consumption: while the former, or flux, is very troublesome to stop, and sometimes also proves fatal.

Scorbutic fluxes are not suddenly to be stopt. They, however, are to be moderated. The tone of the intestines must be strengthened :

marindor. &c. Of the last kind was *infus. amar. cum senna*, with the addition of a proper quantity of *canella alba*. And these were repeated occasionally.

So soon 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 *decoct. 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 *sal 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 salts or spirits carried to sea, prevented that from being a general medicine. I have also given a mixture of *cremor* and *sal tartar.* with success, and sometimes *tartar. vitriolat.* (*b*). In violent scorbutic pains, diaphoretic anodynes of *acet. theriacal.* or *theriac. andromach.* with *spirit. mindereri.* 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.* soap, 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 *viscus*, 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-pains,

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

P 2

a glu-

pains, jaundice, &c. all which I have seen; as also great tension of the *abdomen*, lenteries, &c. The appetite then begins to fail, the lungs are affected, respiration becomes contracted, the motion of the heart less vigorous, the circulation 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 tinct. myrrh.* 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 stomachos (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 sent 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

P 2

violent

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 service. In this last case, *tinct. rosar.* well acidulated, and other styptics are necessary.

I know no peculiar treatment proper in the scorbutic dysentery, different from what has

violent pain in his bones and joints. Upon account of the scurvy being then epidemic, he was very sparingly blooded, took a vomit and was purged. Upon which the fever subsided a little; and there appeared a miliary eruption, soon after followed by the several 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 *decoct. lignor.* acidulated with *elixir vitriol.* His diet was water-gruel, rice, sago with wine, and sometimes a little fresh broth or meat from the officers table. The several 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 *tinct. ad stomachic.* The bile in most chronical diseases, especially in the scurvy, is defective either in quality or quantity, and something 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 some remarks on his letter.

(a) Wine would probably have been better.

(b) The

has been recommended by authors on that disease, 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 hospital 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, stomachic bark-bitters, *elixir vitriol.* or the use of some light steel mineral water, will serve to perfect a recovery in all scorbutic cases, where the patient has been much exhausted.

For scorbutic complaints of the breast, blisters applied to the seat 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 same time be promoted by very small doses

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

(c) The medicine recommended, is truly 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,

214 *Of the cure of the scurvy.* Part II.
of *oxym. scillit.* 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
subdued, it sometimes leaves behind it other
disorders; which require the same treat-
ment as is proper for them when proceed-
ing from other causes; together with a
mixture of antiscorbutic medicines for far-
ther security.

Besides the consumptive disposition al-
ready mentioned, a dropical habit is some-
times the consequence; or, what is more
frequent, the legs remain swelled, and ulce-
rated. In this last case, if the ulcers have
been of long standing, sufficient provision
being made for healing them up, by purg-
ing, and issues near the part, an electary
of the prepared crude antimony may be
given, with the addition of æthiops mine-
ral (*k*); and at the same time a decoction of
guajac and sassafras: or, provided they are
obstinate, and the gums sufficiently hardened,
the patient may undergo a slow and gentle
course of mercury. In scorbutic habits, I ge-
nerally 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 mine-
ral, and have found a large dose of *sal diureticus* remove it
speedily.

quantity of *bals. sulph. 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 disease, 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
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(1) Vid. Medical Essays, vol. 1.

(n) *Miscell. curios. medico-phyc, 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 soldiers of the army afflicted with this disease; excepting a few, who, by the severity 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, soonest recovered. He made use of this decoction, with the addition of alum and *mel. rosat.* 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-hair*.

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

(o) *Schroderi dilucidati phytologia.*

Winter's crew when afflicted with this disease, 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 fir tops, esteem it altogether specific in the scurvy. The efficacy of which is further confirmed 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 traveller.

(p) Vid. New Dispensatory, or improvement of Quinsy on the article *Eupatorium cannabinum*.

(q) Vid. Moellenbroek, p. 116. Etmull. Schroderi dilucidati phytologia, p. 2. See account of it, chap. 4.

traveller (*r*). But the Danes (*s*) are said to esteem most *trifolium palustre* or *marsh trefoil*; which they administer sometimes by itself, at other times with the addition of scurvy-grafs.

In *Groenland*, where this disease is extremely frequent, we are told by a gentleman (*t*) who twice visited the country, that the natives make use of scurvy-grafs (*u*) and

(*r*) *Tenellas pini summitates vulgus Sibiriae pro infallibili antiscorbutico remedio habet.* Gmelin Flor. Sibiric. p. 178.

(*s*) *Vid. Aët. Haff. vol. 3. obs. 75. Etmull. Schrod. dilucid. phytol. p. 104. Simon Pauli digress. de vera causa febrium scorbuti, &c.*

(*t*) *Hermannus Nicolai. Vid. Aët. 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; so 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 seized on their first entrance into the cold, find an increase of their symptoms when got into the ice. The attack of the malady is here more sudden, and its progress more rapid, than any where else. The patient has seldom any cure or alleviation till the weather softens: for the month of *July* is very moderate, which is almost the only pause of winter; and at this time the scurvy-grafs step in, and performs incredible wonders. I have been an eye witness to many scorbutics 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 sound as well as sick. Our field and garden scurvy-grafs are bitter and pungent; this is mild and esculent, resembling our sea scurvy-grafs, or *cochlearia minima ex montibus Walliæ*. It is said to acquire a pungency, if transplanted into warmer countries; but

and sorrel together ; and that these two herbs, put with barley or oats in broths made of fowls, or the flesh of rein-deer, have an effect to recover the diseased most surprisngly in a short time, even after having lost the use of their limbs.

The *Norway* cure affords the only well-attested instance, of this distemper being successfully removed by what would seem 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 seems 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 dose ; and it is said to operate by sweat, 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 reflections, 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. Dissert. harmonic.*

I shall now conclude what I have to say on this head with the following cautions and observations.

1st, As to evacuations: It is to be observed, that this disease, especially when advanced, by no means admits of bleeding; even although the most acute pains, a high degree of fever, and dangerous hæmorrhages, would seem 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, seawater, 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 serviceable.

2^{dly}, 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 seemingly pretty hearty, a glass of wine should be given them well acidulated with lemon or orange juice; which is likewise the best cordial in their fainting fits.

When they drop down seemingly 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 fluxes, 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-mixture;

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 salivations and hæmorrhages, but rather hurtful in fluxes. Warm draughts of the decoction gave always relief, if the patient sweated; 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
our

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.

—Warned by my former mistake, I never 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 fevers, altogether dissolved and of a livid colour. Some of the symptoms, vomits of *ipecacuan*. rather increased, *viz.* pains, faintness, 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 antiscorbutic virtue of the squill or sea-onion, 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 symptoms arising from costiveness; but their operation, though sometimes 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, observing that it occasioned bloody stools, I afterwards exchanged it for a ptisan of senna, with cream of tartar; which seemed to answer better. One man drank salt-water every other day, and found it a serviceable purge. Would it cure the scurvy?

But these, though useful, were not able alone to cope with the distemper. An attentive consideration of its symptoms seemed to shew it was putrid. On this I founded my practice; and had soon the pleasure to find, that success 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 scruple, given every night. For this purpose too they were allowed to drink plentifully of warm sage tea; which, with the assistance sometimes of a glass of mulled claret, seldom defeated our intentions. If they did not sweat, an increase of very foetid 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 cleansing gargles, were found indispensable auxiliaries. I have applied blisters 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 elicet. acet. acerr. ana lib. i. sp. tereb. lib. ss. sal. tart. unc. ss. M.* The milder was, brandy and vinegar *p. æ.* camphire and soap *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, sometimes sooner, the symptoms began to abate, the spots turned

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brown,

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.

C H A P. VI.

The theory of the disease.

WE 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 constrict 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,

lessened, 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 disease. 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 so overcome by it, that the digestive faculties are chilled and enervated; and the solids being overbraced by so high a degree of cold, may at last lose their tone or elasticity. 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 sufficient to dispose the constitution to the scurvy 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 succeeded by great and incessant rains usual in these latitudes, or when the season proves

very unconstant. The disease is there likewise much owing to the great length of these southern voyages. But, otherwise, it is not near so 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 several places, describes such a state of air, and its effects, as is often met with at sea: "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*
 "*humidus, natatio in frigida*, gross viscid
 " food, and a neglect of exercise" (*i*); but observes the consequence of perspiration being obstructed by such 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 scorbutic cachexy, when describing the effects of humidity, or of such 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 sensible weight in the body" (*l*).
 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 strength 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 skin, but weakens and relaxes the whole system of solids. Hence, during a rainy cloudy season, 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 sensible 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 salutary purposes 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 sedentary 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

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 deficiency 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 fit 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

(o) Compare *Sanct. aph.* 456. 458. 460. 461. 462. 463. 469. 474. 478. with Lord *Anson's* voyage, p. 101. edit. 5.

effects of these passions upon the human body would require too long a discussion for this place, I shall refer to the authors who have expressly 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 insist 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 scurvy appears most frequently where such food has no share in producing it; its most common occasional cause being the gross viscid diet before described (*q*).

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(*p*) Vid. a medical dissertation 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 viscosity 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 sorts of aliment.

The tenderer or softer 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 fly 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 sea biscuit, pudding, and other unfermented, mealy, or farinaceous substances, it is certain nothing can be more wholesome than the mealy seeds of several plants, as wheat, barley, rice, &c. as also several of the leguminous plants. They afford so wholesome a nourishment, that they are used by the generality of mankind for the greatest part of their food. But some of these substances, in particular wheat-flour,

flour, requires a previous fermentation, in order to attenuate the viscidty 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 fermentation, 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 œdematous 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 perspiration.

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
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in some 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 flesh 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 flesh. 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 four 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 hæmorrhages, 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-
enced

(y) *Parerg. medic.* p. 311.

enced so 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 easily 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 possess 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 designed to feed both on animal and vegetable substances. But though we perceive a person in health, and of a sound state of

body, has a wonderful faculty of converting almost all sorts of alimentary substances into nourishment; yet experience shews, that no man can long bear a diet entirely of flesh 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 said, That scurvy-grass, cresses, and other acrid alcalescent plants, are found highly antiscorbutic; it must likewise be remembered, that they are not perhaps altogether so efficacious as the acescent fruits; or at least become much more so by the addition of lemon-juice, oranges, or a little sorrel; 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 stomach 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 essential quality of an antiscorbutic composition. That they strengthen the powers of digestion appears not only

(a) See chap. 5.

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 senses. Whatever then promotes the secretions, as squills; or whatever, *Sanctorius* observes, either perspires itself, or assists 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 assimilation of grosser 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 acedent tendency. We evidently see in this disease

(*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 salts of the herbs set loose in the stomach; to which he ascribed their cure. He therefore strictly enjoined his patients, to prevent as much as possible these salts from making their escape in this way.

(*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 *sui 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 preserve health and life. If flesh, or animal substances, promote this process in the stomach, as would seem by some late experiments (*b*); we may from thence conclude, flesh-soups 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 aforesaid qualities, the more antiscorbutic 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,

(*b*) *Pringle's experiment* 35.

which, a vegetable, stomachic acid may result. 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 preservatives against this distemper.

C H A P. VII.

Dissections.

THE 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.

N^o 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. N^o 2. a dissection made upon one of *Jaques Cartier's* crew (*a*). N^o 3. to 21. *inclusive*, is Mr. *Poupart's* account of many, and very accurate dissections of scorbutic bodies, in the hospital of *St. Lewis* at *Paris*, in the year 1699 (*b*).

N^o 1.

(*a*) See Part 3. chap. 1.

(*b*) *Etranges effets du scorbut arrivez à Paris, par M. Poupart. Memoirs de l'academie des sciences, 1699, p. 237.*

N^o 1. In the beginning of the disease, the blood, as it flowed out of the orifice of the wound, might be seen to run in different shades of light and dark streaks. When the disease increased, it ran thin, and seemingly very black; and after standing some time in the porringer, turned thick, of a dark muddy colour; the surface in many places of a greenish hue, without any regular separation of its parts. In the third degree of the disease, it came out as black as ink; and though kept stirring in the vessel many hours, its fibrous parts had only the appearance of a quantity of wool or hair, floating in a muddy substance. In dissected bodies, the blood in the veins was so entirely broken, that, by cutting any considerable branch, you might empty the part to which it belonged of its black and yellow liquor; and when found extravasated, it was all of the same kind. *Lastly*, As hæmorrhages were frequent at the latter end of the calamity, the fluid had the same appearance as to colour and consistence, whether it was discharged from the mouth, nose, stomach, intestines, or any other part.

2. The heart was found white and putrid; its cavities were quite full of corrupted blood. The lungs were blackish and putrid; more than a quart of water was found in the breast. The liver was pretty sound;

but the spleen somewhat affected, and rough as if it had been rubbed against a stone.

3. All those who had any difficulty of breathing, or their breasts stuffed or stopped up, had there a quantity of water; and we found more or less of it according as they were oppressed.

4. The breast, belly, and several other parts of the body, were filled with this water or *serum*; which was of different colours; and so corrosive, that having put our hands into it, the skin of them came off, attended with heat and inflammation.

5. We have seen some whose breast was so oppressed, that they died all of a sudden. In the mean time, we found no water neither in their breasts nor in their lungs. But the *pericardium* was entirely fastened to the lungs; and the lungs were glued to the *pleura* and *diaphragm*. All the parts were so mixed and blended with each other, that they made up but one mass, so confounded that one could scarce distinguish one from another. As the lungs were squeezed together in the middle of this mass, they were deprived of their motion, and the sick person was suffocated for want of breath.

6. All those who died suddenly, without any visible cause of their death, had the auricles of their heart as big as one's fist, and full of coagulated blood.

7. We have seen several, who without pain dropped down dead. They had no apparent sickness; only their gums were ulcerated, without any spots or hardness on their skin: yet we found their muscles were mortified and stuffed with a black corrupted blood; and upon handling them, they fell to pieces.

8. A youth of ten years had his gums much swelled, and deeply ulcerated; his breath intolerably offensive. The surgeon was obliged to pull out all his teeth, for the better dressing of his mouth. There appeared afterwards ulcers upon his tongue and cheek. He died suddenly, and his bowels were found mortified.

9. Some with no other symptoms but slight ulcerations of their gums, had afterwards small red hard tumours on their hands, feet, and other parts of their body: after which there appeared imposthumes in their groin, and under their arm-pits, together with blue spots on their body. We found the glands under their arm-pits much enlarged, and surrounded with purulent matter; as well as the muscles of their arms and thighs, the interstices of which were all filled with it.

10. We observed some whose arms, legs, and thighs, were of a reddish black. This proceeded from that black and coagulated blood which was always found under the skin of those persons.

11. We

11. We also found their muscles swelled and hard. This was occasioned by blood fixed in the body of the muscles, which were sometimes so full of it, that their legs remained bent, without being able to extend or stretch them out.

12. The blue, red, yellow, and black spots, which appeared on the body, proceeded purely from extravasated blood under the skin. As long as the blood kept its red colour, the spot was red; if the blood was black and coagulated, the spot was also black, &c.

13. We sometimes observed certain small tumours, which, upon breaking, formed scorbutic ulcers. They proceeded from the blood, with which the tumour was filled: for as often as we took off the plaister, we still found under it a great deal of coagulated blood.

14. Some old persons had such large bleedings from the nose and mouth, that they died of them. The coats of the vessels were eat through by the sharp and corrosive humour.

15. In some, when moved, we heard a small grating of the bones. Upon opening those bodies, the *epiphyses* were found entirely separated from the bones; which, by rubbing against each other, occasioned this noise. In some we perceived a small low noise when they breathed. In them the

cartilages of the *sternum* were found separated from the bony part of the ribs.

16. All those in whose breast any purulent matter or water was found, had their ribs thus separated from the cartilages, and the bony part of the rib next the *sternum* carious for four fingers breadth.

17. There were some dead bodies, in which, if we squeezed betwixt two fingers, the end of the ribs which began to be separated from the cartilages, there came abundance of corrupted matter. This was the spongy part of the bone; so that, after squeezing, there remained nothing of the rib but the two bony plates.

18. The ligaments of the joints were corroded and loose. Instead of finding in the cavities of the joints the usual sweet oily mucilage, there was only a greenish liquor; which, by its caustic quality, had corroded the ligaments.

19. All the young persons under eighteen had in some degree their *epiphyses* separated from the body of the bone; this water having penetrated into the very substance of it.

20. In scorbutic people the glands of the mesentery are generally obstructed and swelled. Some of these were found partly corrupted and imposthumated. In the liver of some few, the matter or corruption was hardened, as it were, into a stone. Their spleen

spleen was three times bigger than natural; and fell to pieces, as if composed of congealed blood. Sometimes the kidneys and breast were full of imposthumes.

21. What was very surprising, the brains of these poor people were always found and entire, and they preserved their appetite to the last.

C H A P. VIII.

The nature of the symptoms, deduced and explained from the foregoing theory and dissections.

THE first symptom of this disease is generally a præternatural change of colour in the face. To explain this, it must be understood, that the solids in the human body are extremely small in proportion to the fluid parts; as appears plainly in the cases of exhausted and consumptive patients. On the quantity and quality of the fluids the colour of the body principally depends; these however are greatly influenced by the condition of the solid parts; thus, a lively colour in the face denotes not only a sound state of the blood, but a vigorous action of the solids, of the heart, and of the whole arterial system: whereas, on the contrary, paleness of the face and a bloated complexion are signs both of a

morbid state of the humours, and of weak and relaxed fibres. These changes of colour are also most perceptible, where the vessels lie most exposed, as in the lips, gums, corners of the eye, &c.

From the relaxation of the solids, and morbid state of the fluids, frequent effusions happen, especially in parts distant from the heart, where the circulation is most languid, and a *nifus*, contrary to its own gravity, required to push it on; as in the legs, when in an erect posture. Hence such persons are observed to have œdematous swellings at first about their ancles, and on their legs; as the weakness and relaxation encrease, the face, and sometimes the whole body, become pale, swelled, and bloated.

Where the chyle is not assimilated, so as to nourish the body, the strength and vigour of our bodies being supported chiefly by well-digested food, a lassitude, heaviness, and an aversion to exercise must ensue.

In this respect, the case of scorbutic people is somewhat singular, that though when at rest they find themselves quite well; yet, upon the least exercise, they are subject to a panting and breathlessness; which, as the disease increases, degenerates into a proneness to faint; and lastly, in the height of the malady, upon using exercise, or an exertion of their strength, or upon being exposed to a sudden change of air, they are apt to drop down dead.

In order to set this in a clear light, it must be observed, that the lungs seem in this disease in a peculiar manner affected by the general weakness and relaxation of the body; perhaps from their perspiration being suppressed, their tone may be greatly weakened.

Now when the body is at rest, the circulation is languid and slow: the blood then, in a small quantity, glides gently through the lungs, notwithstanding their loss of tone. But when, upon using exercise, or an exertion of strength, the velocity of the blood is accelerated, and a much greater quantity, *viz.* that which, when at rest, was almost stagnating in the veins, is at once returned into the right cavities of the heart, and from thence into the lungs; the weakened vessels of the lungs not being able so quickly to transmit so great a quantity, the blood is necessarily accumulated in the *sinus venosus*, right auricle and ventricle of the heart: which causes a laborious breathing and panting, an effort being made by all the powers subservient to respiration, to dilate the breast fuller and more frequently, for the passage of this increased quantity of blood.

This will receive confirmation by several considerations; as for instance, that upon exerting a degree of strength, we hold in our breath; and also that the right ven-

tricle of the heart is larger than the left ventricle, the *systole* of both is *synchronous*, and yet, what is singular, the pulmonary vein is less than the pulmonary artery.

As the disease and weakness encrease, the body becomes susceptible of the most gentle impressions. Hence, upon the least motion of the body, by which the circulation is quickened, and a greater quantity of blood sent at once into the heart, that organ is rendered unable to overcome the resistance it meets with in forcing the blood through the lungs, and weakened unelastic arteries; the accumulated blood stagnates, as it were, in its cavities; an almost entire stoppage of circulation, and pause of the vital motions follow; the patient faints away; till at length the heart is evacuated by his lying at rest, the vital principle is again exerted, the circulation is restored, and he recovers (*e*).

Lastly, It appears by the weakness and feebleness of the pulse, and many other symptoms in this disease, that the whole system of solids is in the most relaxed and weakened condition. Even the heart itself was found putrid (N^o 2.) Its force to circulate the blood, which is not indefinite, must in this case be greatly impaired. The cavities of it, which are fitted to contain only a propor-

(*e*) The swoonings of scorbutic persons are different from what happen to very weak and exhausted people in other diseases, upon being raised up. When they sit, they are quite hearty, and have a considerable degree of strength.

proportioned quantity, were found preternaturally weakened and dilated (N^o 6.) Persons in such a state are apt to drop down dead upon an exertion of their strength, or upon exercise, but more especially upon being exposed to a sudden change of air; it is therefore dangerous to remove them at once from the warm and moist air in the hold of a ship (*f*), into a colder, drier, and purer air. For the effect of this is, to constrict the whole external habit of the body, and to drive the blood at once with great force from thence towards the heart; at which time the velocity, as well as quantity of it, is increased in the internal parts. So that the heart is not able to overcome the resistance it meets with in the weak and unsound lungs (whose vessels are also straitened by the contact of such fresh air;) nor in the arteries, which will be in proportion to the quantity of blood with which they remain distended. But the weak unelastic arterial system is not here able to contract and propel the blood in their canals. On the contrary, the cutaneous vessels being thus

(*f*) The air in the hold of a ship is always moister than even upon the upper deck. This is owing to the cables, and the other contents of the hold, not having a free circulation of air or wind, to dry up the water, either of the sea or rains, poured down upon them. Places below become also extremely moist, by the fresh water and beer spilt in pumping them from the casks, by the bilge-water, and by the cutaneous and pulmonary perspiration of a number of people pent up in the sick apartment.

thus constricted by the external air, the blood may perhaps have, as it were for an instant, a retrograde motion towards the heart, which this debilitated muscle (N^o 2.) cannot overcome. Hence such people drop down dead suddenly, without any other visible cause of their death found upon dissection (N^o 6.) than the weakened auricles of their heart enlarged, and distended with blood. They are observed to have a panting or breathlessness for about half a minute before they expire (g).

I come now to account for the pathognomonic or characteristic signs of this disease, *viz.* putrid gums, &c. I shall upon this occasion observe, that although it is no easy matter to say why, in several general and universal disorders of the body, some particular parts are only or principally affected, while others continue to perform their functions as in health (see N^o 21.); yet we may hereby perceive the goodness of Providence, who, by certain signs peculiar to each disease, points out the malady, and gives us a medical and demonstrative certainty of its existence. But as our inquiry is not into final causes, I shall endeavour to account for these symptoms in the mechanical way.

Putrid

(g) Why only the auricles of the heart in this case are enlarged, *vid. Lancis. de aneurismatibus in genere, prop. 52.* This species of sudden death is called by the great *Harvey*, *suffocatio ob copiam*; and is beautifully illustrated by his experiment, *Exercitat. 1. de motu cordis*.

Putrid gums, foetid breath, and loosening of the teeth, we find also in persons who, by long fasting, are deprived of a supply of fresh chyle. In several religious orders, those who are obliged, by way of penance, to abstain a considerable time from food, perceive their breath become foetid, their teeth loose, their gums spongy and soft (*i*). The same symptoms are also observed in those who are starved to death (*k*). In the scurvy, the gums are affected either from their peculiar structure, or perhaps from the saliva becoming acrid, as every one's experience must convince him it is more so after ten or twelve hours abstinence from food, than at other times.

It was observed before, that the depending situation of the legs, in an erect or sitting posture, occasioned the humours to stagnate there in the very beginning of the disease; in the encrease of it, they often become greatly swelled, and such stagnated blood and humours are, upon the least rupture of the skin, apt to form into scorbutic ulcers. These ulcers generally occur upon the fore-part of the leg, where the least accidental stroke makes a considerable bruise of

(*i*) I have always observed men of the rigorous orders in the church of *Rome* greatly scorbutic. They are remarkable for rotten gums (part of which is commonly eat away) want of teeth, and a most offensive breath.

(*k*) *Vid. Tschirnhaus. medicin. corporis, p. 23. Lister de humoribus, cap. 12.*

of the thin skin, against the hard and sharp edge of the bone. Their appearance is truly described N^o 13. and accounted for N^o 10. and 11.

In such a state of blood (N^o 1.) as appeared both in living and dead bodies, we have no reason to be surpris'd at the frequent hæmorrhages from all parts of the body, fluxes, dysenteries, &c. to which such persons are subject; nor at its bursting out from the scars of old wounds in Lord *Anson's* crew. These wounds are, for many reasons, liable to such accidents; not only from the hard and imperspirable *cicatrix* with which they are generally covered, but from a want here of the *tunica adiposa*, into whose cells the extravasated blood is poured, when it appears in spots on the body (N^o 12.)

In this disease the solids are in so weak a state of cohesion, that the vessels are apt to burst and the blood to be extravasated in great quantities. If this effusion happens very deep (as in N^o 11.) it occasions violent pains, which have often been observed (*l*) to be greatly relieved by the extravasated blood changing its place, and being removed immediately underneath the surface of the skin. It there sometimes appears as if it was a mortification, by which some ignorant surgeons have been misled to make incisions on the part, which have cost some
unfor-

(*l*) *Vid. Van Swieten Comment. in Aphor. 1151.*

unfortunate patients their lives. And in such an univerfal weakness and laxity of the vessels, sudden death has been sometimes owing to a rupture of a large vessel.

There is somewhat indeed singular in the effects of the scurvy upon the bones (see N^o 15. 16. but particularly 17.); whereby it appears to affect chiefly the internal cellular part, which is known to be of a different texture from the outward bony *laminae*. And from thence it is easy to account for those remarkable cases which occurred likewise in Lord *Anson's* squadron, where the *callus* of broken bones, which had been compleatly formed for a long time, was found dissolved, and the fracture seemed as if it had never been consolidated. It must be remembered, that the bones, like all the other parts of the body, are daily nourished and repaired by the aliment. There are many instances of entire bones being generated in the body anew. And it appears, that a *callus* is not (as has been vulgarly supposed) a rude glutinous substance issuing out from the extremities of the bones, by which they are glued together: but is really, like new flesh generated in wounds with loss of substance, a true organised part restored, of the same cellular texture with the other parts of the bone; with this difference, that it wants the outward bony *lamella* (*m*): so that, from this defect,

(*m*) *Vid. Rusch thesaur. anatom. n. 8.*

defect, it becomes, of all other parts of the bone, most liable to be affected by the scorbutic taint.

If in the advanced stages of the disease the cellular texture of the very bones are dissolved, it is natural to suppose, that in the beginning, or where there is only a scorbutic habit of body, no *callus* can be formed; of which Dr. *Mead* furnishes us with a remarkable proof (*n*). However, it is almost universally the case in the scurvy, as observed elsewhere (*o*), that as long as any bone is sufficiently defended by its external thick plates, it will not be found carious in this disease until broken and separated (as in N^o 16. and 17.) or until corroded by a large ulcer of the flesh penetrating to it. For this reason, it is rare to find a carious jaw, after the most virulent ulcers in the gums, unless by some accident, as the pulling out of a tooth, part of the *laminæ* of that bone has been broken. In the same manner, the teeth will likewise be preserved sound, if their outer coats are entire.

There is a reason assigned N^o 18. for the loss of motion which happens commonly to the joint of the knee in this disease. To which it may be added, that the lubricating liniment of the joints is said to be partly composed of the perspirable matter (*p*);
which

(*n*) Discourse on the scurvy, p. 107.

(*o*) Chap. 2.

(*p*) Vid. Van Swieten comment. in Boerhaave aph. 556.

which being here either deficient, or degenerated into a morbid state, may induce this symptom.

It likewise appears, that the mucilage that lubricates the hard tendons, and their sheaths, and which fits them for motion, is of a similar nature with the liquor found in the cavities of the joints (*q*). We have a proof of its extreme depravity in N^o 18; so that they must necessarily become hard, contracted, and unfit for motion.

It is indeed the universal perspiring humour, exhaling from all parts, both external and internal, of the body, which gives softness, pliancy, and suppleness, to the whole machine. And it is perhaps a deficiency of this which occasions hardness of the flesh, contraction of limbs, want of motion, and indurated tendons in scorbutic cases.

Lastly, If we consider the other appearances observed upon dissection, *viz.* the swelled, obstructed, and mortified state of the bowels (N^o 20.); the rottenness of the heart itself (N^o 2.); in some the universal tendency of the body to mortifications (N^o 7. 8. and 9.); the caustic acrimony of the lymph found in its different cavities (N^o 4.); with the condition of the blood, even when alive (N^o 1.), where its dark and livid colour, but especially the greenish hue, denoted the highest degree of malignity;

(*q*) *Vid. Kaau de perspiratione, n. 854.*

lignity; we shall have no reason to be surpris'd at the most extraordinary and anomalous symptoms, which sometimes have occurred in this disease.

C H A P. IX.

The Supplement.

A letter from Dr. JOHN COOK, physician at Hamilton, giving an account of the scurvy in Russia, Tartary, &c.

I Here send you some brief remarks I made in general upon the scurvy in *Russia, Tartary, &c.* in all which countries it is a frequent and dreadful disease.

Taverhoff lies in 52 deg. of N. lat. where the stream of the *Verona* is received into the *Don*. It is situated, as most towns on the banks of that river, on a low sandy soil, and surrounded with lakes, marshes, and woods. The winter commonly begins in the month of *October*. In *November*, all the rivers, lakes, and marshes, are quite frozen over, and the whole country is covered with snow; which continues until about the beginning of *April*, O. S. At this time the snow suddenly melts away, leaving the earth covered with grass, and many wholesome vegetables. The spring is so very short, that the inhabitants are scarcely sensible of it: for in less than fifteen days the weather becomes

becomes excessive hot; and the cold frosty winter is suddenly expelled by a very warm summer, that continues until the month of *September*; during which time the weather is very hot and moist. When I was there in the years 1738 and 1739, 27,000 boors were employed in cutting wood, and preparing it for building of ships for the use of the army; as also about 5 or 600 sailors, who were their overseers, and between two and 3000 soldiers, who guarded the boors to prevent their making an escape. In the month of *February* 1738, the scurvy made its appearance. The boors were not so much afflicted with it as the sailors, nor the sailors so much as the soldiers. Many, both sailors and soldiers, were sent to our hospital this month; but their numbers were greatly increased in *March*. Towards the latter end of *April* they were mostly recovered, and many were discharged from the hospital. In *June* none remained except the most inveterate cases. In *July* an intermitting, and obstinate remitting fever, prevailed. From the 1st to the 20th of *August* we had but few patients. From that time to the 1st of *October*, agues raged with more violence than ever; and fluxes succeeded in *October*. This month the first snow fell; and at that time children were universally afflicted with sore throats. We had afterwards settled frosty weather, and

S

but

but little sickness, except a few inflammatory fevers; until about the beginning of the year 1739, when the scurvy began to shew itself, much about the same time as in the preceding year, and continued its usual length of time.

Astracan is situated in $46\frac{1}{2}$ deg. N. lat. on a small island washed by the *Volga*. Here are many salt lakes, both upon the islands and desert. The soldiers of the garrison are much more subject to the scurvy than the boors, and these last than the sailors. The soldiers live a very indolent life, having but little duty to perform. They eat hardly any thing else, even in their hospitals, besides rye bread and meal, with fish; and have nothing but water for drink, except the decoctions prescribed for them by the surgeons. Their hospitals are very damp and in a ruinous condition. This poor garrison of five regiments, consisting of about 6000 men when compleat, is yearly recruited with between 600 and 1000 men. The boors live also but a lazy indolent life; being employed either in fishing, or in navigating great boats, from *Astracan* sometimes as far as *Tweer*. On the contrary, the sailors work hard, at all times of the year, both in the docks and at sea; and live much better, having good provisions of all sorts. The winter begins commonly in *October*, and continues till *March*. It is extremely

extremely severe during the months of *January* and *February*. The scurvy generally breaks out in the latter end of *February*. I found it here often complicated with other diseases, *viz.* the venereal disease, agues, dropfies, consumptions, &c. The violence of the distemper (except in complicated cases) seldom continues after *June*, or to the middle of *July*.

Riga, the metropolis of *Livonia*, is the last place I shall mention. The winters are here very long. The soil for many miles about it is sandy, and covered with lakes and morasses. The boors living better than they do in *Russia* and *Tartary*, are not so subject here to the scurvy as the soldiers in the army, nor these so much as the proper garrison; for by their labour they gain money, and can purchase flesh in winter. The garrison-soldiers, consisting of between 6 and 7000 men, are most miserably lodged. The walls of their ill-contrived barracks are continually moist and warm. At *Riga*, in the years 1749 and 1750, but especially in the year 1751, the scurvy raged with the utmost violence. It broke out in the month of *February* that year. Here I saw the most dreadful spectacles that ever I beheld. Their gums mortified, as also their lips, which dropped off; the mortification spread to their cheeks, and lower jaw; and the jaw-bone in some fell down upon the breast. When

the mortification first began, we tried the bark, to no purpose. Nothing but death rid the unhappy wretches of their frightful misery.

Dr. *Nitzsch*'s method of cure (a) corresponds with, and is agreeable to the method practised in *Russia*, especially by the *German* physicians and surgeons. What he terms the *hot* or *painful scurvy*, is generally a complication of this disease with the pox. Although some may die in the state he describes, without having any outward swelling upon the body; yet such persons have always scirrhus swellings of the glands in the *abdomen*, particularly of the mesenteric glands, and of the liver, which are perceptible to the touch, even before death. My method of cure was in general as follows, unless some particular symptoms or cases required me to deviate from it. I commonly began with a very gentle purge or two, and then gave the *decoct. antiscorb. (b)*, and *essent. antiscorb.* At *Astracan*, where there are whole fields of horse-radish, we gave the juice of it mixed with a very little brandy, twice a-day. The patients had fresh flesh-meat every day, and what greens or salads we could procure them. They used the warm bath once or twice a-week. Before they eat, drank, or swallowed any medicines, their mouths were well

(a) Vid. Part 3.

(b) I presume the Doctor means the *decoct. sum. pin. &c.* described by *Nitzsch*.

well gargarised with solutions of nitre, &c. Their gums were dressed with *ung. Egyptiac. tinct. myrrh. tinct. lacc.* &c. I obliged them to use exercise, and to walk about both forenoon and afternoon, when the weather would permit. I allowed them to sleep moderately; and forbid them all dried, salt, and fat meats. Fumigating the wards, is common in all the hospitals in *Russia*.

When I came home to this country, I found the denomination of *nervous disorders* universally applied to most chronic and cachectic complaints. Upon examining those complaints in the lower sort of people, who live entirely on mealy substances and a gross diet, I observed they had a universal lassitude, pains which they termed *rheumatic* flying through their body, and a difficulty of breathing upon using exercise. The legs were sometimes swelled, and the belly almost always tense and enlarged. But, whether they had swellings or not, they had generally an ill-coloured scorbutic complexion, and were listless and inactive to a great degree, with complaints of pains in their jaws, teeth, &c. I made no scruple to pronounce such cases scorbutic; and by proper anti-scorbutic regimen, medicines, diet, and exercise, seldom failed to give very sensible relief. I have disobligeed many patients, by saying they had the scurvy; a disease as hateful as it is unknown in this part of the

262 *Sir Charles Linnæus's Letter. Part II,*
world: but the relief they obtained from
antiscorbutics, soon convinced both them
and myself, that their cases were not
mistaken.

*A letter from Dr. Linnæus, giving an account
of the scurvy in Sweden (c).*

D. D. JACOBO LIND

S. p D.

CAR. LINNÆUS

Equ. aur.

A Ccepi hisce diebus ***** a te
missum librum cum epistola *****

Librum etiamnum fugitivis tantum oculis
inspexi, qui linguæ anglicanæ non satis
gnarus sum; curabo autem quam primum
ut coram me legatur ab altero; intellexi
tamen te hoc opere edidisse seculare fætum.

Quæris in epistola quid sentiam ego de
scorbuto. Non deberem me prodere, ante-
quam tua legerim; dicam tamen candidè
viro candido, quomodo morbum intelligo.

Morbus est apud nos, imprimis apud
plebeios frequentissimus. Maris Balthici ac-
colæ,

(c) I am persuaded the reader will be better pleased with
having the sentiments of this celebrated practitioner in his
own elegant dress, than by a translation of them into *English*.

colæ, rustici, fabri ferrarii, et qui e fodinis metalla eruunt, quique per longam hiemem cibis salitis, carnibus falsis, et imprimis halecibus falsis sustentantur, eo laborant.

Mihi videtur morbus consistere in sola discrasia muriatica : et dum falsedo hæc muriatica inficit humores, nec expellitur; scorbutis oritur. Salsedine infectus sanguis in patellam orichalci immissus mox eandem rodit. gingivas et dentes rodit saliva, quæ si in ignem exspuatur magis crepitat; matula ab urina incrustatur magis tartaro quam ab aliis, urinis; corrodit hæc vasa lymphatica, et minimas fibras cullosas facit, homines sic reddit tardos, in majori gradu pedes œdematosos, et pectus asthmate gravatum ab hydrope mediastini seu thoracis quo plerunque pereunt.

Signa apud nos sunt hæc primaria : facies amittit lucem seu nitorem, ut tristes quasi conspiciantur. Tardiores evadunt homines et adclivia adscendentes fere suffocantur ob onus corporis; appetitus cibi languet; a cibo sumpto torpor et somni desiderium : evigilantes manê a somno magis lassos se sentiunt, quam dum vesperi cubitum ibant. Gingivæ laxæ pallidæ et fere œdematosæ, maculæ interdum cæruleæ in femoribus, tibiis, nisi gingivæ sint cruentæ. Qui, labori adfueti, desistunt, citius hoc morbo opprimuntur. Qui, hauriunt spiritum frumenti, œdematosi et hydropici evadunt, Qui inha-

bitant loca depressa, foetida, maritima (cachectici) eo magis periclitantur.

Fabri et metalli fossiores, qui quotidie sudore diffuunt, sudorem effundunt muriæ instar, falsum si digito abstergeas et gustes, nec tamen ægrotant; si vero lædantur ut lectum chirurgi aliquando petant et quiescant, dum consolidatur vulnus interim scorbuto sæpius ita inficiuntur ut vix evadant. Lappones, qui fere omnes ignorant salis usum in cibo, a scorbuto immunes vivunt; honoratiores apud nos a falsis cavent, ne scorbuto corripiantur sine motu viventes. Plebei, qui œdemate pedum obnoxii sunt a scorbuto, sæpe tibiis exulcerantur ulcere cachectico, depascente, hinc miserè vitam transigunt et vivunt; si vero adstringentibus curantur pereunt asthmate.

Cum radices adhuc minus profundas egit scorbutus, hauriunt nostrates acidulas, quæ falsa resolvunt, diluunt, et per urinam effundunt. *Cochlearia, nasturtium aq:*; *armoraciæ* infusum frigide paratum, vulgatissima sunt medicamenta. Succus *cochleariæ nasturtii aq.* &c. magnatibus vere propinatur. *Armoraciæ* radix rasa et cum aceti irrorata coch. ij. affunditur lactis cocti lib. i. fs. caseus aufertur, et serum hauritur quotidie a plebeis; sæpius eventu felicissimo. Turiones *pini* cum *sedo acri* coquuntur, addito momento aluminis, et hauritur strenue; curat scorbuticos. Infusum radices Britannicæ hauritur

hauritur quotidie, et epithemata in eodem decocto cachoeticis pedibus imponuntur, quasi unicum asylum contra ulcera cachœtica scorbutica, a me introductum, quod didici a Coldeno vestrato, et ille ab americanis sylvestribus. Hoc valet tantum contra ulcera cachœtica. *Armoraciæ* radicis syrupus frigide paratus divina est medicina in asthma ex hydrope thoracis scorbutico, nisi altiores fixerit radices, ut eradicari vix queat; pulvis aut electuarium e *maro vero* alternis vicibus propinatur.

Dum ann. 1739, 1740, 1741 medicus eram classis navalis Stockholmiae infinitos hoc morbo decumbentes restitui.

Dabam Upsalii 1755, die 27 Feb.

P. S. Res medica apud nos nuper reviviscere cepit. Pauci itaque scripsere in rebus medicis inter nostrates. Linder, de *Rogfubben* seu scorbuto ante 20 annos edidit libellum, sed non dignus est ut ad te mittatur.

An extract from the Natural History of Norway, by the right reverend Erich Pontopidan, bishop of Bergen.

THOUGH *Norway*, like *Sweden*, is in general a very healthful country, yet it is not exempted from its peculiar diseases, especially the inhabitants of the diocese of *Bergen* along the sea side, and on the west side

side of *File-field* mountains. The air in these parts is not very salubrious, and differs very much from that of the eastern and southern parts of *Norway*. For on the other side of that long chain of mountains, they have both in winter and summer a fine clear sky, with as dry and healthful an air as in any part of *Europe*. Whereas in this province of *Bergen*, the air is generally damp, thick, and foggy; and though it causes milder winters, it is not so healthful as a thinner air. This appears by the effect it has on our peasants, when they come here from other parts of the country; for they seem as if they were entirely out of their element, and can hardly breathe in it, nor does it agree with their health. This must be attributed to the great western ocean that extends from *America* to *Norway*, from the surface of which a vast quantity of damps, or particles of water, are daily evaporated.

Among the diseases which mostly appear in the diocese of *Bergen*, which is the most unhealthful spot in all *Norway*, I shall first take notice of a kind of scab or itch. This is chiefly found among those that live along the coast, occasioned probably by eating great quantities of fat fish, and especially the liver of the cod. This is properly a *scabies scorbutica*, which may be called a leprosy, but not so infectious as the oriental

lepra; for married people live together many years, and the healthy is not infected, though the other party has it. But if they have children, they sometimes take the infection, though not always. This distemper generally lies in the blood a long time before any eruption appears; at last it breaks out into ugly boils on the face: they are generally sent to hospitals erected for that purpose, of which there is one at *Bergen*, and another at *Molde* in *Romsdalen*.

The ordinary scurvy would prevail in this country a great deal more, if it was not for hard work, which is the best preservative against it, and keeps the juices in constant circulation. Hence those who use but little exercise, and have a good appetite, seldom or never escape this distemper. Nature has ordained several berries and roots in this country, which are excellent antiscorbutics, especially scurvy-grass. Some eat this herb raw, others make a decoction of it with milk; and in *Nordland*, where it grows very strong, and is called *erichs-græs*, they use it as a pickle in the winter.

In the east country, or on the other side of *File-field*, they hardly know any thing of these diseases which are common along the coast. The air in those parts, as has been observed before, is much purer, drier, and lighter, and as healthful as in any part of *Europe*.

*Appearances of the scurvy at Swednitz,
Oswego, Quebec, and Crown Point.*

Since the second edition of this treatise was published, we find the scurvy to have made great devastation in different parts of the world.

In the years 1757 and 1758 the *Austrian* garrison in *Swednitz*, a fortress in *Silesia*, during a three months blockade, lost three thousand five hundred men; most of whom, if I am rightly informed, died of this disease.

If we turn our eyes to *America*, we shall behold this calamity still continuing to spread its baneful influence.

During the winter 1756, the unfortunate *English* garrison at *Oswego* was reduced by it to so great distress, that among seven hundred men, they often could not muster eighty fit for duty, a number scarce sufficient to protect them from the incursions of the *Indians*. With the utmost danger from those barbarians, and great difficulties on account of a deep snow, which then covered the country, they sought in the woods for pine tops, but in vain. Only a few were to be found, and those not of the proper *antiscorbutic* kind; so that two hundred of their men died of this disease.

Again, in the winter 1759, the troops in *America* suffered uncommon distress from this disease, as appears by the following extract of a letter from General *Murray*, commander in chief at *Quebec*, to his Majesty's secretary of state.

“ You will no doubt be pleased to observe,
“ that the enemies attempts on our posts,
“ and ours upon their's, all tended to the
“ honour of his Majesty's arms, as they
“ were always baffled, and we were con-
“ stantly lucky. I wish I could say as much
“ within the walls (of *Quebec*). The ex-
“ cessive coldness of the climate, and con-
“ stant living on salt provisions, without
“ any vegetables, introduced the scurvy
“ among the troops, which getting the
“ better of every precaution of the officer,
“ and every remedy of the surgeon, became
“ as universal as it was inveterate; inso-
“ much, that before the end of *April* a
“ thousand were dead, and above two thou-
“ sand of what remained, totally unfit for
“ any service.”

During this distress, some *Canadians* made known to the *English* the following remedy, viz. an infusion of the tops of what the *French* call *epinnete blanche* or *la prusse*, and the *English* the small leaved *white pine*, which exactly resembles the *hemlock pine* in *Eng-land*. These tops were first cut small, and then bruised in a mortar, and to each pound
of

of them was put a gallon of warm water : the whole remained all night near a fire, a person being employed in stirring it often ; next morning the infusion was strained, and half a pint of it administered morning and evening to each patient, or from a quart to three pints were drank through the day. Mr. *Russel*, then surgeon general of that garrison, informed me that this infusion was of great benefit, and that orders were issued by the General for its being daily drank by the healthy by way of prevention, as well as by the sick ; this warm liquor, when applied as a fomentation to contracted limbs, or to scorbutic ulcers, with swelled and inflamed lips, gave much relief.

Extract of a letter from Mr. Mabane, now surgeon-general to the troops at Quebec.

Quebec, 5th of May, 1761.

“ In the winter 1759, I was ordered to
“ *Crown Point* ; there, as in most of the
“ frontiers of *Canada*, the scurvy prevailed.
“ The severity of the cold, and hard duty,
“ (as the centinels were numerous and
“ doubled in the night) contributed as much
“ as the salt provisions to the production of
“ that distemper. The troops, during the
“ preceding campaign, for common drink
“ had spruce beer. *Lake Champlain* fre-
“ quently afforded them fish, and they had
“ what

“ what greens grew spontaneously, *viz.*
 “ *brook-lime, plantane, &c.* Notwithstand-
 “ ing this, the cold weather no sooner
 “ began, than the scurvy appeared with
 “ its usual symptoms, especially contracted
 “ joints. In the latter end of *January*, a
 “ quantity of onions and turnips were sent
 “ us. The patients were put upon a regi-
 “ men of spruce beer and bread, and the
 “ turnips tasting insipid when boiled, they
 “ were chiefly eat raw, together with the
 “ onions and vinegar. This *regimen* stopt
 “ the progress of the disease, but did not
 “ cure it. Nothing but the warmth of the
 “ spring had that effect: those who before
 “ could not walk, after a few days of warm
 “ weather entirely recovered. Those who
 “ had putrid gums and blotches recovered
 “ more slowly, and required the assistance
 “ of green vegetables.

*An uncommon appearance of the scurvy in
 Hampshire.*

In the years 1759 and 1760, there was
 an uncommon appearance of the scurvy in
Hampshire; whether it prevailed in the other
 counties of *England* at the same time, I
 cannot say. It first shewed itself at *Haslar*
 hospital, in the month of *April* 1759, by a
 slight attack on such as were recovering
 from fevers. It continued all that summer
 and

and autumn, until *December*, and the two following months, when it became much more universal and difficult of cure, and it was uncommon for a person long confined to bed to escape it. Men who had never been at sea, as well as sailors, who in several voyages to both *Indies* had never before been afflicted with it, were equally seized: many of whom had been for three weeks or a month in the hospital, living on excellent fresh beef, fops, and greens. I was at first alarmed with its appearance, and ordered broth with greens to be given to all the convalescents by way of prevention, as also to such as were in fevers, notwithstanding which several were attacked with it, though few died.

The disease raged at the same time among the *French* prisoners in the castles of *Colchester* and *Winchester*. Those prisoners had no fever, nor the appearance of any other distemper among them.

Doctor *Welch*, now an eminent physician at *Winchester*, then my colleague physician in *Haslar* hospital, observed several persons afflicted with this disease in different parts of *Hampshire*, and among others a gardener's wife, who was very ill of it, notwithstanding her using vegetables.

If it was not so generally remarked by the apothecaries in the country, it was owing to its being a disease little known. A slight
attack

attack was not suspected to be the scurvy : and most people were unacquainted with the symptoms of the disease. It extended to ships lying at anchor at *Spithead*, as also to such as were hovering on the coast.

The *Jason* and *Deptford* were constantly employed as a convoy for merchant ships from *Plymouth* to the *Downs*, touching at *Portsmouth* in the passage. They were seldom above forty-eight hours at sea, and for twelve months their men had not eat any salted provisions oftener than once or twice in a fortnight ; yet, notwithstanding the constant use of fresh beef and greens, the companies of both ships became greatly afflicted with the scurvy.

In *Haslar hospital*, the appearances of the disease were various. Such as had been long confined to bed, complained of excruciating pains in their limbs : as there was often no appearance of a hardness or swelling, those pains were sometimes judged to be the effect of the rheumatism. But, in six or seven days, an eruption of small, rough, miliary pimples on the fore-part of the leg, or the legs becoming of a livid hue, sometimes streaked, at other times quite red or black, shewed plainly the nature of the distemper. The gums were not always affected. When going to bed, seemingly in good health, men were surprized to find their thighs streaked with large livid and

T

red

red stains. A few, who when in fevers had been blistered, complained of uncommon pain in the blistered parts, which were found altogether black for several inches round their circumference. The *cicatrices* of some old wounds, and the redness usual in those parts, where ulcers formerly had been seated, became also black. In one person an accidental slight scald by hot water falling on the foot, from a bright red changed in twenty-four hours to a dark colour, as if the part was mortified: but those seemingly frightful appearances were unattended with danger. Several who became *scorbutic* complained of their old hurts and bruises; upon examining the parts they were often found hard, discoloured, and very painful to the touch.

Several complained of extreme weakness and a pain of the back. Most of universal pains in the bones, chiefly of the legs and thighs, which were sometimes mitigated by an appearance of the red and livid blotches. Sometimes the nose, at other times the gums bled profusely. Such as died of fevers had their legs several days before death covered with scorbutic small spots, of a purple, red, or black colour. In a person who was dying of the flux, a large, hard, painful, scorbutic swelling arose during the night on the back of his hand. In another dying patient a livid and streaked swelling

formed itself on the inside of the arm below the elbow: the gums and legs of both being unaffected.

The distemper attacked some with a sudden lameness, while walking in the fields belonging to the hospital; when they were brought into the house we often discovered a red stain or hardness about the ankle, or some other part of which they complained.

The gums of several bled, being sore and spongy, without their having any other symptom of the scurvy. One person was greatly alarmed with a spitting of blood for three days, which I found to be no more than the scurvy affecting his gums.

This disease having been very troublesome, but not fatal to above four persons in the hospital, lessened considerably in its frequency from *May* to *August* 1760. It seemed to disappear entirely in *October* and *November* at *Haslar*, as also at *Polchester* castle; and, as I was informed, much about the same time at *Winchester*. When I was at *Winchester*, in *January* 1761, I did not see one man who had the scurvy among 4000 prisoners.

The account here given does not detract from the antiscorbutic qualities of green vegetables, as it is probable that without their assistance few of those patients would have recovered. And it may be well imagined, that either at sea or land, a dread-

ful mortality must have been the consequence, where vegetables, fruit, and wine, could not have been procured.

Some further particulars relative to this scurvy in *Hastar hospital* will be given in the Postscript.

In the months of *April* and *May* 1760, I saw above fifty patients labouring under the scurvy, in the hospital belonging to *Polchester*: and soon after received the following letter from Mr. *Lloyd*, surgeon to the *French* prisoners at *Winchester*, dated 24th *June* 1760.

“ The first patients, sent in the scurvy
“ from the castle of *Winchester* to the hos-
“ pital, were two in *February* 1759. A
“ few were admitted in the months of
“ *April, May, July, August, and December*
“ that year. But in *February* last, and since
“ that time, their number is greatly en-
“ creased, in all to between 3 and 400,
“ and the disease is not yet abated.

“ Young persons, as well as old; the
“ well cloathed and the naked are equally
“ seized. Many of them are landmen and
“ passengers, who had been at sea only for
“ a fortnight or three weeks, before they
“ were taken prisoners, and who never had
“ the like sickness before. How far the
“ diet might be instrumental in producing
“ the malady, you will judge by the fol-
“ lowing account of provisions allowed to
“ the

“ the prisoners, *viz.* Excellent soft bread,
 “ one pound and an half; fresh beef, three
 “ quarters of a pound; beer, a quart each
 “ man per day; peas, half a pint four days
 “ in the week; butter, four ounces, and
 “ cheese six ounces every other *Saturday*.

“ The prisoners in general were allowed
 “ greens all last summer in place of peas,
 “ till within two months of the time, that
 “ those scorbutic complaints became so ge-
 “ neral. They have four acres of a fine
 “ green field, called the airing ground of
 “ the prison, where they may walk and
 “ amuse themselves.

“ I must observe, that the number of
 “ patients in this disease encreasing very
 “ fast, alarmed me greatly, and induced me
 “ to make a particular enquiry into their
 “ manner of living in the prison. I found
 “ it was the practice of many, to sell their
 “ beef and beer to the *English* centinels, so
 “ that their diet was very low and poor.

“ They have the same symptoms as usual
 “ in the scurvy at sea: the mouth and knees
 “ are principally affected; and several have
 “ uncommonly large excrescencies of putrid
 “ flesh sprouting out from their gums.”

A fatal scurvy in the East Indies.

*Extract of a letter from the surgeon of the
America ship of war, dated 11 Nov. 1762.*

Manila, in the island of Luconia.

“ Our long cruise in expectation of com-
“ modore *Kepple*’s arrival, in order to the
“ attack of the *French* settlements at *Bour-*
“ *bon* and *Mauritius*, proved very fatal to
“ our *East-India* squadron: having lost on
“ our return to *Madras* eight or nine hun-
“ dred brave fellows by an extraordinary
“ species of scurvy. And, as the crew
“ of the *America* was as much, if not more
“ afflicted with it than any other ship, so I
“ am enabled to furnish you with a more
“ minute detail of the fatal and diversified
“ symptoms of this calamity.

“ The disease most commonly began with
“ a soft swelling of the legs, which as-
“ cended to the thighs, enlarging them to
“ an enormous size. This swelling after-
“ wards extending itself to the belly and
“ *scrotum*, gradually mounted up to the
“ breast, and sometimes reached even to
“ the head, so that all the cavities of the
“ body being filled and distended with
“ water, as well as the skin, the patients
“ laboured under an universal dropfy, ac-
“ com-

“ accompanied with swelled, putrified gums,
“ a stiffness at the joints of the knees, livid
“ stains and scorbutic spots.

“ The patients had seldom any fever in
“ the first stage of the disease: but when
“ the swelling had once reached to the
“ belly, by its hindering the proper action
“ of the organs of respiration, a difficulty
“ of breathing and a smart fever came on,
“ especially towards the evening. And
“ when the breast became also affected,
“ which happened soon after the swelling
“ had reached the belly, the fever and diffi-
“ culty of breathing were both greatly en-
“ creased. At this time the patients could
“ by no means lie upon their backs: this
“ posture of the body exposing them to the
“ most imminent danger of being suffo-
“ cated.

“ An obstruction of the perspiration, and
“ a difficulty of making urine, occurred al-
“ most always at the commencement of the
“ disease, and were increased as it advan-
“ ced to its height. The parts of genera-
“ tion were in almost every patient dis-
“ tended with water to a vast and enor-
“ mous size. I frequently by *tapping* emp-
“ tied them of three pints or two quarts
“ of water. This operation gave imme-
“ diate ease, though the relief was but of
“ short duration; for the disease, proceeding
“ from causes (afterwards to be mentioned)

“ which continued daily to enforce it, could
“ not be cured, and was with difficulty
“ palliated.

“ Some bore their affliction in the first
“ stage with tolerable spirits, though their
“ legs, thighs and belly were of an un-
“ wieldy size, of a white shining colour,
“ and when pressed with the finger, re-
“ tained for a considerable time its impres-
“ sion, of an inch and a half in depth.
“ Their appetite was at length impaired,
“ their thirst became violent, they com-
“ plained of sharp pains in the bones of
“ their legs and in their joints, as in the
“ common scurvy, as also of an utter ina-
“ bility to walk; an attempt to move four
“ or five steps occasioning a want of breath,
“ as they expressed it, and a faintness.

“ All medicines were here unavailing.
“ In the first stage, gentle purges and diure-
“ tics somewhat relieved their distress, and
“ as the belly filled, it became absolutely
“ necessary to administer *jalap*, and such
“ like violent purges, at least twice a week,
“ to prevent the patient from being suffo-
“ cated by the water; as also diuretics in
“ various forms, and we imagined *oxymel*
“ of *squills* and *garlic* to be of some benefit.
“ When the water had got into the breast,
“ a short cough was a common symptom.
“ Blisters were at this time of service, as
“ likewise pretty deep scarifications of the
“ legs

“ legs and thighs, together with fetons put
“ in the belly. A mortification seldom or
“ never (which was pretty remarkable) was
“ the consequence of any of those opera-
“ tions.

“ But notwithstanding our utmost efforts,
“ the disease always gained ground. The
“ patient after its first attack seldom survived
“ seven weeks, few lived longer, many
“ expired in a shorter time. They all died
“ of a suffocation from water, except those
“ from whom the water was constantly
“ drained off by the means before menti-
“ oned; and they, after languishing for
“ some time, expired at length when re-
“ duced almost to perfect skeletons, all the
“ fluids of their body having been quite
“ exhausted.

“ By this dreadful calamity one third
“ nearly of our number was cut off in the
“ space of nine months, for out of 420
“ men in our ship we buried 130 before
“ we arrived at *Madras*, besides several
“ others, who being in the last stage of
“ their affliction, expired in the boats from
“ the fatigue of endeavouring to get on
“ shore at *Madras*, when the surf of the
“ sea ran very high. However, upon
“ landing our sick, most of them were soon
“ reestablished in health by the use of vege-
“ tables, lime juice, and syrup of garlic.

“ It was an unfortunate circumstance for
“ us, that there was little lime juice in any

“ of the ships of the squadron. The island
“ of *Diego Reys*, from whence we had
“ failed, afforded no limes, nor any ve-
“ getables but a species of *wild purslain*,
“ which grew in a salt marsh. Every cap-
“ tain and surgeon, who had any lime
“ juice, experienced great benefit from it
“ in this disease. One of the captains, who
“ had a quantity of four beer, distributed it
“ among the sick, which was of infinite
“ service to them.

“ The causes of this fatal calamity were
“ principally the sultry heat of the climate
“ and bad provisions, *viz.* bread full of
“ maggots, spoilt beef and pork, water full
“ of vermin, and a very scanty allowance
“ of that, and spoilt rice, which last even
“ in its best state affords only a very poor
“ and watery nourishment.”

A
T R E A T I S E
ON THE
S C U R V Y.

P A R T III.

C H A P. I.

Passages in ancient authors, supposed to refer to the scurvy; together with the first accounts of it.

THIS distemper, in the *Latin* denominated *scorbutus*, is said to derive its appellation from *schorbeet* in the *Danish* language; or the old *Dutch* word *scorbeck*: both which signify a tearing or ulcers of the mouth. Most authors have deduced the term from the *Saxon* word *schor-bok*, a griping or tearing of the belly; which is by no means so usual a symptom of this disease; though, from a mistake in the etymology of the name, it has been accounted so by those authors. The word seems to me
most

most naturally to be made out from *scorb* in the *Sclavonic* language, which signifies a *disease*; this being the endemic evil in *Russia*, and those northern countries, from whence we borrowed the name (*a*).

It is said to have been known and described by the ancient writers in physic under other denominations; and particularly by *Hippocrates*, as the εἰλεὸς αἱματώδης, or third species of *volvulus* (*b*). He says, those who labour under that disease, have a foetid breath, lax gums, and an hæmorrhage from the nose; ulcers sometimes on their legs, which heal up, while others break out anew. Their colour is black, their skin fine and thin; they are chearful, and prompt to action. He afterwards adds, that it was with difficulty cured and often accompanied the patient to his death. *Langius* was of opinion, that this contained a description of our modern scurvy. He imagined also the *lues venerea* to be nothing more than a complication of symptoms and diseases which had been before described by the antients; to prove which he wrote two of his epistles (*c*). *Foësius*, *Dodonæus*, and some others, would here willingly supply a defect, by putting in the particle *z*. This would

(*a*) *Vid. Hist. natural. Russiæ. Commenc. literar. Norimb. ann. 1733, p. 274.*

(*b*) *Lib. de intern. affectionibus. Edit. Foësi, p. 557.*

(*c*) *Epist. 13 et 14.*

would indeed quite alter the sense of *Hippocrates*, making the disease attended with an aversion to all sorts of exercise, as more agreeable to the true genius of the scurvy.

But the most prevailing opinion is, that, in different parts of his writings, *Hippocrates* has described the scurvy under the name of *Σπλῆν μέγας*, a swelling and obstruction of the spleen. After having told us (*d*), that an hæmorrhage from the nose, in persons otherwise seemingly healthy, presaged either a swelling of the spleen, pain in the head, or floating images before the eyes, he describes those with the swelling of their spleen, as having unsound gums, and a bad breath. If these symptoms did not appear, they then had ulcers on the legs, and black cicatrices. After mentioning some symptoms which give reason to expect an eruption of blood from the nose, he adds another sign of it, viz. a swelling under the eyelids; to which if there be joined a swelling of the feet, they would seem to labour under a dropfy. He treats of this disease in another place (*e*); where he takes no notice of the gums being affected, but only of the breath being offensive; the patient's losing colour, being lean, and having bad ulcers. The spleen felt hard, and always of an equal

(*d*) *Prorrhetic. lib. 2. p. 111.*

(*e*) *Lib. de affectionibus, p. 521.*

equal bigness, in those of a bilious habit of body; but in phlegmatic constitutions it was sometimes bigger, and sometimes less. Several received scarce any benefit from medicine, by which the swelling of their spleen was usually but little abated: and the disease not yielding to any remedies, some in progress of time fell into dropfies; while in others the hardness and swelling continued to old age. If it suppurated, they were cured by burning the part. He is elsewhere (*f*) still more particular in his description of that disease. In those who labour under it, the belly is first swelled, then the spleen is enlarged, and feels hard, with acute pain. They lose their colour; become black, or pale, of the hue of a pomegranate rind; emit a disagreeable smell from their ears and gums (the latter of which separate from the teeth); have ulcers on the legs, extenuated limbs, and are generally costive. He attributes those swellings (*g*) to the drinking of stagnating and unwholesome waters; where he describes the *lienosi* as thin, meagre, and extenuated by the disease.

The reader will hereby be enabled to judge, or better by consulting the original itself, how far *Hippocrates* has described the modern scurvy under the appellation of a
swelling

(*f*) *Lib. de intern. affectionibus, p. 549.*

(*g*) *Lib. de aëre, aquis, et locis, p. 283.*

swelling of the spleen. It appears by several passages in his works, that he imagined the yellow jaundice to be owing to an obstruction of the liver, and the black to that of the spleen, especially to a *scirrhus* of it. An obstruction or hardness of the *spleen*, as well as some parts contiguous to it, which he might easily mistake for it, often occurs in practice; and is owing chiefly to such causes as he assigns (*b*), viz. malignant fevers, particularly of the intermittent kind; and, as he justly adds, is a disease not in itself mortal, though of tedious cure (*i*). But dissections have sufficiently proved, that in the scurvy the spleen is but seldom affected, or at least is not the cause or seat of the disease. Dr. Mead gives us an instance (*k*) of a preternatural swelling of the spleen found after death in a countryman of the island of *Sheppey*, who died with several symptoms of the scurvy. But it is to be remarked, the patient laboured under a complicated disease, especially a violent intermitting fever, which is often attended with obstructed *viscera*. That this disease was not known or described by *Hippocrates*, farther appears from his making

(*b*) *Lib. de intern. affection. p. 521.*

(*i*) This distemper is observed by my ingenious friend, Mr. Clegborn, to be one of those, to which the inhabitants of *Minorca* are subject, from their scarcity of well-water, and the frequency of tertian fevers in that island. *Observations on the epidemic diseases of Minorca, Introduction, p. 67.*

(*k*) *Monit. et præcept. medic. cap. 16. de scorbuto.*

making no mention of spots, an usual symptom in the scurvy, nor of many others which almost constantly attend it. Upon the whole, we may be persuaded, that had this immortal author seen the distemper, he, who studied nature with so much care, and copied her with so great exactness, would have left us a more accurate description of it. But the truth is, the warm southern climate in which he lived, was not then, nor is at this day usually productive of it: and the nature of the coasting voyages of the ancients gave him no opportunity of being acquainted with it at sea. So that there seems no occasion for paying him a compliment here; as it is not to be expected he should have hinted at, much less have described a disease, which in all probability he never saw nor heard of.

The succeeding *Greek* and *Roman* authors, are likewise upon this disease entirely silent. They copy from *Hippocrates* pretty nearly the account they give of the *lienosi*; without adding any one symptom which would induce us to believe, that either he meant, or they understood it to be the scurvy (1).

It

(1) *Celsus*, in his elegant manner, almost literally translates *Hippocrates*.

Quibus sæpe ex naribus fluit sanguis, his aut lien tumet, aut capitis dolores sunt: quos sequitur, ut quædam ante oculos tanquam imagines obversentur. At quibus magni sunt lienes,
his

It also seems to have been a disease altogether unknown to the *Arabian* writers. They have made no mention of such a distemper in any part of their works; though *Avicenna* (*m*), the most considerable amongst them, has described the spleen-malady at great length, with the same symptoms as done by the *Greeks*.

Some who are extremely fond of attributing much to the knowledge of the sage ancients, would have it to be the same with the *oscedo* described by *Marcellus* (*n*). Dr. *Poupart* thought the malignant scurvy observed at *Paris*, had a resemblance to the *Athenian* plague, described by *Lucretius* (*o*). *Moellenbroek* imagined the servant of the centurian at *Capernaum* (*p*) to have had this distemper. But such opinions deserve no serious confutation.

It has, lastly, and with greater shew of reason, been esteemed the same disease which afflicted the *Roman* army under the com-
U
mand

his gingivæ malæ sunt, et os olet, aut sanguis aliquâ parte prorumpit. Quorum si nihil evenit, necesse est in cruribus mala ulcera, et ex his nigræ cicatrices fiant. Lib. 2. cap. 7.

Ætius, tetrab. 3. serm. 3.

Paulus Ægineta, lib. 3. cap. 49.

Aretæus de causis et signis morborum, lib. 1. cap. 14.

Cæl. Aurelian chronic. sive tardar. passion. lib. 3. cap. 4.

(*m*) *Can. 3. fen. 15. tract. 2. cap. 5. de signis apostematum splenis.*

(*n*) *Lib. de medicamentis, cap. 2.*

(*o*) *Lib. 6. Vid. Thucydid.*

(*p*) *See Matth. viii. 5.*

mand of *Cæsar Germanicus*. In order to judge of which, it may be proper to transcribe the narration as it is in *Pliny* (q).

“ The *Roman* army under the command
 “ of *Cæsar Germanicus* having incamped in
 “ *Germany*, beyond the *Rhine*, near the sea-
 “ coast, they met with a fountain of sweet
 “ water ; by the drinking of which, in the
 “ space of two years, the teeth dropt out,
 “ and the joints of the knees became para-
 “ lytic (r). The physicians called the
 “ malady *stomacace* and *sceletyrbe*. They dis-
 “ covered a remedy for it, viz. *herba Britan-*
 “ *nica*, a salutary medicine not only in dis-
 “ orders of the mouth and nerves, but for
 “ the quinsy, bite of serpents,” &c.

The whole account seems pretty extraordinary. And I cannot help remarking, that the loss of their teeth, and of the use of their limbs, in two years after drinking this water; the extraordinary virtues ascribed to *herba Britannica*; and the romantic directions afterwards added of gathering it before thunder, favour much of the fabulous credulity for which this author is so justly blamed. But had a more credible historian given us this relation, it would still seem exceptionable, upon many accounts, as referring to the scurvy.

Those places beyond the *Rhine*, viz. the
 northern

(q) *Histor. natural. lib. 25. cap. 3.*

(r) *Compages id genubus solverentur.*

northern parts of the *Netherlands*, are now well known, and no such fountain has ever been discovered. No mention is made of scorbutic spots, which are more frequently observed than what has been here interpreted the *sceletyrbe*. This is supposed to refer to the rigid tendons in the ham. But his delineation by no means seems to express this peculiar symptom in the scurvy. It is understood by *Galen* (*s*), the only author who uses the appellation, to mean a species of palsy very different from the scorbutic contraction.

Strabo (*t*) mentions a like malady occasioned by the use of certain fruits, &c. to have afflicted the army under the command of *Ælius Gallus* in *Arabia*. But *stomacace* may refer to various other disorders of the mouth without supposing it to be the scurvy; as this calamity, when general in an army, occasioning the *sceletyrbe*, or depriving the soldiers of the use of their limbs, must needs have been attended with other concomitant symptoms, equally constant and remarkable in the disease (*u*). These would no doubt

U 2

have

(*s*) *In definition. medic. p. 265. tom. 2. Edit. Charterii.*

(*t*) Στομακάκη τε καὶ σκελοτυρβη πειραζομένης τῆς σφατιάς ἐπιχωρίοις πάθεσι, τῶν μὲν περὶ τὸ σῶμα, τῶν δὲ περὶ τὰ σκέλη πα-
ράλυσιν τινα δηλῶντων, ἕκ τε τῶν ὑδρείων, καὶ τῶν βοτάνων. *Strabon.*
geograph. lib. 16. sub finem.

(*u*) I do not mean, that the scurvy never afflicted armies of old; but only that the accounts we have of it are dubious and imperfect. The first description of a true scurvy
that

have been particularly described by the succeeding writers in physic, who had opportunity of seeing both *Pliny's* and *Strabo's* writings.

There would have been no occasion to have dwelt so long upon this inquiry (as it may appear a matter of no great importance, to be rightly informed whether this disease was known to the ancients or not) if a misplaced esteem for their works had not been productive of ill consequences in practice, and in the cure of this disease. Many, believing the spleen the seat of it, have directed their medicinal intentions to the relief of that bowels; while others have wrote whole volumes to discover the true *herba Britannica*, endued with such supposed miraculous virtues.

But as people are apt to run from one extreme to another, many not finding the disease in any description of the ancients, have supposed it a new calamity, making its appearance in the world, like the venereal disease, at a certain period of time (*w*); an opinion equally, if not more censurable than the former. For as there seems to have

that I have met with, is what occurred in the Christian army in *Ægypt*, about the year 1260, under *Lewis IX.* But there mention is made, not only of the legs being affected, but also of the spots. The fungous and putrid gums are particularly described, &c. *Vid. Histoire de Lewis IX. par le Sieur Joinville.*

(*w*) *Vid. Freind's History of physic.*

have been two reasons principally why it is so imperfectly, if at all, described by the antients, *viz.* their little knowledge of the northern countries, where it is peculiarly endemic, and their short coasting-voyages; so we find, that as soon as arts and sciences began to be cultivated among those northern nations (about the beginning of the sixteenth century, a period remarkable for the advancement of learning over all *Europe*) this disease is mentioned by their historians and other authors. We could not have expected it sooner from their physicians, if we reflect upon their extreme ignorance, and the little esteem in which this science was held (*x*). But when, after the taking of *Constantinople*, the *Greek* writings were dispersed over the western parts of the world, and in the beginning of the next century were made more general and public by the late invention of printing, the art of physic began to flourish in the northern parts of *Europe*; and we soon after find this disease accurately described there by physicians.

In like manner, no sooner were long voyages performed to distant parts of the world, by the great improvement of navigation, and by the discovery of the *Indies*, which

U 3

happened

(*x*) *Vid. Olavum Magnum de medicina et medicis septentrionalibus.*

happened much about the same period of time, than the seamen were afflicted with it; as appears by the voyage of *Vasco de Gama*, who first found out a passage by the Cape of *Good Hope* to the *East-Indies*, in the year 1497; above a hundred of his men, out of the number of a hundred and sixty, dying of this distemper. In the relation of which voyage, the first account of this disease at sea is to be met with (y). At that time, and for a considerable time afterwards, it was a disease little known; as appears by the following narration.

The second voyage of James Cartier to Newfoundland, by the grand bay up the river of Canada, ann. 1535 (z).

“ In the month of *December*, we under-
 “ stood that the pestilence was come upon
 “ the people of *Stadacona* to such a degree,
 “ that before we knew of it, above fifty of
 “ them died. Whereupon we charged
 “ them neither to come near our forts, nor
 “ about our ships. Notwithstanding which,
 “ the said unknown sickness began to spread
 “ itself amongst us, after the strangest
 “ manner that ever was either heard of or
 “ seen; insomuch that some did lose all
 “ their

(y) See the history of the *Portuguese* discoveries, &c. by *Hermen Lopes de Castaneda*.

(z) *Hakluyt's collection of voyages*, vol. 3. p. 225.

“ their strength, and could not stand upon
 “ their feet; then did their legs swell, their
 “ sinews shrunk, and became as black as a
 “ coal. Others had also their skin spotted
 “ with spots of blood, of a purple colour.
 “ It ascended up their ancles, knees, thighs,
 “ shoulders, arms, and neck. Their mouth
 “ became stinking; their gums so rotten,
 “ that all the flesh came away, even to the
 “ roots of their teeth; which last did also
 “ almost all fall out. This infection spread
 “ so about the middle of *February*, that of
 “ a hundred and ten people, there were not
 “ ten of us in health: so that one could
 “ not help the other, a most horrible and
 “ pitiful case! Eight were already dead;
 “ and more than fifty seemingly past all
 “ hopes of recovery. This malady being
 “ unknown to us, the body of one of our
 “ men was opened (*a*), to see if by any
 “ means possible the occasion of it might
 “ be discovered, and the rest of us pre-
 “ served. But in such a manner did the
 “ calamity increase, that there were not
 “ now above three sound men left. Twen-
 “ ty-five of our best men died; and all the
 “ rest were so ill, that we thought they
 “ would never recover again: when it
 “ pleased God to cast his pitiful eye upon
 “ us, and send us the knowledge of a re-
 “ medy for our health and recovery.

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“ Our

(*a*) See the dissection, Part 2. chap. 7. N^o 2.

“ Our Captain considering the deplo-
 “ rable condition of his people, one day
 “ went out of the fort, and walking upon
 “ the ice, he saw a troop of people coming
 “ from *Stadacona*. Among those was *Do-*
 “ *magaia*, who not above ten or twelve days
 “ before laboured under this disease; ha-
 “ ving his knees swelled as big as a child’s
 “ head of two years old, his sinews shrunk,
 “ his teeth spoilt, and his gums rotten and
 “ stinking. The Captain, upon seeing
 “ him now in perfect health, was marvel-
 “ lous glad, hoping to know of him how
 “ he had cured himself. The *Indian* ac-
 “ quainted him, that he had taken the juice
 “ of the leaves of a certain tree, a singular
 “ remedy in this disease. The tree in their
 “ language is called *ameda*, or *banneda* (*b*);
 “ by a decoction of the bark and leaves of
 “ which, they were all perfectly recovered
 “ in a short time.”

Of the colony sent over from *France*, un-
 der the Lord of *Roberval*, there died in the
 winter fifty in this disease (*c*). We have
 some time afterwards the following farther
 account of it.

(*b*) See Part 2. chap. 4. p. 179.

(*c*) *Ann.* 1542. See *Hakluit*, vol. 3. p. 240.

Nova Francia; or, *A description of that part of New France which is one continent with Virginia; in three late voyages and plantations, made by Messieurs de Monts, du Pontgrave, and de Poutrincourt (d), published by L'Escabot, ann. 1604.*

“ Briefly, the unknown sicknesses like to
 “ those described by *James Cartier*, attack-
 “ ed us. As to remedies, there were none
 “ to be found. In the mean while, the
 “ poor creatures did languish, pining away
 “ by little for want of meats to sustain the
 “ stomach; which could not receive hard
 “ food, by reason of a rotten flesh which
 “ grew and over-abounded within their
 “ mouths; and when one thought to root
 “ it out, it grew again in one night’s space
 “ more abundantly than before. As to the
 “ tree called *ameda*, mentioned by the said
 “ *Cartier*, the savages of these lands know
 “ it not (*e*). It was most pitiful to be-
 “ hold every one (very few excepted) in
 “ this great misery, and the miserable
 “ wretches dying, as it were full of life,
 “ without any possibility of being succoured.
 “ Thirty-six died; and thirty-six or forty
 “ more afflicted with it, recovered them-
 “ selves by the help of the spring, so soon
 “ as

(*d*) Collection of voyages and travels, compiled from the library of the late Lord Oxford, vol. 3. p. 808.

(*e*) The *Indian nation at Stadacona* by this time had been cut off.

“ as that comfortable season appeared. The
 “ deadly season is the end of *January*, the
 “ months of *February* and *March*; where-
 “ in the sick die most commonly, every
 “ one in his turn, according to the time they
 “ begin to be ill; so that he who is taken
 “ ill in *February* and *March*, may escape;
 “ but those who betake themselves to bed
 “ in *December* and *January*, are in danger
 “ of dying in *February*, *March*, or the
 “ beginning of *April*. Which time being
 “ past, there are hopes and assurances of
 “ safety. *Monf. de Monts* being returned
 “ into *France*, consulted the Doctors of
 “ physick upon this sickness; which in my
 “ opinion, they found quite new, and al-
 “ together unknown to them; for I do not
 “ find, that when we went away, our apo-
 “ thecary was charged with any order or
 “ directions for the cure thereof.”

The author of this relation afterwards
 observes it to be the scurvy, a malady to
 which the northern nations, the *Dutch*, &c.
 are very subject; and upon this occasion,
 quoting a passage from *Olaus Magnus*, says,
 “ I have delighted myself to recite the
 “ words of this author, because he speaketh
 “ thereof as being skilled, and has well de-
 “ scribed the land disease of *New France*;
 “ only he maketh no mention of the stiff-
 “ nefs of the hams, nor of the superfluous
 “ flesh which groweth in the mouth.” He
 further

further observes, that the savages use frequent sweatings for cure of this malady; and that a singular preservative against it is contentment, mirth, and a chearful disposition of mind; as it commonly attacked the discontented, idle, and repining. But the last and most sovereign remedy, was the *ameda*, mentioned by *Cartier*, which he calls the *tree of life*. This *Monfieur Champlain*, who was then up the country, had orders to search for among the *Indians*, and to lay up a store of it for the preservation of their colony.

The name of the disease is said to be in the history of *Saxony*, written by *Albert Krantz*; and if so, I believe he will be found the first author now extant who calls it the scurvy (*f*). It is next taken notice of by *Euritius Cordus* in his *Botanologicon*, published *ann.* 1534. It is observed that the herb *chelidonium minus*, or lesser celandine, is called by the *Saxons* *schorbock rout*, being an excellent remedy for that disease. Being asked, what disease this is? it is replied, It would seem to

(*f*) He brings down his history to the year 1501. According to *Melchior Adams*, and *Chevreau* in his history of the world, he died *ann.* 1517. I own I could not find it in the edition which I perused: but it is said so by *Wierus*, *Schenkius* in his observations, and others; unless they have mistaken him (which could not be *Wierus's* case) for *Geo. Fabritius*, an author who flourished about the year 1570, and who mentions, in his *Annales urbis Misnæ*, a disease breaking out in the year 1486, *viz.* the scurvy; which he very imperfectly describes.

to be the *stomacace* of *Pliny*; as it occasions the teeth to drop out, and all the mouth is affected by it. In the year 1539, it is mentioned in the same manner by *Jo. Agricola* in his *Medicina herbaria*. *Olaus Magnus*, in his history of the northern nations, published ann. 1555, observing what diseases are peculiar to them, gives us a long description of the scurvy (g). *Jodochus Lomius* does the same in the year 1560 (h).

Soon

(g) *Est et alius morbus castrensis, qui vexat obsessos et inclusos, talis, viz. ut membra carnosæ, stupiditate quadam densata, et subcutaneo tabo, quasi cera liquecens, digitorum impressioni cedant; dentesque, veluti casuros, stupefacit; colores cutium candidos reddit cæruleos; torporemque inducit, cum medicinarum capiendarum nausea; vocaturque vulgari gentis lingua schoerbuck; Græcè, cachexia, forsitan à subcutanea mollitie putrescente: quæ videtur esu salsorum ciborum, nec digestorum, nasci, et frigidâ murorum exhalatione fieri. Sed vim tantam non habebit, ubi muri interiùs tabulis quorumcunque lignorum sunt cooperti. Insuper, si diutius grassetur iste morbus, absinthiaci potu continuato illum arcere solent. Lib. 16. cap. 51. Viribus, primis annis, demum (milite stragibus continuis diminuto) artibus, dolis, et insidiis, obsidentium surripiunt commeatum, præsertim pecudes; quas secum abductas, in herbosis domorum tectis pascendas imponunt; ne, defectu carniû recentiorum, morbum incurrant, quibusvis ægritudinibus tristiores, patriâ linguâ schorbuk nuncupatum; hoc est, saucium stomachum, diris cruciatibus et diuturno dolore tabefactum. Frigidi enim et indigesti cibi avidius sumpti, morbum hujusmodi causare videntur, qualem medici cachexiam universalem appellant. Lib. 9. cap. 38.*

(h) *Interdum bilis atra, ita pestilens fit corruptione, ut cum in corpus extra lienem diffunditur, plane ejus habitum universum corrumpat. Id vitium his signis se prodit os ipseque spiritus male olet, gingivæ vitiantur, sulci vidæque, & nonnunquam subatræ reduntur, ac digito, vel aliter pressæ, ætrum cruorem emittunt: eadem sic laxæ sunt, ut a dentibus discedant*

Soon after we find three eminent physicians, all cotemporary, treating expressly of this distemper, viz. *Ronssseus*, *Echthius*, and *Wierus*. To whom *Langius* may be added as a fourth, having wrote two epistles upon this subject. What is called *Echthius's Epitome*, was the first wrote, though the last published. It would appear from *Forrestus* (*b*), to be a letter sent, in the year 1541, to *Blienburchius*, a physician at *Utrecht*; whose answer is now lost. The first book published expressly upon the scurvy was by *Ronssseus*, in the form of an epistle. The year is uncertain, as he afterwards corrected, and reprinted it in a different form. He is so modest as to say, that had he first seen *Wierus's* accurate observations, he would

discedant facileque eos, vel omnes interdum eximere liceat. Aliquis etiam capiti, itemque præcordiis dolor est, urgetque cibi fastidium: crescente morbo, hæc quoque crescunt, & maculæ quædam lividæ, tanquam vestigia sugillationum, variis corporis locis efflorescunt, in brachiis, scilicet, in coxis, in cruribus, sæpeque per universi corporis cutem, adeo ut, hæc quasi arquato videatur fædata. Inter hæc magna imbecillitas oritur, præcipueque in cruribus, quorum impotentes compages fiunt. Nonnullis, ac potissimum junioribus, crebro sanguis e naribus fertur: quod ni fiat, in cruribus hæ maculæ, quas dixi, & interdum ulcera fiunt. Is morbus Batavis, aliisque populis, qui humiliora, atque palustria loca incolunt, frequens est, utique si his quoque alimenta crassæ, duræque materiæ sumuntur. Rarissimus siccis regionibus, atque editioribus. Omnem ætatem, quolibet anni tempore, nullo discrimine impetit. Senibus tamen gravior, sed frequentior juvenibus esse creditur: quibusdam tamen locis frequentissimus pueris est: idemque autumnò, atque vere maxime recrudesceat.

Lib. 2. *Observ. Medicinal.* p. 130.

(*b*) *Observ. medic. lib. 20. obs. 11.*

would not have published any thing upon the subject. There is an edition of *Ronssseus* put down by *Mercklin* (i) and *Lipenius* (k), in the year 1564; and of *Wierus*'s observations in 1567. The learned Dr. *Astruc* (l) is of opinion, that these last were not published till 1580. It is thus far certain, that those authors corresponded together; and upon *Wierus* sending to *Ronssseus* *Echthius*'s letter, now called his *Epitome*, he published it, together with his own work, *Wierus*'s observations, and two of *Langius*'s epistles, in the year 1583.

C H A P. II.

Bibliotheca scorbutica: or, A chronological view of what has hitherto been published on the scurvy.

A. D. 1541. *Joan. Echthii de scorbuto, vel scorbutica passione, epitome.*

He proposes it as a question, Whether the blood in the scurvy may not be corrupted, without the spleen or any other of the bowels being affected? but is inclined to think the spleen often is. He assigns as causes of this disease, gross and unwholesome

(i) *Linden. renovat.*

(k) *Bibliotheca real. medic.*

(l) *Lib. de morbis venereis,*

some food, such as salted, dried, or putrid flesh and fish, rancid pork, spoilt bread, bad water, &c. He distinguishes the symptoms into two classes. The first contains such as appear at the beginning, and are common to it with other diseases; the second, the succeeding and more certain signs of the malady. Under the first, he comprehends a heaviness of the body, with an unusual weariness, generally most sensibly felt after exercise; a tightness of the breast, and a weakness of the legs; an itching, redness, and pain of the gums; a change of colour in the face to a darkish hue: and observes, that where all these symptoms concur, we may foretel an approaching scurvy.

But the more certain signs he enumerates under the second class, *viz.* a foetid breath, a spongy swelling of the gums, which are apt to bleed, with a loosening of the teeth; an eruption of leaden coloured, purple, or livid spots, on the legs; or of somewhat broader ones variegated or of a dark colour sometimes on the face, at other times on the legs. As the disease advances, the patients lose the use of their legs, and are subject to a difficulty of breathing, particularly when moved, or when they sit in an erect posture; at which times they are apt to faint: but upon being laid down again, they recover, and breathe freely; nay, when lying down they think themselves in perfect

perfect health. But as they cannot always thus continue without some motion, they are subject to these perpetual faintings. The appetite is seldom bad; on the contrary, they generally have a good one. There is sometimes observed an aggravation of the symptoms; with some on the fourth or fifth day, in others on the third. Some few have it every day, but without any fever: others become feverish. Fevers may terminate critically, as it were, in the scurvy: and with such scurvies whole families and monasteries are infected; which generally end either in a fatal dysentery, or, at other times, in a sudden and irrecoverable fainting. During the course of this disease, some are apt to be very costive; while others have a continual purging. Sometimes their spotted legs swell so monstrously, as to resemble the *leprosy* of the *Arabians*; while others have them so extenuated, that the bones seem only covered with skin. The spots of some separate into black and dusky scales, like the leprosy of the *Greeks*; while in others they remain soft, smooth, and shining; and the impression of the finger continues for some time upon the part. After death the spots sometimes disappear; at other times, they break out afresh. Lastly, There have been observed varicose swellings of the veins, particularly in those under the tongue, and of the lower lip.

He afterwards delivers the indications of cure, without giving us any remedies. And it may not be improper to remark, that this is the first description now extant of the scurvy by a physician.

1560. *Jo. Langii medicinalium epistolarum miscellan. lib. 3. epist. 13. de novis morbis; epist. 14. de veterum stomacacia et sceletyrbe, et morbi Gallici tuberibus.*

These two epistles were reprinted by *Ronſſeus*, in order to prove the scurvy to have been a disease known to the ancients.

1564. *Balduini Ronſſei de magnis Hippocratis lienibus, Pliniique stomacace ac sceletyrbe, seu vulgò dicto scorbuto, commentarius. Ejusdem epistolæ quinque ejusdem argumenti.*

He ascribes the frequency of the scurvy in *Holland*, to the diet and air of that country; to their eating great quantities of waterfowl; but principally to their living on flesh, first salted, then smoaked and dried. The weather, he says, had a very great influence upon this distemper. For though it occurred in these provinces at all seasons; yet, by long observation and experience, he had found, that a moist air, and southerly winds, contributed greatly to increase it: and instances in the year 1556, when, during that whole year, they had almost continual rains, with southerly and westerly

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winds;

winds; which were followed by a great frequency of this disease; and to such a height, that many were brought in danger of their lives by it. In 1562, after a very rainy season, there likewise ensued frequent and very troublesome scurvies. So that although this disease was at all times common in *Holland*, from the peculiar air of the country, and the bad waters; yet it often became more general during a moist season. It usually prevailed most in spring and autumn; was milder in the spring, and shorter: but in the autumn, it was of longer continuance, and more obstinate, so as sometimes to endanger the life of the patient. No age was exempted from its attack; which, though severest with old people, yet was more incident to those of a middle age.

From a mistaken theory in judging it a disease of the spleen, he begins the cure by bleeding. He afterwards prescribes a decoction of a number of antiscorbutic herbs, with the addition of *sena*, and some other purgative ingredients: but observing, that the more simple compositions were generally the most efficacious, he thinks, that the use of scurvy-grass, wormwood, and germander, is alone sufficient; the vulgar curing themselves by scurvy-grass, brooklime, and water-crelles. At the end of the cure, he gives gentle physic; forbidding all rough and acrid medicines, especially violent purgatives; till towards the decline of
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the malady, when the patient is able to bear them. For twelve years past, he had used with great success, both for prevention and cure, a tincture, in spirit of wine, of fumitory, scurvy-grass, wormwood, and small germander, or herbs of the like virtue. The spirit was extremely well impregnated by repeated infusions of the fresh plants, and the body kept moderately lax during the cure.

He observes that much depends on the diet. Scorbutic patients must abstain from all kinds of sea and water fowls; from pork, and salt meats. Their drink should be wormwood and germander wine by turns. He prescribes a gargarism with alum and honey for the putrid gums; and orders the rigid tendons in the ham, after friction, to be anointed with cowfeet jelly. He gives several remedies for scorbutic ulcers on the legs. To prevent the disease he recommends gentle physic in the autumn; but especially the use of a slight infusion of wormwood in ale or wine: by which (with the help of a diet of easy digestion, the benefit of good air, and dry lodgings) he has known the scurvy often not only prevented, but cured.

In his first epistle, he accounts for the frequency of this distemper in some places more than in others; from their different soils, climates, and weather, and especially

from the quality of the waters they used; observing that, universally, in marshy countries, people were most afflicted with the scurvy: though their diet and other circumstances were alike with others. In his second epistle, he maintains, that this distemper was known to the ancients, against the opinion of *Wierus*; and remarks, that seamen in long voyages cure themselves of it by the use of oranges. In his third epistle, he recommends the steel and mineral waters.

1567. *Jo. Wieri medicarum observationum hætenus incognitarum lib. 1. de scorbuto.*

He transcribes all the symptoms out of *Echthius* at great length, with the following additions. The weakness in the legs felt at the approach of the disease, is attended with stiffness and pain. The flesh of the gums is often destroyed to the roots of the teeth. Small spots, resembling blood sprinkled upon the part, appear on the legs, thighs, and on the whole body; but the very large, livid, and purple spots, chiefly on the legs. Sometimes this livid colour will shew itself in the back part of the mouth of those who are near death. In the progress of the disease, the tendons of the legs become stiff and contracted. Some are seized with a slow irregular fever. After violent malignant fevers, and double tertian agues imperfectly cured, he has known the

curvy to follow ; upon which a malignant quartan ensued. This still left the scurvy behind it ; which was at last cured by proper medicines. When the legs are greatly swelled, they are sometimes altogether of a livid colour. The pulse, as in a quartan ague, varies : so that at different times, and according to the state of the disease, it is small, hard, quick, or weak. The urine is reddish, turbid, thick, and muddy, like new red wine, resembling that which is usual in the fit of a quartan ague when sweating ; and of a bad smell. He adds afterwards, that if ulcers break out on the legs they are with great difficulty healed up ; being extremely foetid, and of so *putrid* and *gangrenous* a nature, that the application of a hot iron to them occasions little pain.

He assigns as causes of this distemper, unwholesome air, such bad and corrupt food as was used in the northern countries, and by their seamen, *viz.* stinking pork, smoaked rancid bacon, mouldy bread, thick muddy ale, bad water ; melancholy and grief of mind, preceding fevers, the stoppage of usual evacuations, &c.

Though he sometimes bleeds in the beginning, yet he forbids it when the disease is advanced. In this case, after purging with a little *sena* or the like (observing that it does not bear violent purgatives) the patient is

to be sweated twice a-day, *viz.* in the morning, and at four after noon, with a draught of four ounces of the expressed juices of the antiscorbutic herbs; *viz.* scurvy-grass, water-creffes, winter-creffes, or rocket, of each equal parts, with half the quantity of brook-lime; adding a little cinnamon and sugar. The proportion of the different ingredients may be diminished or increased, according to the constitution of the patient, state of the disease, and heat of the body. He would have the herbs always fresh and green when used; and they may sometimes be boiled in goats or cows milk, or rather in whey: but their juice mixed with whey, is preferable to their decoction. He sometimes adds common wormwood, fumitory, small germander, and, in certain cases, moneywort. To people who are fond of a medley of medicines, he gives a long list of all the antiscorbutic and aperient herbs, roots, seeds, &c. to which later authors have made but a small addition; and remarks, that he generally made successful cures by a proper use of a few of these plants. He understood many had been cured by a decoction of wormwood and juniper berries in whey, to which a little saffron was added (*a*). After giving some other

(*a*) R. *Absinth. vulg. succ. bacc. juniper. contus. ana manip. i. lactis caprini lib. iv.* Coque ad tertiæ partis consumptionem. A drachm of saffron is to be infused in the strained decoction, and a warm draught taken three times a day.

other cures usual in his time for this disorder, he observes, that there is nothing specific in the common antiscorbutic herbs, as they are called; but that all acrid plants which incide and attenuate, as also many aperient roots, and warm seeds, are highly serviceable. At the same time, a diet of easy digestion, and of similar intention, must be used, with good sound ale or wine with wormwood infused in it, or milk and whey. Care must be taken to procure dry chearful lodgings, and to banish grief, cares, &c.

He afterwards subjoins various topical applications for the different symptoms (*b*). In his appendix, he particularly recommends whey for the cure of this disease; and gives a description, at great length, of scurvy-grafts, and some other antiscorbutic herbs.

1581. *Remberti Dodonæi praxeos medic. lib. 2. cap. 62. Ejusdem medicinalium observationum exempl. rar. cap. 33. de scorbuto.*

He ascribes the scurvy chiefly to bad diet. He relates, that it was occasioned in *Brabant*, ann. 1556, by the use of some corrupted rye

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(*b*) For the putrid gums, R. *sal. mar. alum. ana dr. ii. æq. font. lib. i. M. Bulliant simul.* The people of *Friesland* use the following. R. *acet. cerevis. lib. ii. bol. armen. unc. fs. alumin. dr. ii. mellis unc. iii. M. Bulliant simul.* The *Saxons* add to the former, *herba sabina*. If the putrefaction is very great, *ung. Ægyptiac.* or *alum. ust.* mixed with honey, may be used; or it is to be stopped by touching with *ol. vitriol.*

brought from *Prussia* during a scarcity of corn. At this time many had not the spots; but their gums were chiefly affected. He gives an instance, however, of its being contracted in a prison, where confinement alone was the cause; the place being well aired, and the diet such as he thought could give no suspicion of its proceeding from thence. He never bled any patient in this disease, but the person in the prison, who had signs of a *plethora*. He generally performed a cure by the use of a few herbs, *viz.* water and garden cresses, scurvy-grass, and brooklime; which last he esteems of inferior virtues to the others. These he thinks sufficient to remove the scurvy, if, at the same time, proper diet is used, especially well-baked wheat-bread. He sometimes gives a gentle purgative at first, and repeats it occasionally: but if the disease is far advanced, purges are not without great caution to be administered. When only the gums were affected, he has cured these often by topical applications. The large livid scorbutic spots like bruises, are oftner seen on the lower extremities than on the arms. If the disease is very virulent, and not removed, the *hypochondria* will also become livid; and the patient in this case be seized with violent gripes, and die.

1589. *De scorbuto propositiones de quibus disputatum est publicè Rostochii, sub Henrico Bruceo.*

The scurvy is endemic in particular countries, from their situation, air, water, and food. In those countries, scorbutic mothers bear scorbutic children, often miscarry, at other times bring forth dead foetuses. He mentions no other symptom, but what is taken notice of by *Wierus*; except a pain sometimes in the right, at other times in the left side, attended with a sense of weight. Upon the malady's increasing, the belly swells, and grows also painful; with an entire loss of appetite. In his theory of the disease, he supposes, that either the liver, or spleen, sometimes both, but oftner the spleen, was obstructed; although it was seldom found scirrhus. He afterwards says, there is often no swelling or obstruction in any of those parts; though, from the quality of the scorbutic humour, produced by improper and gross food, it was natural to expect the spleen might be affected. When the scurvy is very inveterate, it degenerates into the *hypochondriac* disease; a distemper frequent among the inhabitants on the shores of the *Baltic*. It is sometimes complicated with other diseases, *viz.* the dropsy, consumption, and a bilious purging; at other times there is a slow continual fever, and sometimes a tertian ague.

His

His cure consists in diet and medicines. For the first he directs well baked wheat-bread; broth of flesh or fowls, with radish, hyssop, thyme, savory, or the like herbs boiled in it. He allows all sorts of flesh or fowl (except water-fowls) that are of easy digestion, and afford good nourishment. Whatever is dried, salted, smoaked, long kept, and rancid, or of difficult digestion, is to be avoided. Milk is proper for those who are far gone in scorbutic consumptions.

At table the antiscorbutic herbs are to be used by way of salad, and for drink good *Rhenish* wine, or sound beer with worm-wood infused in it. After a moderate bleeding (if the patient be full of blood) and a gentle purge, scurvy-grass, brook-lime, water-crelles, and the roots of horse-radish are to be boiled in milk, and administered to the patient; or their juices may be given mixed with whey, adding worm-wood or mint, if the stomach be weak, sorrel or fumitory if the patient be of a hot constitution, and a fever apprehended, or the roots of elecampane, and the herb hyssop when the breathing is affected. If the patient be of a cold habit, has swelled legs, and the spots are black, the juices are best given in wine, with cinnamon or ginger: or he may take an infusion of horse-radish in *Rhenish*. The author likewise recommends the sweating course from *Wierus*,
parti-

particularly the laconic or dry bath, when the scurvy appears on the external habit or skin. The body is to be kept open by gentle physic, given in goat-whey, repeated every day, or every other day, during the cure. This method, together with the diet before recommended, will effectually remove the scurvy. For lax and bleeding gums, he orders the pickle of olives ; but in his other receipts transcribes from *Wierus*.

De scorbuto tractatus duo ; auctore Balthazaro Brunero.

He has copied *Wierus* in most things ; but is more explicit and full in describing the air productive of the disease. Thus, if the atmosphere of any place is impure, and polluted with exhalations that are gross, moist, putrid, or liable to putrefaction, it causes this distemper ; as in marshy, damp, and maritime countries ; or places where stagnating waters are left after inundations. To which also rainy seasons contribute a great deal, especially where the sun has not influence sufficient to raise and dissipate the vapours. To the diet observed by other writers to occasion the scurvy, he adds black coarse bread ; and observes, that the pernicious effects of such diet and air are considerably augmented, by immoderate watchings, depressing passions of the mind, and stoppage of the natural and usual evacuations.

tions. Foreigners by way of prevention from this disease, when in the air of *Saxony*, take plenty of mustard-seed, finding the good effects of it by experience, together with gentle astringents (*c*).

Brunerus has but one singular observation on this disease, *viz.* He has often remarked, that violent pains in the legs preceded the scurvy, and that the spots and putrefaction of the gums followed soon after. These pains are chiefly about the ancles and joints; on the fore-part of the legs and soles of the feet; sometimes in other parts of the body; attended with a sense of heat and pricking betwixt the skin and flesh. If they continue long, and especially if they become most severe in the night, and do not yield to medicines, and are exasperated by oily and greasy applications, it is a certain sign of a future scurvy. These pains
cease

(*c*) He describes the symptoms and cure in the same manner as *Wierus*; only, by a typographical error, the *deliquium animi* is said to occur when the patient sweats; having *sudat* instead of *sedet* (when he sits up). The whole is taken from *Wierus*; who immediately adds, *de-cumbens respirat facilius, reficiturque*. It may be proper to note another mistake, which he and many other authors have fallen into, in transcribing a medicine from *Wierus* for phagedenic ulcers of the gums. It is the following. *R. mercur. sublimat. scr. ii. alum. ust. dr. ii. ss. aq. plantagin. lib. i. M.* But as this author, in his observations, wrote in *Dutch*, had called the first medicine simply *sublimate*, after the manner of the chemists, by which he meant mercury; his translator into *Latin* unluckily here put in arsenic, making it to be *arsenici sublimat. scr. ii;* in which dangerous mistake many have followed him,

cease upon an eruption of the spots, which are generally very large. In this case, warm steams, discutient fomentations and cataplasms, must only be used, and, if possible, a sweat procured upon the parts. He concludes with the case of a scorbutic patient; whom he first purged, then ordered the juice of water-crelles in goat-whey; of which six ounces were taken twice a day; and, by sweating him, a number of scorbutic spots appeared, by which a violent pain in the thigh was allayed.

1593. *Scorbuti historia proposita in publicum; à Solomone Alberto, &c.*

He is of opinion, that the disease may be hereditary, or got from an infected nurse, and that it is contagious; but adds nothing to the description of symptoms of it as delivered by *Wierus*, unless it be a stiffness or *rigor* of the lower jaw, seemingly from a contraction of the *temporal muscle*; in the same manner as the *tendons* in the ham become stiff and contracted in the progress of the disease, as had been observed by all authors. He says, it is most usual in children, and in either a hereditary scurvy, or that which is got from the nurse.

He treats of the diet proper in this disease at great length: recommends the juices of acid and austere fruits, such as oranges, with which roast meats when on the spit are
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to be sprinkled. These are likewise to be put in soops, and vinegar and wine in the gruels and barley-water. Exercise is necessary.

In full habits he begins the cure with bleeding, but observes that when the disease is advanced, especially if the spots have appeared, it is extremely improper. In this case, if there is an obstruction of the *menfes* or *hæmorrhoids*, those evacuations are by all means to be promoted; which will be of great service, though they may not prove a cure; having seen women regular after child-bed, yet over-run with the scurvy. He prescribes very gentle physic, observing the danger of giving violent purgatives; then gives a long catalogue of aperient and deobstruent medicines (*d*). He remarked, scurvies were very frequent in that and the preceding year, from the unconstant weather and very rainy seasons they had after warm summers.

(*d*) He says, whatever incides, deterges, and attenuates gross, viscid, and fæculent humours, is proper, in order to their being prepared and fitted for evacuation by any of the outlets of the body. For this purpose, in a particular manner, the common antiscorbutics, *viz.* *cochlearia*, *nasturtium*, and *becabunga*, are adapted; being such whose virtues have been approved by long experience. To these he afterwards adds other herbs under the denomination of *hepatic*, *splenic*, and *thoracic*; from an imagined property in them to remove obstructions, and relieve and strengthen particular parts and bowels. When by these means all obstructions are removed, and the morbid humour, the immediate cause of the disease, is sufficiently attenuated

1595. *Petri Foreſti obſervationum et curationum medicinalium lib. 20. obſ. 11. de ſcorbuto malo cognoscendo et curando; obſ. 12. ibid. de quinque ægris à ſcorbuto curatis.*

This is a long letter which the author wrote firſt to his brother in the year 1558, and afterwards ſent to his two nephews ſtudents in phyſic, *ann. 1590.* He ſeems to have been acquainted with no other authors upon this ſubject than *Ronſſeus* and *Echtbius*. The laſt he copies in deſcribing the ſymptoms; all which he confirms and illuſtrates by various caſes of patients. He makes it a diſeaſe unknown to the ancients, though, according to his theory, a diſorder of the ſpleen. It was indeed ſo little known in his time, that many died of it (particularly one *Martin Dorpius*, a clergyman at *Louvain*) to the great ſurpriſe of the phyſicians, who were intirely unacquainted with the very name of the diſeaſe, its nature, or proper method of cure. He mentions likewiſe one *Saſbotus*, a counſellor at the *Hague*, who laboured under a violent ſcurvy; and
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attenuated and prepared, he obſerves nature itſelf will throw it out of the body, either by the kidneys or ſkin. It is the buſineſs only of art, to further her intention, by giving diuretics if it tends to the kidneys; having particularly remarked, that, by a flow of urine, the diſorders of the breaſt in this diſeaſe were moſt effectually relieved: or by taking diaphoretics and ſudorifics internally, at the ſame time ſweating in ſtoves and in baths moiſt and dry; as it is often diſſipated by inſenſible perſpiration, at other times by profuſe ſweats. The dregs of the diſeaſe evacuated this way, have been obſerved to foul the very ſkin.

was given over by his phyſicians, when an *Amſterdam* phyſician diſcovered the diſeaſe and cured him; obſerving, that the *Hague* doctors did not know this diſtemper ſo well as thoſe who reſided at *Amſterdam*, or as he did who lived at *Alcmaer*, where they became well acquainted with the ſcurvy by ſeeing it among the ſeamen. This laſt patient the counſellor being ſubject to a relapſe at times, our author preſcribed for him the juices of brooklime and ſcurvy-graſs boiled into a ſyrup with ſugar; which effectually prevented the diſtemper. And this medicine, going under the name of *syr. ſceletyrb. Foreſti*, became afterwards univerſally famous, and continued in repute for a conſiderable time, over all *Flanders*, *Brabant*, and *Holland*, for the cure of the ſcurvy. It was principally uſed in the winter-ſeaſon, when the green plants could not be procured. He indeed very ingenuouſly owns, that phyſicians were firſt made acquainted with thoſe remedies by the vulgar; they having only a more elegant method of adminiſtring them.

He illuſtrates the ſeveral intentions of cure at great length in the caſe of a ſailor at *Alcmaer*, who fell into the ſcurvy after an autumnal quartan ague, which had continued ſeven months. This perſon told our author, he had formerly the ſame diſeaſe at ſea, in a voyage to *Spain*; and that it was
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very common among the *Dutch* failors, who generally recovered by change of air, and the use of a wormwood-ale. But he had been quite cured of it before he had the ague. Upon this occasion, *Forestus* observes, he has known many fall into the scurvy after such intermitting fevers. This patient had laboured under a great difficulty of breathing, and had lost the use of his limbs; his left knee, and whole leg, being swelled, hard, spotted, and so stiff, that he could not walk, or even move it: his gums were swelled and bled frequently. The physicians and surgeons said, he was poxed; but when the author saw him, he found it to be the scurvy. It was indeed a complicated case; the fever having left behind it a hectic disposition, with obstructed bowels.

Forestus, who has had great practice in this disease, says, the distinguishing marks of it are, an oppression on the breast; weakness and pain of the legs; redness, pain, and itching in the gums; with an alteration of colour in the face. However, in the beginning it is not so easily known; being sometimes slow in its progress, and having the above-mentioned symptoms, together with a lassitude after exercise, common to it with other diseases. But where all those signs appear together, he thinks it the
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beginning of the diftemper, or at leaft that an approaching fcurvy may then be foretold: though he fometimes hesitates for a little time; till, in the progrefs of the diftemper, the violence of thofe fymptoms be increafed; and the foetid breath, fpungy bleeding gums, loofe teeth, and purple and livid fpoths upon the legs, &c. confirm his former judgment of the difeafe. He recites the fymptoms from *Echthius's* epitome; adding, almoft after each, instances of patients in whom they occurred. In particular, after the remarkable pronenefs to faint in the height of the difeafe, he adds that he has known feveral drop down dead fuddenly; as happened to a magiftrate he mentions, who had a *Haerlem* phyfician to attend him, who faid he had the venereal difeafe; the ignorant in thofe days pronouncing all extraordinary and unknown difeafes to be the *lues venerea*. However, this gentleman's fon, labouring under the fame diftemper, was cured by our author. He recommends butter-milk when the patient is inclinable to be hectic: but where there was no fever, he cured many by milk, in which fcurvy-grafs and brooklime were boiled. Thefe obfervations, although extremely tedious, are valuable for the many truly fcorbutic cafes they contain.

1600. *Hieronymi Reusneri diexodicarum exercitationum liber de scorbuto.*

This voluminous author, remarkable only for his theory, describes the scurvy, in its different stages, altogether in the same manner as the authors before him; with the addition of the following symptoms. A bleeding at the nose, which he says is usual even in the beginning of the disease; as likewise a continual spitting. Some have a pain at the mouth of the stomach, and there is a want of appetite; or at least if they long for food, it is rather hurtful to them. He observes, that scorbutical women are subject to the *fluor albus*, and *mensēs discolorēs*. The urine is for the most part thin, pale, and watery, without any sediment, and of a foetid smell. The pulse is low, weak, slow, and irregular. He is extremely prolix on the cure. But it were to be wished, that the many chemical and galenical remedies recommended, had been proved serviceable by experience, rather than by being agreeable to his theory.

1604. *De morbo scorbuto liber; cum observationibus quibusdam, brevique et succincta cujusque curationis indicatione. Auctore Severino Eugaleno.*

This book must have been published by the author in a very loose immethodical dress;

dress; as it has undergone several corrections by different editors; and the order of the whole is still very inaccurate. *Jos. Stubendorphius* published it in the year 1615, with great alterations: and *Brendel*, Professor of Medicine at *Jena*, ann. 1623, again corrected it; and with great labour has classed the different symptoms, or rather species of this disease, into different sections, making in all forty-nine in number. They will admit of several subdivisions; and comprehend a catalogue of almost all distempers incident to the human body. There are here also fifty prognostics, with thirty generally diagnostics of the scurvy; besides the particular diagnostics of each symptom, or rather disease, by which it is known to be scorbutic. But as I have elsewhere animadverted at great length upon this book, it may be sufficient here only to repeat, that the merit of the author has always been supposed to consist in his great sagacity in detecting this deceitful disease lurking under so many different forms. This he tells us was his professed design in writing. So that the description of the symptoms makes up the greatest part of his performance. In the beginning of it, he assigns the same causes of the scurvy as *Wierus* had done much more accurately before him; and to this author likewise he recommends us for the cure. The first five

pages (as far as § 4.) contain what he has copied from other authors : but the rest of the treatise may, with great propriety, be deemed entirely new, and his own.

The symptoms are as follow. I. Putrid gums. II. Blackish, purple, and livid spots. III. Malignant ulcers. Acquainting us that these are obvious signs, known even to the vulgar, he observes, that the disease often proves fatal before they appear ; and therefore he proceeds without stopping long here, to other symptoms equally characteristical and demonstrative of the scurvy. But before we go any farther, it will be necessary to transcribe that peculiar state of urine and pulse which he so often refers to in his account of the following symptoms, and which was with him the most certain signs of the disease.

He says, the urine of those who labour under this disease varies extremely, according to the habit of the body, the different nature of the disease, and of the putrescent humour. If there be only a slight putrefaction, and the disease but beginning, the urine is sometimes of a citron colour, and thin ; at other times thick and white. But such appearances of the urine discover nothing certain concerning the scurvy. As the distemper increases, it becomes sometimes thin, and of an intense red colour, inclining to a livid hue. If the patient

passes this urine when seemingly in perfect health, having little or no thirst, it is a certain sign of the scurvy. Frequently the urine appears thick, red, and manifestly livid; it either remains thus thick, or deposits a thick red heavy sediment like bran or sand, having besides for the most part a thick turbid matter suspended a-top: such likewise is a demonstrative sign of the disease, provided the patient languishes, without any thirst or fever. Of some the urine is thick, white, and turbid; and deposits several roundish whitish particles like sand, without becoming any clearer. The urine of those who live irregularly, is in some thick, black, and turbid; in others blackish, with an obscure paleness; and these persons have a violent thirst while they pass such urine. After those long accounts, he adds in another place, that where there is no fever, nor putrefaction of the humours, thick, white, and turbid urine, having a white roundish heavy sediment, like sand or brick-dust, is the most undoubted sign of the scurvy. The pulse peculiar to this disease, is quick and small, but particularly unequal.

We now proceed to transcribe the other symptoms. And the IV. is a difficulty of breathing; known to be scorbutic, 1st, By the part affected; which is under the diaphragm, at the orifice of the stomach. 2^{dly},
By

By the complaint. It is a great and uneasy straitness and oppression not easily expressed. 3dly, By its remission and intermission; though sometimes it is almost continual. 4thly, By its having none of the symptoms which usually follow disorders of the breast, viz. cough, pain, *orthopnœa*, &c.

V. Vomitings, retchings; and even the *cholera morbus*. A vomiting is known to be scorbutic, 1st, By not yielding to the common medicines, and those prescribed by the ancients in this disorder; on the contrary, the patient becomes worse after using them. 2dly, Its sudden unaccountable remission, and equally unexpected return. 3dly, Its seizing without any previous pain, disorder of the stomach, or a distemper described by the ancients. The retchings are very violent, without bringing up much from the stomach. But the most certain proofs are had from the urine and pulse. VI. A looseness, or costiveness of the belly. VII. A bastard dysentery; known to be scorbutic by want of gripes, the blood not being mixed with the *feces*, but chiefly by the pulse and urine.

VIII. Irregular fevers. IX. Intermitting fevers. X. Continual fevers. Under these he comprehends most species of fevers, viz. slow, putrid, remitting, and intermitting, of all kinds. They are all ascertained to be scorbutic, by the oppression in the breast,

not agreeing in type with those of the ancients, &c. but more infallibly by the pulse and urine. The first, though strong and hard during the fever, upon its remission returns again to its peculiar, small, and unequal state.

XI. Fainting-fits. XII. Pains of the legs. XIII. A pain in the hands, and ends of the fingers. This is known to proceed from the scurvy by the pulse. XIV. A pain in the neck. XV. Pains in almost every part of the body, *viz.* the teeth, jaws, back, &c.; burning pains in the kidneys, head, arms, &c. XVI. The bastard pleurisy; discovered in a girl to be scorbutic, by the smallness and inequality of the pulse; the intermission of the pain; and being free from cough but at times; by the urine, and her having no thirst, and breathing without pain. But the intermission of the pain, and its returning at intervals, are sufficient to distinguish this from the true pleurisy. XVII. Violent colic pains; easily known when scorbutic, by their intermission, the urine, and pulse. He gives two instances of ruptures occasioned by the acuteness of these pains. XVIII. Hard tumours similar to those in the pox, *viz.* in the groin, and other glandular parts of the body; or in any other part, as in the interstices of the muscles, &c. They often arise from *varices* or a dilatation of the veins. These give no
pain

pain while the patient is at rest, and the part kept easy; but upon walking, or hanging the legs, they become so very painful as to occasion fainting. Sometimes the whole body is covered with such tubercles. XIX. Weakness of the legs upon walking. XX. Retraction of the heel backwards towards the ham; known when occasioned by the scurvy, from the pulse alone. XXI. Troublesome prickings in the soles of the feet, next day followed with a palsy of the lower extremities. XXII. A palsy of the legs; distinguished from palsies described in ancient authors, by differences very equivocal, and too long here to mention. XXIII. A *hemiplegia*. XXIV. Weakness of the whole nervous system. XXV. A colic ending in a palsy. XXVI. A convulsion or contraction of the members, gradually coming on. XXVII. The epilepsy is known when scorbutic, by the pulse and urine; as likewise, 1st, By its attack accompanied with a fever. 2^{dly}, Its sudden attack, and equally sudden remission. 3^{dly}, Its proceeding from no cause assigned by the ancients. XXVIII. An apoplexy. XXIX. Convulsion of a particular part. XXX. The gout; known to proceed from the scurvy, by not being fixed, but shifting from one joint to another; and its being quickly cured by antiscorbutic medicines. XXXI. The dropsy; requiring quite a different method

method of cure from that described by the ancients; and is easily distinguished from it, by the difficulty of breathing becoming much worse after purgatives. The difficulty of breathing is at all times greater, even in the beginning; with extreme anxiety under the diaphragm. XXXII. The encysted dropfy. Before this is fixed in any particular place, it causes a momentaneous swelling as it were, in different parts of the body; which most commonly happens upon change from a pure to a thicker air, or to those who use gross food; otherwise the legs swell first, then the whole body is covered with a hard and unequal swelling, and with various indolent tubercles, &c. XXXIII. The scorbutic atrophy; which can be cured only by antiscorbutics. It is known by the patient's languishing, without having any disease described by the ancients; by the pulse, urine, and frequent anxieties; but especially by spots on the body. XXXIV. Ulcers and gangrene of the toes. XXXV. Ulcers on different parts of the body, cancers, &c. XXXVI. Pestilential fevers, and tumours; distinguished from the true plague, generally by the mildness of the symptoms, but more easily by the pulse, and sometimes by the urine. XXXVII. A mortification, either with or without ulceration. XXXVIII. The scorbutic *erysipelas*; known by the pulse, urine, and

and shifting its place. XXXIX. Madnefs, and the memory impaired. Thefe two more rarely occur, being not fo demonftrative fymptoms of the fcurvy as many of the preceding. XL. *Carus* and a profound fleeping. XLI. A falivation. XLII. A *languor*, without any evident caufe. XLIII. A diforder like to a *languor*. XLIV. Copious fweats, the forerunner of an atrophy. XLV. A cutting or tearing pain in the acceffion of fevers. XLVI. toffing or concussion of the limbs, being a mixture of a paralytic and convulfive diforder. XLVII. *Tremor* of the limbs. It is known to be fcorbutic by the pulse alone. XLVIII. Ulcers of the *penis*. XLIX. Dry ulcers. The book is concluded with feventy-two obfervations, containing a variety of cafes in thefe difeafes.

1608. *Felici Plateri praxeos medicæ lib. 3. cap. 4. de defædatione*. Under which title, he treats of the *lues venerea*, *ſcorbutica*, and *elephantica*.

He feems not to have ſeen *Eugalenus's* book, or at leaſt has copied nothing from it: for he ſtill gives the ſame deſcription of the ſcurvy, as *Wierus*, and all other authors preceding *Eugalenus*, have done. He, however, takes notice of one ſymptom not mentioned by them, *viz.* tumours, ſometimes indolent, at other times more painful, reſembling

resembling a scrophulous gland. These are seated either on the glandular parts of the body, or in the interstices of the muscles. The sweat of scorbutic persons is foetid; their urine red and turbid; their pulse feeble; as had been observed by all others before *Eugalenus*. He seems inclined to believe, that, like the *lues venerea*, the scurvy might have been brought from abroad, especially by sailors. It sometimes produces convulsions and palsies; and may end in an atrophy, consumption, dropsy, or dysentery. He recommends for prevention, as also cure, a confection of mustard-seed and honey; as likewise the juice of oranges. This last is to be used as an application to the putrid gums; as also *sal. prunell.* dissolved in a proper liquor. The patient may be sweated with *decoct. lignorum*.

1608. *Relaxao do Viage de Don Sebastian Vizcaino, &c.* or the Voyage of *Don Sebastian Vizcaino*, performed in the year 1602, to the western coast of *California*, with two large ships and a frigate.

It will not be foreign to the purpose, to mention here the sickness which raged among the squadron, being the same, which in these parts generally seizes on those who are coming from *China* to *New Spain*, and which proves so fatal as to sweep off half the
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the ship's company. In this latitude the air is very sharp and cold, which pierces those of weak constitutions, and perhaps of a pestilential nature; unless we suppose that its great subtilty is sufficient to cause such a disease in bodies attenuated by fatigues. Its first symptom is an universal pain all over the body; which now becomes so tender, as not to bear the least touch; and sometimes this will extort tears and cries from the most resolute men. After this, the body, especially the lower parts, is covered with purple spots, larger, and more prominent, than grains of mustard-seed: the next symptom is blotches of the same colour, two fingers broad. They appear first under the hams, and spread from the middle of the thigh to the flexure of the knee, rendering the parts so rigid, that the legs resemble petrifications, it being impossible to move them in the least from that posture in which this symptom seized them. The patients swell so prodigiously, that they cannot be moved from the one side to the other, without extreme torture. And these stains extend themselves so, that the calf of the leg and thigh becomes wholly livid; and thus the morbid humour pervades the whole body, and seizes the shoulders in particular, more than any other part, causing, at the same time, excruciating pains in the loins and kidneys. Nor
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is the least ease to be expected from change of place, as the slightest motion is attended with such severe pains, that they must be very fond of life, who would not willingly lay it down on the first appearance of so terrible a distemper. This virulent humour makes such ravages on the body, that it is entirely covered with ulcers; and the poor patients are unable to bear the least pressure, even the very cloaths laid on them deprives them of life. Thus they lay groaning, and incapable of any relief. For the greatest assistance possible to be given them, if I may be allowed the expression, is not to touch them, nor even the bed cloaths. These effects, however melancholy, are not the only produced by this pestilential humour. In many, the gums both of the upper and lower jaw, are swelled both within and without, to such a degree, that the teeth cannot touch one another; and withal so loose and bare, that they shake with the least motion of the head; and some of the patients spit their teeth out with the saliva. Thus they were unable to receive any food but liquids, as gruel, broth, milk of almonds, and the like. This gradually brought on such a weakness, that they died whilst talking with their friends.

Such was the distemper with which all were afflicted; which removed numbers from this world to the mansions of eternity.

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When the ship *Capitana*, on her return came to us on this coast, her condition was truly deplorable; all the people on board, the general, and three soldiers excepted, labouring under the above mentioned disease, and it was with great pain that the father commissary went about administering the sacrament to the sick. As for father *Antonio de la Ascention*, he was not able to stir; and the disease was so excruciating, that nothing was heard in the ship but cries and lamentations. Some, by way of ease, made loud complaints, others lamented their sins with the deepest contrition; some died talking; some sleeping; some eating; some whilst sitting up in their beds.

The sight of so many fellow adventurers lying dead, together with the cries, groans, and lamentation of the afflicted, would have moved the most obdurate breast, and Providence was pleased to inspire hearts, which before were strangers to every humane and tender sentiment, with such fervent benevolence, that those in health attended the sick, and performed all services to them with as much diligence and care, as if every one had only a single patient. The religious, especially father *Thomas de Aquino*, foreseeing these terrible extremities, had, at *Acapulco*, provided themselves with cordials and conserves, which were all reserved for this day of affliction; and doubtless
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many owed their recovery to the prudence and liberality of the fathers in the distribution of them.

From what has been said, some idea may be formed of the condition of the *Capitana*, at their arrival in this harbour: we shall therefore only add, that by the distemper above described, they were helpless and sick, covered with ulcers, and their gums so swelled, that they could neither speak nor eat: and the malignity of the distemper such, that none thought of ever being restored to perfect health. Nothing was heard in the ship at her arrival here, but cries and passionate invocations of heaven. However, in 19 days, all of them recovered their health and strength; so that when they departed, the sails were loosed, the ship worked, and every part of the duty performed as in the preceding year, when they visited this harbour on their passage. Such salutary effects had the fresh provisions, fruits, &c. sent on board by the general; the eating of a fruit which abounds in these islands, and by the natives called *Xocobuiltzles*, was also of very great service. It resembles an apple; the leaves of the tree are exactly like those of the pine-apple; and the fruit grows in clusters, like that of the cypress: it is also nearly of the shape of the cypress nut: the rind or shell is yellow; and the pulp like that of a white tuna, with seeds something larger

larger than those of the tuna. It has a very pleasing taste, and tartish sweetness. This fruit is endued with such virtue, that it cleansed and relieved the gums, fastened the teeth; and after eating twice of it, the mouth would be cleansed so as to eat any other kind of food without pain. The use of this fruit was discovered in the following manner: some soldiers going up the island, with the Father Commissary to a burial, *Antonio Luis*, the officer, seeing the fruit, from a curiosity of being acquainted with the products of the soil, plucked one, and began, though with extreme pain in his teeth and gums, to bite it; and finding it of an exquisite taste, he eat the whole; and immediately voided from his mouth a great quantity of purulent blood: and on putting the other to his mouth, he found that the pain in his teeth was much less, and he could chew it with great ease. On his return to the ship, he related the happy effects of this fruit; and distributed some among his friends, who all found the same pleasing consequences, which induced them to go ashore, and gather a great quantity for the relief of others. So that, on the general's return, he found many, whom he despaired of seeing again, able to eat the fresh provisions continually brought to them. These were the only means by which, within 19 days, they perfectly recovered

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from such a dreadful and fatal distemper. This fruit is the chief subsistence of the *Indian* warriors of the provinces of *Acapo-neta* and *Chametla*, which lie within the government of *New Gallicia*: But their general way is to roast or boil it, as more wholesome and palatable.

1609. *Gregor. Horstii tractatus de scorbuto.*

This author is in many places seemingly inconsistent with himself; having first followed *Forestus*, then *Eugalenus*, in his description of the disease; concluding with a diet, regimen, and cure, transcribed chiefly out of *Albertus*. The disposing causes are, thick foul air, and gross viscid food; both which, as productive of the scurvy, he pretty well describes. He observes, that though in the *Lower Saxony*, and *Old Marche* of *Brandenburgh*, it was a disease generally very well known; yet in some places it was a more uncommon and flighter disease than in others; being most frequent and dangerous where the inhabitants used thick unwholesome new ale, and where the soil was marshy and damp. So that the year before, when he practised in the *Old Marche*, he found it extremely frequent at *Soltquell*; but much less so in the neighbouring country. In that place, besides using the same gross food as other northern countries do, the situation was very marshy;

and they drank thick new ale without hops, which had undergone no fermentation or depuration. He recommends spirit of *vitriol* given along with other antiscorbutic remedies; and has perhaps nothing else new on the disease, but theory.

Matthæi Martini de scorbuto commentatio.

He copies entirely from *Eugalenus* his description of the scurvy, adding some new symptoms first mentioned by himself; such as a swelling of the eyes, frequent darkness over them; virulent ulcers in the throat; such variety of pains in all parts of the body as cannot be expressed, *viz.* tensive, pulling, pricking, biting, corroding, gnawing, &c. on the muscles, membranes, and nerves. These are not only severest in the night (as is most commonly the case) but afflict likewise in the evening, morning, and through the day. The pains may all with great certainty be known to proceed from the scurvy, by the smallness and inequality of the pulse. Even pains peculiar to each part, are rendered wonderfully anomalous by the scurvy. This disease is nearly allied to the plague; as it occasions carbuncles, buboes, cancers, &c. Most tertian vernal agues are scorbutic. A sudden and unaccountable loosening and fastening of the teeth alternately; large fissures in the lips, closing in a most surprising manner after drinking, are symp-

toms of the scurvy. Here *Eugalenus* is every where an oracle; his whole book being transcribed, and digested into a much more methodical order, with the addition of some things from *Wierus*, *Albertus*, &c.

1624. *Dan. Sennerti tractatus de scorbuto. Ejusdem practicæ medicinæ lib. 3. part 5.*

He has transcribed from *Eugalenus* and *Martinus* all that they have said on the disease; which, together with his theory, makes up the greatest part of his book. What he calls his own new and uncommon observations, are as follow. One is the case of a student, who, upon the disappearance of an itch, was seized with a *gutta serena*, difficulty of breathing, and tightness of the breast. He recovered his sight by the use of some purgative medicines, and diuretics of the antiscorbutic kind. The other, a boy of twelve years of age, who had also the itch; and it being repelled by an improper unction, he lost his sight, and afterwards died epileptic. The author having often remarked, after an itch in such a manner injudiciously treated, pains and prickings in the breast to ensue, with pleurifies; and likewise tertian and quartan fevers, which were removed upon the appearance of the eruption, but returned again upon its disappearing; from thence he concludes the

ſcorbutic humour combined with the itch, to have produced thoſe ſurprizing ſymptoms.

He then proceeds to ſtill more uncommon and remarkable ſymptoms of the ſcurvy; and, upon the teſtimony of *Doringius*, relates caſes of a jaundice ending in a dropſy; an aſthma; a *tinea*, covering not only the whole ſcalp, but the forehead; a *herpes* or ringworm of the left arm; a gangrene in the fore-finger; a hæmorrhage from the lips, no conſpicuous orifice of a vein being diſcovered; a palpitation of the heart; burning and intolerable pain in the ſoles of the feet, with livid ſpots on the legs; and a running of putrid and purulent matter from the *uterus*. *Timoth. Ulricus* obſerved not only the knees, but the whole body, as it were, contracted; with an excreſcence of fleſh from the eyes. In ſome, though leſs frequently, upon each motion of their joints, a noiſe was plainly heard as from broken bones, or like the crackling of nuts. Where there was a dropſy, in a night's time the whole teeth became looſe, ſo that the patient was in danger of loſing them all; but next day they were found firm in their ſockets. In a patient, where no ſpots could be made to appear, even by the help of medicines, upon forcing a ſweat, the fleſhy part of the arm was ſeized with a ſenſe of heat and burning, as if drops of boiling water had been thrown upon it; mean while nothing was to be ſeen appearing outwardly. A

widow labouring under a continual fever, had her whole body covered with large black spots; her face resembling in colour the skin of smoked bacon when boiled. From all which he concludes, such is the strange variety of diseases and symptoms occasioned by the scurvy, that not only the vulgar, but even a physician unacquainted with the distemper, would be greatly amazed, and might believe the person to have died of poison. He very ingeniously, however, accounts for them all, according to his own *hypothesis*; making up sixty-two symptoms, by adding several to what are mentioned by *Eugalenus*, viz. blindness; a stench of the body; a stoppage of the *menfes* in women; in place of which they have a white acrid saltish running, apt to infect men: and men from this disease are rendered unfit for generation, by having a watery vitiated *semen*. He is very prolix on the cure; and abounds with almost all the prescriptions given by preceding authors, together with what he learned from other persons (*e*). He recommends steel where there is not the convenience of mineral waters; but forbids the use of vinegar in this disease.

(*e*) Where there is a heat of the body, or fever, he uses the cooling antiscorbutics, viz. *cichoreum*, *endivia*, *acetosa*, *acetosella*, *succ. c. tri*, *aurantior. limon. sp. salis, vitriol. vel sulphur.*

1626. *Arnoldi Weickardi thesaur. pharmaceutic. galeno-chemic. sive tract. pract. &c. lib. 3. cap. 5. de stomacace, seu scorbuto.*

This author, although usually ranked among the number of writers on the scurvy, has nothing new upon it. He makes no mention of the symptoms. His cure consists in bleeding, purging, and afterwards sweating the patient, and in administering the common antiscorbutic medicines in very improper forms; all transcribed from other authors.

1627. *Frederic Vander Mye, de morbis et symptomatibus popularibus Bredanis, tempore obsidionis, et eorum immutationibus pro anni victusque diversitate, &c. tractatus duo.*

How far the passions and dispositions of the mind contribute to the production and cure of diseases, and how much their symptoms and appearances are diversified by different seasons and by different food, nowhere more clearly appeared than in the siege of *Breda*. We here saw the progress of the plague, scurvy, and such like diseases, increased upon the report spread of bad news, but in a manner altogether checked by the arrival of joyful tidings. We here beheld some apparently relieved, many perfectly cured, by their faith in imaginary remedies. Grief and fear greatly injure the human body, and in a particular man-

ner give strength and vigour to the plague and scurvy.

But we proceed to relate the order in which these diseases occurred, and the influence of the various causes which gave rise and diversity to their appearances. The preceding summer being very warm and dry, produced inflammatory fevers, pains of the side and breast, and fore-throats of a mild nature. Soon after this the plague was brought hither by infection from *Holland*. In the autumn the weather was cloudy and rainy, with southerly winds; the winter also proved wet and open, the season being windy though mild. Here the author very minutely describes the influence of such a state of weather, concurring with the various incidents of joy and grief, hope and despair, in diversifying the symptoms of that dreadful calamity, and in encreasing or abating the mortality of it. But as such remarks are foreign to our purpose, we shall only observe, that in the end of winter a frost came on, and put an entire stop to the plague. An universal joy now prevailed, occasioned by the daily arrival of messengers encouraging the besieged with the hopes of a speedy relief, and by their own army being already in sight. But these hopes were soon baffled, the attempts of the *Dutch* army proving fruitless. Scarcity of provisions encreasing in the town, and as the frost went off the moist and unwholesome vapours
from

from the lakes, added to a damp cloudy rainy *equinox*, produced a new calamity.

The appearance of livid spots on the body, occasioned at first a general consternation. The surgeons who were ignorant, declared the plague to have broken out again ; but upon a closer examination, it was found to be the scurvy. This disease seemed to absorb all others ; so that for six weeks there was no talk of any other distemper in the town. The calamity became great and universal ; few escaped it ; many deprived of all motion, wasting away by piece-meal, toothless and starved, as not being able to chew their food, died in a most piteous condition.

The scurvy proceeded from grief and disappointment, as also from unwholesome food. The States of *Holland* had taken care to provide this city for a siege, with rye, cheese, and dried fish. The cheese and fish had at times been renewed, but their stock of rye had been in store for thirty years, and was become quite spoiled and musty. Being altogether improper for baking, it was mixed up with other grain, and all who eat of it soon began to be attacked with the scurvy. Eating of the old cheese, which was rotten, as also of dogs and horse-flesh, but particularly the wetness of the season, contributed much to the production of the distemper: the air which the soldiers breathed, and the houses where they

they lay, being extremely damp. They also lay together, so received it by infection; for the disease proves infectious when persons use the same improper food, and breathe the same impure air.

In some the gums were rotten; in others spots only appeared on the body, especially in such as had discharges of blood, which sometimes prevented, at other times diminished the swelling of the gums. The spots were chiefly upon the legs. They were also to be seen upon the back, arms, breast, neck, as likewise upon the face, even when the gums continued sound; chiefly in such as took care to preserve their teeth, and were continually washing their mouth with astringent compositions of salt, alum, and the like. At first the spots were red, then became purple, afterwards livid, and last of all quite black. The livid spots were very dangerous, but the black still more malignant and fatal. A few of the eruptions put on the appearance of a *St. Anthony's Fire*, and the *cuticle* afterwards fell off in scales. In most patients the skin was of a purple hue. An enervated, heavy and languid body, without having any complaint of real sickness, and a foetid breath, were symptoms common to all. The knees became afflicted with violent pains at times.

The tendons of the posterior muscles of the

the thigh turned as rigid and hard as a piece of wood, so that the leg being bent altogether back to the buttock, it became quite immovable; and of the joint in the knee, there remained no vestige. Exquisite pains were felt along the course of the *sciatic* nerve, and in the deep-seated joint of the thigh bone. Some expired suddenly and unexpectedly when at their meals; especially those who had been troubled with palpitations of the heart. The heart itself is greatly affected in the scurvy with palpitations, tremors, frequent stoppage of its motion, a frequent and great oppression, and a defect of natural heat; hence a redundancy of watery and excrementitious humours in the whole body passing off by profuse spitting, urine, and foetid sweats. In many the gums grew up to such a pitch as to bury the whole teeth, and sometimes part of the cheek bone dropped off. In this case the misery was intolerable, though the pains gave some little relief by short intermissions; the gangrenous flesh of the gums not having been speedily removed; the taint had spread and preyed upon the bone. The disease was seldom accompanied with a fever, but frequently with a flux. Where there was a fever, it was generally slow and irregular. We observed one or two of these fevers somewhat to resemble the plague. The mouth was dry, though the patient had but little

little inclination to drink; the pulse was small and irregular; there were frequent retchings and at times an unspeakable uneasiness in the breast; hard, black, crusty abscesses appeared on the legs, the anguish of which occasioned often a pain, seldom a tumour in the groin. But fevers at this time were very uncommon.

Of those who were afflicted with the flux, few escaped, and that with great difficulty. They afterwards became bloated, relaxed and dropfical. Watery swellings of the testicles were frequent. The unhappy patients took a dislike to drugs, and were apparently injured by the operation of violent purges. Some died early in the disease, *viz.* those who had seldom any evacuation of blood by the nose or stool and seemed from the beginning indolent, dispirited, and blown up as it were with wind. Their stools were greasy, foetid, and of various colours, but not frequent. The blood drawn from the veins appeared livid, was foetid and thick, but did not coagulate. The discharges by stool in this disease were indeed commonly watery and greasy, but a flux did not relieve the disease. When there were acute pains of the belly, intestines, and stomach, in this case little hopes of life remained, by reason of the intenseness of the pains, the strength of the patient having been exhausted by the violence of the distemper.

stemper. In a word, whether the disease was protracted to a longer or shorter period, most died with an inward indisposition in the belly; the flux proving rather a distinguishing sign of the scurvy than a critical and salutary discharge.

It was observed before, that the scurvy broke out about the equinox, and it quickly encreased to an almost incredible degree. On the 20th of *March*, 1625, an account was taken of the number of patients, and there were found 1608 soldiers labouring under it. The sick were ordered to be classed into three divisions; for the superintendence of each of which a physician, an apothecary, and two surgeons were appointed. Three hours were employed every day in visiting and prescribing for the patients. We here beheld an exact picture of the disease, and at first, even during a time of scarcity, were fortunate enough in its cure. At this period fluxes were so trifling and uncommon, that we gave no attention to them, directing our whole care to remove the disease itself (*f*).

The

(*f*) In the beginning, the shops being well provided with medicines, this decoction was usually prescribed. *R. Lign. guaiac. lib. i. cort. ejusd. ℥iv. rad. sarsaparil. ℥i. ls. enul. camp. petrosel āā ℥i. cort. tamarisc. rad. cappar. āā ℥ij. bacc. juniperi, lauri, sem. nasturt. hort. anisi, fœnicul. carv. āā ℥vi. citri ℥ij. genist. ℥ls. herb. absinth. chamædr. scolopend. fumar. lupuli, āā m. ij. cinamom ℥iv. aq.*

The number of the afflicted began afterwards daily to decrease, owing partly to the lucky circumstance of our spies having brought into the town a quantity of tobacco, by the use of which many were preserved from the disease, while others were recovered: to this likewise the more liberal use of wine, permitted at this time to be publickly sold, was supposed to have contributed its share: now also the days began to lengthen, the sun to shine forth with comforting heat, and the nights grew warmer; so that in less than a month's time we found the number of scorbutic patients reduced to 800. But these were left in a most pitiful condition indeed! the shops were now exhausted of medicines; the ordinary remedies administered did not avail; our provisions grew daily worse, and so scarce, that the corrupted grain, which by order of the magistrates had been formerly condemned was now ordered to be distributed to the soldiers, and to complete our misfortunes, no appearance presented itself of relief, all expectation from the *Dutch* army was gone: *una salus victis nullam sperare salutem.*

We were at this time quite at a loss what measures to pursue: however we put on the
the

aq. font. lib. cxx. coq. ad quartæ partis consumptionem.
The following liniment was directed for the gums. R.
Mel. lib. iij. sal. prunel. alumin. aa ʒiij. ung. Ægyptiac. ʒi. lb.

the best countenance. We changed the medicines, extolled the efficacy of our prescriptions, doubled their dose, talked largely of the number cured, magnifying in every respect our skill and success. By these means we protracted time for near a month longer. But the miserably afflicted began to discover the deceit, particularly such of them as had been before shut up in besieged places, and had observed the like artifices practised. The soldiers, no longer able to suffer in a situation harder to be borne than human nature is accustomed to, gave themselves up entirely to despair. They refused to do any longer duty, delivered up their arms to the Governor, and threatening a mutiny, conspired to surrender the city to the enemy. This the terriblest circumstance of all, *viz.* their absolute despair, gave rise to a variety of misery; hence proceeded fluxes, dropsies, and every species of distress (*a*), attended with a great mortality.

Quis tibi nunc civis cernenti talia sensus.

The physicians at this time giving up entirely with the cure of the disease, direct their whole art to remove the flux, and alleviate the more pressing symptoms. Nothing was left unattempted to recal the drooping spirits of the soldiers, and to allay their

(*a*) In the original, *Omne chaos morborum.*

their turbulent minds. Recourse was had even to opium itself. By such means a truce was gained, but of short duration; for the evacuations being thereby stopped, the legs became more unwieldy. A dropſy enſued, the tendons became rigid, and ſudden death ſtepped quickly in to put an end to farther woe.

On the 2d of *May*, 1625, when the Prince of *Orange* heard of their diſtreſs, and underſtood that the city was in danger of being delivered up to the enemy by the ſoldiers, he wrote letters addreſſed to the men, promiſing them the moſt ſpeedy relief. Theſe were accompanied with medicines againſt the ſcurvy, ſaid to be of great price, but ſtill of greater efficacy: many more were yet to be ſent. The effects of this deceit were truly aſtoniſhing! three ſmall phials of medicine were given to each phyſician, not enough for the recovery of two patients. It was publicly given out, that three or four drops were ſufficient to impart a healing virtue to a gallon of liquor. We now diſplayed our wonder-working balſams. Nor were even the commanders let into the ſecret of the cheat put upon the ſoldiers. They flock'd in crowds about us, every one ſoliciting that part may be reſerved for their uſe. Chearfulneſs again appears on every countenance; and an univerſal faith prevails in the ſovereign virtues of the remedy.

medy. The herbs now began to spring up above the ground; we of these made decoctions, to which wormwood and camphire were added, that by their prevalent flavour, the medicines might appear of no mean efficacy. The stiff contracted limbs were anointed with wax melted in rape-feed, or lint-feed oil. The invention of new and untried physic is boasted; and amidst a defect of every necessary and useful medicine, a strange medley of drugs was compounded. The effect however of the delusion was really astonishing: for many were quickly and perfectly recovered. Such as had not moved their limbs for a month before, were seen walking the streets sound, upright, and in perfect health. They boasted of their cure by the Prince's remedy; the motion of their joints being restored by a simple friction with oil, Nature now of itself well performing its office, or at least with a small assistance from medicine. Many who declared they had been rendered worse by all former remedies which had been administered, recovered in a few days, to their inexpressible joy, and the no less general surprise, by the taking (almost by their having brought to them) what we affirmed to be their gracious Prince's cure (*b*).

A a

Soon

(*b*) This curious relation would perhaps hardly gain credit, was it not in every respect consonant to the most accurate

Soon after this their old calamity the plague broke out again. Not one in a hundred escaped of those who were seized with it. So that a victorious *Spanish* army, an eight months famine, the rage of the plague within, and the fury of the bombshells from without, depopulating and laying waste the city, the promiscuous funerals of parents and friends, the dismal apprehensions of a disheartened and reduced garrison, want of medicines and common necessaries, bad and unnatural food, having all conspired to the ruin of this

accurate observations, and best attested descriptions of the disease. See Lord *Anson's* voyage, part 3. *Item*, Mr. *Ives's* journals, p. 94, &c. It is given us by an eye-witness, an author of great candour and veracity, who, as he informs us, wrote every day down the state of his patients; and seems more to be surpris'd with their unexpected recovery, than he possibly would have been, had he formerly been better acquainted with the nature of this surprising disease. These facts were then also notoriously known to many, at the time when he published his book, *viz.* the second year after they happened.

Might not the speedy recovery of the patients be partly owing to the decoction of the green herbs beginning to sprout up? Be that as it may. An important lesson in physic is here to be learned, *viz.* the wonderful and powerful influence of the passions of the mind upon the state and disorders of the body. This is too often overlooked in the cure of diseases; many of which are sometimes attempted by the sole mechanical operation of drugs, without calling in to assistance the strong powers of imagination, or the concurring influences of the soul. Hence it is, that the same remedy will not always produce the like effect even in the same person, when given by different hands; and that common cures often prove wonderfully successful in the hands of bold quacks, but do not answer the purpose in a timorous and distrustful practitioner.

this important place, it was surrendered by capitulation in *June*.

As to the scurvy. This calamity proved most fatal to the *English* soldiers, as they very early began to feed on dogs flesh, were in want of their beloved tobacco, and lay in the most wet damp barracks. It was much less frequent among the *Waloons* and *Flemings*, they being more careful and delicate in their diet, and having much better quarters. Among the *French* it was seldom to be met with, owing entirely to their being stationed in the driest part of the town, and to their natural sprightly disposition, which kept them constantly employed in some motion or exercise, singing, and the like. I do not here touch upon the many different symptoms described by authors in this disease; those that occurred in this siege, I have faithfully related. From which it will appear, that the scurvy is not a complication of many different diseases, but is itself a simple identical disease. It is extremely difficult, during the time of a long close siege, to preserve the citizens and soldiers from this cruel disaster. I am persuaded the best method would be to permit them the use of brandy or spirits during a cold moist season, and when wholesome food is wanting. Washing the mouth with brandy is excellent for preserving the gums and teeth.

1627. *Gul. Fabricii Hildani observ. et curationum chirurgic. cent. 5. obs. 5.*

There is here a short letter to the author from *Ludov. Schmid*, giving an account of the Prince of *Baden's* youngest son, a child of fourteen months, afflicted with the scurvy, who was cured with antiscorbutic medicines. *Hildanus*, in his answer, mentions an obstinate scorbutic ulcer cured likewise by antiscorbutic medicines; which is all that is to be met with on this disease in the works of that celebrated practitioner.

1633. *Joannis Hartmanni praxeos chymiatricæ, p. 345. de scorbuto. Ed. Genev. Opus posthumum.*

He is the first who observes the pernicious effects of mercury in the scurvy; for the cure of which he relies much upon some chemical preparations (*a*).

1640. *Lazari Riverii praxeos medicæ lib. 12. cap. 6. de scorbutica affectione.*

As the scurvy was hitherto so little known in the southern parts of *Europe*, that it had not been so much as mentioned by any author there, he likewise would have omitted treating of it; the disease never appearing in *France*, attended with all the symptoms described by northern writers. However, as diseases were observed accompanied with
some

(*a*) *Tartar. vitriolat. spir. vini tartarizat. &c.*

some of its symptoms, and as those authors inform us, that one symptom peculiar to the distemper was sufficient to discover it, he would therefore describe it. But as it was by no means common in his country, where most physicians believed they had no such disease, he does not pretend to describe the true scurvy; therefore calls it the *affectio scorbutica*, as approaching near to it. He thinks the scurvy nothing else but the *hypochondriac* disease, attended with such extraordinary and unusual symptoms as denote a degree of malignity.

1645. *Consilium medicæ facultatis Hafniensis de scorbuto.*

This was published for the benefit of the poor in the country, and is divided into four sections. The 1st recites the cause of the disease, and the signs by which it is known; the 2d, how it may be prevented; the 3d, how it ought to be cured; the 4th, what is proper for the removal of the chief symptoms.

Seçt. 1. They observe, that it is a disease frequent among them and other northern nations. It attacks the patient in various shapes, according to his habit and constitution, or other diseases with which it may be complicated. Its immediate cause, is a bad digestion, owing to a crude, corrupted humour, oppressing the organs,

both of the first digestion in the stomach, and of sanguification. Hence ensue for the most part difficulty of breathing, swelling, putrefaction, and bleeding of the gums; loose teeth; a weakness, swelling, and stiffness of the legs; spots, and the like. The external causes are, 1. The impure, gross, moist, and cold air of their country; those persons being most subject to it who live in the northern parts near the sea, or where they are surrounded with lakes. 2. Gross and corrupted food, *viz.* bad bread, not sufficiently baked, made of spoiled flour; salted and dried flesh and fish; old cheese; rancid butter; pease, and other grains, when spoiled; together with unwholesome malt liquors. 3. Those of a sedentary inactive way of life are most afflicted with it; together with those, 4. who are apt to be costive, or labour under a suppression of any natural evacuation; as also the low-spirited and dejected. 5. This disease often succeeds others; such as obstructions of the liver and spleen, and particularly quartan agues. It is likewise hereditary and infectious. From these external causes proceeds the internal or immediate cause of the disease before mentioned. Although the scurvy may not easily be discovered in the beginning, by reason of its appearing under the form of other diseases; as also from its unexpected and slow attacks,

tacks, (so that, in countries where it is prevalent, we are to suspect anomalous diseases not yielding to the usual remedies, especially if the patient is of a melancholy disposition, to be scorbutic); yet when the distemper is violent, it is easily known. It is usually preceded by a lassitude over the whole body, weakness of the legs, difficulty of breathing when walking, a livid colour of the face, and by a greater fullness of the habit of body. In its progress, flying heats become troublesome; the gums itch, with a great flow of *saliva*; the urine is sometimes turbid, at other times quite watery. When farther advanced, the difficulty of breathing is so great, that the patient cannot walk or move himself but he falls into a faint; of which he recovers when laid in bed. It is attended with colic pains; the gums are swelled, and bleed upon the least touch; the teeth are loose, and fall out without pain, the flesh at their roots being quite putrid; the breath is foetid; the legs swell, and grow stiff, so that the patients cannot walk. Sometimes on the legs, and even over the whole body, there appear various red, purple, or azure spots. Now and then they are afflicted with the *St. Anthony's fire*, malignant ulcers, and nocturnal pains; and sometimes the body wastes away. Different fevers, and various symptoms,

almost of every kind that can be mentioned, often accompany this disease. The urine is turbid, thick, and clayish, of a purple colour; but it does not long retain the same appearance. The pulse is variable; sometimes weak, at other times strong, when the patient seems very weak; and sometimes it is scarce to be felt. This disease is easily removed by proper remedies in the beginning; but when advanced, it is not so easy to prevent relapses. When proper diet and medicines are neglected, health is seldom restored. It commonly ends in a dropfy or consumption. A difficulty of breathing, and black spots on the legs, are dangerous symptoms; as also continual pains and flatulencies about the navel. An hereditary scurvy is seldom cured. It is a more dangerous disease in old persons than in young. When the mouth is affected, remedies are speedily to be used; otherwise the disease spreads farther, and may infect the whole throat. Fevers and ulcers accompanying this disease, cannot be cured without the assistance of antiscorbutic medicines.

Señ. 2. Prevention is proposed, by living in dry lodgings; fumigating the apartments with the steam of aromatic woods and gums; and by avoiding such food as has been observed productive of the disease. For this is likewise recommended the use of a wine medicated

medicated with wormwood; and several other warm, bitter, aromatic ingredients. The body is at all times to be kept in a lax state, and the other evacuations (especially when suppressed) are duly to be promoted. Exercise, baths, physick in the spring and autumn, are also necessary. Those, who are much subject to it, are to take now and then two or three spoonfuls of an antiscorbutic water; which may be made more pleasant and stronger, by adding occasionally some of their scorbutic syrup, which is the same with *Forestus's* (a).

Sect. 3. and 4. containing the indications of cure, and the treatment of the symptoms, have nothing new; the rules being pretty much the same as those of *Albertus*. The whole is concluded with a number of long prescriptions, adapted to the various intentions of prevention and cure. Here the prices of the several medicines are marked for the benefit of the poor.

(a) R. Rad. raphan. rust. lib. iii. scorzon. unc. ii. cort. rad. cappar. tamarisc. ana unc. ss. fol. cochlear. nasturt. aq. petrosel. becabung. recent. ana manip. iii. sem. cochlear. cardui bened. aquileg. fœnicul. ana dr. iii. crem. tartar. dr. ii. gran. paradif. cardamom. ana dr. i. Affunde vini Rhenan. lib. xii. aq. cochlear. fumar. ana lib. i. Stent in digestionē 24 horis, dein per cineres destillantur. Or they may take the juice of scurvygrass mixed with wine; or their elect. scorbuticum, which is the conserves of several antiscorbutic herbs, with the addition of a very small quantity of spir. vitriol.

1647. *Bericht und unterricht von der krankheit des schmerzmachenden scorbochts:* or, An account and information concerning that painful disease the scurvy. By *John Drawitzs.*

This book has undergone no less than four editions, being esteemed the best written upon the subject in the *German* language. The diseases treated of as proceeding from the scurvy, are as follow. 1. The gout. 2. A spasmodic disorder. 3. The palsy. 4. Pains in the extremities, though not in the joints. 5. The headach. 6. The toothach. 7. The pleurisy. 8. The bellyach; or the scorbutic colic, and iliac passion. 9. A pain about the *os sacrum*, back, and *perinæum*, resembling a true fit of the stone. He had been informed from the *East-Indies*, that the sailors there were speedily and effectually cured of the scurvy, by eating oranges; which he finds great difficulty to reconcile to his theory of the disease. He had also heard from *Dantzick*, that some masters of ships carried out with them an acid water, got in the preparation of *diaphoretic antimony*, which prevented the scurvy at sea.

1662. *Baldassaris Timæi opera medico-practica.*

This author gives us many histories in his writings, of such cases as he deemed
scorbutic,

scorbutic, viz. Book 1. of practical cases and observations; case 3. a scorbutic head-ach; case 7. a scorbutic delirium; and case 15. the hypochondriac melancholy beginning with the scurvy. In his 3d book, case 24. an *hydrops ascites*, joined with the scurvy; and case 32. the *affectio hypochondriaca*, with this disease also; case 35. a scurvy and atrophy, of which the patient died; case 36. the *arthritis vaga scorbutica*. Book 6. case 15. *scabies pruriginosa scorbutica*. Book 8. case 15. a scorbutic tertian; and case 18. a scorbutic quartan.

In his epistles, book 3. epistle 10. 11. and 12. the *cachexia scorbutica*; epistle 20. and 28. the *affectio hypochondriaca scorbutica*; and book 5. epistle 9. the *arthritis vaga*. His method of cure, which has nothing new in it, is to be found in the 34th case of his 3d book, by which he says he generally succeeded, unless the scurvy was hereditary, or very deeply rooted: as likewise in the 29th and 30th epistles of his 3d book; where we have the treatment of the Queen of Sweden, when labouring under this disease, by the celebrated *Hermannus Conringius*. And there (epistle 29.) we have mention made of a new scorbutic symptom, by *Otto OEslerus*, viz. a burning internal pain, seated in the mesentery, attended with violent thirst, and colics most violent in the night.

1663. *Valentini Andreæ Moellenbrocii, de varis, seu artbritide vaga scorbutica, tractatus.*

He makes the scurvy a most universal disease, a calamity common almost to all mankind. Its cause is, a volatile salt in the blood, endued with great acrimony and malignity. The last of these properties he thinks demonstrable, from the sudden weakness and prostration of strength, great oppression and difficulty of breathing which occur even in the beginning of the disease, as if the patient had swallowed poison; as also from an eruption of livid spots, which often make their appearance after death.

1667. *Thomæ Willis tractatus de scorbuto.*

He sets out with telling us, that a great variety of symptoms, and diseases of the most opposite kinds, are supposed to proceed from the scurvy; which, like a condemned and infamous name, has the scandal of most diseases charged to its account. How far he clears up this confusion, or has abridged the number, will appear by the following detail he gives of scorbutic symptoms. He observes, that no simple description or definition of this distemper can be given; and, consequently, that the best method of describing it, is according to the different parts affected of the body; in all which it produces manifold symptoms.

He begins with the head: where the scurvy causes headaches, violent and habitual; and sometimes vague, or periodical; oftentimes sleepiness, and dulness of the spirits, at other times obstinate watchings; frequent giddiness, convulsions, palsies, salivations, ulcers of the gums, loose teeth, and foetid breath.

The breast is affected with pains in different parts of its membranes, chiefly on the breast-bone, where they are very violent, acute, and darting; frequent asthma's; difficult and unequal respiration; straitness of the breast; violent cough; irregular pulse; palpitation of the heart; frequent faintings, and the continual dread of them.

In the *abdomen*, where this disease has its principal seat, it begets a multitude of evils, *viz. nausea*, vomiting, *cardialgia*, flatulencies, frequent colics, and most troublesome shifting pains; and almost constant purging, sometimes the dysentery, or *tenesmus*; the *atrophia*, and now and then the *ascites*. The urine is very often reddish and lixivial, having a cake suspended in it, or adhering to the sides of the glass: and sometimes, though seldom, a great quantity of pale watery urine is discharged.

In the limbs, or even over the whole body, there are wandering pains, often very acute, and becoming worse at night; a lassitude; wasting of the flesh; pain of the back; a weakness of the other joints; spots of
various

various colours on the skin; tumours, tubercles, and often malignant ulcers; a *stupor* or stinging pain about the muscles; a sense of cold as it were in the parts; contractions and *subfultus* of the tendons. Besides these, scorbutic people are subject to irregular effervescencies of the blood, irregular fevers, and profuse hæmorrhages. He concludes this long detail with observing, that these are the most common and usual symptoms of the scurvy, sometimes more, sometimes fewer, of this or that kind, afflicting the diseased: but besides what have been already mentioned, there occur in it more uncommon and extraordinary appearances.

The principal causes are, unwholesome air, and a vitiated texture of the blood by preceding sickness. In this distemper, either the blood, nervous juice, or both are affected. The fault of the blood is its being either *sulphureo-saline*, or *salino-sulphureous*. If the first be the case, and the sulphurs superabound, then repeated bleedings, a cooling regimen, and the most temperate remedies are proper; avoiding above all things the hot and acrid antiscorbutic medicines. But, on the contrary, where there is the *salino-sulphureous* state, and the salts of the blood are predominant, then the warmer medicines are proper, and such as are possessed of a volatile salt, together with steel
and

and the like. The fault in the nervous juice is threefold. It is, *1st*, Either too thin and poor; or, *2dly*, It has degenerated from its spirituous saline nature into a sharpness; or, *3dly*, It may abound with foreign and morbid particles. And according to these imagined faults in the blood and nervous juice, he makes a second distribution of the symptoms, and accounts for the whole number he enumerates in this disease, which he supposes to be hereditary and infectious.

The *indications* of cure are divided into three classes. 1. The preservatory; under which he gives the process of cure, or rather the method in general of removing the causes of the disease. 2. The curatory, or means of alleviating and relieving the most urgent symptoms. The 3d comprehends what he calls *the vital indications*, or the means of preserving and restoring the strength and health of the patient.

The cure is accomplished by purging, digestive and antiscorbutic medicines; with blood-letting occasionally repeated. If the stomach is much disordered, or oppressed with phlegm, he gives a vomit, weaker or stronger, according to the strength or habit of the patient. This in some he repeats every month, where it is indicated: otherwise he begins the cure with a purge, which he repeats occasionally, and of a different kind,

kind, suited to the warmer or colder constitution of the patient; or, to use his own terms, according as the *dyscrasy* of the blood is *sulphureo-saline*, or *nitro-sulphureous*. In both cases he furnishes us with variety of prescriptions; observing, that they should be repeated no oftener than at an interval of five or six days; as too violent and frequent purges serve only to weaken the tone of the *viscera*, and strength of the patient, without removing the disease. After once or twice purging, if a fulness of blood, and its viscosity, make it necessary, the patient is to be bled in the arm, or with leeches in the hæmorrhoidal veins; rather repeating the operation, than taking away too much at a time. Those evacuations being made according as they are severally indicated; provided no particular symptom be urgent, he proceeds to the general method of cure, *viz.* removing the cause, and extirpating the disease. For these purposes, the digestive and specific antiscorbutic medicines (divided into two classes, *viz.* hot and cold) are to be given every day, unless when under the operation of a purge; to these, if needful, sweating medicines may be joined (*g*).

For

(*g*) He calls those *digestive medicines*, which assist or restore the functions of the stomach, and other chylopoietic *viscera*; and *antiscorbutics* or *specifics*, such as remove the scorbutic dyscrasy of the blood: both which are to be joined together, or at least given the same day. *Cremor, sal,* or *tinctura tartari, tartar. vitriol. chalybeat. el. propr. &c.* are proper digestives. They are to be administered in a small dose, evening and morning.

For the cold scurvy, he abounds with an ample variety of antiscorbutic compositions (*b*).

In the hot scurvy, the more cooling and temperate antiscorbutics are necessary (*i*).

After having delivered the cure of the disease in general, he proceeds to the indications for removal of the most urgent symptoms (*k*).

He

(*b*) *Cochlearia, nasturtium aq. becabunga, cort. winteran. bacc. juniper. rad. raphani*, and other acrid aromatic herbs and roots, together with their conserves, the candied spices, *pulv. ari comp. steel, &c.* He has often successfully prescribed the following remedy. *R. Sum. genistæ manip. iii. minutim incif. Coquant. in cerevis. fort. lib. iii. ad medietatem.* Two or three ounces to be given twice a-day.

(*i*) Of these he gives the same variety; making use, in most prescriptions, of the *testaceous* powders, the absorbents, *sal. absinth. &c.* He recommends wines made of gooseberries, and other summer fruits, but especially cyder: observes *rad. lapathi acuti* to be among the best of our antiscorbutics. This infused in ale, with brook-lime, water-creffes, sliced oranges, citrons, pine-tops, &c. makes a noble remedy.

(*k*) For a difficulty of breathing, and asthmatic fits, he recommends cardiacs and antispasmodics, *viz. sp. cornu cervi, tinct. castor. flor. benzoin. el. propr. &c.* given in any scorbutic liquor. If the *dyspnœa* be entirely spasmodic, opiates afford the greatest relief: acrid glysters, sudorifics, and diuretics, are likewise serviceable. In scorbutic disorders of the stomach, vomits, purges of rhubarb, *el. propr. &c.* with fomentations to the part, are necessary: opiates sometimes give ease. In scorbutic colics, glysters are to be given; fomentations, liniments, and cataplasms, used externally; and opiates internally, especially when joined with purgatives: the *testaceous* powders are proper; likewise the use of some purging mineral water, as *Epsom*. An inveterate *diarrhœa*, such as scorbutic persons are subject to, is not to be stopt by astringents: the mineral waters impregnated with steel and vitriol, are in this case

He afterwards relates a symptom which he had observed three or four times, *viz.* a crackling of the bones upon moving the joints. Even upon turning in bed, by the rubbing of the bones of the back on each other, a considerable noise was perceived, like to the rough handling of a skeleton; which he remarks is an almost incurable symptom.

Lastly, We have what he calls the *vital indications*. He here directs the use of cordials, restoratives, opiates, &c. together with a proper diet. He blames the immoderate use of sugar in the present age, for the frequency and violence of the scurvy; and concludes with some histories of cases.

1668. *Morbus polyrhizos et polymorphæus*. A treatise of the scurvy. By Everard Maynwaringe.

To the causes of this distemper usually assigned by others, he adds the use of tobacco, and immoderate venery; particularly the first, which he inveighs against at great length. He condemns all former theories and methods of cure recommended by authors; pretending to be possessed of most effectual remedies; which, however, he does not make public.

the best medicines; and next to these, preparations of steel, especially its *crocus*. A *vertigo*, faintings, palsy, and convulsions, require a mixture of cephalic and antiscorbutic remedies. The other symptoms are to be treated likewise with such medicines as are proper for the original diseases compounded with antiscorbutics.

1669. *Praxeos Barbettianæ, cum notis Frederici Deckers, lib. 4. cap. 3. de scorbuto, et affectione hypochondriaca malè vulgò dicta hysterica.*

Barbette gives a description of the scurvy, and its symptoms, pretty much from *Eugenus*: cautions against bleeding, and violent purgatives, in the cure; but thinks gentle physic proper at times, and that the diseased humour should be prepared by inciding remedies; the most proper for this purpose being volatile salts. After a long list of the common antiscorbutic medicines (to which *Deckers* subjoins many more, adapted to the particular symptoms of the disease) he observes, that the spirit of scurvy-grass and *dulcified* spirit of *sal ammoniac*, are the principal remedies. He concludes with two cases: one a young man not able to walk through his chamber, who recovered in seven days by a decoction of *rad. raphani* in whey; another, a merchant, having scorbutic spots, who was cured by the use of *spir. sal. ammoniac.* and proper diet. *Deckers* adds another case, and seemingly a very genuine scurvy, which was removed by fourteen drops, for a dose, of the *sp. sal. ammoniac.* given in an infusion of *rad. raphani* in wine.

1672. *De scorbuto liber singularis; auctore Gualtero Charleton.*

Observing it might be a task fit only for *Jove* himself to give an accurate account of

the scurvy, and all its symptoms, he thinks it necessary to give only a catalogue of those which most frequently occur, and are the most afflicting. In this number he ranks almost all the symptoms enumerated by *Eugalenus*, *Sennertus*, and *Willis*; and afterwards distinguishes the disease itself into three kinds, from its different causes. The first is denominated a *rancid scurvy*, from the predominancy of the sulphurs in the blood combined with some of its salts; the second, a *scurvy from fixed salt*, where the tartareous or terrestrial saline particles prevail; and the third, an *acid scurvy*, owing to a sharpness and acidity of the blood and juices.

The symptoms peculiar to the first species, are, spots, pustules, tubercles, and ulcerations, upon the external parts of the body; internally, heartburn, vomiting, purging, colics, together with frequent effervescencies of the blood. When this species of the scurvy is inveterate, the *nervous system* becomes affected. The symptoms are then, a giddiness; tensive headach; sleepiness, or immoderate watchings; the night-mare, and sometimes madness.

Of the second species, the symptoms are, straitness of the breast, palpitation of the heart, and faintings; numbness and lassitude of the body; convulsive motions, and wandering pains in the joints.

In

In the third, or acid scurvy, there are continual irritations of the nerves; which are increased by the slightest passion of the mind; frequent *rigors* (a certain sign of acidity in the humours); a sense of cold in the back part of the head, and spine of the back, sometimes running through the limbs; flatulent spasms; convulsions, and what are commonly called *hysteric* complaints; sometimes costiveness; at other times the dysentery; melancholy, with dread and despair; atrophy; ulcerations; lastly, a gangrene, which generally closes the scene. From this acidity in the blood, proceed likewise, palpitations of the heart; a sudden stoppage of the pulse, attended with great oppression on the breast, ending in a faint, and a cold sweat. When this species of the scurvy has become inveterate and confirmed, it begets most violent and dreadful symptoms, *viz.* intolerable nocturnal pains, cancers, &c.

In the cure of the first species, we are to begin with gentle *cholagogue* purgatives prudently administered and repeated, and with bleeding, if the disease is but commencing; proceeding to the digestive or temperate alterative medicines, that may correct the hot *sulphureo-saline* state of the humours (1).

B b 3

For

(1) If the patient be of a hot temperament, and lean, scurvy-grass, and other hot antiscorbutics, are to be avoided. Asses milk with juice of dandelion, or a water distilled from the milder

For cure of the second species, proceeding from a fixed salt, the only proper medicines are those which abound with a volatile salt, *viz.* the warm antiscorbutics (*m*).

The cure of the third species, or acid scurvy, is to be begun with gentle laxatives, which makes way for bleeding; proceeding afterwards to deobstruents (such of this class as are mild) joined with temperate antiscorbutics, but especially such remedies as are proper in the hypochondriac disease with obstructed *viscera*. Afterwards he endeavours to correct the acidity (*n*). The cure here, as in the before-mentioned scurvies, is to be concluded by corroborants; such particularly

milder antiscorbutics with cyder or cows whey, is then to be used. A pint of warm whey, with the addition of ten drops of *sp. cochlear.* or *sp. sal. d.* may be drank night and morning for some weeks together. The mineral waters are likewise serviceable; observing at the same time proper rules with regard to diet and exercise. After those courses (during which the patient must take a purge every week) the cure is to be compleated by restoratives and corroborants. The best is, a small subacid wine, medicated with the temperate, but aromatic and stomachic antiscorbutics, or confections of the subacid fruits, &c.

(*m*) Digestive and cathartic medicines must be interposed at times, together with sudorifics and diuretics, according to the tendency of the tartareous humour to the skin or kidneys. Steel mineral waters are to be used, if the patient is of a hot temperament. After those courses, recovery is to be perfected by corroborants and analeptics. The best of these is fennel-wine.

(*n*) Volatile salts of any kind, or the testaceous powders, lixivial salts, oily emulsions, and chalybeate medicines. Milk almost of any kind is proper; as likewise whey medicated with the temperate antiscorbutics; broths of snails, cray-fish, &c.

particularly as are recommended by authors at the close of the *hypochondriac* disease.

He finishes his book with laying down the method of removing several of the most urgent symptoms in this disease. The principal of which are to be treated with antiscorbutics joined to the remedies proper for such diseases.

1674. *Francisci Deleboe Sylvii opera medica.*

This celebrated author has little upon this disease but theory. He only observes (*o*) that there is no distemper in which volatile salts are so efficacious and necessary as in the scurvy; herbs abounding with these salts, as scurvy-grass, rochett, cresses, horse-radish, and mustard-seed, being its best remedies. In imitation of those, for many years past he had given, with great success in this distemper, volatile salts obtained from different parts of animals. Moreover, acids that are spirituous, either of the natural or chemical sort, are likewise serviceable in the scurvy, *viz.* juice of oranges, sorrel, &c. *sp. sal. vel nitr. dul.* For cure of the scorbutic spots observed after the epidemical fever, of which he is there treating, he mixed these volatile salts and spirituous acids together; which proved very serviceable, and sudorific.

B b 4

(*o*) *Prax. medic. append. tract. 10. § 863, &c.*

1675. *The disease of London; or, A new discovery of the scurvy.* By Gideon Harvey.

He divides the disease into two great branches, *viz.* a *mouth-scurvy*, and *leg-scurvy*. To which a third may be added, which he calls the *joint-scurvy*. They are thus denominated from the parts affected. The immediate cause of the first, is an acid lymph in the stomach; the occasional causes being the frequent use of mercury, a saline air, salt diet, brackish water used for brewing of ale, gluttony, debauchery, &c. The second, or leg-scurvy, he attributes to a cause opposite to that of an acid, *viz.* a lixivial alcalious salt. He terms it a *saponary state of blood*. The occasional causes of this are pretty much the same with the former, *viz.* saline air, and salt food; the use of sea-salt, distilled spirits, and tobacco. An acid scurvy continuing long, changes into a saponary scurvy; or is followed with swelling and ulcers of the legs, &c. He afterwards makes many other distinctions in this disease. For a preservative against it he recommends change of air, and wholesome, nourishing, easy-digested food. In the cure, bleeding is proper, and issues both for that and its prevention. In the mouth-scurvy, they are to be put in the left arm; in some cases in the neck, or right arm; in the leg-scurvy, above the knee; in the joint-scurvy, more than one are to be made. Aloetic pills are

amongst the best preservatives against this distemper. They are to be given in the cure of a recent, or even inveterate scurvy: but at the same time are proper only in the acid kind; as the laxatives in the lixivial or saponary scurvy must be of the mildest sort. The acid scurvy requires warmer medicines; the lixivial the more temperate, cooling, mucilaginous, &c. He concludes with the cure of a stomachic scurvy, hepatic, &c.

1681. *Abrabami Muntingii de vera antiquorum herba Britannica, ejusdemque efficacia contra stomacacen seu scelotyrben, Frisiis et Batavis de Scheurbuyck, dissertatio historico-medica.*

He pretends, after much labour, to have discovered the true *herba Britannica* of the ancients, which had been unknown to the world for many ages, viz. that celebrated plant which, according to *Pliny's* account, cured the *Roman* army under *Cæsar Germanicus* (see p. 290.). He would have it to be *hydrolapathum nigrum* (a), the great water-dock; and bestows the most extraordinary encomiums upon it; giving instances of several remarkable cures performed by its use, in the scurvy.

(a) An infusion of this herb, under the name of its essence, has for some years past been sold in London as a great specific for the scurvy, to the no small emolument of the proprietor, Dr. Hill.

1683. *Traité du scorbut, par L. Chameau.*

The scurvy is in a particular manner frequent among the *English*, as the author had observed during his residence for some time among them; and for their sakes chiefly he published his book. He makes it to be a contagious dissolution of the blood, by a very acrid subtile salt: confutes the distinctions made of the disease by Dr. *Willis*, and extols milk as the most excellent antiscorbutic remedy; accounting all warm and acrid medicines for the most part pernicious.

Une voyage aux Indes orientales, écrit par M. Dellon, M. D. Supplement, chap. 2. Of the scurvy, called by the *French* the land evil.

This is the most dangerous and troublesome of all the distempers incident in a long voyage, being contagious, and scarce ever to be cured at sea. The symptoms first appear in the mouth and gums, which swell, grow black, and emit a disagreeable scent. Deep incisions are requisite in order to remove a considerable quantity of corrupted flesh and matter, which not only loosens the teeth, but makes them fall out. The next symptoms that appear are certain black spots on the arms, legs, and thighs, and then over the body. The broader these spots are, and the nearer the heart, the more dangerous is the distemper. The corruption in the gums, and blotches

blotches over the body, are followed by a *nausea*, laziness, fainting fits, pains in the head, arms, and legs, and last of all with a looseness. There is seldom any fever; the pulse in this malady declining very little from its natural state.

For prevention he recommends that the ship be victualled with sound wholesome provisions; that she be kept neat and clean, washed with sea-water every day, and sprinkled with vinegar twice or thrice a week. Each person on board ought to provide himself with juice of citrons, lemons, *ros solis*, and dried fruits, especially prunes, and not to abstain long from drinking. But if the disease has already made its attack, then he proposes first a moderate bleeding, a little gentle physic, and above all repeated clysters, if there is not a scarcity of water on board. The gums are to be rubbed with a mixture of vinegar or juice of lemons with some salt, until they bleed. The blotches on the body are to be washed and rubbed with warm sea-water until they smart: or (if it can be got) with the blood of a sea hog, which has been found by experience to have a specific quality against this evil. If in spite of all endeavours the heart becomes affected with the malignant vapours from the corrupted parts, recourse must be had to cordials. From the first attack of the disease, the patient must abstain
from

from every thing salted. If he cannot have fresh provisions, he must feed on rice, barley, and prunes, and drink wine mixed with water, which will be of greater service to him than all the cordials in the ship. He concludes with telling us, that it is of great use to send the sick on shore in hot weather or in warm countries; but if the ship comes to an anchor in a cold climate, the utmost care is to be taken not to expose them to a cold air. They are rather to be kept up close and warm, sweating being conducive to their cure, especially if at the same time they are provided with a good diet of easy digestion, and good nourishment.

1684. *Nauwkeurige verhandelinge van de scheurbuik en des selfs toevallen*: or, A curious treatise on the scurvy, and its symptoms. By Stephen Blancard. *Ejusdem praxeos medicæ cap. 15. de scorbuto.*

Though *Willis* and *Charleton* have written the best upon the scurvy, they have not yet solved all the difficulties that occur in it; which this author thinks he does by his theory of fermentation, founded upon the *Cartesian* philosophy. The malady proceeds from a thickness of blood. Of this there are two kinds, *viz.* a cold and *phlegmatic* viscosity; or there may be a heat and an acidity in that fluid: hence the disease is properly divided into a *hot* and *cold* scurvy.

In

In the first species, whatever incides and attenuates viscid pituitous humours, such as the warm aromatics and spices; in the other (or acid scurvy) the *testaceous* powders, and all other absorbents; fixed, volatile, and alkaline salts; chalybeats, but particularly drinking of tea and coffee, are the proper remedies. Bleeding is of no use. Vomits and purgatives are sometimes necessary. All acids, viscid and salted foods, are pernicious.

1684. *Jo. Dolæi medicinæ theoretico-practicæ encyclopædiæ lib. 3. cap. 12. de scorbuto.*

The scurvy is a disease nearly allied to the hypochondriac disease, being an acid indispotion of the blood. He pretends to cure all scurvies in twelve days, by mercury dulcified in a particular manner.

1685. *Michaelis Ettmulleri collegii practici de morbis humani corporis part. 2. caput ultimum, exhibens duos affectus complicatissimos; nempe, malum hypochondriacum, et scorbutum.*

He accounts the scurvy the highest degree of the hypochondriac disease. All the symptoms of this latter occur in it, besides many more. He has nothing new, all he says being transcribed from other authors; but confounds the two diseases together, so as to make steel, and most other remedies proper in the hypochondriac disease, useful in

in the scurvy. He observes, that mercury is extremely pernicious in the scurvy; and so much dreaded by the *Dutch*, that even in venereal cases, they were afraid to use it, on account of their scorbutic habits of body. *Dutch* seamen carry to sea mustard-seed, which both preserves them from the disease, and cures it. In winter, when the antiscorbutic plants cannot be procured, a composition with mustard-seed is to be prescribed (*p*).

1685. *Thomæ Sydenham opera universa.*

The author has no where treated expressly of this disease, but in a posthumous work ascribed to him (*q*). There the scurvy is said to be accompanied with, 1. spontaneous lassitude; 2. heaviness; 3. difficulty of breathing, especially after exercise; 4. rottenness of the gums; 5. foetid breath; 6. frequent bleeding at the nose; 7. difficulty of walking; 8. a swelling sometimes, at other times a wasting of the legs; on which spots always appear, that are either livid, or of a leaden, yellow, or purple colour; 9. a fallow complexion. For cure, eight ounces of blood are to be taken from the arm, provided there be no sign of a dropsy; next morning a purging potion is to be given, and repeated twice, at the interval of three days betwixt each dose. On the intermediate days the
anti-

(*p*) *Phytolog. p. 98. Vid. Sinap.*

(*q*) *Processus integri in morbis ferè omnibus curandis.*

antiscorbutic medicines are to be used, and continued for a month or two (*r*). But the more genuine sentiments of this candid author are to be found in his other works.

Cap. 4. de febris continuis, ann. 1661, 62, 63, 64, he observes, that the two great subterfuges of ignorant physicians, were malignity and the scurvy; which they blamed for disorders and symptoms often owing to their own ill management. Thus, whatever bad and irregular symptoms have been brought on in fevers, perhaps by their unseasonable evacuations, these they ascribe to the malignity of the disease; but if the long continuance of the distemper should wipe off this aspersions of malignity, whatever afterwards obstructs the cure must be the scurvy; both of which are blamed without reason.

Seçt. 6. cap. 5. de rheumatismo. To deliver my sentiments freely, though I do not at all doubt that the scurvy is to be met with in these northern countries, yet I am persuaded it is not so frequent as generally supposed. For most of those disorders we term *scorbutic*, are the effects of approaching ills
not

(*r*) *R. Conf. cochlear. hort. unc. ii. conf. lujulæ unc. i. p. ari comp. dr. vi. syr. aurantior. q. s. F. elect.* Of this the quantity of a large nutmeg is to be taken three times a-day, with six spoonfuls of the *aq. raphan. comp.* or *aq. cochlear. recent.* The patient is to have for common drink, an infusion of horse-raddish, scurvygrass, raisins, and oranges, in small beer or in white wine. Those medicines are likewise beneficial in the scorbutic or hysteric rheumatism, bleeding and purging excepted.

not yet formed into diseases, or the relics of some disease imperfectly cured. Thus, for instance, where a matter suited to produce the gout is newly generated, there appear various symptoms, which occasion us to suspect the scurvy; till the formation and actual appearance of the gout remove all doubt concerning the distemper. And in the same manner, many symptoms ascribed to the scurvy afflict gouty people after the fit is over, especially if it has been improperly treated. And this is to be understood not only of the gout, but also of the dropsy. The proverb is, That where the scurvy ends, there the dropsy begins; which is to be understood in this sense, that, upon the appearance of the dropsy, the preconceived opinion of the scurvy falls to the ground. And the same may be said of several other chronic diseases that are but forming, and others that are not totally cured. He however thinks, there is a species of rheumatism near akin to the scurvy in its capital symptoms, and which requires the same method of cure. The pains shift from one place to another; rarely occasion a swelling; there is no fever; but it is attended with irregular symptoms; such especially as have taken much of the *Peruvian* bark are subject to it. Though it is otherwise a very obstinate disease, yet it may be effectually cured by the use of the antiscorbutic electuary
before-

before-mentioned, and a water distilled from scurvygrafs, brooklime, cresses, &c.

1694. *Martini Lister tractatus de quibusdam morbis chronicis exercitatio 5. de scorbuto.*

He treats of the scurvy next to the venereal disease, because they are nearly allied; having so many symptoms common to both, that they are not easily distinguished from each other, but by an experienced physician. The scurvy has not been expressly treated of by the ancients, as being in their time prevalent only in a remote corner of the world little known to them. *Eugalenus* was the first who accurately described this disease. It was formerly confined to *Flanders*; but has acquired great strength since our navigation to the *Indies*, being now universal, and common to seamen of every nation. He ascribes it to the use of salt food, old saltish cheese, and the like; or it may be occasioned by ale made of brackish water. He observes the brewers have a bad custom of adding salt and quick lime to their malt-liquors; which fines and preserves them without hops. He fancies the salt sea-air greatly productive of this malady; as he had been informed, that even saltish rains fell in hot countries. He afterwards very ingeniously accounts for all the symptoms of the scurvy enumerated by *Eugalenus*;

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which

which he supposes to proceed from the use of this sea-salt, occasioning a brinish chyle, lymph, &c. and converting the whole humours of the body into a pickle. Juice of scurvygrass, lemons, and oranges, all sorts of fruits, and pot-herbs (the more acid the better) are excellent remedies; as also vinegar, and spirit of vitriol. He pretends to be the first who takes notice of fatal hæmorrhages sometimes occurring in this disease, and gives some instances of them from his own observations.

1696. *Sea-diseases; or, A treatise of their nature, causes, and cure.* By William Cockburn.

The scurvy being generated by the salt provisions altogether unavoidable at sea, makes one of the constant diseases in navies. A fourth part of the seamen do not contract it directly, in declining from a state of health, but by being put too soon on the sea-provisions, after recovering from fevers, and other distempers. It attacks commonly the weak, lazy, and inactive. Refraining from the sea-diet, and living upon green *trade* (as it is called) on shore, proves an absolute cure. It is worthy observation, how suddenly and how perfectly they recover of this distemper by eating greens, *viz.* coleworts, carrots, cabbages, turnips, &c. Men put on shore in the most pitiful condition
that

that can be imagined, are able in three or four days, by means of this food only, to walk several miles into the country. When Lord *Berkeley* commanded the fleet at *Torbay* in 1695, the author prevailed with his Lordship to erect tents for the sick on shore. Above a hundred of the most afflicted scorbutic patients, perfect moving skeletons, hardly able to get out of their ships, were landed. They had fresh provisions given them, with carrots, turnips, and other greens. In a week they were able to crawl about; and before the fleet sailed, they returned healthy to their ships. He regrets, that this distemper had as yet been left without a remedy at sea. If proper care was taken about their diet, seamen would not be so liable to it. He condemns the division into a hot and cold scurvy, made by Dr. *Willis*. The first alone is properly the true and real scurvy, and the latter nothing else but the *hypochondriac* disease. And upon this occasion he observes the necessity of having proper names and descriptions of diseases; as the use of ambiguous terms is apt to mislead, and to have fatal consequences in the cure of them.

1705. *Genees en Heelkonstige Redenvoering van de Scheurbot, &c. &c. &c. Uit eigene ondervindinge opgesteld, Door Yvo Gawkes, M. D. Or, A compleat description of the Scurvy, &c. &c. from the experience of Doctor Yvo Gawkes.*

This practical treatise is esteemed the best that has been published on the scurvy in the *Dutch* language. It contains eighteen cases of patients, all of whom, including men, women, and children, were afflicted with the true scurvy, except one person whose case was doubtful. From a contemplation of the symptoms, and an enumeration of the remedies, by which he performed the cure of those patients, he infers the scurvy does not proceed from an acid or thick blood, but from a volatile alkalious and dissolved state of that fluid. The book contains an accurate description of the scurvy, and some good observations, which are chiefly valuable for being the result of the author's own experience. He describes the cases of some young children, who undoubtedly laboured under this malady (*s*).

Archibaldi

(*s*) His remedies were, a gargle for the gums of alum water and honey, with an addition of the spirit of vitriol; three ounces of the following purging medicine were taken night and morning.

R. Fol. *senæ* unc. i. sem. *anisi* dr. ii. infunde in aquæ calidæ q. s. per noctem; dein adde herb. acetos. manip. vi. cochleariæ manip. iii. tamarind. unc. i. fs. colaturæ lib. ii. b. adde syr. e cichoreo cum rheo unc. ii. fs.

Archibaldi Pitcarnii element. medicinæ physico-mathematic. lib. 2. cap. 23. de scorbuto.

The reader must here be cautioned, that every thing in this posthumous work is not to be ascribed to *Pitcairn*. The symptoms of the scurvy are said to be, a redness, itching, putrefaction, and bleeding of the gums; loose teeth; spots on the legs, first red, then livid, and blackish; an unusual lassitude; a red sandy sediment in the urine, so that it appears lixivial; an unequal pulse; wandering pains; toothachs; redness, or heat of the body; foetid breath; fluxes with or without blood. The immediate cause is, a broken texture of the blood; and this dissolution of that fluid may be occasioned even by bleeding; which is by no means proper for scorbutic patients. But he talks only of the hot scurvy, or what *Willis* terms the *sulphureo-saline*; this being properly the disease, if we would distinguish it from the hypochondriac distemper. He recommends milk, or a milk diet, as the best cure. But if it does not succeed, or any thing forbids its use, then chalybeats are to be given, with the addition of astringents, and the fixed temperate antiscorbutics, especially if faintings, fluxes, or a difficulty of breathing, afflict the patient. For the wandering gout, or scorbutic pains, after gentle purging, a decoction of *guajac* and *sarsaparilla*, is to be administered; observing, that if these pains are attended with few or no other

scorbutic symptoms, they are then to be deemed rheumatic. This may easily be discovered by their admitting of repeated and plentiful bleedings; which are so very hurtful in the scurvy.

1708. *Hermanni Boerhaave aphorismi de cognoscendis et curandis morbis. Aph. 1148. &c. de scorbuto.*

Besides the common causes usually assigned by authors as productive of the scurvy both at sea and land, he, from *Sydenham*, adds that particular of having taken too great a quantity of the *Peruvian* bark; then describes the symptoms peculiar to the malady in its beginning, progress, and more advanced stages, contained in the four following sections.

Sect. 1. An unusual laziness; an inclination to rest; a spontaneous lassitude; a general heaviness; a pain of all the muscles as after too great fatigue, particularly in the legs and loins; an extreme difficulty in walking, especially up or down a steep place; in the morning upon awaking, the limbs and muscles feel as if wearied and bruised. *Sect. 2.* A difficulty of breathing, panting, and almost suffocation, upon every little motion; a swelling of the legs, often disappearing, and an inability to move them, from their weight; red, yellow, or purple spots; a pale tawny colour in the face; a beginning stench of the mouth; a swelling, pain, heat, and itching of the gums, which bleed

bleed upon the least pressure; bare and loose teeth; pains of different sorts wandering over all parts of the body, external as well as internal, occasioning surprising anguish, resembling pleuritic, stomachic, iliac, colic, nephritic, cystic, hepatic, and splenetic pains. Hæmorrhages occur in this stage, but slight.

Seçt. 3. A most offensive rottenness, inflammation, bleeding, and gangrene of the gums; loose, yellow, black, and carious teeth; varicose veins under the tongue; hæmorrhages, frequently mortal, from under the skin, without any apparent wound; as also from the lips, stomach, liver, lungs, spleen, *pancreas*, nose, &c.; ulcers of the worst kind upon every part of the body, chiefly the legs, yielding to no remedies, of a gangrenous disposition, and most fœtid smell; *scabies*; crusts; a dry and gentle leprosy; violent, piercing, universal nocturnal pains; livid spots. *Seçt. 4.* Fevers of many kinds, hot, malignant, intermitting all manner of ways, vague, periodical, continued, occasioning an atrophy; vomitings; *diarrhœa*; dysenteries; severe stranguries; faintings; and an oppression upon the breast, often suddenly mortal; a dropsy; consumption; convulsion; *tremor*; palsy; contraction of the *tendons*; black spots; vomiting and purging of blood; putrefaction of the liver, spleen, *pancreas*, and mesentery.

He supposes the immediate cause of the scurvy to be a singular state of blood; in

which one part of that fluid is too thick and viscid ; while, at the same time, the other part is too thin or dissolved, saltish and acrid. Which latter, or its acrimony, is either of an acid or alkaline quality : a distinction here carefully to be remarked. Upon this hypothesis, he founds the following rules, *viz.* That part of the humour which is too thick, viscid, and stagnating, must be attenuated, rendered thinner, and put in motion ; meanwhile, what is already too thin, is to be thickened, and the predominating acrimony corrected according to its different kind and species. Now, as a singular regard must be had at the same time to these so opposite intentions of cure, he thinks it the masterpiece of art to cure the scurvy. And after observing that smart evacuations always exasperate, and often render it incurable, he lays down a process of cure adapted to the different stages and symptoms, as distributed in the four classes or sections (*t*).

He

(*t*) In the first stage (see sect. 1.) we are to begin with a gentle, attenuating, deobstruent purgative, often repeated in a small dose ; next, to proceed in the use of attenuants, and what are called *digestive medicines* ; (Vid. *Willis*. It is needless to give *Boerhaave's* prescriptions here, as almost all of them in his *Materia medica* are taken out of *Willis* ; as is indeed his process of cure) ; concluding with a long continued course of the milder specifics, exhibited in almost any form. In the second stage (sect. 2.) all that has been mentioned is necessary, with the addition of the more acrid antiscorbutics. Baths for the body and feet, prepared with antiscorbutic ingredients ; also hot, dry friction, and often blood-

He concludes the subject with observing, that, in order to a successful cure of this disease, it is principally required to investigate the peculiar predominating acrimony in the humours: and as this acrimony may be either saline and muriatic, acid and austere, alkaline and foetid, or rancid and oily; so it requires different and opposite cures; what is serviceable to one scorbutic patient, proving poisonous to another. The name of the distemper is not so much to be studied, but each particular species of it, according to the different kinds of acrimony above specified, as if it was a distinct disease.

1712. *Jo. Henrici de Heucher cautiones in cognoscendo curandoque scorbuto necessariae.*

This pamphlet contains some of the most exceptionable doctrines of *Willis*, *Eugalenus*, &c. Of which the following may suffice as a specimen.

blood-letting, for certain reasons he mentions, are proper. According to the acrid thinness of the fluids, heat, or danger of a hæmorrhage; or, on the contrary, the viscosity and inaction of the humours, paleness, coldness of the body, &c. the antiscorbutics given, are to be moderately astringent, somewhat cooling, or hot or acrid. In the third species or stage (sect. 3.) all the already prescribed measures are to be used. The patient is also to take great quantities of soft antiseptic, antiscorbutic liquors, promoting for a considerable time gentle evacuations, by sweat, urine, and stool. In the fourth stage or species, (sect. 4.) the case is for the most part incurable: medicines are to be varied according to the different symptoms; sometimes mercurials do service, as likewise what was ordered for the third species,

a specimen. Mercury is very justly sometimes recommended in the scurvy by *Boerhaave*, when it is accompanied with fevers of various kinds, vomiting, purgings, sometimes of blood; violent stranguries, faintings, and oppression on the breast, often mortal; dropfy; consumption; convulsions; palsies; voiding of blood; putrefaction of the liver, spleen, *pancreas*, and mesentery.

1714. *A short essay on the scurvy, in which the causes and cure of that disease are briefly stated and demonstrated.*

Such persons as have long languished under a scorbutic habit, and have been disappointed of their expectations from the use of ordinary means, will find relief by having recourse to the author's never-failing medicines. He observes there were great disputes in his time concerning the doctrines of acid and alcali: some physicians believing the scurvy and other diseases to proceed from an acidity, others from an alcalescency in the blood; from these disputes about the cure, the poor patients suffered greatly, being very differently treated, according as they fell into the hands of one or other of the contending parties. The author supposes both parties to be in the wrong.

1732. 1734. *An account of the scurvy at Wiburg. Communicated by Dr. Abraham Nitzsch to Dr. Schulze. Commerc. literar. Norimb. ann. 1734, p. 162.*

It may be proper, first, to observe, that the scurvy is here a common disease. But what drew particular attention to it this year, 1732, was the uncommon number of the afflicted, and of those who died, together with its unusual duration. It persisted in its ravage from the beginning of the year until the month of *August*, with such remarkable violence, that I was sent thither by express orders in the month of *June*. I observed the appearances of the disease were not the same in all; but varied according to the different constitutions of the patients.

Those who were of a lax habit, laboured under swelling of the legs, (rarely of the belly) yielding easily to the impression of the finger, but often becoming harder upon the continuance of the malady. The *hypochondria* for the most part were tumid, the flexor tendons of the leg always contracted, with livid spots on the legs, knees, thighs, and back. Those spots, particularly on the legs and if the patient was full of blood, became often inflamed, and were attended with most acute pain, and quickness of the pulse. Now and then the white of the eye altogether

altogether bloody; and sometimes the eye lids were greatly swelled, being distended with effused, stagnating blood. In some the spots were pretty large, especially upon the thighs and back; in others they resembled only flea-bites, and were accompanied with swelling of the legs, universal lassitude, swelled, bleeding, and putrid gums; as also a pale wan countenance. Several were distressed with a great difficulty of breathing, cough and spitting, giddiness, and faintings, most commonly when in an erect posture; the latter often proved fatal to those who had been long afflicted. The appetite from the beginning was somewhat impaired, often leaving the patient upon his being affected with flatulencies and *nausea*, but returning upon the accession of a purging. The feet, *scrotum* and belly were sometimes greatly distended with a transparent watery swelling, and the skin inflamed. The gums having become a mass of spongy flesh, discharged, upon squeezing, a thin foetid matter; and the salivary glands were sometimes so stuffed, as to acquire the hardness of a scirrhus, which could not be resolved by any other means than by a natural and spontaneous salivation.

Persons of a thin habit were afflicted with symptoms different from those who were corpulent. They were every day more and more emaciated, and racked with violent

shooting pains on the bones of the legs accompanied with a fever. The anguish did not fix in one place, but by shifting produced gouty pains, colics, the spasmodic asthma, headachs, toothachs, and contractions. By volatile medicines having been improperly given, the bowels, the liver and spleen, became hard; upon which ensued either a dropsy, consumption or flux, which constantly proved fatal. The gums were swelled and hard, painful to the touch, and often over-run with a cancerous ulceration.

In order to put a stop to this dreadful calamity, it was necessary that the remedies should be suited to the habit and constitution of the patient (*t*).

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(*t*) He therefore prescribed for those who laboured under the slow or cold scurvy, a decoction of *sum. pin. bacc. juniper.* and *trifol. fibrin.* Where there was reason to apprehend a swelling of the abdominal *viscera*, he gave the neutral salts, and alkaline tinctures: but where there was a fever, and inflammation on the *tibia*, the saline nitrous absorbents internally, and externally *sp. vin. camp.* with saffron. For the stiff tendons he used *ung. nervin. cum ol. philosop.* &c. and baths; for the swelled, bleeding gums, *ung. Ægyptiac. mel. ros.* and *spir. cochlear.* or *tinct. gum. lacc.* and *sp. coch.* or common water acidulated with *sp. vitriol.* The air was corrected three times a-day by a fume of juniper wood and berries. The *paracentesis* often succeeded with those who had the *ascites*, when free from a fever, and an œdematous swelling of the abdomen. It restored them to perfect health; as did also scarifications upon the calf of the leg and *scrotum*, when there appeared a tense watery swelling upon these parts; provided proper internals were administered, *viz.* aperient, diuretic, and strengthening

This present year, the *Cuirassiers* lately come from the *Ukraine* to *Petersburg* have furnished me with several other observations upon this disease. The symptoms were as usual. It was always a salutary sign when the spots appearing continued out. In two cases their sudden disappearance proved fatal. Besides the use of a decoction of pine tops, I found it necessary, every second or third day, to give a pretty smart purge: which had so remarkable good effects, that though many were bloated, yet none became dropfical. Bleeding with caution near the decline of the disease, when the pulse was strong,

strengthening medicines, such as *tinct. tartar. mart. antimon.* neutral salts, &c. If there was any danger of a gangrene from these scarifications, as often happened, it was stopped by nervous and antiseptic applications.

In the painful scurvy, upon account of the dry habit of body, medicines heating and exagitating the blood, formerly given, were laid aside, and emollient remedies were prescribed, *viz.* a decoction either of barley or oats; or of *rasur. cornu cervi*, with *rad. scorzon. summit. millefol. et flor. chamæmel.*: as also oily medicines, *viz. ol. amygd. d. et sperm. ceti*; which often miraculously allayed arthritic pains, and the oppressive complaints in the breast. Antispasmodics were sometimes given, *viz. nitr. depurat. cinnabar. antimonii*, epileptic powders, &c. and occasionally absorbents, and the *testaceous* powders. When the *hypochondriaca* were obstructed, *rad. cichor. vel tarax.* was added to the decoction; and for the swelling, heat, and pain of the gums, the pulp of citron proved an excellent and agreeable remedy. By this treatment, and the blessing of Heaven, a stop was put to the calamity; inso-much that the number of the diseased, and of those who died, diminished every day, and in the space of a month it quite disappeared.

strong, evidently assisted in the cure. I can solemnly affirm it was followed with an increase of strength, a perfect relaxation of the tendons, which had before been attempted to no purpose by warm steams and baths, and a more speedy recovery. The disease left us in *May*, having acquired its virulence in *February*.

1734. *Observationes circa scorbutum; ejusque indolem, causas, signa, et curam. Auctore Joanne Fred. Bachstrom.*

From want of proper attention to the history of the scurvy, its causes have been generally, though wrongfully, supposed to be, cold in northern climates, sea-air, the use of salt meats, &c. whereas this evil is solely owing to a total abstinence from fresh vegetable food, and greens; which is alone the true primary cause of the disease. And where persons, either through neglect or from necessity, refrain for a considerable time from eating the fresh fruits of the earth, and greens, no age, no climate or soil, are exempted from its attack. Other secondary causes may likewise concur: but recent vegetables are found alone effectual to preserve the body from this malady; and most speedily to cure it, even in a few days, when the case is not rendered desperate by the patient's being dropical or consumptive. All which is founded on the following observations.

He remarks, that the scurvy is most frequent among northern nations, and in the coldest countries. There it is not confined to the sea alone, but rages with great violence at land, afflicting both natives and foreigners; of which the poor seamen left to winter in *Greenland*, who were all cut off by this distemper, afford a memorable instance. But the opinion of its being produced there by cold, he thinks irreconcilable with the daily experience of its attacking seamen in their voyages to the *Indies*, even when under the torrid zone.

That it is not peculiar to the sea, the following histories sufficiently evince. During the late siege of *Thorn*, above 5 or 6000 of the garrison, besides a great number of the inhabitants, died of this distemper; the surrender of the town being more owing to the havock made by this dreadful calamity, than to the bravery of the besiegers. Upon which he observes, that, allowing this disease to be most frequent among the northern nations in winter, yet the siege of that place was carried on in the heat of summer; and the *Swedes*, the besiegers, a northern nation, kept altogether free from the scurvy. The mischief first attacked chiefly the blockaded *Saxon* garrison. They being almost all cut off, the inhabitants were at last obliged to do duty upon the walls; of whom it also destroyed
a great

a great number. But no sooner was the siege raised, and the gates of the town open for the admission of vegetables and greens from the country, but the mortality quickly ceased, and the disease at once disappeared.

In the end of the last war with the *Turks*, when the Imperial army wintered in *Hungary*, the country having been laid waste about *Tameswere*, by the calamities of the preceding war, many thousands of the common soldiers (but not one officer, as having a different diet) were cut off by the scurvy. The physician to that army employed his utmost skill, and used the most approved antiscorbutic remedies. Notwithstanding which, the mortality went on increasing during the winter. Unacquainted with the disease, or rather its remedy, he demanded a consultation of the college of physicians at *Vienna* for the preservation of the troops; whose prescriptions and advice were of no service. The disease still persisted with increasing virulence until the spring, that the earth was covered with greens and vegetables. And the physician now rejoiced as much in having found out the true cause of this evil, as before he had regretted his unhappy disappointment in the removal of so general and dreadful a calamity.

As some are of opinion, that warm and inland countries are altogether free from

this distemper, he gives an account from an officer of a *German* garrison in *Italy*, where many of the foldiers were cut off by it at a great distance from the sea. The officer himself, an *Italian*, was miserably afflicted, and given over by his physicians, who were altogether ignorant of his case; when a *German* surgeon, by lucky accident passing that way, rescued him from the jaws of death. He cured him in a few days, to the surprise of his physicians, by ordering his servant to the fields to supply him with green vegetables, especially the *sifymbrium* or red water mint, which grew thereabouts very plentifully.

The following relation is no less curious. A sailor in the *Greenland* ships was so overrun and disabled with the scurvy, that his companions put him into a boat, and sent him on shore; leaving him there to perish, without the least expectation of a recovery. The poor wretch had quite lost the use of his limbs; he could only crawl about on the ground. This he found covered with a plant, which he, continually grasing like a beast of the field, plucked up with his teeth. In a short time he was by this means perfectly recovered; and, upon his returning home, it was found to be the herb scurvy-grass.

From all which the author concludes, that as abstinence from recent vegetables is altogether

altogether and solely the cause of the distemper, so these alone are its effectual remedies. Accordingly he bestows the epithet of *antiscorbutic* on all of that class which are wholesome and eatable; observing Nature every where affords a supply of remedies, even in *Greenland*, and the most frozen countries. There no sooner the snow melts from the rivers, but their borders are covered with brooklime, cresses, and scurvy-grass, in ample prodigality. There Nature dictates to those barbarous nations, that what she thus blesses them with in such bounteous profusion, affords present health and relief in their malady. Of this all physicians acquainted with the nature of the scurvy, must be likewise sensible. The most common herbs and fresh fruits excel the most pompous medicines, especially those of the animal and mineral kinds. He divides antiscorbutics into three classes. The first contains the common pot-herbs, and all plants of an insipid, or rather sweetish taste, fruits of trees, &c. of this quality; and when in want of those, even grass itself may be eat. In the second class, he ranks all vegetables, roots, fruits, berries, &c. that are of a tart or acid taste: and these being of a middling quality betwixt the insipid plants of the first class, and the stronger bitters he includes in the third, they will prove more effectual than the first,

without being liable to some inconveniencies which may attend those of the third class. In this last he comprehends all fresh herbs, roots, and fruits, of a bitter and strong taste, of the nature of scurvygrass, cresses, &c. These last are with caution to be prescribed at first, or in great quantities. For prevention he recommends living much upon green vegetables, when they can be got; otherwise, upon preserved fruits, herbs, roots, &c. He advises seamen when at land to be more careful of laying up a store of greens than of flesh; and, in case of necessity, would have them when at sea to make trial of the sea-weeds that grow upon the ship's bottom; being persuaded, that the great physician of nature had not left them without a remedy, although he had never heard of its being tried (*b*). After a long abstinence from vegetables, the diseased are to begin with the milder antiscorbutics, proceeding by degrees to those of a stronger nature. In examining the mineral and fossil remedies, which have been so much recommended for the scurvy, he observes of nitre, that as it is a copious ingredient in most plants, it may perhaps be serviceable; but otherwise, all those classes are to be avoided. He condemns the use of steel, mercury, and alum; as likewise ful-

(*b*) I am informed they were tried in Lord Anson's ship.

fulphureous and vitriolic medicines, especially the strong acid of vitriol, which some account a specific in the scurvy; but they will find themselves disappointed.

1734. *Parerga medica conscripta à Damiano Sinopeo.*

In *Cronstadt*, which is a low marshy island, and where the weather for the most part is cold, rainy, and cloudy, the scurvy is a common disease. It is most frequent and violent in the beginning of spring; but less frequent and more mild during the rest of the seasons, unless the weather proves cold and wet: and for the same reason it is more frequent some years than others.

The symptoms are, a putrid swelling of the gums, lassitude, and a remarkable pain and weakness of the legs; swelling of the feet and knees; contraction of the tendons; a bloated, and as it were, dropfical habit of body, with a dark yellowish hue; costiveness, and a thick reddish urine. After those appearances, ensue pain, and even contractions of the upper extremities; livid spots of different sizes; pains in the shoulders, and small of the back. These latter prove very violent in such as are tainted with the venereal poison. Few die of this distemper; for the most part only those who have become consumptive or dropfical,

The learned author, in his very elegant and accurate account of the diseases which prevailed at *Cronstadt*, from the year 1730 to the end of 1733, observes, that when he first came there, *ann.* 1730, true pleurifies, peripneumonies, &c. reigned. Those fevers ceased in the spring; and an unusual dry and warm summer succeeding, there were few acute diseases, and even old habitual complaints became more tolerable. A dry and cold autumn, with a seasonable snowy winter, gave rise to but very few acute diseases; till about the beginning of *February*, when a catarrhal fever commenced. The weather proved then very unsettled; the spring was cold and moist; the summer much the same, with little heat. This catarrhal fever raged about twenty days. Upon its remission, pleurifies, peripneumonies, rheumatisms, &c. took place; and an intermitting fever, which continued the whole spring; as also the scurvy. This last made its appearance in the month of *March*, 1731, seizing at first only a few; but in a short time the number of scorbutic patients was equal to those in fevers; and afterwards exceeded them. It began with a bloated fallow complexion, livid spots, &c. and was accompanied with such symptoms as have been before mentioned. In the months of *April* and *May* it raged with uncommon violence, and continued almost till

till the middle of *July*; when it was abated by the heat of the season. Some patients became dropfical, others consumptive. Some laboured under the most violent colics, with obstinate constipation of the belly; others were seized with a mortification of the mouth and gums, scorbutic tumours, &c. Soft livid swellings arose upon the body: they were judged to be full of matter; but, upon opening them, nothing was discharged but a black dissolved blood: the ulcer was surrounded by a fungous rotten flesh, whose basis seemed very deep, and bled upon the gentlest touch (*c*).

Although the scurvy was a distemper bad enough of itself, it was, however, often rendered worse by being complicated with other intercurrent diseases, *viz.* fevers, and rheumatisms, but especially the intermitting fever. All who recovered from this last, became scorbutic. There was scarce any person either in the hospital or town, who laboured under even a chronic disease, who was not more or less affected by the scurvy. Hence all diseases whatever became more troublesome and obstinate this spring.

The scurvy having entirely ceased in *July*, a few mild fevers took place the rest of the summer, and autumn.

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(*c*) A very accurate description of scorbutic tumours and ulcers. Compare it with *Poupart's*, p. 242. *Dr. Huxham's*, p. 52. and other observations, p. 119, &c.

In the beginning of the year 1732 a gentle vernal fever prevailed; soon after, the *bastard* pleurisy was more frequent; and, lastly, the scurvy. All those diseases entirely ceased upon the appearance of a warm and dry summer. This continued but for a month, when the weather changed to rain and cold; which induced a universal distemper, viz. a catarrh, with cough, &c. It spread itself over all the countries about, raged much at *Petersburg*, and affected even those who were at sea.

After many curious observations foreign to our purpose, he remarks, that the vernal scurvy, *ann.* 1733, was milder than any of the former; but, nevertheless, contrary to custom, continued during the whole summer and autumn, the seasons proving wet and uncomfortable (*u*). The remedies used, were, essences and conserves of the antiscorbutic plants, hot aromatics, bitters, &c. The author gave many medicines; but, unluckily, few or none that were truly antiscorbutic.

(*u*) He has one singular observation, That the *scabies* and *purpura* prevailed at the same time with the scurvy.

1737. 1720. *Geo. Henrici Krameri
dissertatio epistolica de scorbuto.*

*The case of the Imperial troops in Hungary;
transmitted in a letter to the college of
physicians in Vienna, by the author.*

The calamity which afflicts the Imperial troops, is not that species of scurvy described by *Eugalenus* and others. It differs from it in three particulars.

1st, It is not infectious. No officers are seized with it; and only the regiments of such nations as use too gross diet. 2^{dly}, It is not a primary, but a secondary disease. It attacks only those who have recovered from fevers, and especially such as have had frequent relapses. 3^{dly}, It is not attended with the many symptoms described by those authors. The appearances in all are constantly uniform, and as follow.

In the first stage the gums are swelled; they are apt to bleed, and stained with livid spots. Upon which ensue great putrefaction, a most offensive stench from the mouth, and a falling out of the teeth.

In the second stage or degree of the malady, there is for the most part a contraction of the joint of the knee, so that the patient cannot extend his leg. Violent shooting pains are felt in this joint, as likewise

wife often in the other joints of the body. The contracted knees are also swelled, with incredible pain and *rigor* of the tendons; and the skin is covered with bluish stains interspersed with small miliary eruptions. In one night's time the eyes, and even other parts of the body, become covered with large livid spots, as if the patient had received several bruises. These spots are altogether without pain. The muscles of the legs, thighs, and even cheeks, become greatly swelled, and hard, nay altogether indurated. But those swellings, as also the large stains, never suppurate. The pulse is quick, small, and hard; the urine red, with a thick unequal sediment.

If the patient still continues to use an improper diet, as is the case of many of our common soldiers from want of necessaries in *Hungary*, the malady advances to its third stage. The gums become prodigiously swelled, together with the cheeks. A mortification, or *caries* of the jaw, ensues; both which prove incurable. The difficulty of breathing is so great, that the patients not only faint away upon the slightest motion of the body; but frequently, when walking about, drop down suddenly dead. They generally complain excessively of this difficulty of breathing a few days before death, though they have neither cough nor spitting. All the species of dropsies, and watery swellings on the body, accompany the

the advanced stages of this calamity; in so much that, by lying with the head in a declining posture, the face in half an hour becomes so swelled, that the person cannot open his eyes. Such swellings often disappear and return. They are subject to profuse bleedings at the nose; and, in these deplorable circumstances, to a purging with frequent discharges of blood by stool, which often closes the scene. In the beginning of the disease, the appetite and thirst are natural; but towards the close of the malady, the appetite fails and the thirst is increased. Of the many other symptoms described in this disease by authors, none else occur but those alone which have been mentioned.

This is the fatal mischief which destroys many of our people in *Hungary*, at farthest in the space of two or three months, but for the most part in three or four weeks. If the patient survives until summer, he either perfectly recovers, or remains incurably contracted.

The causes of this evil are, frequent relapses after fevers, which have been epidemic in the country; the moist and marshy soil; but especially gross and viscid diet, *viz.* flesh and the grosser farines, coarse heavy bread, and pudding (or a food called *rollatschen*) eaten by the *Bohemians* more than by all others. They are indeed almost

most the only nation who suffer. One thing remarkable is, that this disease does not appear in *Hungary* in summer, autumn, nor in winter; but every year in the beginning of spring.

I come now to what has been attempted, both by myself and others, towards the cure: and must first observe, that 400 of the troops near *Belgrade* having taken mercury without my advice, the dreadful consequence was, they all died in a salivation! Shunning therefore that fatal drug, I generally at first gave a vomit, in order to cleanse the stomach, and so to procure a more certain entrance of the specific antiscorbutics, with their full virtues, into the blood. I then administered, in every form that could be thought of, or that has been recommended by authors, the most approved antiscorbutic remedies (*w*); but, alas, all was in vain!

In

(*w*) *Radices, raphan. taraxic. ari, asari, gentianæ, angelic. helen. acori, sarsaparill. chinæ, &c. Folia, et herbæ aridæ*, (for here the green fresh plants cannot be procured) *becabung. nasturt. trifol. fib. cochlear. acetos. scordii, rutæ murar. rosmar. salv. cent. min. sedi minim. &c. Ligna guajac. sassaphras, &c. Strobili pin. cortices winteran. guajac. aurantior. Baccæ juniperi, lauri, &c.* I have also given salts of every kind, volatile and fixed, particularly *sal vol. cornu cervi, arcan. duplicat. sal. tartar. fix. sal ammoniac. crud. cremor tartar.* with chalybeates of all sorts. *Spir. sal. ammon. sal. vol. ol. spir. et tinct. tartari, tinct. bezoard. spir. cochlear. &c.* In place of the juice of citrons and lemons, which cannot be got here, I gave *acet. theriac.* or vinegar, in which many of the before-mentioned ingredients, particularly the celebrated *rad. armoraciæ*, were infused. I was not sparing of the most costly medicines, *tinct. mart. antimonii, lunæ belvet. &c.*

In a word, there is nothing that has been recommended by the best classical and standard authors (*d*), which I have not made trial of, except the juices of the fresh green plants, and their quintessence recommended by *May* (*e*): It not being in my power to procure those herbs, or their juices; because, as I observed before, they do not grow in this country. We have nothing here but wild rocket and wild mustard (*f*); but even of these, who can gather a sufficient quantity for such a number of the distressed? Milk, were it proper, cannot be purchased for so great a multitude of people: and the same may be said of whey.

After having met with such melancholy disappointments, in the trial of what has been recommended by others, and whatever I could think of myself; reflecting that tedious fevers had generally preceded, and that a slow fever still accompanied the disease, I had recourse to the *cort. peruv.* given in the form either of electuary or infusion. By this, in a few days, I formerly cured sixty soldiers in the regiment of *Bagnan*, who were in the second stage of the

(*d*) Here he enumerates sixteen modern writers on the scurvy, of the greatest repute, with an &c.

(*e*) A medicine of Dr. *Michael's*. Vid. p. 141. The author afterwards observes, that it was of no efficacy.

(*f*) *Eruca lutea et rapistrum arborum.*

the disease. It is now two years since : but at the same time they had a proper diet, and such food as cannot at this time be procured. I have already tried mustard-feed, which is said to have saved the besieged garrison of *Rochelle*, when over-run with this disease ; but here, like all other remedies, it is of no efficacy. I need not say any thing of external applications : as such powerful internal helps do not avail, little can be expected from them. I shall only observe, that different regiments have used the baths of the country ; but all to no purpose.

I therefore humbly request, that if any of you, gentlemen, be possessed of an *arcanum*, or a remedy that may overcome this *Herculean* disease, you will favour me with it ; as also your best advice. Perhaps some of you may have the knowledge of the fixed mercury boasted of by *Dolæus* and *Helmont*, which will cure the scurvy without the aid of such a proper diet as cannot at this time be procured for the wretched sufferers in *Hungary*.

A copy of this melancholy case of the troops was delivered to each member of the college of physicians in *Vienna* ; and, by order of the Dean of Faculty, all were desired in three days time to give in their opinion in writing. Which produced the following answer.

We

We have received your very accurate account of the scurvy, which commits such dreadful havock among the Imperial troops during the spring in *Hungary*; and it is ordered directly to be printed. After having had all circumstances duly weighed by the most experienced of our faculty, the first rule we prescribe, is great attention to the *nonnaturals*. Without this, the most excellent medicines may fail; but when a proper regard is had to these, simpler remedies will do great things. As the sources of this calamity seem to be impure air, and an unwholesome marshy soil (evils not easily remedied); the troops must often shift their quarters, and remove into a better air. When in unhealthful stations, they are, by way of prevention, to use the smoak of tobacco, juniper, &c. They should have always dry straw to lay upon the ground; and as wholesome food as can be procured for them.

As to the cure (after noting with infamy those who have recommended a mercurial salivation in this disease, as more properly destroyers of the human race than physicians) we would advise a gentle vomit of *ipécacuan* to be premised; and afterwards the approved antiscorbutics of the vegetable kind to be given, *viz.* scurvy-grass, brooklime, cresses, fumitory, *St. John's wort*, marsh-trefoil, &c. The juice, extract, tincture, decoction, &c. of these, may

may be administered either in whey or broth. As you have none of those plants, we have sent you their seeds to be sown in the country; and until such time as they grow up, have supplied you with a quantity of the dried herbs, and of their inspissated juices. Besides which, we would recommend two remedies of great and experienced virtues (*f*).

The author's farther explanations and experience in this disease.

The scurvy attacked only those who, after frequent relapses, and a recovery from fevers, used a crude viscid diet. Hence not one officer was seized with it; nor even any of the common men among the dragoons, as their pay and living were better. It was always accompanied with remains of the fever in the pulse and urine. Both in *Hungary* and in *Piedmont*, where the troops were lately afflicted with it, the natives were at the same time altogether exempted from it. The disease occurs oftentimes in *Germany*, among such people as live altogether on the boiled pulses, without eating any green vegetables or summer-fruits. In
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(*f*) The one a paste of *pulv. rad. chin. sarsaparil. et bordei*, from *Hoferus*; the other, a distilled antiscorbutic water, from *Zwingerus*. The author afterwards observes they were of no efficacy.

the hospital at *Dresden* there are scorbutic patients every year. It is often a fatal mischief in besieged towns, as also to seamen in long voyages. It is, however, quickly cured in cold countries; as in *Greenland*, by scurvygrafs; and in warmer countries, by the juice of oranges. *Dutch* sailors effectually prevent this distress, by eating once or twice a-week pickled cabbage. When blood was injudiciously drawn for relief of the scorbutic *asthma*, there was no separation of the watery part: it was covered a-top with a white greasy film. The contraction occurs in no other joint but the knee. The disease constantly begins, and regularly advances, in the manner as described in the relation transmitted to the college. No person can be supposed to labour under the scurvy, or any symptom of it, unless the gums are affected. Putrefaction of the gums is the primary and inseparable symptom of the malady in its very first stage. A great difficulty of breathing, dropsy, and dysentery, attending the last stage, render the case often incurable. As to scorbutic pains, it is remarkable they afflict equally both day and night, and are not increased by heat, or by lying in bed. The knees, when swelled, are generally covered with large effusions of blood under the skin. These never come to suppuration on any part of the body, ex-

cept on the gums, where they often break and ulcerate. The flexor tendons of the legs alone become rigid, *viz.* the tendons of the *seminervosus* and *semimembranosus* muscles. Colics afflict in this disease when there is a *diarrhæa* or dysentery, but never otherwise. In many thousand scorbutic patients, I never once saw the true pleurisy, nephritic pains, strangury, nor bleedings from the skin, except where there was a wound; although scorbutic people are subject to discharges of blood from the lungs, stomach, intestines, &c.; nor did I ever observe any other ulcers than what have been described, in the gums and cheeks, much less any species whatever of a *scabies*. Scorbutic persons are never afflicted with epileptic fits, palsies, tremors, &c. Their death is for the most part tranquil, if you except their laborious breathing.

I can aver from experience in above a thousand cases, that this malady is most effectually cured by the fresh juice of scurvy-grass and cresses, either mixed or separately, taken to the quantity of three ounces twice or thrice a-day in warm broth. These juices occasion slight flushings of the face, are carminative, and promote urine and perspiration. As those herbs cannot be obtained fresh in many parts of *Hungary*, nor in warm climates, the disease may be effectually cured by three or four ounces of the

the juice of oranges or citrons, taken twice a-day in a pint of water with sugar, or rather in whey. By juice of citron in whey, twenty patients were lately cured in the hospital of *St. Mark* at *Vienna*. As to a preservative medicine against it, I know of none but the tincture of the *Peruvian* bark, taken at bed-time to the quantity of two *drachms*, either by itself, or mixed with other bitters. By this remedy the famous Count *Bonneval* preserved himself and his domestics, many years in *Hungary*, free from the distempers of the country.

1739. *Frederici Hoffmanni medicinæ rationalis systematicæ tom. 4. part. 5. cap. 1. de scorbuto, ejusque vera indole.*

In what he terms a compleat history of this disease (in an enumeration of the symptoms, classed in *Willis's* manner according to the different parts of the body affected) among other things he observes, the scorbutic colic is distinguished from all others, by the pain being so shooting, acute, and intolerable. The belly is not, as in other colics, distended with wind: but the navel is drawn inwards, so as to form a cavity sufficient to hold one's fist. It is very obstinate, yielding neither to medicines nor fomentations; and has often this peculiar to it, that it terminates in a palsy. After

a preceding scorbutic *asthma*, the patient is very apt to fall into a dropfy, especially if violent purgatives have been used. The scorbutic toothach is distinguished from all others, by its suddenly attacking, and as suddenly leaving the patient. Scorbutic headaches are most troublesome in the evening; but upon a sweat breaking out, they leave the patient. Some in this disease keep awake for many weeks without being sensibly weakened by it. Scorbutic ulcers appear in the following manner. First, the part is painful; then the cuticle separates in like manner as if boiling water had been poured upon it; a watery humour ouzes forth, and the part becomes extremely painful; but true *purulent* matter is scarce ever observed to flow from the ulcer. At other times, scorbutic ulcers continue deep, and quite dry, without affording any discharge; and these are very apt to gangrene.

He thinks the best cure for the scurvy is the mineral waters. They are sufficient to effect it, as long experience had convinced him, when aided by a proper diet and regimen. For this purpose, he recommends the *Caroline* and *Selters* waters. Where the conveniency of mineral waters is wanting, he advises drinking simple, pure, and light water of any sort; which will often remove the disease. But it is still
I better

better if the water partakes of steel principles, such as the *Lauchstadt* spring, two miles from *Hall*. It is to be both outwardly and inwardly used. He likewise recommends a milk-diet, especially asses milk. When a scorbutic habit of body is complicated with obstructed *viscera*, cachexies, the hypochondriac disease, or the *purpura chronica*; then the cure succeeds better, if the milk be taken mixed with the mineral water. He observes the great detriment of mercury in this distemper; and mentions various antiscorbutics, bitters, emollients, &c. that may be proper.

1744. *Siris: A chain of philosophical reflexions and inquiries concerning the virtues of tar-water.* By the Right Rev. Dr. George Berkeley, Lord Bishop of Cloyne.

The scurvy may be cured (if the author may judge by what he has experienced) by the sole, regular, constant, and copious use of tar-water,

1747. *Theoretisch praktische abhandlung des scharbockes, wie sich derselbige vornemlich bey denen kayserlich Ruffischen armeen an verschiedenen orten geauffert und gezeiget hat, &c.*: or, A theoretical and practical treatise on the scurvy, as it has appeared chiefly in the Imperial *Russian* armies, together with a circumstantial description of its causes, its

two classes and their different species, the ordinary and extraordinary symptoms, the remedies for it, and the necessary regimen. By *Abraham Nitzsch*.

Three different opinions of physicians concerning this disease deserve censure. 1st, Some extend the term of scurvy by much too far, comprehending under it almost all diseases in which there is a considerable impurity or corruption of the juices. 2^{dly}, Some though not entirely denying the existence of the scurvy, yet limit or circumscribe it within too narrow bounds. 3^{dly}, Others have described its causes, its different kinds and its cure, in too vague and indefinite a manner.

It has been difficult for physicians to make a perfect system of this disease, as it does not usually occur in their common practice; being confined chiefly among the poorer sort of idle people, who are in distressed circumstances, and who live in a moist air. Besides, the frequent modern practice of drinking tea and coffee, by thinning the blood and diluting its salts, has in place of the scurvy in many countries where, according to the relation of credible authors, it in former times greatly prevailed, introduced a new disease, viz. the *purpura*, as Dr. *Hoffman* has shewn (a).

It may be proper to premise that I am unac-

(a) *Hoffmani disputatio de purpuræ genuina origine, &c.*

unacquainted with the nature and appearances of the scurvy, so common and fatal at sea; but that this disease was among the first which occurred to my observation in the army, and it arose to such a pitch of violence, as not only to require the utmost care and skill of the physicians and surgeons, but also to command the attention of the generals.

This evil has been attributed to the use of salted flesh-meats, the vapours arising from the sea have also been blamed; but such opinions are confuted by daily experience. Others would ascribe it to a mere want of a sufficient quantity of vegetables, neglecting more considerable circumstances, as will appear by the following observations. There being two classes of this distemper, that which is denominated the *slow* or *cold* scurvy, may rather be said to proceed from a concurrence of causes, and their operation for a considerable time, *viz.* a constitution impaired by trouble and diseases; improper, gross, and corrupt aliment; much fatigue, grief, or anxiety of mind; a moist air, accompanied either with cold or with heat; confinement in low damp crowded places; as also drinking impure putrid water. These acting in conjunction produce the scurvy, and are sufficient to heighten the evil to an extreme degree of violence.

As such causes operate but slowly in the human body, the progress of the malady is very gradual. The healthful colour of the face more and more disappears. There is a general lassitude. The thighs and legs feel heavy, and a remarkable weakness is perceived in the knees and ancles. At the same time, the gums begin to swell and corrupt. The preternatural colour of the face afterwards encreases, the legs begin to be painful, the cheeks and joints to swell, the gums become surprisngly rotten, the body more feeble, and a difficulty of breathing ensues upon using of exercise, the knees and joints being stiff. Finally, the appetite gradually decays, and the body becomes constipated. In a certain kind of this disease, commonly several blue spots appear all at once. By these, and the former symptoms daily gaining ground, the true nature of the distemper fully and plainly appears. And this is the slow or cold scurvy, which is by far the most frequent malady; the symptoms and causes of the other, or *hot scurvy*, being very different. It arises from an *inert* chyle tending to *putrescence* in the first passages, with a great laxity of the *viscera* and of the secretory and excretory organs, as also of all the solids: from whence the blood acquires a thickness, and is rendered in a manner putrescent, shewing itself by a remarkable

markable bad colour, and a preternatural swelling or inflation of the body. It is usually a tedious troublesome disease. The hot scurvy is not so commonly met with. It proceeds from a prevailing alcallescent acrimony and thinness of the blood, occasioning a total waste of the body, and at all times the most violent symptoms, attended with great pain and a constant fever. In both there is a general weariness; a particular debility of the joints; the gums are partly spongy and fetid, partly hard, swelled, and hot; the pains in the limbs are sometimes fixed, at other times they shift; the knees are stiff, and sometimes also swelled, nay, much inflamed and violently pained; more or less hypochondriac symptoms, and a fever attend it. And these are the genuine essential signs of scurvy: but before we proceed to the hot scurvy, of which there is but one single species, it may be proper to distinguish the different kinds of cold scurvies.

The first is what occasions large, black, and blue spots, on the legs and joints; sometimes on the breast and back, not unusually on one or both eyelids, and on the white of the eye; which appears swelled, and of a deep red colour. The gums are greatly swelled, discoloured, and very lax or spongy; and when pressed, discharge either a yellow ill-scented blood, or matter.

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The parotid glands are also usually much enlarged and hardened. This species, proceeding from a remarkable coagulation of the red globules of the blood, I call a livid scurvy; being the only species that is accompanied with dark or reddish large spots, or livid streaks upon the skin. The patient commonly when they appear is very feverish, and the pains are very violent. It occurred chiefly at *Wiburg*, ann. 1732; and again at *Petersburgh*, ann. 1733.

In the second species, the red globules of the blood are not so much coagulated; it proceeds chiefly from a viscosity of the watery or serous parts of the blood. The spots appear of a deep red, turning afterwards to a darkish yellow; being very small, so as to resemble lentils, flea-bites, or *petechiæ*; and are discovered no where else but on the legs and thighs, attended with a pain in those parts. Sometimes reddish blue spots appear above the knee, and in the ham; according to the redness of which the pain and swelling there, as also the quickness of the pulse, is always increased. The gums are not so lax as in the former species: the upper part of them, however, is commonly excoriated. On the palate or inside of the gums several tumours appear, or on the inside of the cheeks may be observed swellings, some-

times hard, knotty, and wart-like : and sometimes a uniform hard swelling extends itself even to the back part of the mouth. This species, from the form of the spots, is denominated a *lenticular* or *petechial scurvy*. The patient spits more, and the breath is more foetid, than in any other species of scurvy. Sometimes the temporal muscle is swelled and hardened under the zygomatic process ; but the parotid glands never are. It shewed itself, *ann.* 1732, at *Wiburg*, only in a few patients ; but afflicted much greater numbers, *ann.* 1737, in the intrenchments at *Ust-Samara*.

A third species of this disease proceeds from a corruption of the fat or oily particles of the blood. There being no visciduity of the blood, there are consequently no spots. On the contrary, an universal pale swelling covers the body ; which becomes of a yellowish colour, when those oily particles turn rancid. When the fat assumes a hardness like tallow, the thighs and arms are vastly swelled, and so hard as not to yield to the impression of the finger ; and very hard tumours, or *tophi*, form on the hands and fore-part of the legs. Now in this species the serous or watery parts of the blood become much more easily and quickly vapid than in the others, and the saline particles daily more and more acrimonious. Hence the cheeks are more
swelled,

swelled, the knees more violently contracted, the teeth looser, and the gums much more lax and spongy. Sometimes a fungous flesh rises at the angle of the lower jaw, and the jaws are locked either with or without an induration of the parotid gland, *crotaphite* or *masseter* muscles. When this vapid *serum* or water is accumulated in the cellular membrane under the skin, an universal dropfy is produced; or when within the substance of the lungs an asthma, upon which a dropfy of the breast ensues; when in the belly, a dropfy is formed there; and lastly, when discharged by the glands of the intestines, a flux distresses the patient. Further, when this vapid serum, by an addition of oily and saline particles, has acquired an acrimony, it occasions the most violent and gnawing pains in various parts of the body. Wherever the serum corrupts, the pains become there altogether intolerable; chiefly upon those parts where the ribs are joined to the breast bone; part of the bones of which may be taken out quite carious. It also produces a convulsive suffocating asthma, a wasting painful flux, and afterwards a gangrene of the cheeks, or an incurable dropfy of the belly. This species is of longer duration than any other, continuing often the whole summer, until late in autumn. And as it is accompanied with no
spots,

spots, it may be denominated the *pale scurvy*; but more particularly when the fat of the body is only thick and viscous, it might then be called the *mucous pale scurvy*; and when it is become rancid, the *rancescent scurvy*; or when hard, and tallow-like, the *tophaceous scurvy*; lastly, when the serum is become acrimonious, the *muriatic scurvy*. The mucous sort was the first the author met with, and remarked it most frequent before *Ajoph*, in the general field-hospital at St. *Anne*; as also in the *Neister* campaign. He observed the tophaceous first in *Finland*, at *Borgo*, ann. 1742; and the muriatic, where the cartilages of the ribs were entirely separated from the breast-bone (*g*), as was plainly to be seen and felt, at the field-hospital at *Abo*, ann. 1743.

These are the chief kinds of the slow scurvy, which occurred in the *Russian* armies, and fell under the author's observation. There is indeed yet another species of it, proceeding probably from a total dissolution of the red part of the blood; which occasions an extraordinary weakness and redness of the body, swelled pendulous cheeks, a bloated habit of body extremely stinking, fungous gums, full of a bloody humour, with somewhat contracted or rather weak knees, &c. But this he never observed

(*g*) Cases similar to those at *Paris*. Vid. dissections, part 2. cap. 7.

ved, except in some few patients in the intrenchments of *Ust-Samara*.

Thus much of the cold scurvy. There remains the other general branch of this disease, *viz.* the *hot* and *painful scurvy*. It is distinguished from the former, 1st, By there being no fullness or swelling of the body; on the contrary, there is rather a decay or wasting (*b*). 2^{dly}, The gums are neither so spongy nor do they yield so bloody, foetid, or discoloured an humour; but are rather very hard, swelled, hot, and so painful, that the gentlest touch gives agony. 3^{dly}, The pains are not so fixed as in the cold scurvy. The patient makes continual complaints, sighing and bemoaning his unhappy condition; and has a constant, though irregular, fever. The pains fly from one member to another; sometimes from the joints and back to the whole or half of the head, teeth, and neck; where, after occasioning the most exquisite torture, they again instantly attack the outside or inside of the breast, occasioning extreme oppression, stitches, &c.: afterwards, seating themselves in the belly, they produce colics, nephritic pains (*i*), and stoppage of urine,

(*b*) Vid. part 2. p. 260.

(*i*) Vid. *Sinop.* part 3. p. 400. By the account of northern writers it would seem, that venereal diseases do not so readily yield to mercurial medicines there, as they do in warmer climates. *Sinopeus* tells us, that he found great difficulty to cure even a common *gonorrhœa* at *Cronstadt*.

urine, and in the limbs all sorts of convulsive contractions. *4thly*, The knees are inflexible and contracted: but, unless it has been occasioned by some outward accident, they are not so much swelled or inflamed as in the cold scurvy. *5thly*, No spots are seen. *6thly*, There is a difference to be perceived in the urine, which in the livid and petechial scurvies, though not accompanied with any remarkable degree of fever, is commonly of a deep red colour, and undergoes little alteration by standing: but in the hot scurvy, as there is always a fever, it drops a copious sediment, and shews a film swimming at the top. This hot scurvy he has remarked sometimes; but he no where saw more patients labouring under it than at *Wiburgh* and *Cobilack*.

It may not be improper to describe the various causes which produced this calamity, *viz.* principally the pale scurvy, in the order in which they occurred.

1st, As to the siege of *Asoph*: This place was attacked in the spring *ann.* 1736, in
very

Stadt. And as for the pox, except it was very recent, the taint could not be subdued by repeated salivations: for the disease generally broke out again, always in the spring, together with the scurvy; the latter seeming constantly to awake any sparks of the venereal poison lurking in the body. During the prevalence of the scurvy, those who, for venereal complaints, underwent a slight salivation, fell into a dreadful scurvy; which being removed, left a worse *lues* behind it.

very piercing cold weather, accompanied with frequent rain, sleet, and sometimes with snow. And as there were no woods in the neighbourhood, the troops suffered extremely, during this rigorous season, for want of fuel. Nor did the regiments fare better who were ordered to join us; as most of them were obliged to begin a long journey by land, upon a very short warning; or were transported in boats down the *Don*, together with the artillery, from the garrison of *Nova Pawloffsky*, and the adjacent places. Now, as this siege, by various accidents, was protracted for three months, the inconveniencies and hardships which the troops suffered, were extremely great.

1st, The weather became afterwards excessive hot; and was quite unsupportable during sun-shine, and on calm days. 2^{dly}, We had a great deal of moist rainy weather; which greatly incommoded our army, which was incamped on slippery and hilly ground; as also the sick in their tents, who were not well attended; their tents were also ill contrived, and badly sheltered. 3^{dly}, Sicknefs was occasioned by the too frequent eating of fish badly dressed, with which the plentiful river *Don* abounds. 4^{thly}, The bread was not sufficiently baked, for want of fuel. 5^{thly}, The water was very impure, being taken up from the fordable parts of the *Don*, and it became every day

day more impure. To which may be added, the preceding camp-disorders, *viz.* fluxes and obstinate quartan agues; besides the passions of the mind raging in the breasts of the soldiers, *viz.* revenge, anger, discontent, &c. and the great fatigues they underwent.

As to what regards the fortress of St. *Anne*; though this place is situated pretty high, yet the country about it lies so low with respect to *Great* and *Small Russia*, that it is from thence annually overflowed, generally in the months of *March* and *April*, for thirty versts around, upon the breaking loose of the ice and snow. It appears at this time like a great sea; and many parts are sunk several fathom below water. This inundation of the *Don* brings along with it an incredible number of excellent and very fat fish; which were sold excessively cheap, and eat in immoderate quantities. During the inundation, the air is very raw, cold, and windy. At the time of its drying up, the days are excessively hot; and the sun is scorching, when the weather is fair; but the nights, on the contrary, are intolerably cold, and the air is foggy and moist. As the morasses dry up, and the remaining fish (especially cray-fish, of which there is an astonishing quantity left behind) begin to putrify, the air becomes offensive; and so thick, that it is several hours every morning,

before the sun has power to dissipate the noxious vapours. Upon the retreating of the flood, the ground shews a sandy bottom, and is formed into little islands and banks of sand, furrounded with fords filled with stagnating water. What was drank, was often not taken where the stream was quick and deep, but in such fords where it was muddy and greasy. The fish remaining behind, were eat in immoderate quantities badly dressed. The barracks were built on morafs, damp ground, and too low. Lastly, The soldiers being the only inhabitants of the garrison, were obliged to stand every day up to their middle in water, in order to unload the necessary wood; which is always sent them for fuel and building from the *Ukraine*.

The principal reason why, of those regiments who marched to *Oczakow*, such a considerable number were attacked by the scurvy, and brought into the hospital at *Cobilack*, was, the excessive fatigues they underwent through the whole winter, partly in cutting open the ice of the *Neiper*, to prevent the incursions of the *Tartars*; and partly in performing other hard and severe military duties, either in stormy rainy weather, or during excessive frost and cold, without having proper conveniencies, lodgings, or diet. Even those who underwent no fatigue, being afflicted with dif-

ferent complaints, for want of sufficient attendance, rest, and quiet, in the army, became also scorbutic.

As to what regards the great number of scorbutic patients, which occurred not only during the march of the army from *Oczakow*, but also during the *Neister* campaign; the author treats only of the latter, as having been there in person; and because, according to his best information, the occasions and causes of the malady in both differed very little, or rather not at all.

The most part of the recruits required to complete the army, joined it seldom sooner than when either the army was ready to march, or was actually in motion. And though they were generally young raw fellows, excessively fatigued after a long and tedious journey; yet it was not possible then to grant them any rest or necessary refreshment. They were directly incorporated into the respective regiments; and entered at once upon a new way of life, *viz.* of constant disquiet, military hardships and severities, and of great fatigue. The marches were begun early in the morning, often during thick fogs and dews, heavy rains, or severe cold. Towards the middle of the day, they were oppressed with intolerable scorching heat, and clouds of dust, or with much rain. The march was protracted for the most part till noon,

and often beyond that time, according as water, wood, and forage were to be met with in those desert places. Thus the poor soldier, after a fatiguing journey, quite spent with thirst, and enfeebled by the excessive heat of the sun, or drenched in rain, arrived at last at the camp. But often, even here, no rest could be permitted him. He was obliged, according as it was his tour, to go upon the piquet, *tabunen*, or the centinel's duty. Another great hardship was the want of good and clean water upon the roads. Overcome by the excessive heat, some threw themselves naked into every dirty muddy pond they met; while others endeavoured to allay their violent thirst, occasioned by the dust and sun, by greedily drinking up every drop of filthy stagnating water they saw upon the ground. This bred many diseases, especially continual inflammatory fevers, &c. men full of blood were attacked with apoplectic fits; which if not removed by immediately blood-letting, they quickly expired. Their blood was so inflamed, that it came out of the veins as thick as pitch. But the hardships which the sick underwent, were still greater. They were by most regiments carried in open carts, exposed to all the inclemencies of the climate and weather, *viz.* to rain, dust, and wind, heat and cold. In passing the defiles, being

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generally

generally the last, it was always several hours before they arrived in camp after their regiments; notwithstanding on the marching-days they set out early in the morning, long before the rest of the army; and after having been quite wet with rain in their carts, were then taken out, and laid upon their bed stretched out under moist canvas, upon the cold wet ground. Nor, in such afflicting circumstances for the sick, was it a small addition to their misery, that, in this desolate and uninhabited country, proper food and drink could not be procured, in order to restore them to health. Hence it is not to be wondered at, that from such causes, as also by reason of the great preceding sickness and fevers in the camp (which, for want of conveniencies and proper treatment, were not brought to a perfect crisis) the scurvy raged with such uncommon destruction.

It is, however, remarkable, that this fatal calamity was greatly prevented in the *Chocim* campaign, *ann.* 1739, by sending the recruits much earlier; so that they had sufficient time to be refreshed after their journey, and were accustomed a little to the military life and diet before they marched; as also by every regiment's being provided with a certain number of covered waggon for their sick; in which they were at all times sheltered from rain, dust, wind, and weather,

The happy effect of those excellent regulations was, that in a whole division, consisting of ten or twelve regiments, we had scarcely as many scorbutic cases as occurred in the former campaign in one regiment only ; and of these an incredible less number died.

From these observations it appears that the scurvy occurs as well in the hottest climates, and in the midst of the continent, as in the cold northern regions, or near the sea. The pale scurvy is the only species of the *slow* scurvy which is not confined to certain months of the year. In the livid scurvy, the blood is very liable to an expansion, which has occasioned this species sometimes to have been mistaken for the hot scurvy : heating and irritating remedies for this reason must be avoided. The acrid antiscorbutics are serviceable in the petechial and pale *mucons* scurvies ; as also in the tophaceous, where it is proper to give salts along with them, such as salt of worm-wood, *cream* of tartar, and *vitriolated* tartar ; but in the rancescent and muriatic scurvies, they are very pernicious. It is to be observed, that the rancescent and muriatic scurvies do not affect the whole body. They are rather symptoms incident to other species ; as for example, to the livid scurvy, though but seldom and in few parts of the body ; to the pale scurvy, more frequently and
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then in many parts of the body. The rancescent appears principally in the cheeks; the muriatic commonly first at the ribs, and their articulation with the breast-bone.

As to the proper regimen, the sick in the slow scurvy ought to have particularly spacious dry rooms, in which too many of them are not to be crouded. The apartments are to be kept clean and airy, and often perfumed with the steam of strong vinegar poured on hot stones, or of burnt juniper-berries. Those who are very feeble, and such as are afflicted with the hot or with the muriatic scurvy, cannot bear exercise, or being exposed to a cold moist air. Patients in the pale scurvy especially, require hot and dry rooms; whereas those in the hot scurvy bear with a moist air better than with an air too hot and dry; and are particularly much refreshed in hot and dry weather by having fresh sand, or grass in their room, or water sprinkled on the floor.

Bathing is prejudicial in the beginning of the slow scurvy. Fresh vegetables, though otherwise proper, are not to be permitted when the body is already much wasted, or in a flux. Horse-raddish and fir-tops steeped and fermented with beer; or infused in brandy; and mustard, where no fever or other symptoms forbid their use, are extremely serviceable, principally in the petechial and pale mucous scurvies, after cleansing the stomach and intestines.

1748. *A voyage round the world, in the years 1740, 41, 42, 43, 44, by George Anson, Esq; late Lord Anson, commander in chief of a Squadron of his Majesty's ships, sent upon an expedition to the South seas. Compiled from his papers and materials, by Richard Walter, M. A. &c.*

Soon after our passing straits *Le Maire*, the scurvy began to make its appearance amongst us: and our long continuance at sea, the fatigue we underwent, and the various disappointments we met with, had occasioned its spreading to such a degree, that, at the latter end of *April*, there were but few on board who were not in some degree afflicted with it; and in that month no less than forty-three died of it on board the *Centurion*. But though we thought, that the distemper had then risen to an extraordinary height; and were willing to hope, that as we advanced to the northward, its malignity would abate: yet we found, on the contrary, that, in the month of *May*, we lost near double that number. And as we did not get to land till the middle of *June*, the mortality went on increasing; so that, after the loss of above 200 men, we could not at last muster more than six foremast men in a watch, capable of duty.

This disease, so frequently attending all long voyages, and so particularly destructive to us, is surely the most singular and unaccountable

countable of any that affects the human body. Its symptoms are unconstant and innumerable, and its progress and effects extremely irregular: for scarcely any two persons have the same complaints; and where there hath been found some conformity in the symptoms, the order of their appearance has been totally different. However, though it frequently puts on the form of many other diseases, and is therefore not to be described by any exclusive and infallible criterions; yet there are some symptoms which are more general than the rest, and occurring the ofteneft, deserve a more particular enumeration. These common appearances are, large discoloured spots dispersed over the whole surface of the body; swelled legs; putrid gums; and above all, an extraordinary lassitude of the whole body, especially after any exercise, however inconsiderable: and this lassitude at last degenerates into a proneness to swoon, on the least exertion of strength, or even on the least motion. This disease is likewise usually attended with a strange dejection of spirits; and with shiverings, tremblings, and a disposition to be seized with the most dreadful terrors on the slightest accident. Indeed it was most remarkable, in all our reiterated experience of this malady, that whatever discouraged our people, or at any time damped their hopes, never failed to add
new

new vigour to the distemper: for it usually killed those who were in the last stages of it, and confined those to their hammocks who were before capable of some kind of duty. So that it seemed, as if alacrity of mind, and sanguine thoughts, were no contemptible preservatives from its fatal malignity.

But it is not easy to complete the long roll of the various concomitants of this disease. For it often produced putrid fevers, pleurifies, the jaundice, and violent rheumatic pains. And sometimes it occasioned an obstinate costiveness; which was generally attended with a difficulty of breathing; and this was esteemed the most deadly of all the scorbutic symptoms. At other times the whole body, but more especially the legs, were subject to ulcers of the worst kind, attended with rotten bones, and such a luxuriance of fungous flesh as yielded to no remedy. But a most extraordinary circumstance, and what would be scarcely credible upon any single evidence, is, that the scars of wounds which had been for many years healed, were forced open again by this virulent distemper. Of this there was a remarkable instance in one of the invalids on board the *Centurion*, who had been wounded above fifty years before at the battle of the *Boyne*: for though he was cured soon after, and had continued well for

for a great number of years past ; yet, on his being attacked by the scurvy, his wounds, in the progress of his disease, broke out afresh, and appeared as if they never had been healed. Nay, what is still more astonishing, the *callus* of a broken bone, which had been compleatly formed for a long time, was found to be hereby dissolved ; and the fracture seemed as if it had never been consolidated. Indeed, the effects of this disease were in almost every instance wonderful. For many of our people, though confined to their hammocks, appeared to have no inconsiderable share of health ; for they eat and drank heartily, were chearful, and talked with much seeming vigour, and with a loud strong tone of voice ; and yet on their being the least moved, though it was only from one part of the ship to the other, and that in their hammocks, they have immediately expired. And others, who have confided in their seeming strength, and have resolved to get out of their hammocks, have died before they could well reach the deck. And it was no uncommon thing for those who could do some kind of duty, and walk the deck, to drop down dead in an instant, on any endeavours to act with their utmost vigour ; many of our people having perished in this manner, during the course of this voyage.

Upon

Upon arriving at the island of *Juan Fernandes*, 167 sick persons were put on shore, besides at least a dozen who died in the boats, on their being exposed to the fresh air. The extreme weakness of the sick may be collected from the numbers who died after they got on shore: for it had generally been found, that the land, and the refreshments it produces, very soon recover most stages of the sea-scurvy; yet it was near twenty days after their landing, before the mortality was tolerably ceased: and for the first ten or twelve days, they buried rarely less than six each day; and many of those who survived, recovered by very slow and insensible degrees. Indeed those who were well enough, at their first getting on shore, to creep out of their tents, and crawl about, were soon relieved, and recovered their health and strength in a very short time; but in the rest, the disease seemed to have acquired a degree of inveteracy altogether without example.

It was very remarkable what happened to the *Gloucester*, which, like the other ships in that squadron, had suffered the most unparalleled hardships, and buried three fourths of her crew in this disease; that, upon landing the remainder of her sick, less than eighty in number, very few of them died. Whether it was (as the ingenious author observes) that the farthest ad-
vanced

vanced in the distemper were already dead, or the greens and fresh provisions sent on board them when plying off that island, had prepared those who remained for a speedy recovery ; their sick, however, in general, got much sooner well than the *Centurion's* crew.

The havock which this dreadful calamity made in those ships, was truly surprising. The *Centurion*, from her leaving *England*, when at this island, had buried 292 men, and had but 214 remaining of her complement. The *Gloucester*, out of a smaller complement, buried the same number, and had only 82 alive. This dreadful mortality had fallen severer on the invalids and marines than on the sailors : for on board the *Centurion*, out of fifty invalids, and seventy-nine marines, there remained only four invalids, including officers, and eleven marines ; and on board the *Gloucester*, every invalid died, and only two marines escaped out of forty-eight.

In less, however, than seven weeks after leaving the coast of *Mexico*, having continued in perfect health for a considerable time before, this fatal disease broke out again amongst them. Upon which occasion, the ingenious author makes the following remarks.

Some amongst us were willing to believe, that in this warm climate the violence of
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the disease, and its fatality, might be in some degree mitigated. But the ravage of the distemper at that time convinced them of the falsity of this speculation; as it likewise exploded other opinions about the cause and nature of this disease. For it has been generally presumed, that plenty of water, and of fresh provisions, are effectual preventives of this malady. But it happened in the present case, we had a considerable stock of fresh provisions on board, being the hogs and fowls taken at *Paita*. We besides, almost daily, caught great abundance of bonito's, dolphins and albigores: and the unsettled season having proved extremely rainy, supplied us with plenty of water; so that each man had five pints a-day during the passage. But notwithstanding this plenty of water, and fresh provisions distributed among the sick, the whole crew often fed upon fish; yet neither were the sick hereby relieved, nor the progress and advancement of the disease retarded. It has likewise been believed by many, that keeping the ship clean and airy betwixt decks, might prevent, or at least mitigate the scurvy: yet we observed, during the latter part of our run, that, though we kept all our ports open, and took uncommon pains in sweetening and cleansing the ship; yet neither the progress, nor the virulence of the disease were thereby sensibly abated. The
surgeon

ſurgeon at this time having declared, that all his meaſures were totally ineffectual for the relief of his patients, it was reſolved to try the effects of *Ward's* drop and pill; and one, or both of them, at different times, were given to perſons in every ſtage of the diſtemper. Out of the numbers who took them, one, ſoon after ſwallowing the pill, was ſeized with a violent bleeding at the noſe. He was before given over by the ſurgeon, and lay almoſt at the point of death; but he immediately found himſelf much better, and continued to recover, though ſlowly, till we arrived on ſhore near a fortnight after. A few others were relieved for ſome days. But the diſeaſe returned again with as much virulence as ever; though neither did theſe, nor the reſt who received no benefit, appear to be reduced to a worſe condition than they would have been if they had taken nothing. The moſt remarkable property of theſe medicines in almoſt every one that took them, was, that they operated in proportion to the vigour of the patient. So that thoſe who were within two or three days of dying, were ſcarcely affected; and as the patient was differently advanced in the diſeaſe, the operation was either a gentle perſpiration, an eaſy vomit, or a moderate purge. But if they were taken by one in full ſtrength, they then produced all the before-mentioned effects with conſiderable violence; which ſome-

sometimes continued for six or eight hours together with little intermission. Upon their arrival at *Tinian*, they soon began to feel the salutary influence of the land: for though they had buried in two days before twenty-one men, yet they did not lose above ten more from the day after they were landed; and reaped so much benefit from the fruits of the island, particularly those of the acid kind, that in a week's time there were but few of them who were not so far recovered as to be able to move about without help.

1748. *A voyage to Hudson's-Bay, by the Dobbs galley, and California, in the years 1746 and 1747, for discovering a north-west passage. By Henry Ellis.*

The bringing two casks of brandy from *York-fort* for our *Christmas* cheer, was attended with fatal consequences. The people had been healthy enough before this season of mirth came; but indulging themselves too freely, they were soon invaded by the scurvy, the constant attendant on the use of spirituous liquors. It is a melancholy, but withal a necessary task, to describe the progress of this foul and fatal distemper. Our men, when first seized with it, began to droop, to grow heavy, listless, and at length indolent, to the last degree: a tightness in the chest, pains in the breast, and a great difficulty in breathing followed;
then

then ensued livid spots upon the thighs, swelled legs, contraction of the limbs, putrid gums, teeth loose, a coagulation of blood upon and near the back-bone, with countenances bloated and fallow; these symptoms continually increasing, till at length death carried them off, either by a flux or a dropfy. Those medicines, which in other countries are generally used with good effects, proved entirely ineffectual here. For unctions and fomentations, when applied to contracted limbs, afforded no relief: fresh provisions, indeed, when we could get them, did somewhat. But the only powerful and prevailing medicine was tar-water; and the steady use of this saved many, even after the disease was far advanced, when all other medicines lost their efficacy, and were tried to no purpose. As far as we could observe, this salutary drink operated no other way than by urine (*k*).

(*k*) Upon this relation, I must beg leave to observe, that though the immoderate use of spirits had certainly pernicious effects; yet the severity of the winter, their being denied proper refreshments from the *English* forts, and particularly, in such circumstances, a want of greens and herbage, which do not seem to have appeared on the ground till towards the latter end of *March*, p. 204, were what principally occasioned the disease. As he very justly accounts for its return upon their passage home, p. 281. where he says, “The uncomfortable weather we had, made so chiefly by the thick and noisome fogs, proved the cause that many of our people began now to relapse into their old distemper, the scurvy.” As to the good effects ascribed to the tar-water while at *Port-Nelson*, it were to be wished, both in this and

1749. *An historical account of a new method of extracting the foul air out of ships, &c. with the description and draught of the machines by which it is performed; by Samuel Sutton, the inventor. To which are annexed, Two relations given thereof to the Royal Society, by Dr. Mead, and Mr. Watson; and, A discourse on the scurvy, by Dr. Mead. Ejusdem monit. et præcept. medic. cap. 16. de scorbuto.*

The learned author very justly describes the most essential symptoms of the scurvy. He imagines the air even more than any other agent concerned in bringing on this calamity. How the sea-air acquires such noxious qualities, he accounts for in the following manner. In the first place, moisture weakens its spring; next a combination of foul particles, such as are contained in the breath of many persons crouded together, and some perhaps diseased; then the filthiness of water stagnating in the bottom of the ship; lastly, salts imbibed from the sea, some of which may probably have proceeded from putrified animals in that element, may
insinuate

many other relations of the effects of medicines in this disease, that we had always been informed what other regimen the patients underwent, particularly as to their diet and lodgings. The mortality from this disease seems to have been increased in the latter end of *January*; and in the latter end of *March* several were in a bad way. Some likewise died of it on their passage home; which could not be for want of this medicine on board a ship, which has been often tried at sea.

insinuate themselves into the blood, and, in the nature of a ferment, corrupt the whole mass. Other causes, as bad diet, &c. concur to breed the disease. For the prevention of it, he recommends the use of Mr. Lowndes's salt made from brine, as preferable for salting provisions, both flesh and fish, to that made from sea-water, even to the bay-salt; would have stock fish used at sea, which is dried without any salt, instead of salt fish; and thinks, that the *Dutch gort*, which (as he had been informed) is a kind of barley ground, is not so hot and drying as oat-meal. Wine-vinegar is likewise a proper preservative. He observes, that the disease is cured by vegetables, and land-air; and that hotter and colder vegetables, when mixed, qualify each other, especially as the acid fruits in Lord Anson's voyage were found of most benefit. Milk of all sorts, and its whey, when it can be had, are proper antiscorbutic food and physic. But as the design of this discourse is principally to demonstrate the usefulness of Sutton's machine, he particularly insists upon the advantage that might reasonably be expected from it.

1750. *De tabe glandulari, sive de usu aquæ marinæ in morbis glandularum, dissertatio. Auctore Ricardo Ruffel, M. D.*

The use of sea-water would be very beneficial to sailors in bilious colics, both to

prevent the disease, and its return after the cure. This latter is to be effected by a warm bath and purging salts, after the inflammation has been removed by plentiful bleeding. In his letter to Dr. *Lee*, he observes, that, after taking into serious consideration the case of that scorbutic putrefaction which afflicts seamen, he finds, that it is falsely ascribed to their salt provisions. Salt not only preserves meat from corruption, but mariners also from that corrupt state. This is confirmed, by remarking the strength and good state of health which poor country-people enjoy whilst living upon the same food as seamen. Thus there are many in every country who have lived, perhaps for thirty years, altogether upon salt beef, bacon, and coarse puddings, unless upon a high holiday, when they are sometimes regaled with a bit of fresh meat; and yet continue perfectly healthy and strong. So that the difference between those people and seamen lies only in this, that the latter have not the benefit of so much exercise, and live in a moist air, by which the tone of their fibres is relaxed, and perspiration stopt.

1750. *An essay on fevers, &c. By Dr. John Huxham. Appendix, A method for preserving the health of seamen in long cruises and voyages.*

He thinks the scurvy at sea owing to bad provisions, bad water, bad beer, &c. The pernicious effects of which will be considerably augmented by living in a moist, salt atmosphere, and breathing the foul air betwixt decks. The most effectual way of correcting this alcalescent acrimony in the blood, is by vegetables and mineral acids: and for that purpose he particularly recommends cyder; of which each sailor should have at least a pint a-day.

1736. 1750. *Or a journal of voyages made by order of the court of Russia into Ramavatzin, by the coast of Siberia, &c. By M. Gmelin.*

On the 18th of *August* 1736, the ship entered the river *Karaulach*, in the latitude of 71 deg. The first care of the commanding officer was to build a habitation for their winter quarters. It was made of wood, 76 feet long, $25\frac{1}{2}$ broad, and 17 high. They divided it into four apartments, and the chinks being well corked up, it was to be kept warm with three stoves. On the 12th of *September* they took possession of their winter quarters, all of them being

then in perfect health except one soldier. Towards the end of *October* the cold became very severe, and the scurvy made its appearance. The sun was seen no more after the 5th of *November* for two months. On the 18th of *December* the lieutenant, a man of a strong and robust constitution, and another person, died of the scurvy. The sun making its appearance for the first time on the 19th of *January*, gave great expectation that the sick would by degrees be restored to health; but yet there died seven in this month, and in the two following months twenty-four persons.

The disease began by pains afflicting those parts of the body which were formerly subject to ulcers or other complaints. The appetite was a little diminished; after which followed a weakness of the body, accompanied with an extraordinary lethargic indolence. The legs became swelled, and were covered with blueish spots. The patients sneezed with difficulty, and then piercing pains were felt in the back. The teeth were all loose; the breath was foetid. Towards the close of the disease a dropfy came on, accompanied with a violent thirst. A dry cough and costiveness were symptoms common to all, insomuch that many remained constipated for two or three weeks; the strongest purgatives were of no effect; and in this condition one died after another.

Towards

Towards the close of life they had all a great propensity to go to stool, upon which many expired. Some, however, who were once open in their body, did not afterwards lose that benefit of nature ; but then at each time they discharged blood, and continued so to do until death in a few days put an end to their misery.

With regard to the case of the lieutenant, it is said, that towards the end of the disease, it was remarked, he had a violent fever, an asthma, an insensibility over the whole body, and an hiccough, under which he expired. Upon opening the body, the right side was observed marked all over with blueish scorbutic spots. The *penis* was erect, and discharged blood into the bladder ; in the cavity of which was found a quantity of coagulated blood and other impurities. The right lobe of the lungs was covered with a viscid humour ; the throat and *aspera arteria* were inflamed ; the heart and the great artery were distended with a blackish blood ; and the kidneys as if they had been mortified : the stomach nevertheless was discovered sound, and without defect.

The most memorable circumstances which deserve attention, and could not be remedied during the course of this malady, were, 1st, Their winter quarters being too near the sea. 2^{dly}, The cold was so

excessive in their habitation, that whatever quantity of fuel was heaped upon the fire, the furnaces were scarce warm; nor could the men be brought to a moderate degree of heat in any other way than by standing close to the vent-hole of the stove which opened into their chamber. *3dly*, The planks of their houses were always moist, and the walls as it were frozen over. *4thly*, None daring to stir abroad on account of very high winds, and great falls of snow, they were often obliged to keep the dead bodies four or six days unburied in their houses.

Of all the company, eight persons only had the good fortune to escape with life; whose preservation it is not easy to account for. 'Tis true, that the scurvy having spared them, they were kept in perpetual motion and exercise; being constantly employed in cutting down wood, in warming the chambers, in attending and assisting the distressed: and to this incessant labour they attributed in part their preservation. Nevertheless the *Russian* priest, who was not employed in so laborious occupations, imputed his safety to the contrivance of a vent he had made in his apartment, which gave free issue outwardly to the noxious exhalations arising from the humidity of the wood and clay of which the stoves were built; these he imagining to be the chief cause of the malady.

1750. *A dissertation on quick-lime and lime-water.* By Dr. Ch. Alston.

The Doctor informs us, that he published this paper chiefly for the use of mariners. He attributes the good effects of lime-water in putrid scurvies, and some other diseases, not so much to an antiseptic virtue (which it is possessed of) as to its penetrating, detergent, and diuretic qualities. He has discovered, that lime prevents the corruption of water, or insects breeding in it; and thinks this water will be useful in curing the diseases to which sea-faring people are most subject. One pound of fresh well-burnt quick-lime of any kind (*l*), is enough to be put in a hoghead of water; and this may be used, not only for common drink by the diseased, or for prevention by the healthy; but also by boiling, and exposing it to the air for a short time, it will become, after long keeping, sweet and wholesome water. When lime-water, by standing exposed for some time to the air, has thrown up all its crusts, none of the qualities of lime-water remain in it. From the remarkable quality he found in quick-lime to prevent water from corrupting, he often thought, that some of it put in the ship's well would effectually prevent the

(*l*) Stone-lime (not shell or chalk-limes) preserves water from putrefaction.

the corruption of the water there, and consequently the putrid streams of foul air arising from thence. All these experiments are safe, easy, and attended with no expence.

1753. *An essay on the sea-scurvy: wherein is proposed an easy method of curing that disorder at sea, and of preserving water sweet for any cruise at sea.* By Dr. Anthony Addington.

The description of the disease is borrowed from *Cockburn, Boerhaave, Hoffman, Eugalenus, Lord Anson's voyage, &c.* The cure proposed at sea, is to be begun, if there be any mark of fulness, by blood-letting. This is recommended upon the authority of *Hoffman, Boerhaave, Sennertus* and *Brucæus*, as also *Eugalenus*. In order to lessen the quantity of redundant blood still more, the patient is afterwards to be put under a course of gentle and daily purgation, with sea-water. *Boerhaave*, without any restriction to the habit of the patient, gives us the greatest expectations from a moderate and protracted course of purging in the scurvy; and *Hoffman* speaks to the same purpose. But where there are marks of virulence in the scurvy, it will be lost labour to rely on simple sea-water, unassisted with any other antiputrid medicine. So if, in conjunction with that water, we
make

make a prudent use of the spirit of sea-salt, we shall but seldom be disappointed in our hopes of a cure. This is that safe and effectual corrector, which will counteract the putrifying quality of rock and bay salt, when they have been taken in such large quantities as to occasion the scurvy. Twenty drops of this spirit taken every day, will probably succeed with most patients. Five of them are to be given in the sea-water every morning, and the remainder at any other times in fresh water: to a pint of which ten drops will impart an agreeable acidity. When the vessels have been pretty well unloaded by the purgation with salt-water, and the bad symptoms begin to decline, the patient (with some exceptions) is to be bathed every morning in the sea just before he drinks the water. Sea-water is also to be used externally, where there are ulcers on the gums and legs, or *carious* bones. To give the greatest sanction that can be given to the outward application of sea-water in scorbutic ulcers, it is advised for them by *Hippocrates*. In scorbutic fluxes, mortifications, and hæmorrhages, the salt water is to be omitted. The most probable way to remove the last symptom, is, to bleed the patient as often and as much as his strength and age will permit; to open the belly, if costive, by glysters; and to oblige him to live entirely on the unfer-

unfermented farines, and to drink freely of water softened with *gum arabic*. and strongly acidulated with spirit of sea-salt. About an ounce and a half of spirit of salt to a tun of water, will preserve it from corrupting.

1755. *A treatise on the scurvy. Designed chiefly for the use of the British navy.* By Charles Bisset.

Chap. I. *Of the progress and different species of the scurvy.*

After a description of the two first stages of this malady differing in nothing material from other accounts, he observes, that the disease being arrived at its third and last stage, some other symptoms and symptomatic diseases frequently arise, which with the former symptoms swiftly encrease, and soon and infallibly end in death; if the patient has not the benefit of a proper *regimen*, ripe fruits, or green vegetables. The forms the scurvy now assumes are divided into five classes.

The first is, when an *anasarca* is the most prevalent symptom: this does not often occur.

In the second species, the *anasarca* is almost wholly confined to the legs and feet: little elevated pustles about the bigness of a small pin-head at the roots of the hairs of the legs, are most conspicuous in this species and the third.

In

In the third the legs are swelled and hard, chiefly at the calves, and sometimes they are greatly indurated without much swelling. The muscles of the thighs are often rigid and painful, and the benders of the legs sometimes contracted, with one or both knees rigid, having a hard discoloured swelling. There are discolourings on the skin as in the second species, also tumours, tubercles, bone-achs, hæmorrhages; sometimes *nodes* and *exostoses*, and other symptoms common to all, or most of the other kinds of scurvy. It is worse than the second, but better than the first species.

The fourth species is distinguished by a dry emaciated habit and legs, excruciating bone-achs, frequently most violent in the middle and forepart of the legs. The author saw but a few cases of this sort, which most commonly afflicts seasoned *Europeans* and old men in the *West-Indies*. It has a great affinity to a species of cachexy induced by intermittents in the *West-Indies*. The fifth species, the most malignant and fatal, is commonly preceded by a continued or remitting fever, and sometimes the second and third species degenerate into it, especially if supervened by any degree or species of fever. Besides the usual symptoms of a bloated complexion and œdematous legs, the specks at the roots of the hairs are seldom raised above the skin, the inside of the

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mouth

mouth is ulcerated, and sometimes there is a *caries* of the maxillary bones. It is attended sometimes with a flow, continued, remitting or irregular intermitting fever and thirst. Its progress is swift. It is sometimes formed by a complication of the scurvy with the cachexy from an intermittent; and it is generally this species which succeeds fevers at sea. Two cases occurred wherein the *diuresis* was much impaired, with thick turbid urine, and sometimes a spurious *ischuria*; in both the disease quickly encreased with profuse hæmorrhages at times from the nose. Such hæmorrhages however do not often occur, a cough scarce ever, nor any considerable *dyspnœa* in the scurvies in the *West-Indies*: nor did the author ever see one case of luxuriant spongy flesh arising from the gums.

Persons under a manifest scurvy are not invaded with the bilious fever in the *West-Indies*; yet this fever often attacks them when highly predisposed to the scurvy, as also when recovering from it, in both cases proving very fatal.

Chap. 2. *Of the external and internal causes of the scurvy, &c.*

The predisposing cause to this disease in the *West-Indies* is, according to the author's hypothesis, the intense diurnal heat, when the sun is in or near the zenith; joined with a constitution not seasoned to the torrid zone;

zone; which weakens the digestive and assimilating powers of the body. He does not think distilled spirits, as I had observed, are productive of the scurvy, or have any pernicious influence on this disease, if properly diluted; and censures pretty freely the opinion I gave in the first edition of this treatise, that such spirits check a fermentative tendency which ripe fruits and some vegetables have when taken into the stomach. He is inclined to believe, that malt-liquor, unless it operates as a laxative or diuretic, has no antiscorbutic, but a contrary quality.

Chap. 3. *Of the prevention of the scurvy on board his majesty's ships.*

Chap. 4. *Of the method of curing the scurvy, particularly at sea and in desert places.*

A discovery is here said to have been made in the *West-Indies* of a powerful antiscorbutic quality in rice, which he advises as the principal article of diet for the prevention and cure of the scurvy at sea.

Having before constituted five different species of scurvy; in the treatment of the first we must chiefly regard the dropsey: for the cure of which he furnishes us with great variety of all such medicines as have been recommended in dropfical cases. He has observed good effects in scorbutic swellings and spots, by rubbing with a fresh cut lime,

but on the contrary, bad effects from embrocation with oily medicines. Sweet oranges will be best for this purpose in stiff and painful swellings, indurations, &c. The second species requires a greater proportion of attenuants and deobstruents than the first, with some demulcent medicines, and a much less proportion of purgatives, diuretics, diaphoretics, and corroborants. It is indeed for the most part soon cured by a proper vegetable diet only. The third species requires a still greater proportion of attenuants, deobstruents, and demulcents, together with some emollients: consequently sweet oranges will be the most suitable remedy for both external and internal use. The cure of the fourth species is to be attempted by attenuants, demulcents, emollients, sudorifics, and bathing in warm water; using afterwards the cold bath, exercise, and other corroborants. In the fifth species, the best internal remedies are juice of limes or lemons, shad-docks, pomegranates, cashew apples, and all subacid subastringent fruits, verjuice, spirit of vitriol, *Peruvian* bark, a decoction or extract of the twigs of green *guajac*, lime-water, tar-water, a decoction of sharp-pointed dock with orange-peel acidulated with *acacia*, and sweetned with molosses, &c. (o). He is of opinion,

(o) It is much to be regretted, that this author, who recommends such a variety of drugs in the scurvy, has not favoured

opinion, that *ung. Ægyptiac.* but especially the mineral acids, are hurtful applications to scorbutic gums. Sweet oranges are the most powerful known antiscorbutics.

Chap. 5. *Of the scurvy chiefly from acid, and acescent farinaceous food.*

This chapter is a part of the *Boerhaavian* doctrine contained in *Aphorism* 62, 63, &c. *de Morbis spontaneis ex acido humore*; and the following section *de Glutinoso spontaneo*, as also *Aph.* 1166, &c. *de Cachexia (p)*, illustrated by cases which occurred at *Cleveland* in *Yorkshire*.

Chap. 6. *Of scorbutic and malignant ulcers.*

Chap. 7. *Of the cure of scorbutic ulcers.*

Under these titles we have a long dissertation on different species of obstinate, habitual, and carious ulcers.

1761. *Tractatus de scorbuto, Joannis A Bona.*

He observes in his dedication, that no *Italian* author had before him treated expressly on the scurvy, so far as he knew. And in his preface gives the following reason for this publication. Fourteen years before, having cured a lady of quality at *Verona* of this disease, he was surprised

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favoured the public with a few practical cases, where the good effects of such medicines, as lime-water and many others recommended, were discovered.

(p) *Vid. Boerhaav. Aphorism.*

that several learned physicians, who had formerly attended her, were unacquainted with the nature of her case, and was amazed to hear them affirm it to be as it were ominous for *Italy*, where they had hitherto believed themselves to be altogether exempted from the scurvy.

The book was finished in the year 1750, but not put to the press till after the publication of the third volume of Baron *Van Swieten's* Commentaries on *Boerhaave's* Aphorisms (*a*). This author seems to have been diffident of his own sentiments in respect of this disease; but finding them so nearly to coincide with the Baron's, he took the courage at length to publish them. His book is properly a commentary on *Van Swieten's* commentary on what Dr. *Boerhaave* has published on the scurvy. Agreeable to the *Boerhaavian* system, the disease is divided into four distinct classes, according to the supposed prevailing acrimony in the blood.

This large volume, in which the author tells us, that he has given a complete history of the scurvy, contains few practical observations, and those mostly communicated to him by his friends.

The

(*a*) It appears from some passages in this book, that Doctor *A Bona* had seen the first edition of my treatise on the Scurvy, wherein the distinctions made in the scurvy by *Boerhaave* are criticized.

The first is from professor *Targa*, who in the year 1752 observed many country people, living about ten miles from *Verona*, in a healthy climate under the *Alps*, afflicted with the scurvy. It proceeded from a want of corn, or a sort of famine, which had reduced those poor to the necessity of eating bad and unwholesome food. Towards the end of winter, and in the spring, the disease made its appearance. The symptoms were a lassitude, spots of various colours, bleeding swelled gums, loose teeth, acrimonious spittle, pain and contraction of the knees, a weak feeble pulse, &c. It attacked more women than men, and disappeared almost entirely when a succeeding plentiful harvest had put an end to their apprehension of a famine, and to the misery of the country.

A second observation is communicated by the same professor. A healthy old man, being confined to his bed for five months by a fracture of the head of the thigh bone, was, notwithstanding his having a very wholesome diet, seized with a scurvy, attended with all the symptoms before mentioned. The violence of those symptoms encreasing with the addition of a fever and flux, carried off the patient in the tenth month of his confinement.

The 3d observation was made by a physician, who for many years had the care

of lunatic patients in the hospital of *St. Ursula*. The greater part of those lunatics, who had been long confined in that hospital, were at length attacked with the scurvy. It was not equally violent in all, though sometimes it advanced to the 4th stage, and even some died of it in great misery. The doctor used all possible precautions against it, but to little purpose. The plaster, which overlaid the walls was removed, the beds, linen, and other furniture shifted, without producing any sensible good effect. And though some wards were small, others larger; some on the ground floor, and others above it, yet the patients in all of them were seized with the scurvy; such as were robust not being exempted. Those who were very indolent and lay in their bed the greatest part of the day, were sooner and more violently afflicted, and in some of them the disease proved so obstinate, that neither change of air, of their chamber or diet, or even setting them altogether free from their confinement, proved a means of their recovery. The whole body was sometimes stained with livid spots, and the ulcerated gums sprouted up to such a pitch as to cover all the teeth, although *antiscorbutic* decoctions and tinctures were of benefit to some, as also washing the mouth frequently with austere red wines, yet the effects of those remedies were not permanent.

Towards the conclusion of the book, there is an extract given by a clergyman from a very antient and curious *Greek* manuscript, preserved in the library of *St. Mark* at *Venice*. This manuscript, whose author is said to have been *Aelius Promotus*, contains a number of prescriptions for a bad breath, for painful ulcerated and wasted gums; for rottenness, bleedings, and fluxes of humour from the gums, and for various maladies of the teeth. Hence our author concludes, that the demonstrative signs of the scurvy being clearly described by *Promotus*, this disease, especially the *alkaline* scurvy, was known to the ancients.

1761. *Verhande lingen Vitgegeevin door de Hollandsche Maatschappy der Weetenschappen te Haarlem.* Or, An essay on the causes and cure of the usual diseases in voyages to the *West-Indies*, together with the preservatives against them. In answer to the questions proposed by the society of sciences in *Holland*. By *Solomon de Monchy*.

He says, the *putrid* fever, the *malignant* fever, and the scurvy, are the most usual diseases in those voyages. Upon the subject of the latter disease, he offers nothing new, having (as it would appear) few opportunities of seeing scorbutic patients.

1764. *Oeconomical and medical observations, in two parts, from the year 1758, to the year 1763, tending to the improvement of military hospitals, and to the cure of camp diseases, &c.* By Richard Brocklesby. Page 301, *Of the scurvy among soldiers.*

The author informs us, that he saw several of the *French* prisoners confined in *Winchester* castle labouring under all the symptoms of the scurvy as enumerated in Lord *Anson's* voyage, except that of the dissolved *callus* of a fractured bone, which he never heard had happened in *England*.

The surgeons mates of the prison shewed him some men whose teeth were all loosened, and many had dropped out. The *tonsils* and upper parts of their mouth were swelled, and several had hard spongy excrescences pushed out from the roof of the mouth; the whole inside of their mouth being ulcerated. Every diseased part bled profusely. The spongy *laminæ* of the bones of the nose were sometimes destroyed. Many had the *uvea* of the eye as black as a coal. And two men had a great portion of the white of their eyes also discoloured (*a*). Those prisoners suffered, says our author, distressed by the scurvy unknown in our times,

(*a*) See a particular account of this scurvy in the supplement to this treatise.

times, except among the *British* troops in the winter, 1759, at *Quebec*, and among those who died at *Senegal* of this disease. To this marvellous account is subjoined the cure, which was performed by keeping the body lax, by aromatic cordials, wine, onions, garlic, vinegar, mustard seed, bitter infusions, &c. but above all by decoctions of the bark sowed with elixir of vitriol.

1764. *Experimental essays, &c. &c.* By David Macbride. *Essay IV. On the scurvy, with a proposal for trying new methods, to prevent, or cure the same at sea.*

The author of those useful and ingenious essays, being of opinion, that the cure of the *sea scurvy* depended chiefly, if not altogether, on the fermentative quality of fresh vegetables, which are found to conquer this destructive evil: It occurred to him, that malt taken in the way of medicine, would in all probability produce effects similar to those produced by green vegetables, and consequently cure the scurvy. Malt may be preserved sound and good, for years, and if carried to sea, in order to make wort occasionally, a remedy might always be had in readiness against that fatal disease. He therefore requests, that trial may be made of wort on scorbutic patients often. He advises to boil it up into a panado with sea biscuit, or some dried fruits. Of this

the patients are to make two meals a day, and drink a quart or more, (if it shall be found to agree) of the fresh infusion of the wort in the course of 24 hours, taking a smaller quantity at first, and gradually encreasing it. If it gripes or purges, the dose must be lessened, and some drops of the *acid elixir* of vitriol given with it, to check the too great fermentation, and make it sit easier on the stomach. When malt is not at hand, melasses, honey, or sugar, may be tried.

The wort is to be brewed (especially in hot weather) fresh every day in the following manner. Take one measure (suppose a quart) of the ground malt, and pour on it three measures of boiling water; stir them well, and let the mixture stand close covered up for three or four hours, then strain it (*b*).

We have here an extract from a book published about the year 1639 by *John Woodall*, an old *English* surgeon, containing an accurate account of the scurvy, taken from *Ecthius*, *Wierus*, and from the author's own observation.

(*b*) By an admiralty order, a trial of the effects of wort on scorbutic patients was made in *Haslar* hospital; I was then in *London*, and the experiment was conducted by my ingenious and learned colleague, Dr. *Farr*, now physician of *Plymouth* hospital.

1764. *An account of the diseases which were most frequent in the British military hospitals in Germany, from January, 1761, to the return of the troops to England in March, 1763. By Donald Monro. P. 250, Of the scurvy.*

The true scurvy attended with spungy foetid livid gums, livid blotches, ulcers of the legs, &c. began to shew itself at Bremen, in January, 1762. There the disease was observed only among the soldiers, not one of the officers having the least symptom of it. The first patient was an *invalid* who had been some weeks in the hospital, before his case was discovered to be the scurvy. He at first complained only of great weakness, and such a giddiness when he got out of bed, that he could scarce walk; and of what he called *flying* rheumatic pains in his legs. At length his gums became sore, swelled, soft and spungy; and his legs covered with scorbutic blotches, &c. The proofs of the scurvy being now evident, he was ordered an addition of greens to his diet, and a quart of lemmonade with a gill of brandy in it *per* day for his common drink. And for medicine, a decoction of the bark with elixir of vitriol. The gums were scarified where much swelled, and washed with an astringent *gargle*, then rubbed with a little burnt alum.

By

By pursuing this method, in a fortnight's time the symptoms decreased. During the cure he was bled for a pain in his side. In about six weeks he was dismissed the hospital, being perfectly reestablished in health.

We have an accurate account of several other similar cases of patients, who laboured under this malady in the hospital at *Bremen*, and who by the like treatment were restored to perfect health by this skilful physician.

1764. Ludovici Rouppe, *M. D. de morbis navigantium liber, sect. 2. cap. 2. de scorbuto.*

This book, in which the author is pleased to make very honourable mention of my treatise, contains many excellent observations, furnished from an extensive medical practice, both at sea and land. To the other causes usually assigned for the scurvy, he adds drinking to excess of spirituous liquors; and chewing or smoaking tobacco: both which impede the digestion of the aliment. But chiefly he ascribes the disease to a neglect of bodily exercise or a sedentary life.

In a voyage from the *West-Indies* to *Holland* in the year 1760, when the scurvy began to spread itself among the company of the *Princess Caroline* (a *Dutch* ship of war) he selected three patients, who at that time complained only of pains in their limbs,

limbs, and a lassitude in their joints. To each of them he administered in the morning an ounce of the spirit of *scurvy grass* mixed with an ounce of *horse-raddish* water; at noon six *drachms* of *spiritus carminativus sylvii*, with an ounce of cinnamon water; and at night an ounce *aqua vitæ Matheoli*, mixed with an ounce of cinnamon water.

Some days afterwards finding their gums swelled, and other evident marks of the scurvy, he ordered them to drink a tea-cup-full every two hours of equal parts spirit of scurvy grass and horse-radish water, sweetened with sugar. But after the continuance of this prescription for several days, finding the symptoms to encrease, he discontinued it, and treated those men in the same manner as the other patients in the ship.

The consequence of this trial of the effects of *spirit of scurvy grass* was, that those three patients (who had taken it) all died, when they came on shore; being the only men of that ship who died of the disease. Hence our author concludes, that this boasted antiscorbutic remedy does not merit the encomiums which have been bestowed upon it.

He relates that a number of soldiers and poor people in *Landau* had lately been seized with an *itch* or *scabby* eruption on the skin, different from the true scurvy.

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It was occasioned by their eating the salted flesh meats and old cheese, which during the late war had been laid up in the stores of that garrison. He thinks their eating greens at the same time, was the means of preventing their having the true scurvy.

Among other symptoms of this disease, he observes, that the patients are from the beginning melancholy or low spirited, and apt to be struck with terror upon the slightest accident. He could never inspire them with any degree of hope or confidence; they always imagined every person to be their enemy. In the progress of the malady they move their eyes slowly, and when they contemplate an object open their eyelids more than usual, as if under a constant apprehension of danger. They are particularly fearful of their officers, and conceal themselves in the dark places of the ship. When the disease is farther advanced, they often lose all hopes of a recovery, and the most bold intrepid fellows when in health, are then apt to be constantly melted down in tears. Lastly, as if the mind had grown *callus* by a long continuance of affliction, they become insensible of injuries, and weeping like children patiently bear their affliction, and the affronts put upon them by their officers. The belly is somewhat swelled from the beginning, and in the progress of the disease the face, especially
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the lower eye-lids, are apt to swell in the morning. They are subject to pains in various parts, which sometimes at first shift, but at length become fixed, generally in the joint of the knees, where the torture is exquisite; the *flexor tendons* being contracted, and the joint somewhat swelled. After the distemper has passed its 2d stage, the knees become greatly enlarged, and the legs in most patients as hard as wood; both legs and knees being racked with exquisite pain. Moreover, if life be so long preserved, the hardness of the legs is converted into a soft swelling; a contraction of the knees, their former pains and an inability to motion still remaining. This disease is not accompanied with any fever. He has seen some who were slightly scorbutic attacked with a fever, but never any who laboured under a confirmed scurvy. The dropsy and a mortification are the last and deadly symptoms of the distemper.

After a very accurate detail of the symptoms, the author proceeds to the remarks he made on the inspection of the blood and dissections of dead bodies.

In the first stage, the blood as it flowed from the veins was thick and black; and after standing, separated into a yellow water or *serum* and a *grumous* mass.

In the 2d stage, the blood was pretty much in the same condition, with this difference,

ference, that it flowed with greater difficulty from the veins, and was of a darker colour. Some drops of it received upon clean linen did instantly coagulate. This blood after standing some hours deposited a black muddy sediment, and the *serum* became reddish.

In the first stage, a greenish crust had sometimes been observed a-top of the *grumous* mass. In the second a thin greenish pellicle often shewed itself there; the *serum* separated itself more slowly, sometimes not at all, and always in less quantity than in the former stage.

In the last stage, the blood was quite black, and became for the most part soon covered over with a thin greenish pellicle, which was easily removed, and the *grumous* mass was not so strongly coagulated as in the former stages. There was however always a distinct separation of the parts of the blood.

In the first dead body mentioned to have been opened (which was of a person who died at the island *Curacoa* of a *yellow* fever and scurvy) we find nothing remarkable; but that about three pounds of a yellow or reddish water was contained in the belly, the liver was hard and very large, but upon cutting, it appeared of the natural colour. The gall bladder was replete with a yellow gall.

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The 2d dissection was of a soldier, who after having suffered uncommon distress from the scurvy, which gradually passing through its three different stages terminated in a dropsy, was at length suffocated by it. The cellular membrane under the skin and between the muscles of the belly, was turgid with water. Three or four pints of yellow water were found betwixt those muscles and the *peritonæum*, and a like quantity in the cavity of the belly. The *omentum* was consumed. In the breast were some ounces of water. The lungs were of a red or livid colour, hard to the touch; and their blood vessels full of black blood. They were encrusted over with a fleshy substance half an inch thick, of a red colour like to that of the liver, and sunk in salt-water. The heart was large, and of a white colour; its right *ventricle* and *sinus* being distended with black coagulated blood, and with a yellow *polypous* substance. On the left side of it there was no blood, but a *polypous* substance extended into the artery.

Much the same appearances were observed in another person, who had been afflicted with almost all the symptoms of the scurvy. His legs had for three months been as hard as a piece of wood, until about ten days before his death, when they began to swell, his appetite and senses continuing entire to the last. He expired with his body surprisngly contracted.

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A yellow transparent gelatinous substance was found between the several *abdominal* muscles, and spread upon the *peritoneum*: as also a like substance (but not so tough) in the cavity of the belly. The spleen was hard large and white; the liver white and enlarged. The lungs and heart were in the same state as in the former dissection. The *cartilages* of the ribs were separated from the breast-bone, and upon cutting their ligaments, a glutinous yellow matter issued forth. This *purulent* matter (of which there was also a great quantity found in the joint of the knee) had tinged those cartilages of the breast with a yellow colour, as also the thigh-bone and head of the *tibia* in the joint of the knee. The *rotula* was rough and bare.

A man who had been afflicted with the scurvy for a whole winter died at *Naples*. His knees were greatly swelled, and a crackling noise had been perceived in the joint when moved. Above ten pounds of a turbid water having a disagreeable cadaverous stench was found in his belly. The liver and spleen were quite corrupted. The *mesentery* was full of knots, the lungs hard. The heart contained, besides some coagulated blood, a *polypous* substance. In the joint of the knee four ounces of greenish foetid matter had almost wholly consumed the *cartilages*, had rendered the bones rough

rough and *carious*, and almost entirely corroded the *capsule* of the joint.

In a man who died of hunger and the scurvy, the *omentum* was corrupted, the liver hard and enlarged, the gall-bladder full of a black greenish bile, the *mesentery* spotted with black and red blotches, the lungs were in a sound state, but the right *ventricle* of the heart contained black coagulated blood, and somewhat of a *polypous concretion* as in the former persons. He found the seat of the stains or spots not only in the *cellular membrane*, but even in the skin itself under the *scarf-skin*.

In others, who had died of the scurvy, he found pretty much the same appearances, *viz.* the lungs hard, its vessels turgid with black blood; in the right *ventricle* of the heart, the blood was coagulated and a *polypous* substance extended into the large blood-vessels. In those who died dropfical, the bowels for the most part were corrupted, and as it were *water-soaked*; the gall bladder was full of a green or black bile, and the *mesenteric* glands obstructed.

From those dissections, his examination of the state of the blood, and a review of the symptoms of the disease, the author concludes against the opinion of there being a thinness or *fusion* of the blood and humours in this distemper, observing that this can only happen in the last stage, be-

ing rather the effect than the cause of the scurvy. In like manner the pleurisy cannot properly be termed a *putrid* disease, because it may and does often terminate in an *empyema*, or a collection of *purulent* matter.

With regard to the state of the blood, said by Dr. *Mead* to have been observed in Lord *Anson's* company, he observes, that allowances must be made for time and place, as also for the combination of the scurvy with other distempers. The author opened a person who died of the scurvy at *Curacoa*, whose blood was in the same state as that of Lord *Anson's* people, but the body was necessarily inspected in so hot a climate, while it seemed yet warm, and the blood was then thin and dissolved, which he never saw in any person who died of the scurvy in *Europe*.

The cure of the scurvy is to be performed, *1st*, by a proper diet, *viz.* of unsalted flesh meat, and greens. *2dly*, by having warm cloathing. *3dly*, by exercises adapted to the patient's strength; and lastly, by proper remedies to remove the most urgent symptoms.

When the scorbutic pains are not removed by the general method of cure proper for the disease, the *oxymel* of *squills* proves an excellent remedy. If the pains still continue obstinate, the *Peruvian* bark is to be given,

given, first in a small quantity, and afterwards in an encreased dose, provided the patient's stomach will receive it; or lastly, those pains may be effectually removed by a blister applied to the affected part, if they be not seated in the legs, where the ulceration from the blister may perhaps prove difficult to heal; but if the pained parts be swelled or soft, they are to be treated in a different manner, *viz.* rubbed with a warm hand or with flannel, and afterward fomented with a decoction of the aromatic and *discutient* herbs, with an addition of *sal. ammoniac.* and vinegar or of soap. He concludes with several remarkable instances of the efficacy of the bark in this disease and in the cure of ulcers.

1766. *Essai sur les maladies qui attaquent le plus communement le gens de mer, &c.* Chap. 2d, *On the scurvy.*

This anonymous author supposes the scurvy to be contagious. For the cure of it he recommends an infusion of the dried leaves of cresses and scurvy-grass in boiling water, with an addition of syrup of lemons, or of lime juice and sugar. An infusion in wine of the antiscorbutic herbs may also be administered, with mustard-seed and some *sal ammoniac.* China oranges are the most powerful preservatives against this disease.

1767. *Traité des maladies des gens de mer.* Par M. Poissonnier Desperrieres (a). Chap. 1st, *Of the scurvy.*

This ingenious performance, after having met with the approbation of the academy of sciences at *Paris*, was presented to the King of *France* by the author in person.

He divides the scurvy into three stages: in the 1st, he allows the patient may sometimes lose a little blood, but with more confidence he recommends purges of tamarinds and cream of tartar, or of manna joined with bark and rhubarb, observing that a lax state of the body always gives relief in this stage. Blisters he found likewise useful, especially to remove wandering scorbutic pains, and he gives a remarkable instance of the good effects of one applied to the back; recourse must be had to the proper antiscorbutic medicines, viz. vegetables abounding with a volatile spirit, the juices of fruits, fermented liquors, &c.

In the second stage, all volatile, spirituous, and acrid medicines are to be laid aside, and in place of them the *saponaceous* juices of plants and fruits are to be administered. A
drachm

(a) This is not the person, who claimed in *France* the discovery of freshening sea water by a simple distillation, three years after the discovery had been made by me in *England*. See Appendix to my Essay on Diseases incidental to *Europeans* in hot Climates.

drachm of cream of tartar, with an ounce of coarfe fugar and four grains of the refin of *guajac* well mixed together, may be taken every day, and is very proper in this ftage, which will admit only of very gentle phyfic.

In the 3d period or ftage of the difeafe, bleeding, bliftering, as alfo purges, and all fpirituious, hot and acrid antifeorbutic medicines, are highly prejudicial. Clyfters may be occasionally adminiftred. But the juice of *China* oranges is the moft excellent remedy, and cyder for common drink is preferable to all other fermented liquors.

1767. *An hiftorical account of a new method of treating the fcurvy at fea, containing ten cafes, which fhew that this destructive difeafe may be eafily and effectually cured without the aid of frefh vegetable diet.* By David Macbride, M. D.

In thefe ten cafes trials were made of curing the fcurvy at fea by wort, in the manner directed, *ann.* 1764, by the author.

The four firft cafes occurred on board the *Fafon* man of war; upon which it is remarked, that a loofenefs feems to be the only thing to be apprehended from the ufe of the wort in this difeafe; but that may be avoided by giving a fmall quantity of the wort at firft, and encreasing it gradually, as the patient recovers ftrength. A few loofe ftools were always of fervice, and when they exceeded

they were easily checked by a proper use of opiates and astringents.

On board the *Nottingham East-India* ship trial of the wort was made at sea in the cases of six men afflicted with the scurvy; from this small trial he endeavours to prove, that the use of wort will generally in three or four days abate the scorbutic pains, excite a looseness, and disperse the eruptions; that in ten days, or so, the wort, if taken in time, and to a sufficient quantity, will recover the scorbutic patient as far as to be fit for moderate duty.

1768. *Versuch, uber aufertefene Mittel, &c.* Or, *A translation into the German language of an Essay on preserving the health of seamen, by Dr. James Lind; as also an abridgment of a treatise on the Scurvy, by the same author; with annotations on that treatise, by John Christian Lange.*

This book was published at *Copenhagen*. The translator offers a modest defence of *Eugalenus*. He asserts that *Eugalenus* had treated the scurvy well, as there are other symptoms equally demonstrative of the scurvy with the putrid gums and spots. He gives several cases in proof of this opinion, which do not appear to be strictly scorbutic.

1768. *Libellus de natura, causa, curationeque scorbuti. Auctore* Nathaniele Hulme, M. D. *To which is annexed a proposal for preventing the scurvy in the British navy.*

Here the *nyctalopia*, a disease not unfrequent in hot climates, having been observed in some scorbutic patients in the straits of *Gibraltar*, is mentioned as a symptom of the scurvy.

A moist atmosphere he supposes does not contribute towards the production of that disease; but chiefly a cold air, insomuch that in countries where the heat always exceeds seventy degrees in *Farenheit's* thermometer, the scurvy will seldom appear, though the air be moist and the sea diet be only used. He afterwards observes, that it is the sea diet, and not the air, which is the principal cause of the distemper.

The cure of the scurvy at sea, is to be performed, after the administration of a gentle purge, if the patient be costive, by giving a drachm of the *Peruvian* bark with an ounce of the juice of lemons, three times a day, bathing at the same time the limbs, morning and evening, with vinegar. By pursuing this method for a fortnight or three weeks, the disease is either perfectly cured, or all apprehension of danger from it will be removed, according to the experi-

ence of Mr. *Hodgkin*, an ingenious surgeon in the navy. Dr. *Hulme* found the juice of oranges equally beneficial with that of lemons; but the powder of the bark proved hurtful, when there was a great difficulty of breathing, which is usual in advanced stages of the disease. Avoiding therefore the bark in powder, the doctor infused two ounces and a half of bark with half an ounce of *myrrh* in a pint of brandy, and of this tincture he gave half an ounce mixed with an ounce of either the orange or lemon juice, with good effects, even in the scorbutic *asthma*. The tincture, with the addition of one *drachm* of camphire and another of saffron, was also found beneficial, when acidulated with *cream* of tartar instead of lemon or orange juice, and given to the quantity of half an ounce three times a day, diluted with four ounces of water. But neither the tincture thus administered, the elixir of vitriol, nor the spirit of sulphur or of sea salt, though joined with the bark, were equal to the virtues of the orange and lemon juice.

In a voyage to *India*, he had observed good effects from sweating scorbutic patients; for this purpose he used from a *drachm* to half an ounce of a tincture (*b*),
similar

(*b*) Gummi benzoini, opii, croci, singulorum drachmam unam; camphoræ, olei essentialis anisi, singulorum scrupulos duos; spiritus vini Gallici libram unam. Digerentur simul dein cola. Fiat elixir sudorificum.

similar to the *elixir paregoricum Pharmacopœiæ Londinensis*, to be taken every night in a decoction of the shavings of fir, drinking afterwards a pint of that decoction warm. A sweat thus procured every night gave great relief to the stiff joints, the scorbutic pains, and scorbutic *asthma*. The patients used the fir decoction for common drink as a proper antiscorbutic, which may be improved by the addition of sugar and melasses.

Through the whole course of the disease the body must be kept lax by gentle purges. If at the commencement of it, the patient be seized with an acute pain of the breast, without having any fever, he may lose six or eight ounces of blood. If the stomach be oppressed (which is seldom the case) a vomit of *ipécacouha*, or of *oxymel scilliticum*, may be given with safety. The scorbutic *asthma* is to be removed by the juice of oranges or of lemons, by gentle purges, and by sweating the patients every night with the *sudorific elixir*, and the decoction of fir before mentioned. For the scorbutic *dysentery* and cholic pains attending it, the patient is advised to sit over the steams of warm vinegar.

Scorbutic ulcers require the application of dry lint and a gentle compression; if very *putrid* the tincture of myrrh or of the bark may be applied to them. Or if large
and

and very painful, a poultice may be used of oat-meal boiled in vinegar and water, with the addition of a little oil.

Scorbutic pains and swellings are relieved by the application of vinegar alone, or rather with the addition of olive oil, or of *linimentum saponaceum Pharmacop. Lond.* But for this purpose the juice of oranges or lemons, with a little oil, exceeds all other applications. An incision is to be made upon the gums when distended with blood; after the discharge of the blood, the mouth is to be washed three or four times a day with a gargle of barley water and tincture of myrrh, with the addition of a little alum, which is all that is requisite.

The prevention of the scurvy at sea is to be accomplished by ships carrying to sea the juice of oranges or lemons and sugar, which should be mixed with their common drink. For this purpose one ounce and a half of the juice of oranges or lemons, and two ounces of sugar, should be daily allowed to each man in his majesty's navy.

Scorbutic patients he says should not be brought on shore until they have had green vegetables given them.

1769. *Practical thoughts on the prevention and cure of the scurvy. Especially in the British navy.* By William Jervey, M. D.

The author informs us, that he had seen numbers of scorbutic cases, which, as would appear, occurred at sea.

After a short enumeration of the characteristic symptoms of the disease, what he chiefly considers is, how far a ship's provisions as causes of the scurvy might be corrected or changed at the most moderate expence, and likewise how methods already discovered or proposed for prevention of this disease may with more ease be put in execution.

For this purpose the seamen when in harbour, should not only have vegetables to eat along with fresh meat, but large quantities of vegetables should be boiled in their water-gruel.

In order to have a sufficient supply of vegetables where there are a great number of ships, the government might purchase a large piece of ground to be laid out in a garden, where the marines or men from the ships might be employed as labourers, and to defray the expence either a half penny *per* day, or a small part of the prize money in time of war, may be deducted for this plentiful supply of vegetables to the fleet.

Ship

Ship biscuit being of a viscid and glutinous quality, bread for the ships might be baked in the manner of the *Spanish* or *Portuguese* biscuit or *rusk*, the latter being lighter, better baked, and not so viscid as our common biscuit.

In place of salt butter, and cheese, which are hurtful in the scurvy, he recommends oil, and in lieu of pease, rice should be substituted, as it contains nothing of the viscidness of pease, is less flatulent, and easier of digestion; boiled rice, eat with sugar, vinegar and oil, would prove beneficial, both for prevention and cure of the scurvy at sea. Oil and vinegar eat with biscuit and other ship provisions conduces to preserve health at sea.

The beer proving sometimes bad at sea, ships may be supplied with *spruce* beer or with melasses and the leaves and tops of the common *pitch* trees. When the men have spirits instead of beer, four parts of water should be put to the spirit, and a weak *punch* made of it by the addition of vinegar. By putting a few slices of lemons into a cask of vinegar, with the addition of a small quantity of spirit to preserve it, an agreeable sowering for making *punch* may be furnished for a whole voyage, and if the vinegar is good it will be found little inferior in flavour to lemon juice. The dampness of a ship might sometimes be corrected by having small *German* stoves betwixt decks.

As

As to the cure of the scurvy, in the beginning of the disease, no medicines seem more proper than *saline* draughts made of the ship's vinegar and salt of tartar, five or six *drachms* of the vinegar, according to its strength, should be put to a *scruple* of the salt of tartar, so that the acid may predominate. This diluted with an ounce and a half of water, and sweetned with a *drachm* of sugar, may be given twice or thrice a day, adding occasionally twenty or thirty drops of the tincture of myrrh, or a like quantity of *tinctura serpentariae*. Infusions of the dry *vulnerary* herbs, such as *betonica*, *scabiosa*, *agrimonia*, *heder. terrest.* *hypericum*, or the like, may be given afterwards.

The diet should be rice steeped in water, with a fourth part vinegar, till it becomes quite soft and swelled, then boiled into a *ptisan* or gruel, and sweetened with sugar; a little cinnamon in powder, or any other mild aromatic may be added, with some oil or butter well washed and freshened to render it more nourishing.

Portable soup allowed the navy should be given once a day, but always gently acidulated with vinegar, as otherwise it will be apt, where there is a putrid scorbutic tendency, to encrease it.

By persisting in this gentle method and diet, after sometimes giving the *draughts* only once a day, or as the patient's symptoms

toms may indicate, this disease, if not carried off entirely, which can hardly be expected at sea, until the patient has the opportunity of enjoying the land air and fresh vegetables, yet may be so mitigated and prevented from encreasing, as to preserve life till there is that opportunity.

When the scurvy occurs on shore, where doubtless it frequently does, and where I think we have no cause to doubt, it may be often complicated with other symptoms, a dry inland air, with a dry, sandy, or gravelly soil, and the *esculent* and *succulent* fruits and herbs used in food, are proper. These, together with the common antiscorbutic herbs or their juices, used by way of medicine, with butter-milk, whey, and decoctions of *grass* roots, will speedily remove it; proper attention being paid to any other symptoms that may happen to accompany it.

POSTSCRIPT.

SECTION I.

Appearances on dissection of scorbutic bodies.

SINCE the second edition of the preceding Treatise was published, I have had an opportunity of inspecting a number of the bodies of such as died of the scurvy in *Haslar* hospital. Outwardly several of them had the appearance of being much wasted and extenuated, but a few were still plump and corpulent, having the *tela cellulosa* sufficiently distended, and no apparent consumption of the body.

I did not find the bowels in so putrid a state as described by *Poupart* and others (*a*).

We frequently found the *spleen* to be putrid, the *omentum* almost wholly consumed, and it's remains tainted, in such as died of the scurvy in a very low, exhausted state after a fever. Appearances which we judge not to be peculiar to the scurvy, but usual in all those who have been much exhausted by sickness.

Some parts of the intestines, particularly the *colon*, in the bodies of such as died of scorbutic fluxes, were mortified, which is far from being an uncommon case in other fluxes. But except-
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(a) See part II. chap. 7.

ing those cases, all the bowels of such as died of the scurvy were for the most part perfectly sound. The greatest signs of putrefaction were commonly observed in the limbs, especially in the legs and thighs, which are most frequently the seats of the disease.

Of those parts an accurate dissection cannot indeed be well performed, by reason of the fleshy or muscular fibres being extremely lax and tender. What also greatly obstructs the operator, is the large quantity of congealed blood, which presents itself, not only where no stains, or mark of it can be perceived on the surface of the body, and where no hardness of the flesh can be felt, but even in limbs greatly emaciated. The quantity of this effused stagnating blood was sometimes amazing: we have opened bodies in which almost a fourth part of this vital fluid had escaped from its vessels. It often lay in large concretions on the *periosteum*; and in the legs and thighs the bellies of the muscles seemed generally as it were stuffed with it. On the forepart of the leg, where there is no muscle, the stagnated blood is plainly perceived while the patient is alive, by the frequent appearances of large red or livid stains. These proceed from blood effused in the *cellular membrane*, which we found often an inch in thickness; where there were several separate discolourations or blotches, the blood was contained in distinct cysts or enlargements of this membrane; the intermediate portions of the membrane being thin and natural.

Once only I discovered a collection of blood under the *periosteum*. The patient became scorbutic by lying long in bed after a fever, and had complained much of a violent pain in the forepart

part of his leg. After his death five spoonfuls of bloody matter were found on the bone, lodged in a bag formed by the elevated membrane; several effusions of blood were also found in the bellies of the adjacent muscles, and immediately under the skin.

The blood which lay on the bone began to be converted into *pus*, and by its longer continuance must have corroded the bone. At the same time that the blood is forced out of its containing vessels into many different parts, especially of the lower extremities, there is often a quantity of serum or water collected and confined in the cells of the *tunica adiposa*.

It is said, that by violent exercise the blood of animals has been found extravasated in the *cellular* membrane.

Future anatomists may perhaps be so fortunate as to discover, that into those cells the arterial blood is poured in order to its being reabsorbed by the veins. But, notwithstanding all this, such large and deep extravasations into the bellies of the muscles and elsewhere, without being contained in the cellular membrane, must be acknowledged as *præternatural* and uncommon.

Upon this subject, a question naturally presents itself; Are these extraordinary effusions of stagnated blood the cause of scorbutic pains, or only the consequence of pain and spasms in those parts? Various considerations induce us to adopt the former opinion, that the pains and lameness in the scurvy, proceed chiefly from extravasated blood in the bellies of the muscles, and from this congealed blood being seated on parts endued with an exquisite sensation, such as the joints, &c. In this case the pains are violent

and racking, whereas the superficial, red and livid streaks on the thighs, legs, &c. are not in the least painful, even on pressure; the blood being here contained in the cellular membrane, immediately under the skin. The lank calves of the legs also, without having any outward blemish, become often extremely painful from stagnant blood.

The stiffness of the knee may at first be occasioned by coagulated blood lying deep in the ham, between the *flexor* tendons, or upon the tendon of the *biceps tibiæ*, frequently extending themselves to the belly of the *gastrocnemius* muscle; neither is it improbable that the pain of the back, so usual in this disease, may sometimes proceed from a collection of blood in the cellular substance that surrounds the *kidneys*, as also from the same fluid covering or stuffing the *psoas* muscle: all which appearances occur upon dissection.

And in like manner we may account why the scorbutic symptoms are so various in different people, and seated in the place where an effusion or extravasation of the blood is lodged. Thus one person, according to his own account, shall be afflicted with the scurvy on the fore-part of his leg, another in the calf, sometimes in the ankle, commonly in one leg only. I have often seen the whole leg quite distorted, its natural shape having been altered by stagnant blood. The large hard white swellings, resembling *nodes*, and observable chiefly on the back of the hands, are also filled with nothing but concremented blood.

The bursting of the vessels, at least those extravasations, seem frequently to happen on a sudden, as is evident from the account of the patients.

patients who complained of a stiffness and pain in some one part of the body, with which they were seized at once. It would also further seem, as if the stagnant blood often shifted its place, or was perhaps taken up again into its proper vessels. Thus by the relation of the sick, the scurvy is said to have appeared first on the thighs, then it fell into the hams; or at first in the ankle, which grew easier, while other parts afterwards suffered.

I never remarked any præternatural appearances in the brain of such as died of the scurvy, except in one person; four ounces of water lay under the *dura mater*, and a small quantity of it in the right *ventricle* of the brain. In the cavities of the breast there was commonly confined a quantity of *serum* or water, especially in the left side. A dropfy in that side, as likewise of the *pericardium*, being frequent occurrences.

This water was apt to whiten and shrivel the hands of the person who dissected the body; and in some instances where the skin of his hands was broke, it irritated and *festered* the wound. A dropfy in the substance of the lungs was remarked in a few, and in most strong adhesions of the lungs to the *pleura*: which last are usually met with in dead bodies.

In the belly, as well as in the breast, I found the bowels for the most part perfectly sound and uncorrupted. The most usual, though not constant, appearances were precisely the same, red or livid spots on the *omentum* and *mesentery*, but especially on the intestines, with those on the surface of the body. An inattentive anatomist might be apt, at first sight, to mistake those

spots for a mortification of the parts, but upon a strict examination, the spots are found firm and altogether free from any mortified taint. For when a part of the intestine is washed, dried, and viewed with a microscope, those spots are clearly perceived to be real extravasations of blood, confined between the membranes, and very different from a mortification. When there is a mortification, the fibres commonly at first become livid in their longitudinal direction, without any apparent intermixture or effusion of blood, and at last turn quite lax, rotten, and offensive.

I have more than once observed true scorbutic spots, as large as a hand-breadth on the surface of the stomach, which was otherwise in a natural and healthy state: and had an anatomical preparation of this sort, where the scorbutic blotch on the stomach was very large; and what is further remarkable, this patient, when alive, had no complaint either in his stomach or bowels, though several parts of them were stained with different coloured spots.

Water was sometimes lodged in the cavity of the belly, even when there was no apparent swelling of it; but not so frequently as in the breast. The water in both cavities was of a similar nature, as was also a liquor sometimes taken out from between the *tunica vaginalis* and *albuginea* of the *testicles*. In the *scrotum*, when distended without any perceptible fluctuations, I found a substance, very viscid and tough. I never remarked any hardness or obstruction in the *mesenteric glands*, although I have often seen the *mesentery* covered with black and red spots of

of different sizes, from that of a crown piece to that of a six-pence, and perfectly sound.

In a word, the true scorbutic state, in an advanced stage of the disease, seems to consist in numerous effusions of blood into most parts of the body, superficial as well as internal, particularly into the gums and legs. This is frequently, though not always, accompanied with a dropfical indisposition, which appear chiefly in the legs and breast.

When there is no disorder in the breast, swelling of the belly or legs, the patient may be supposed to labour under extravasations of the blood only; but when the legs are soft and swelled, the water which is there seated in the *cellular membrane*, is apt to be occasionally conveyed elsewhere, particularly into the breast. I have observed some patients to be tolerably free from complaints in their chests, while their legs continued swelled: and on the contrary to become afflicted with *asthmatic* complaints, attended with acute pains in the side, when by a horizontal posture, or by their lying in bed, the swelling of the limbs subsided. And a few, upon the disappearance of large watery swellings of their legs, were suffocated by the removal of the water into their breast.

But it must be remembered, as I said before, that a dropfical disposition does not always accompany this disease. In some cases the legs do not swell at all, but continue, through the whole course of the disease, hard, painful, and discoloured; when there is no water, and but little blood effused in them, they are for the most part greatly emaciated.

The acute pain in the breast, so frequent in this disease, is most commonly felt on the left side, about an hand-breadth above the pit of the stomach, at the articulation of the ribs with the breast-bone. I have often observed, at that place, swellings of the *cartilages*.

Why the scurvy should so frequently, and in so singular a manner, affect the *cartilages* of the ribs, so as sometimes to separate them altogether from their connexion with the breast-bone; and why it seats itself so commonly in the joint of the knee, I own I am at a loss to account for; otherwise, than that most diseases have their peculiar seat in the human body. A blister applied to the seat of the pain *in the breast*, seldom fails to give immediate relief, by the watery discharges produced from it.

Sudden death is often occasioned by the rupture of a blood vessel, and a subsequent discharge of the blood into one of the large cavities of the body. I have remarked this to happen in the breast; and once observed coagulated blood swimming in the liquor of the *pericardium*, or membrane investing the heart, however it most frequently occurs in the belly. The blood in these cases, as well as when diffused through the bellies of the muscles in the limbs, always appears thick and coagulated. An accident of this nature I once knew to prove fatal to a patient, from a rupture of a vessel in the *spleen*. Masses of coagulated blood were found floating in a small quantity of *serum* in the *pelvis*, or lower part of the belly, and a large concretion, near three ounces in weight, adhered to the spleen itself. We were at first sight deceived in thinking the spleen to be quite putrid, as there was an

an appearance exactly resembling it; but this was nothing more than coagulated blood, upon removing which, we discovered the spleen lying below, and distinctly perceived the large orifice through which the blood had issued.

In patients, whose deaths were unexpected and sudden, and where no effusion of blood could be perceived in any cavity of the body; the heart was commonly much distended with blood: the *auricles* and *ventricles* of both sides were filled, but those on the right to the greatest degree.

In one man, who suddenly dropped down dead, while walking in the fields; there was a large *polypus* which filled entirely the right ventricle of the heart, and sent forth two branches, one into the *pulmonary* artery, another through the right *auricle* into the *vena lava*. But I am apt to think those *polypous* appearances, so commonly found in the heart of those who die of the scurvy, are formed after death. And, indeed, it is impossible to conceive, that the branch of a *polypus* should run in a living person from the heart into the *vena cava*, it being contrary to the well known course of the circulation of the blood. In the same person, a few clots of blood were found in the cavity of the breast.

The doctrine of *polypous* concretions in the heart, during life, is upon the whole very exceptionable, and the fatal consequences said to arise from thence are often merely imaginary. That these concretions are most probably formed after death, appears from their being generally found in the right *ventricle*, seldom in the left *ventricle* of the heart, the former of which after death is generally distended with blood, the latter seldom contains any.

Let me add, That to reap any advantage from the inspection of morbid bodies, the operator should be thoroughly conversant with the usual appearances of dead bodies in general, and endeavour carefully to distinguish the effects of diseases from their causes, as also from the changes that may happen after death, or in *articulo mortis*, during the universal struggle of the dissolving frame.

In most bodies, on opening any of the large cavities, especially the *abdomen*, an offensive smell is perceived, but that generally goes off in a few hours; the state of the air and weather should afterwards be carefully attended to, before the putrid state of the body can be deemed the consequence of a supposed putrid disease.

S E C T. II.

Effects of the scurvy on other diseases.

WE proceed to other observations lately made on the scurvy; and first its complication with other diseases.

I have remarked among some thousand patients in *Haslar* hospital, that such as were scorbutic, were not liable to be seized with fevers; and that even an infection from a fever was long resisted by a scorbutic habit of body. To illustrate this remark, I must observe, that patients in an advanced state of the scurvy have often a quick and low pulse, and at times a considerable degree of heat on the skin. But this quickness of the pulse is to be ascribed to their low and weak condition, as in similar cases of great lowness, and irritation from pain; and if mistaken,

as it has too often been, for a true feverish state, proves fatal to the patient. Wine, well sharpened with lemon juice, and sweetened with sugar, soon removes all those symptoms; by repeating it in small quantities, at short intervals, the pulse in a few hours acquires more strength and calmness, and the patient, from the appearance of a dying man, seems quite recovered.

It sometimes happens, especially when the patient is upon recovery, and has walked about for ten or twelve days, that he is suddenly seized with a sickness at the stomach, and shiverings, succeeded by a fever of twenty-four, seldom of forty-eight hours continuance. In such persons the pulse is generally full and strong. And this is the only scorbutic fever I ever observed. May not this fever, which generally attacks the patient, as his legs become free from the scurvy, proceed from a sudden absorption of a quantity of stagnated blood into the vessels? It is not a dangerous fever, as in eighty cases of this kind I do not remember one person to have died. Much about this period of the disorder, it is usual for a few to be suddenly attacked with the scorbutic pain in the breast, a difficulty of breathing, and cough.

This I conjectured might be owing to the water being suddenly, and in too great a quantity removed from the *cellular membrane* of the legs, into the cavity of the chest (*b*). I have examined
the

(*b*) To illustrate what I have said concerning the *scorbutical* fever, and the shifting of the pains in the scurvy, I shall subjoin the following case.

Francis Week, on the 28th of *June* 1760, was admitted a patient into *Haslar* hospital. The fore-part of his gums was sound, the other parts was much swelled, and entirely
loosened

the cases of several thousand scorbutic patients, who had been sent from different ships, in order to find, whether any other fever was commonly attendant on the scurvy, than what has been already mentioned.

Among so great a number of men, whom the scurvy had reduced to a state of the most complicated distress; some few, who had a feverish pulse, complained of a head-ach, and thirst. But those complaints were not permanent. The

loosened from the teeth. But his chief affliction was centered in the left leg and knee, where the agony was so incessant and acute, that it deprived him entirely of his natural rest, and made him almost delirious, especially when he attempted to move the afflicted part. I ordered him to be put into a warm bath, prepared with a decoction of the most aromatic plants; but this could not be done, on account of the intolerable anguish he suffered from the least motion of his body; he was however, on the 6th of *July*, so well recovered, that he could turn himself in his bed without help, and with much less pain; and slept tolerably well. But that day the pain shifted from his knee, and seated itself in the thigh and hip; where all his misery was now accumulated, and to so excruciating a degree, that he could scarce support it. I directed the parts to be bathed for several hours with warm vinegar, and afterwards to be well anointed with the elder ointment. Next morning his pains were much more tolerable; and gradually abated, so that on the 13th of that month he got out of bed, and continued to sit up a little every day, until the 16th *July*, when he was suddenly attacked with a sickness at the stomach, and with alternate chills and heats, succeeded by a head-ach, thirst, &c.

When I visited him, I found him labouring under a fever, with a very quick pulse. He complained of an universal disorder of the body, but chiefly that the pains having entirely left the lower extremities, had fixed themselves in his breast and belly. A blister was applied to his breast, emollient clisters, fomentations, &c. were administered, together with some *saline* and *diuretic* draughts. In consequence of which the fever abated in thirty-six hours, and he afterwards recovered daily.

head

head is commonly the least affected of any part of the body.

When some men were admitted into the hospital, labouring under the scurvy, and others from the same ship having a fixed and *continual fever*, in conjunction with the scurvy, I always found the fever to proceed from infection on board that ship.

If it be asked, whether an infectious fever be rendered more violent and dangerous, by its attack on a person of a scorbutic habit of body? I answer, my observations on that head, do not permit me freely to assent to the prevailing opinion, that the danger is greater from a fever, because it is complicated with the scurvy; for I have remarked, that during the continuance of the fever, the scurvy for the most part either leaves the patient or becomes milder; and I found the greatest danger to proceed from the almost certain return of the scurvy, with redoubled violence, after the recess of the fever. When the fever leaves the patient very low, especially if he has a flux, with which the scurvy associates itself more readily than with most other disorders, this return of the scurvy often proves fatal.

This leads me to remark the effects of other diseases on the scurvy, and how they are influenced by it.

First, a *tertian* or *quartan* ague, with perfect intermissions, sometimes accompany this disease, without either of them being rendered worse, or more difficult of cure, by thus jointly distressing the patient.

I have already said, that of all the disorders of the body, the scurvy seems most readily to associate itself with a flux; I now add, especially
if

if the flux has been of long continuance, and the patient be not greatly emaciated; for persons very much emaciated, either with the *flux* or *consumption*, are seldom or never seized with the scurvy.

The rheumatism is generally said to be of two kinds, *viz.* the *acute* and *chronic*. But of the last it would appear there are more sorts than one, by the effects of the scurvy upon them. For it will often happen upon the attack of the scurvy, that some old rheumatic pains become much easier, nay, entirely leave the patient; whilst at other times, rheumatic complaints return at the approach of the scurvy, and with redoubled violence, so far at least as we can distinguish the one from the other. Scorbutic pains, however, are generally more violent in the limbs, than those of the *chronic* rheumatism.

As to the *venereal* disease, I do not remember a case to have fallen under my inspection, where the scurvy was combined with a recent *gonorrhoea*. Old *gleets* and *runnings* seemed rather to be lessened during an attack of the scurvy. But if the patient has a *bubo*, or an open *venereal* sore, the scurvy generally seats itself round the edges of it, which turn black, and hence it becomes very difficult of cure. One person died with an open *bubo* in this condition, where the blackness resembled a mortification, of which there was no other symptom.

Another patient, while recovering from the scurvy, was seized with the *small-pox*; a mild distinct sort appeared, but he died soon after the *turn*. But in neither of the preceding cases do I think the scurvy was the immediate cause of death.

There

There is a disorder mentioned by *Van Swieten*, in his Commentaries on *Boerhaave's Aphorisms* (*d*), said to be frequent in *Holland*, and to proceed from the scurvy. It is called *cancrum aquaticum*, the *water cancer*. But I am of opinion this disease is in some respects different from the true scurvy; because a gangrene, unless in large and putrid ulcers, or brought on by a tight bandage, is an unusual symptom in the scurvy. And the only patient I ever saw afflicted with the *water cancer*, had few symptoms of the scurvy, and none of those commonly deemed mortal: his gums were indeed extremely spongy and putrid; besides which, there were ulcers on the inside of both his upper and lower lip: he lived a very short time under his affliction, dying on the tenth day after being taken ill, with his mouth in a most dreadful putrid condition, and with symptoms of an inflammation in his lungs. If this person's disease was altogether scorbutic, it must be allowed to have been a very uncommon and singular case. It were indeed to be wished, that authors would be more careful not to obtrude upon the public, as the offspring of the scurvy, such uncommon and singular cases, as are very different from the true nature of this disease, or at most, are only complicated with it, and proceed from causes entirely different from those of the scurvy.

Among many extraordinary cases, which have occurred to me, the following surprized me not a little, until the true cause of the symptoms was discovered.

On the 8th of *June*, one *Tibbet* was sent from his Majesty's ship the *Chichester*, to *Haslar* hospital,

tal, ill of the scurvy. A severe pain in the small of the back afflicted him much, his legs and thighs were strewed with black spots, overspread with dry *eschars*, or thin films; from under which there issued a thin purulent matter. He had also a very large hard white swelling on the fore-part of the wrist, which rendered the *flexor* tendons of that joint quite rigid. Some days after he came to the hospital, he was seized every four or six hours with a surprisngly quick and involuntary contraction of both knees, by which his heels were made to strike upon his buttocks, with a shock that might be heard at some distance. Those contractions seized him without any previous pain, or other symptom of their approach. And he often remained in this miserable condition, with both heels bent back to his hips, for some hours, notwithstanding the efforts of four men to extend his legs; until by a motion, as sudden and involuntary as before, they became of themselves violently extended; and so rigid, that they could not be bent backwards. As he did not seem to suffer much pain in either state of those contractions, I suspected him to be an impostor, and therefore ordered both knees to be tightly bound with a linen roller, to some *splints* or thin pieces of wood, used to secure fractured bones, which were placed under his hams.

Notwithstanding which, such violent and astonishing contractions ensued, as quickly broke the wooden *splints*, and brought both heels again in contact with his buttocks. I afterwards very strictly examined into all the circumstances attending this poor man's case, and found by his own account, that he had received, about twenty months before, a considerable hurt in his back,
by

by falling into the *bold* of a ship; and had ever since, laboured under a benumbing weakness in both legs. Upon inspecting the seat of this hurt, there appeared to be a partial dislocation of the third bone or *vertebra* of the back, with a considerable distortion of the back bone, and projection of it towards the right side.

He continued for some weeks to suffer great distress from these contractions. Notwithstanding he daily recovered from the scurvy, in two months the lower extremities of his body, though still retaining their natural warmth, became quite paralytic: and the swelling of his back bone being much encreased, he soon after expired in a *paralytic* and *consumptive* state.

I have mentioned this case, with a view to enforce a careful enquiry into all the circumstances attending the sick, before the cause of such extraordinary and uncommon symptoms be ascribed to the scurvy, or to any other disease, which may at the same time afflict the patient.

S E C T. III.

State of the blood and secretions in the scurvy.

HAVING before taken notice, that the blood found stagnating or extravasated in the bodies of such as had died of the scurvy, was commonly thick and congealed, a question naturally presents itself, *viz.* Whether that blood be really in a state which tends to corruption?

This is the opinion of most authors, and what I had formerly adopted from them, as the foundation of my reasoning on the theory of this disease. But I am now doubtful of the blood being

being in so *putrid* a state as those authors have represented it.

I have bled at different times above a hundred patients, in all the different stages of the disease, having even ventured in the last stage to take away an ounce or two of blood, in order to inspect the condition of that fluid in dying persons. And upon the whole, I have observed, that the blood of those who were seized with the scurvy, after a fit of sickness, or a fever of long continuance, was generally of a soft and loose texture. But the blood of most other scorbutic patients was in a natural state; there was generally, after it had stood some time, a perfect separation of the water, or *serum*, from the red concremented mass; the latter even in the last stage of the disorder was firm and compact, and often covered with some white streaks, of what is commonly called the *gluten* (*d*) or *size* of the blood.

One day, having bled eight men in the scurvy, I remarked the blood of some of them to be more glutinous than that of others; the red concremented mass of all their different blood, adhered to the sides of the containing vessels, and was not easily incorporated with the *serum*, which swam on the top.

Another day I bled two patients, one of whom was confined to his bed, his legs being very painful, hard, red, and replete with coagulated blood from the hams to the ancles. His blood, after standing a few hours, became covered with a glutinous pellicle, of a whitish, purulent appearance; the whole mass was very tough, and there was no separation of the *serum* from it.

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(*d*) See my papers on fever and infection, page 99.

The other patient was feverish, as well as scorbutic; his blood was of the natural ruddy colour, but of a thicker and more viscid consistence than common, and there was also no separation of the *serum* from the red mass. Hence it appears, that this disease does not depend on any particular and obvious state of the blood; for its appearances out of the body are various, and the opinions of such, as have inspected the blood only of one or two persons in this disease, are, on that account, not to be admitted without great caution.

In a course of several experiments, made on the blood taken from scorbutic patients, and upon comparing it with the blood drawn from people in health, I found in the scurvy the *serum* to be as tasteless as the *white* of an egg; and that blood fresh drawn from persons in health, affects the organs both of smell and taste, with sensations not easily to be described; whereas the blood taken from persons in the scurvy, gives the least perceptible sensations by tasting or smelling, of any blood I have examined.

Upon the whole, it seems to be more insipid than when the person is in health, and its red *grumous* mass is somewhat more dense; when kept in the same state of air, it corrupts no sooner than the blood of healthy persons. Thin slices of mutton steeped in its *serum*, continued sweet and free from taint, as long as in the *serum* of persons in health.

The offensive smell from the mouth of scorbutic persons, when alive, seems to me to proceed solely from the corrupt state of the gums. For in their dead bodies, I never perceived any unusual marks of putrefaction; they were nei-

ther more offensive, nor liable to corrupt sooner than any other corpse.

It was remarkable, that the dreadful mortality from the scurvy at *Quebec*, in the year 1759 (e), happened during so severe a frost, that the dead bodies could not be buried for a considerable time, until the thaw came on; there being no possibility till then of digging their graves; and at that time all animal substances were kept perfectly free from corruption, by being exposed to the air. It is certain that diseases commonly deemed putrid, seldom occur in winter, or during so severe a frost.

On the other hand, it may be urged, that the scurvy is still properly termed in the *physical* phrase, a putrid disease; as it is not to be expected, that blood taken from a living person, is either by taste or smell to discover itself putrid; that being a state incompatible with animal life.

Monsieur Poupert discovered a great putrefaction in the bowels of those who died of the scurvy at *Paris*; and the muscular fibres of the legs and arms, when such parts are afflicted with the malady, are found upon dissection to be quite lax, tender, and seemingly inclined to corruption. The gums are often putrid, and the ulcers are sometimes *fungous*, as also putrid.

This, I believe, is the sum of all the arguments that can be brought, both for and against the theoretical opinion of this disease being of a putrid nature.

The term *putrid*, respecting animal and vegetable substances, is not indeed, in my opinion, sufficiently defined and restricted, so as to serve

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(e) See the Supplement, page 269.

as a solid basis or foundation of any theory for explaining the symptoms of the scurvy. The idea of the scurvy proceeding from animal putrefaction, may, and hath misled physicians to propose and administer medicines for it, altogether ineffectual.

As to the secretions from the blood in the scurvy; the urine in this disease was not found to be more offensive to the smell, nor to corrupt sooner than that of a person in health; and their sweat is not foetid, or more disagreeable than when they are in health; the same may be said of their stools.

With regard to what I have advanced, relative to a stoppage of the perspiration in the scurvy (*f*), I still continue to think it probable; for although the skin of the body, in parts unattacked by the disease, feels soft and natural, yet, in whatever part the scurvy is seated, there can be little or no perspiration, the skin being there generally dry, rough and spotted;—and, when there is a tendency in the constitution to watry or dropical swellings, sweat commonly stops, and *insensible perspiration* is diminished (*g*).

Now, in several scorbutic habits, there is a manifest redundancy of *water*, stagnating in the body; by reason not only of the weakness of the solids, or of the constitution, but also from a diminution of the watery secretions.

This much has occurred to me, after the most cool and deliberate review of what I formerly said of the theory of this disease, compared with the true state of the patients.

(*f*) Part ii. chap. 6.

(*g*) Most persons, however, in the scurvy, may be easily brought to sweat by the warmth of a good bed, and warm drinks.

S E C T. IV.

Observations on the causes productive of the scurvy.

THOUGH my inspection of dead bodies, and later observations, do not evince such a constant and universal state of *putrefaction* in the bowels, as some authors induced me formerly to believe was always attendant on the scurvy, yet I am fully confirmed in my opinion, that whatever weakens the constitution, and especially the organs of digestion, may serve without any other cause, to introduce this disease, in a slighter or higher degree, even among such as live upon fresh greens, vegetables, or the most wholesome diet, and in the purest air.

This is an exception, but by no means sufficient to infringe the general truth of the observations, on which the causes of this disease are founded, and assigned in chapter 1. part ii. For it will admit of no doubt, that diseases in general, and the scurvy in particular, may proceed from very different causes, all tending to produce similar effects in the human body. And the utmost degree of certainty to which we can attain, from an investigation of external causes, is to know what are the circumstances and situations, which render a disease more or less universal: or such as operating strongly on the constitution, seldom fail to produce it. These, with respect to the scurvy, I have fully proved to be a moist or cold air, damp lodgings, together with the want of fresh green vegetables, and too long and strict confinement. The most then that can be inferred from such an exception as has been mentioned, is, that though cold, moisture,

moisture, and an abstinence from green vegetables, are the general causes which produce an universal and heavy calamity; yet a slighter degree of the disease, or its attack upon a few individuals, will often take place where those general causes do not subsist. In like manner, the *ague* or *intermitting* fever, sometimes makes its appearance in the driest and most healthy spots of ground in *England*, without affording any reason for supposing that disease not to be generally owing to the marshes in *aguish* countries and seasons (*b*).

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(*b*) It may be argued, that the scurvy attacked persons at *Haslar hospital*, as related in the Supplement, page 271, where cold, moisture, and especially the want of green vegetables, could not be supposed to occasion the malady. Therefore, cold, moisture, and abstinence from vegetables, are not the causes which produce the disease.

Again, salt provisions and cold, are also mentioned in the Supplement, page 269, as having contributed greatly to the production and inveteracy of that calamity, which fell so heavy on the *English* troops, in the winter 1759, at *Quebec*. But on the other hand, during the height of a fine warm summer, *ann.* 1761, several of the *English* troops in the hospital at *Belleisle*, were seized with the scurvy, who had as much boiled fresh beef or mutton, with wheat flour and rice, as they chose; therefore, according to the same manner of reasoning, the cold of the air, and salt meat, were not the causes of the scurvy at *Quebec*.

I have now, in the month of *July* 1771, under my care at *Haslar hospital*, several men very ill of the scurvy, sent from the guard-ships lying at *Spithead*, which ships have not been at sea. Those men being prest into the service about six or seven months since, and not permitted to come on shore, have, solely from confinement on board ship, become highly scorbutic.

Lastly, troops that have undergone much fatigue, as also sailors who have worked very hard, may become afflicted with this disease; whence it may be also inferred, that confinement, sloth, or indolence, though frequently, are yet improperly assigned, as causes of the scurvy.

The scurvy is what many persons long confined to their bed by sickness, are apt to be afflicted with;—the first symptoms of it are commonly the same with those of a very low and feeble state of the body, *viz.* a weakness of the knees and back; which together with some slight pains in those parts, are most sensibly felt upon an attempt, by some motion of the body, to exert the remains of their exhausted strength. There is also, sometimes, a swelling of the legs, and an eruption of livid spots. I have known persons to die in this condition, who were supposed to have died of a low spotted or *petechial* fever; whereas their cases were altogether scorbutic.

But the same objections lie against the causes usually assigned for the most prevailing diseases; as for example, the *flux*, which, like the scurvy, attacks mankind in all climates, and in all seasons, both at sea and on shore.

The *dysentery* often is peculiarly *epidemic* at particular seasons, in unhealthy places in the torrid zone; it is also frequently the effect of an infection from patients labouring under the same disease.

But if persons, in a very different climate and situation, and where there was no infection, should by wearing of damp linen, or by eating unwholesome food, or by any other means, be attacked with the same disease, it is certainly no just conclusion, that an infection, or that the unwholesome situations in hot climates, were blameless, or improperly assigned as the true causes of it, in other persons, places, and seasons.

An observation is made on most diseases, that they sometimes prevail where their usual causes do not subsist, and at other times are not to be met with where these causes are real and apparent, which it must be owned renders this *investigating* branch of medical science often difficult and abstruse. Thus *agues* have not only been frequent in a very dry season and situation, but in several places, particularly in the northern parts of this island, and in *Ireland*, many live near bogs and marshes pretty free from the *ague*, and altogether so from the scurvy.

All

All persons who have been long pent up in ships and prisons are subject to this disease. Even such as have lived on the most wholesome vegetable food, during a confinement of six or seven months, in a ship, are, after their enlargement, often sensible of a degree of weakness, which, upon an exertion of the body, particularly on walking abroad in the fields, affects them with a stoppage in the breast, or a difficulty in breathing; this is the true scorbutic *lassitude* and *dyspnœa*. Many officers of the ships of war, after long cruises at sea, came on shore in this condition, having also their legs and thighs discoloured, and spotted; to whom the disease would perhaps have proved fatal, if the free use of wine and fermented liquors, together with a vegetable and wholesome diet, had not checked its progress.

But, when the several causes productive of the scurvy, act with combined and uninterrupted force, it then becomes a most dreadful distemper. It reduces the most stout and vigorous constitution to the weakness of a child; and the bloom and strength of youth, to the imbecillity of age. The feeble knees tremble, and cannot support the weight of the body; nor the back, the weight of the trunk. By walking a few steps, the sick are out of breath, and often faint away; the countenance, the whole appearance, the groans, and complaints of the patients, denote the most piteous and abject state of weakness and of misery.

S E C T. V.

The cure.

I N delivering the cure, three distinctions may with great propriety be made of this disease, viz. The *habitual* or *constitutional* scurvy, the *adventitious* scurvy, and the *symptomatic* scurvy.

1st, The *habitual* or *constitutional* scurvy returns at intervals, affecting the patients for several months at a time, with weakness of body, loose teeth, spots, and pains in the limbs. For the benefit of such, I have already given full directions in part ii. chap. 5.

2dly, What I have in the preceding Treatise termed the *adventitious* scurvy, is that universal weakness of the body, and relaxation of the whole system, which has been described in the preceding section; to this at present we shall chiefly confine the cure.

3dly, The *symptomatic* scurvy, is that which attacks patients in a very low state, when exhausted by some former disease, and is generally incurable.

To what has been already said of the virtues of oranges and lemons in this disease, I have now to add, that in seemingly the most desperate cases, the most quick and sensible relief was obtained from lemon juice; by which I have relieved many hundred patients, labouring under almost intolerable pain and affliction from this disease, when no other remedy seemed to avail, as was the case of *Macgottin*, described, part ii. chap. 3. page 136. And particularly at *Haslar* hospital, where the scurvy raged in the year 1759, many, with whom the distemper encreased during

during a course of other medicines, and a plentiful diet on green vegetables, owed their recovery entirely to the lemon juice.

This acid, however, when given by itself, undiluted, was apt, especially if over dosed, to have too violent an operation, by occasioning sickness and pain in the stomach, and sometimes a vomiting.

To such persons, therefore, as are much weakened by this disease, those acids are to be prescribed in a small quantity at first, and always well diluted with warm water, gruels, and the like.

But what I have found highly to improve the antiscorbutic virtues of the juice, was an addition of wine and sugar. Wine of itself is undoubtedly not only an excellent antiscorbutic, but the best vehicle for administering the rob or juice of limes or lemons in the scurvy.

I have often visited patients, so very low and weak, that with difficulty they could swallow a spoonful at a time of a rich *Malaga* wine, mixed with one third lemon juice, and a little sugar. But our common practice was to order about four ounces and a half of juice, and two ounces of sugar, to be put to a pint of wine, which was sufficient for any weak patient to use in twenty-four hours. Such as were very weak sipt a little of this frequently, according as their strength would permit, others who were stronger, took about two ounces of it every four hours. The sugar served not only to render it more palatable, but also to occasion a fermentation on shaking the bottle, in which effervescent state, such draughts ought always to be administered: they frequently prove greatly *diuretic*, and will sometimes

times occasion profuse sweats (*i*). The patients, as they grew stronger, were allowed eight ounces of lemon juice in twenty-four hours.

This composition of the lime or lemon acid, with wine and sugar, so administered, I esteem the most efficacious remedy for this disease, and greatly to exceed the simple lemon juice, or any other method in which it may be given.

Upon repeated trials, I found that the virtues of lemon juice in this disease, exceeded those of green vegetables, and were much superior to that of wine by itself (*k*).

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(*i*) I have observed much relief to proceed from these draughts, when taken in bed; drinking after them some warm balm tea, so as immediately to produce a profuse sweat.

(*k*) *John Thompson*, on the 18th of *June* 1759, was prest into his Majesty's service. He was servant to a farmer, and had never been at sea. On the 23d of *October* he was admitted for a fever into *Haslar* hospital, which had reduced his strength so much, that he was confined to bed for a fortnight after it. He then complained of a pain in the fore-part of one of his legs, where, in eight days afterwards, a large red blotch, resembling an *erysipelas* appeared. His gums grew spongy, and bled frequently. A bruise formerly received on his breast became troublesome, and very painful when touched; his other complaints were pains in the *small* of the back, and an universal weakness, more especially of the knees, accompanied with a pain in the ham, when he attempted to walk; but when lying in the bed, he was always chearful and in good spirits. His diet when in the hospital, was *milk pottage*, bread and butter, mutton broth with greens. His medicines were *elixir of vitriol*, *conserve of worm-wood*, and *tincture of bark*. A fomentation of warm vinegar gave ease to the pain of his leg; but finding he gained otherwise no relief, on the 16th of *November* I discontinued all his former medicines, and altered his diet, ordering he should taste no greens, small-beer, or any fermented liquor, but live entirely on water-gruel, cheese, butter, bread, and mint-tea. This was done in order to try the effects of lemon juice.

On

I have found this composition equally successful in curing the scurvy, in such as were afflicted with it at land, where it is a disease but little known, and too often mistaken for a different indisposition, as will appear from the two following cases.

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On the 16th of *November*, he took, in twenty-four hours, by a spoonful at a time, two ounces of fresh lemon juice, in a quart of barley-water, sweetened with sugar. On the 17th he had eight ounces of the juice. The 18th, being costive, had a purge, but no juice. From the 19th to the 24th, he took every twenty-four hours, eight ounces of the juice, mixed as before; and next day his condition was as follows. His mouth quite well, the *ecchymoses* entirely gone, no other symptom of the scurvy remaining but weakness.

George Young, ten days after a fever, was seized with the scurvy in his legs. They became extremely painful and swelled towards the evening, were at first of a lemon colour, and afterwards covered with red and black spots, resembling *petechiæ*. He was extremely weak, had a cough, his gums not spongy, but often bleeding; he eat two apples every day, and had broth with greens for three weeks, mending but slowly till ordered fresh lemons, then he recovered apace.

— *Reeves* was long ill of a fever and flux, by which he was greatly reduced. He complained of intolerable pains in his legs, accompanied with spots and a large swelling. After taking lemon juice in wine, for some days, he was seized with a severe fit of shivering, upon which he fell into a violent and profuse sweat, which removed the *anasarca* and scurvy entirely. But in a few days he relapsed into the flux, upon which his *anasarcous* swellings returned, these continuing after the scurvy had entirely left him.

John Ogle, in a few days after, having had a fever, was attacked with the scurvy over his whole body. His arms were covered with rough, red, and purple, miliary eruptions, intermixed with red and black flat spots; those last were also on the trunk of his body; his legs were swelled, rough, and spotted. He was perfectly cured in seven days, by lemon juice given in wine.

At this time I was determined to try what effect wine and greens would have on another patient, who was very weak

I was desired to visit a lady, who being in an insane state of mind, had been confined to her house for some years; she was supposed to be dying, and I found all her friends met to pay their last respects to a person once much esteemed. I was told that a mortification was begun in her limbs, scarifications were talked of, and the application
of

weak after a fever, but got up every day, and walked about on crutches. On the 15th of *February* he complained of intolerable pains in the ancles, and calves of his legs, and was supposed to have got the *rheumatism*. On the 23d, notwithstanding his taking a decoction of *bark* with *snake-root*, and his being allowed wine and broth, with greens, I found him daily growing weaker, and when he attempted to get out of bed he became faint, and could not sit up. When in bed his limbs gave him great pain, but he was otherwise chearful and hearty. Upon examining his skin, some very small purple spots of blood were perceived on the inside of both legs.

The proofs of the scurvy being now evident, I determined he should persist in the use of the hospital broth, with greens, drink half a pint of port-wine in the day, and take by way of medicine, an infusion of *wormwood* and *gentian*, and afterwards made the following remarks.

25th of *February*, the inside of both legs are now covered with red miliary spots, and are rough; the calf of one leg, where he complains of incessant and violent pain, is somewhat more enlarged than the other.

26th. Much the same, and in great pain.

27th. Attempted to get out of bed, but could not, by reason of his proneness to faint.

28th. Sat up a little to day, but his scurvy seems to encrease.

1st of *March*. Both legs are now greatly swelled and much spotted; he grows daily weaker and worse.

2d of *March*. He suffers intolerable pain from his legs, which are much swelled, and stained with red and dark coloured blotches, which daily spread. He cannot now be taken out of bed. Thus suffering intolerable agony, and being in imminent danger, I could no longer withhold what I judged would prove the means of his relief, therefore ordered him the same medicine with *Ogle*, to wit, the
juice

of the warmest poultices. On examination, I found both her legs hard, painful, and covered with livid spots. Above the ankle of the right leg there appeared a large black *blotch*, and on the inside of both thighs several red and livid streaks and stains. She complained of great weakness, and of a troublesome pain in her loins.

I acquainted her friends with the nature of her disorder, and soon removed their apprehensions of her sudden death. I ordered her legs to be frequently bathed with warm vinegar, and prescribed an ounce of the juice of lemons, in two ounces of wine, sweetened with sugar and coloured with *cochineal*, to be taken three times a-day. By this she was restored to her former state of health in less than ten days, no other symptom of the disease at that time remaining, but weakness.

Another lady, during a tedious recovery after her delivery in child-bed, was seized with universal and severe pains, particularly in the back, legs, and thighs; she had frequent bleedings at the nose, and her gums were so painful, that she

juice of four lemons in a day, taken in half a pint of wine, desiring him also to eat the pulp, and to this alone I trusted his cure, forbidding him to taste greens.

March the 3d. He took six draughts of the lemon juice and wine, at an interval of two hours betwixt each, which consumed the quantity prescribed. The draughts proved greatly diuretic, and he thought himself better. There was a considerable swelling on the fore-part of his foot, and his legs were rough, scaly, and spotted. But he afterwards recovered daily, without assistance from vegetables or any medicine whatever, except lemon juice and wine; these he left off taking on the 13th of the month, having no complaint remaining but weakness.

she could not chew any solid food ; she became at length so low and feeble, as to be seized with a great difficulty of breathing, and a disposition to faint away upon the least exertion of her strength.

Her apothecary, judging the symptoms to be of the low *hysterical* kind, administered salt of *hartshorn*, *castor*, and several other *nervous* cordial medicines. But she grew daily worse, and was thought to be dying. I found her legs covered with the true scorbutic spots, and discolourations, and her gums destroyed by the scurvy. The nature of her disorder being quite obvious, I discontinued all her former medicines, and by the same acid and vinous draughts, as in the former case, this lady, from a dangerous condition, was restored to a perfect state of health.

I do not mean to say that lemon juice and wine are the only remedies for the scurvy ; this disease, like many others, may be cured by medicines of very different and opposite qualities to each other, and to that of lemons.

It is to be presumed, that in very cold countries, *scurvy-grass*, and herbs of the like quality, would still be more beneficial. What has been found equal to any other remedy in the scurvy, is the water or juice of the *coco-nut* tree, which distils from incisions made in the branches and tops of the tree, and is commonly called *toddy*.

The *Peruvian* bark, and all bitters, such as *gentian* root, *chamomile* flowers, *orange peel*, tops of *centaury*, and the like, are beneficial. Those bitters are administered to the greatest advantage, when infused in wine. The bark, however, must be given in substance, and in large quantities,

tities, especially in cases of putrid, obstinate, or spreading scorbutic ulcers.

When a symptomatic fever was occasioned by great pain from large ulcerations, an addition of nitre to the bark proved serviceable, and the best dressing for the ulcer was found to be a very strong tincture of *myrrh* in brandy.

Bitters are undoubtedly sometimes of great efficacy in this disease. Among many scorbutic cases which have been communicated to me, Mr. Kerr gives an account of a seaman in one of the *East India* ships, who was perfectly recovered, when at sea, from a very violent and dangerous scurvy, by drinking plentifully of a strong infusion of *chamomile* flowers in warm water. By the constant use of which, he also continued to enjoy a perfect state of health during the remainder of the voyage, for three months at sea.

Most patients in this disease find manifest relief from gentle doses of *physic*, repeated twice or thrice a week. For those who were very weak, I found a *scruple* of *rhubarb* quite sufficient, but for such as were able to walk about, pretty smart purges of *sena* were absolutely requisite.

There are few cases, in which external applications give more relief, than in the scurvy. When the gums are affected, the patient can neither eat nor drink, without first washing and cleansing his mouth with a *gargle* (1), and the relief obtained by bathing the legs frequently in a day, with warm vinegar, is quick and surprising.

In

(1) The following is the gargle I always used at *Hoslar* hospital. R. *Aquæ hordeatæ semilibram, mellis uncias duas, spiritus vitrioli fortis q. s. ad gratam aciditatem. Adde pro re nata tincturæ myrrhæ drachmas duas.*

In the winter of the year 1769, when the *Russian* fleet was at *Spithead*, many of their men were brought into *Haslar* hospital upon men's shoulders, quite disabled by the scurvy, who being put to bed, and having their limbs well bathed with warm vinegar, and their joints anointed with *ung. sambucinum*, were able afterwards to get out of bed, and walk through the wards.

But as there is not in nature to be found, an universal remedy for any one distemper, in all its complicated stages, and for the various symptoms that may attend it, so in the scurvy, deviations from the general method of cure become often necessary, according as particular symptoms of distress present themselves.

Thus in the scorbutic flux, the bark must be given in *decoction*, adding to each dose of it, as much of the tincture of opium, as may palliate or relieve that dangerous symptom. Here, wine, spices, and opiates, are the principal remedies; together with glysters of mutton broth, administered in small quantities, with the addition of red wine; and the *tinctura thebaica philonium Londinense*, together with *ippecacuanha*, in small doses, are serviceable. But the most frequent concomitants of the scurvy, and which require our particular attention, are, dropical swellings in almost every part of the body; these are often very difficult to remove, and sometimes prove fatal.

The case of scorbutic patients, even in the commencement of the disease, seems in this respect to be similar to that of most weak persons, or of all those in whom the principles of life, or of the constitution, are enfeebled by age, sickness, or the like.

Weak, aged, and scorbutic persons, are subject to a cough, swellings of their legs, and sometimes even of the face, all which I judge to proceed from *serum* extravasated in those parts.

It will be found, I believe, that many persons in perfect health, especially if corpulent, have water both in the breast and belly. A small quantity of water in either of those cavities, is, as I conjecture, attended with little or no pain and inconvenience. But when a considerable quantity of water is accumulated in the breast, it will sometimes, without any other cause, give rise to a violent and incessant cough, attended with a constant spitting of gross phlegm, of which I have seen several instances, and sometimes it produces so great a difficulty of breathing, that the patient cannot lie on bed, but must sleep in an erect posture. The *peripneumonia nottha*, which so often puts an end to the life of old men, sometimes proceeds from this cause. In several young persons, who have died consumptive, the lungs seem to have been chiefly injured by being steeped or macerated in the water contained in the breast; and in others, the waste of substance in the lungs, it is not improbable, may be owing to their peculiar structure; for as in a general decay of the body, some parts seem to suffer more than others, so, next to the *omentum*, the lungs are often found to be the organ which corrupts, and is consumed soonest.

Œdematous swellings of the legs, accompanying these disorders of the breast, are the surest signs of water being in that cavity. This water may sometimes have no communication with that of the legs, or any part of the body, but

it is certainly more frequently the case, in weak scorbutic persons, that water in the legs is received from, and returned again into the cavities of the breast and belly, as I have formerly observed (l).

It must be owned, that the passages for such water, from those cavities into the legs, are unknown to us; but they are no more so, than the passages for it into the intestines or kidneys, from which sometimes, by slight irritations of those parts, or from other causes, it is plentifully discharged.

There is no doubt, but in some scorbutic patients, there is also water even in the joints of the knees. For those scorbutic patients, whose legs were much swelled and *œdematous*, we prescribed daily a pint of strong beer, medicated with the most powerful *antiscorbutic* herbs (m). During the last war, many hogsheds annually of this *antiscorbutic* beer were used at *Haslar* hospital, for such patients, with great success.

When the face was swelled and bloated, we prescribed more powerful *diuretics*, such as the *lixivial* salts in wine, and the acrid *antiscorbutics* (n).

When the difficulty of breathing was great, and attended with violent fits of coughing at night,

(l) Pages 91 and 92, of my papers on fevers and infection.

(m) R. *Foliorum cochleariæ hortenſis, nasturtii aquatici, becabungæ, ana manipulos sex; radicis raphani ruſſicani uncias tres; abſinthii romani ſemi-manipulum; infundantur in cereviſiæ veteris & fortis congiis duobus per quatridduum.*

(n) R. *Vini alb. ꝥ. ſ. ſalis abſinthii ʒ ſs. cinerum geniſtæ uncias decem; radicis calami aromatici, ſeminum dauci ſylveſtris, ana ſemunciam; baccarum juniperi unciam unam; ſeminum ſinapis unciam unam cum dimidia. Infunduntur in vini albæ (rhenani) libris quatuor per aliquot dies & cola.*

night, we gave at bed-time the salt of tartar, joined with an opiate, in sufficient quantity to procure rest, and to promote a plentiful flow of urine.

When the swellings remained obstinate, the greatest benefit was received from sweating the patient, by a *scruple* or half a *drachm* of *Dover's* powders properly prepared, and taken at bed-time (*o*). I have often used this medicine in *œdematous* swellings, with remarkable success. The chief inconvenience I perceived from it, was weakening of the patient, by sweating too profusely; this may be prevented by giving it only three or four times a week, and by the patient using through the day a strong infusion of orange peel, acidulated with *elixir* of *vitriol*. In most dropical cases we found the *cream* of *tartar* an excellent *diuretic*.

But, if notwithstanding those remedies, the water encreases so much as to impede respiration, and both legs are affected with a soft swelling, which retains the impression of the finger for a considerable time, nothing will prove more effectual than the application of blisters to the inside of both legs, a little above the ancles. When by this means the water is evacuated, the patient may be put under a course of the *bark* and *elixir* of *vitriol*, and the legs be afterwards fomented with a decoction of *oak bark*.

The apprehension of a mortification in persons afflicted with the scurvy, from the application of blisters, is altogether imaginary.—In some

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hundred

(*o*) R. Nitri tartari vitriolati, ana semunciam; funde in crucibulo ignito, et, deflagratione cessatâ, eximatur massa, cui adde, opii crudi pulv. ipecacoanhæ pulv. glycyrrhizæ pulver. ana singulorum drachmam unam. Fiat pulvis subtil.

hundred cases, where blisters were applied to the legs to remove the swellings, and in many more, when blisters were applied to the back to remove contagious fevers, I never once remember to have seen a mortification ensue, except when the patient was in a dying state; the appearance of a mortification not being the cause, but only the sign of approaching death.

I have lately, by the use of *Dover's* powders, and blisters to the legs, when *oedematous*, in many scorbutic patients made a compleat and perfect cure in a few days, while others, not treated in the like manner, have not been relieved from the scurvy in as many weeks.

In some habits of body, the blisters to the legs are apt to be very painful and troublesome; and sometimes do not discharge the water in sufficient quantity, especially if the scarf skin be injudiciously removed; in this case, though unwillingly, I have recourse to scarification of the legs: but I greatly prefer the application of blisters; having, from extensive experience, learnt, that in a dropsy of the breast, a case which occurs more frequently in practice than is commonly imagined; the irritation occasioned by blisters applied to the legs, and the consequent discharge of *serum*, proves a certain cure; unless, as may be sometimes the case, the water in the thorax has no communication with that in the legs; or the *vis vitæ*, the principles of the constitution are so irreparably decayed, that, though the blisters give immediate ease, yet the water will be again accumulated.

When the water, in a true *ascites*, is altogether confined to the *abdomen*, the case sometimes of scorbutic patients, I found the best remedies to be

be that of rubbing the belly, for half an hour every night, with warm olive-oil, to promote a large flow of urine, and giving twice a week *jalap*, or such purges as evacuate water by stool, with *Dover's* powders on the intermediate nights.

If, as is sometimes the case, after the scurvy, one leg only continues long hard, distorted, or constantly swelled; an issue put in it has often been of service. As also, pills made of the extract of *hemlock*, and fumigations with the steams of *benzoin* and *frankincense*, avoiding all moist or relaxing applications.

S E C T. VI.

Further observations on the cure. Conclusion.

THE scurvy admits not only of various and very opposite methods of cure, but is also often relieved by the most simple means. There are few *chronic* diseases so painful, and attended with such a variety of alarming symptoms, in which the transitions from life to death, or from sickness to health are so unexpected and sudden; a removal of the cause often produces an almost immediate effect on the disease.

I have read, and heard, many relations of men supposed to be dying of this malady, who were said to have been perfectly recovered by being carried on shore to feed on the grass, to smell the earth, and by such like means.

These relations are not altogether destitute of truth; the following may be depended upon.

In the year 1761, when the *English* fleet lay at *Belleisle* on the coast of *France*, the men in his Majesty's ships were preserved from the scurvy

by the seasonable supplies of greens, sent from *England*. But the seamen in the transports had not this benefit. The owners of those ships furnished their crews with no greens or fruits whatever. Hence they became in general very much afflicted with the scurvy. Many of those unfortunate persons, labouring under this severe evil, and utterly destitute of proper remedies, were carried on shore, and after being stript of their cloaths, were buried in a pit dug in the earth (the head being left above the ground) their bodies were covered over with the earth, and permitted to remain thus interred for several hours, until a large and profuse sweat ensued. After undergoing this operation, many who had been carried on men's shoulders to those pits, were of themselves able to walk to their boats; and what was very extraordinary, two of them who had been quite disabled by this disease recovered so perfect a state of health, that they soon after embarked for the *West Indies*, quite recovered and in good spirits, without once tasting any green vegetables (*q*).

I have myself seen many instances of patients brought into *Haslar* hospital, who by being only
on

(*q*) This is said to have been a common practice among the *Buccaneers* in the *West Indies*, when their men were afflicted with the scurvy; which brings to my remembrance the following relation, given me by a friend.

One day hunting in *Newfoundland*, he discovered, what appeared to him at a distance, to be a number of graves, with a man's head fixed to each. Struck with the novelty of the sight, he went to the place; where he was further surprized to find the men alive; they informed him they belonged to a ship which lay in the road, and, that having been reduced to unspeakable misery by the scurvy, they were thus interred in order to obtain a cure. Was not the climate of *Newfoundland* too cold for this operation?

on shore for a few days, seemed surprisingly relieved, and have frequently observed, that this disease, when proceeding solely from a long continuance at sea, is strongly and suddenly influenced by the passions of the mind, and other circumstances attending the sick. The joy of being landed after a long cruise or voyage; the pleasing prospect of a speedy relief from distress, a change of air and weather, even the warmth of a comfortable dry bed, added to the efficacy of outward applications, seemed to operate powerfully and surprisingly upon the disease.

In the course of my experiments on patients in the scurvy, I have relieved some in such circumstances, by the most trifling prescriptions; and am persuaded, that entire credit may be given to the relation of cures similar to this published by *Vander Mye* (*r*), and other authors of unquestionable veracity.

Whether such relief was owing to the faith of the patients in the extolled efficacy of the prescription, to exercise, or an enlargement after being confined in a ship, prison, or bed of sickness, or to a removal from a cold damp place to a dry and warm habitation, and in some instances to a respite from hard labour and fatigue; or lastly, to circumstances unknown or unobserved, I cannot say. It is not improbable, that many of these operated jointly towards that effect.

But though changes in the symptoms of this disease happen very unaccountably, and in a short time; from whence many medicines have derived the character of their efficacy; yet, it is not to be supposed, that the disease itself leaves the

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patient

(*r*) See part iii. of this Treatise.

patient so quickly, the extravasations still continue, as also the *anferine* or *miliary* spots, dry *eschars*, hardness, and blackness of the flesh, livid and red streaks, and especially swellings and pains of the legs.

The gums, if proper care be taken, soon become sound; but it is seldom less than three weeks, a month, or even six weeks, before a person labouring under a very inveterate scurvy, can with the aid of the most excellent regimen, be said to be altogether free from it, and some are a much longer time before they are perfectly re-established in health.

I have frequently observed, that, out of the number of 100 scorbutic patients sent to *Heslar* hospital, in ten or twelve of them at least, the disease proved very tedious and obstinate, requiring not only a vegetable diet, but a continued course of medicine for several weeks; at the expiration of which, the injury done the constitution was in many far from being removed.

In such however, as the disease has in a few days taken a favourable turn, from a change of diet, air, weather, or other circumstances, which might have occasioned it, although the spots, and the other symptoms before-mentioned, continue; nay, should the eruptions on the skin encrease, as they often do, yet the patient will daily acquire strength, and, if the scurvy be not deeply rooted, he will recover from it by the encreasing vigour of his own constitution. Notwithstanding this, these convalescents are very importunate for relief, and desirous to procure it from medicine: they are alarmed with every transition of the seat of pain, which frequently happens, they are every day pointing out new spots

spots and eruptions on their skin, they walk very lame, the pain of the back harasses them much, and the idea of their past sufferings and distress seems always to shock them.

I have relieved above two thousand such patients in *Haslar* hospital, by giving them twice a week gentle purges of *rhubarb* and *sena*, and by the usual outward applications to mitigate the pains of their legs, gums, &c. They took twice a day, the bigness of a nutmeg of an *electary* composed of equal parts of the *conserve* of *Roman wormwood* and of *lenitive electary*, sharpened with *elixir vitriol*, and used at the same time a plentiful diet of greens.

But, as when the scurvy is occasioned by an intense degree of cold, during a severe winter, nothing so effectually relieves the patient as the return of warm weather; so, in like manner, when it is produced chiefly by a long abstinence from green vegetables, it is often soon removed by a plentiful use of them; hence it follows, that if a patient, who has not been reduced to the last extremity, be well supplied with green vegetables after a long abstinence from them, his cure, though it may be greatly forwarded by the use of medicines, is never to be ascribed solely to their efficacy.

I have made it my study for some years, with unwearied diligence, to observe the effects of all the medicines and methods of cure that have been recommended for this disease, by putting them to the fairest trials. For this purpose, I not only sent abroad various medicines to be administered to patients, by way of experiment at sea; but have, at different times, selected a number of patients in *Haslar* hospital, and administered

ministered to them, in various forms, all the different *antiscorbutic* remedies. The principal of which were, the *scorbutic juices* of the London Dispensatory, the juice of *scurvy-grass* by itself, the *Peruvian bark* in large quantities, decoctions of *guajac* and *sassafras*, infusions of *juniper* berries and stomachic bitters of various kinds, both the decoction and infusion of *fir tops*, the *pinces*, &c.

In order to judge of the effects of each of these medicines, such patients as were selected for the trial were confined in wards by themselves; they were strictly watched, and debarred from eating any green vegetables, fruits, or roots whatever, though many of them had not tasted any thing of that sort for several months; they were not even permitted to taste the hospital broth. Their breakfast was *balm* tea with bread and butter, for dinner they had light pudding, and for supper, *water gruel* with bread and butter.

Upon a daily comparison of the state of those patients, I was surprized to find them all recovering pretty much alike, and though they abstained altogether from vegetables, yet they in general grew better.

This strict abstinence from the fruits of the earth was continued long enough to convince me, that the disease would often, from various circumstances, take a favourable turn, which cannot be ascribed to any diet, medicine, or regimen whatever.

I have also endeavoured to discover the comparative effects of different fruits and vegetables in this disease.

For this purpose, after restraining the patients from all other vegetables or medicines, I gave to
some

some *salads* of *water cresses* and *scurvy-grass*, to others *garden cresses*, *endive*, *dandelion*, and *lettuce*; and to others ripe fruits, as *plums*, *apples*, *currants*, &c. But could not observe a superior *antiscorbutic* virtue in any of those, as the patients who eat them did not recover sooner than those who had daily given them the hospital broth, with boiled beef and greens (*s*).

It is proper to observe, that those patients were almost constantly employed in washing their mouths with *acid* gargles, in bathing their limbs with warm vinegar, and afterwards anointing them with *palm oil*, *elder* ointment, or the like applications, from all which they seemed to receive great pleasure and benefit.

On the other hand, this disease sometimes proves very obstinate. I have met with numerous instances, not only among the common seamen, but of officers, with whom it had taken such deep root in the constitution, as to prove a lasting affliction to them during a great part of their lives.

These persons we must again refer for proper means of relief, to chap. v. part 2. of this Treatise, with a caution to beware of the many boasted specifics for this disease; some of which owe their reputation to a partial trial on patients, whose recovery was probably owing to very different

(*s*) In order to judge of the operation and effects of the infusion of *malt*, recommended by Dr. *Macbride*, I put 130 scorbutic patients under a course of it for fourteen days, they drank a quart of it daily; it has the advantage, when new made, to be extremely palatable, the patients were very fond of it, and there was not one instance of its occasioning sickness, gripes, or purging. On the whole, it is a very nourishing liquor, well adapted for scorbutic patients.

different causes; while others, of a *mercurial* nature, dignified with the title of infallible *anti-scorbutic* medicines, may perhaps be given for some particular intentions, but cannot be administered with safety to a person afflicted with the true scurvy.

There are frequent occurrences in this disease, which I think very difficult to account for; thus it may afford matter of speculation,—That some people are afflicted with the scurvy, while their constant food consists of vegetables, well baked bread, flesh soups, and other articles of light and easy digestion, as was the case of many in *Haslar* hospital, in the year 1759; while the same diet proves a certain means of relief to others from this disease.

Another remarkable, and not an unfrequent occurrence, is,—That five or six hundred men, in a long voyage, while living the whole time on salted and hard meats, often continue in perfect health, but soon after they come into a harbour and begin to eat ripe fruits and green vegetables, many of them will be seized with an obstinate scurvy. Thus several hundred seamen have been admitted into *Haslar* hospital, who while living at sea on their ship's provisions, enjoyed good health; but began to feel the first symptoms of this disease, after they had eat greens and fresh meat for some time at *Portsmouth*; and notwithstanding the continuance of this wholesome diet, an enlargement from their confinement in a ship, and the most proper remedies, joined with the utmost care that could be taken of them, the scurvy continued in several of them for five or six weeks.

Others again have been attacked with it a long time after they had left off going to sea.

But, notwithstanding all this, we may be well assured, that the scurvy will never rise to that height, as to become a general, fatal, and destructive calamity, in the nature of a plague, where green vegetables abound, and the proper method of treatment is known and practised.

On the other hand, it must be freely acknowledged, that where a wholesome diet cannot be procured, and the causes of the disease cannot be removed, though its symptoms may be greatly relieved or palliated, its violence checked, nay much abated, and a multitude of lives preserved, by proper attention, and a knowledge of the disease, and the remedies for it; yet in certain circumstances, its inveteracy will sometimes elude the efficacy of the best and most sovereign remedies. This is further confirmed by the account given of the scurvy in *India*, by an ingenious friend of mine (*t*), who had formerly the direction of the naval hospital in that part of the world, and had acquired an extensive knowledge in this disease.

At *Madagascar* he filled a half hoghead with orange and lemon juice, preserved with about a sixth part of rum, and likewise provided himself with a quantity of the *rob* of those fruits. The juices kept good for two years, until he had occasion to use them, in a long passage from the coast of *Coromandel* to *Bengal*. The whole squadron under *Admiral Watson*, became at this time greatly distressed by the scurvy. Mr. *Ives* allowed

(*t*) *Edward Ives*, Esq; of *Titchfield*, whose curious physical sea-journal is published in chap. 1. part ii.

allowed his patients in the *Kent*, as much of the juices as they chose, mixed with water and spirits, by which means several recovered and returned to their duty while at sea, and the *Kent*, a ship of 64 guns, did not lose a man, though all the other ships lost a great many. He sent a dozen bottles of lemon and orange juice on board the *Tyger*, whose men were daily dying, and in a letter of thanks was informed, that the juices had been of great benefit.

He adds, “ The people of the *Kent* were indisputably preserved from dying of the scurvy, by the juice of oranges and lemons, but I verily believe, had our passage been a month longer, the disease would have cut off many. For, though the juices most certainly checked the fury of the distemper, and at first cured several, yet, at length they relapsed, and the disorder gained, though slowly, on most patients. It is to be observed, the sick had little or no assistance from fresh meats, or a proper diet of any kind.

“ When the squadron arrived at the river *Hugley*, after a passage of three months, many of our men were afflicted with dropsical swellings of the legs; the *scrotum* in some contained a gallon of water; and notwithstanding an immediate and plentiful supply of fresh meat and vegetables, their recovery from the scurvy was very slow, and while they had been feasted for a fortnight or three weeks with the most excellent land productions, several were suddenly seized with severe pains in their bowels, accompanied with a vomiting and purging, and with violent contractions of the legs,
“ thighs,

“ thighs, and arms, of which they died in a
 “ few hours.

Mr. *Ives* concludes his observations thus,
 “ Some voyages at sea may be so long, that
 “ nothing will prevent this calamity from spread-
 “ ing : the most powerful of all the remedies I
 “ know, is juice of oranges and lemons, by the
 “ plentiful use of which, many thousand lives,
 “ in a large fleet, may be preserved in a voyage
 “ of moderate length, which without this aid
 “ would be lost. The fresh fruits are best, next
 “ to those is their juice preserved with spirits,
 “ and lastly their *rob* or extract. I have never
 “ been able to discover that any of the *mineral*
 “ *acids*, such as *spirit* of *salt*, *elixir* of *vitriol*,
 “ &c. in the least restrained the progress of this
 “ malady at sea.”

Here I cannot help observing, that the most dreadful cases of the scurvy seem most frequently to occur on board ships in the *East Indies*, where it is often attended with putrid and spreading ulcers of the most malignant kind, and with the most universal and fatal dropxies (*u*).

But for what disease can mankind boast a never failing or infallible remedy, in every situation of the patient and circumstance of his distress? Thus, when the scurvy seizes a person much weakened by a tedious confinement, or long fit of sickness, which it often does both at sea and land, and is accompanied with a frequent purging, proceeding altogether from weakness of body, a most affecting state of distress presents itself.

In this appearance of the scurvy, on patients in a very weak or dying state, after a fever or
 long

(*u*) See Mr. *Ruggie's* account, part ii. chap. 5. p. 206 ; also the supplement, page 278.

long fit of sickness, as also in such as had been long confined to bed by ulcers, the lemon colour of the legs, the black and purple small spots, evince the attack of the disease; but the low, emaciated, and sinking state of the patient, will admit of no cure; and this is what I have called in one of the preceding pages an incurable scurvy, as I always found it such.

Many diseases have been well known, and accurately described for above a thousand years; yet, for which of them have we an infallible remedy? What medicine can counteract the continued influences of improper diet, air, and confinement: the last of which in particular, I now judge to be a principal cause, of the great obstinacy and frequent mortality of the scurvy in long voyages at sea.

It is perhaps the vain and chimerical belief of the existence of a never failing remedy for most diseases, which occasions the quick disgust conceived to a medicine at every disappointment, and the daily attempts after new methods of cure, which has rendered the art of healing as variable and unconstant, as our dresses; which through all ages, and in most countries, are, and have been different.

It would indeed be happy for mankind, if in all the various calamities and distresses, to which they are subject, the means of relief were so well ascertained, as they are in this painful disease, an ignorance of the nature of which, has long been productive of fatal consequences.

A P P E N D I X.

IT has been no easy matter to obtain a knowledge of the many writings on this distemper. There have been collections made from time to time, of the several authors on the plague, venereal disease, &c. ; but no such have been compiled of writers on the scurvy. *Sennertus*, ann. 1624, when he wrote his own treatise, reprinted the writings of *Solomon Albertus* and *Martinus*, together with *Ronsseus*, and the authors which he had published ann. 1583, viz. *Eckthius*, *Wierus*, and *Langius*; and this book, containing those seven authors, is the only collection ever published of writers on the scurvy. There was here as little assistance to be obtained from medical *bibliothecæ*. *Lipenius* in his *Bibliotheca realis medica*, published ann. 1679, reckons up twenty-nine writings on this subject, of which eight are academical discourses or disputations. *Mercklin*, in his *Cynosura medica*, published in the year 1686, enumerates twenty-four authors on the scurvy. Of these, one, viz. *Henricus a Bra*, is classed among them (though improperly) upon account of a letter written to *Forestus* upon a very different subject (*a*). Another, viz. *Albertus*, he has by mistake inserted twice in his list; and has given a place in it to *Jos. Stubendorfius* an editor of *Eugalenus*, *Simon Paulli*, *Joh. Langius*, *Arnold. Weickardus*, and *Ludov. Schmid*; which three last I have taken notice of in the *Bibliotheca*, though perhaps they are not deserving of it. He has besides included in it three academical disputations.

N n

The

(a) Vid. *Foresti observ. medicinal. lib. 20. obs. 12.*

The indefatigable Dr. *Haller* published *ann.* 1751. in his notes illustrating *Boerhaave's Methodus studii medici*, the titles of almost all medical writings now extant, no less than 30,000 volumes. But it were to be wished, that so good a judge had distinguished such books as, not being able to maintain their character, are now out of print, or occasional pamphlets, and some trifling academical orations and disputations, from writings of greater value.

The following list contains the titles of such writings on the scurvy, as have been omitted in the foregoing sheets, but are mentioned in those collections; and comprehends all that, after the most diligent inquiry, have come to my knowledge; except a few academical disputations.

J. Roetenbeck und Casp. Horns beschreibung des scharboks. Nuremberg. 1633.

Christoph. Tinctorius de scorbuto Prussiae jam frequenti. Rigiom. 1639.

J. van Beverwyck van de Blaauw schuyt. Dordrac 1642.

Henrici Botteri (b) tractatus de scorbuto. Lubec 1646.

J. Schmidts von der pest Frantzosen und scharbock (c). Augspurg. 1667.

Phil. Hæchstetteri (d) observationes medicinales raræ. Lip. 1674.

Hen.

(b) Professor at *Cologne*. I have not seen this treatise; nor did *Haller*. I never found it so much as quoted by any author, though it underwent two editions.

(c) I have seen the book; it contains nothing remarkable.

(d) A physician at *Augsburg*. *Decad.* 7. *cas.* 10. contains some good observations on the scurvy.

Hen. Cellarius bericht von scharbock. Halberstatt
1675.

Jon. Zipfel vom scharbock griesstein und podagra.
Dreßd. 1678.

Maitland on the scurvy.

Melchioris Friccii dissertatio de colica scorbutica.
Ulm 1696.

J. Hummel de arthritide tam tartarea quàm scorbutica (e). Buding 1738.

Pierre Briscow traité du scorbut (f). Paris 1743.

Cadet dissertation sur le scorbut, avec des observations (f). Paris 1749.

Travis on the sea-scurvy (g).

As to these or other books which I have not seen, or any curious and useful observations made or published on the scurvy, or also such of the following academical performances as are distinguished by an asteric, I desire and earnestly entreat all men of study and learning who are possessed of them not to conceal them from me, or what is of more consequence, from the republic of physic and letters, but that they would be pleased to favour me with an abstract of such books or observations, which will be thankfully acknowledged. If the intended letter exceeds too much the usual size of an epistle by post, in this case, upon giving me notice, I shall direct a less expensive method of having it transmitted.

N n 2

Acade-

(e) An indifferent character of it is given by *Haller*.

(f) Both quackish pamphlets.

(g) He endeavours to shew that the use of copper boilers for dressing victuals, is one principal cause of the scurvy in the navy of *Great Britain*. Art. i. vol. 2. of *Medical Observations and Enquiries*, by a Society of physicians in *London*, 1762.

Academical performances.

Jacob. Albini disputatio de scorbuto (g). Basil 1620.

Abrahami Dreyeri disputatio de scorbuto (g). Basil 1622.

Amb. Rhodi disputatio de scorbuto. Haffn. 1635.

Jac. Haberstro disp. inaug. de scorbuto. Jen. 1644.

Herm. Conringii disp. Resp. Bebreus. Helmsf. 1659.

Geo. Franci disp. Resp. Wyck. Heidelb. 1670.

And. Birch Angli disp. inaug. de scorbuto. Lugd. Bat. 1674.

Olai Borrichii disp. Resp. Job. Meleh. Sulzero. Haffn. 1675.

Caroli Patini (h) oratio de scorbuto. Patav. 1679.

* *Sam. Koelefer de Kereseer de scorbuto Mediterraneo*. Cibinii 1707.

Jacob Crauford disp. inaug. de scorbuto. Lugd. Bat. 1707.

* *G. Thiesen de morbo marino*. Lugd. Bat. 1727.

* *Michaelis Alberti (i) disp. de scorbuto Daniae non endemio*. Hall. 1731.

* *Christoph. Mart. Burchard disp. de scorbuto maris Baltici accolis non endemio*. Rostoch. 1735.

* *Sim. Pauli Hilscher (k) programma de scelotyrbe memorabili casu illustrata*. Jen. 1747.

Mich. Law dissert. medic. inaug. de scorbuto. Edin. 1748.

Quaestio medica. An à diversâ virûs scorbutici indole et sede morbi diversi? auctore Henric. Michael.

Missa medicinae Baccalaureo. Paris 1754.

Roberti Robertson dissert. medic. de scorbuto. Edin. 1765.

(g) Both are preserved in a collection of academical disputations, published by the bookseller Genathius.

(h) Professor at Padua; more celebrated for his other writings than this.

(i) Present professor of medicine at Hall in Saxony.

(k) Present professor at Jena.

A CHRONOLOGICAL INDEX

of medical authors who have written particular books on the scurvy; as also the principal systematic, and other medical writers, whose sentiments are delivered in this treatise.

1534. *Euritius Cordus*, a celebrated Botanist.
He died ann. 1538.

1539. *Jo. Agricola (Ammon)* Professor of Medicine, &c. at Ingolstadt.

1541. *Jo. Echthius*, a physician at Cologne, by birth a Dutchman. He died ann. 1554.

1560. *Jo. Langius*, chief physician to the Elector Palatine.

Jod. Lomius, a physician in Flanders.

1564. *Balduin. Ronssseus*, ordinary physician to the city of Goude in Holland.

1567. *Jo. Wierus*, chief physician to the Duke of Cleves and Juliers.

Adrian. Junius, an eminent physician and historian. He died ann. 1575.

1581. *Rembert. Dodonæus*, chief physician to the emperor of Germany.

1589. *Hen. Bruceus*, Professor at Rostock.

Balthas. Brunerus, chief physician to the Prince of Anhalt.

1593. *Solomon Albertus*, Professor of Medicine at Wittenburg.

1595. *Petrus Forestus*, physician at Alcmaer, Professor at Leyden, &c. (a).

(a) Besides the above authors, it is taken notice of by several other medical writers in the sixteenth century, viz. *Cornelius Gemma*, (*Cosmocritic. lib. 2. cap. 2.*) *Petrus Pena*, (*adversar. stirpium*, p. 121 & 122.) *Schenckius* (*observat. medicinal.*) *Carrichterius*, (*prax. Germanic. lib. 1. cap. 41.*) *Mithobius de peste*, *Tabarnæmon de thermis*, *Peucerus de morbis contagiosis*, &c. There were likewise two theses, or disputations,

1600. *Hieronimus Reusnerus*, physician to the city of Norlingen.
1604. *Severinus Eugalenus*, a physician of Dockum in Friesland.
1608. *Felix Platerus*, Professor of Medicine at Basil in Switzerland.
1609. *Gregorius Horstius*, chief physician to the Landgrave of Hesse, Professor at Gießen.
- Mat. Martini*, physician at Eisleben.
1624. *Daniel Sennertus*, Professor of Medicine at Wittenburg, and chief physician to the Elector of Saxony.
1626. *Arnold. Wickardus*, a physician at Francfort.
1627. *Frederic Vander Mye*, physician to the garrison in Breda.
1627. *Ludov. Schmid*, chief physician to the Marquis of Baden, &c.
1627. *Gul. Fabric. Hildanus*, physician and surgeon to the Marquis of Baden, &c.
1633. *Jo. Hartmannus*, Professor at Marpurg.
1640. *Lazar. Riverus*, the celebrated Montpelier Professor.
1645. The faculty of physic at Copenhagen (*b*).

tions, published upon it; one by *Twestrengk*, at *Basil*, in the year 1581, and another by *Hambergerus*, at *Tubingen*, in the year 1586. One *Gul. Lemnius*, a Zealander, is said to have wrote upon the scurvy. He seems to have been a very trifling author, believing it to be the same disease in man that the measly distemper is in hogs. It would appear from *Solomon Albertus*, that his performance was out of print in the year 1593.

(*b*) It was one of the most celebrated faculties of medicine at that time in *Europe*; of which *Olaus Wormius*, two of the *Bartholines*, and *Simon Paulli* were then members. The latter, who was physician to the King of *Denmark*, has usually been ranked among the writers on the scurvy, upon account of an appendix which he added, ann. 1660, to his *Digressio de vera causa februm*, &c.

1647. *Job. Drawitzs*, physician at Leipzig, a celebrated chemist.
1657. *Job. Rudolph. Glauberus*, a celebrated chemist of Amsterdam.
1662. *Balth. Timæus*, chief physician to the Elector of Brandenburg.
1663. *Valent. Andreas Moellenbroekius*, a physician of Erfurt.
1667. *Thomas Willis*, an English physician, Professor of natural philosophy at Oxford.
1668. *Everard Maynwaringe*, a physician at London.
1669. *Paul. Barbette*, a Dutch physician.
1669. *Frederic. Deckers*, Professor at Leyden.
1672. *Gualterus Charleton*, physician in ordinary to his Majesty King Charles II.
1672. *Herman. Nicolai*, a Dane.
1674. *Franciscus Deleboe Sylvius*, Professor at Leyden.
1675. *Gideon Harvey*, physician in ordinary to his Majesty King Charles II.
1676. *Bernard Below*, physician to the King of Sweden.
1681. *Abram. Muntingius*, Professor of Botany in Groningen.
1681. *Dellon*, a French physician.
1683. *L. Chameau*, a French physician.
1684. *Stephanus Blancardus*, a Dutch physician.
1684. *Jo. Dolæus*, chief physician, &c. to the Landgrave of Hesse-Cassel.
1685. *Michael Ettmullerus*, public Professor in the university of Leipzig.
1685. *Thomas Sydenham*, the English Hippocrates.
1694. *Martin Lister*, an English physician.

1696. *William Cockburn*, physician to the Royal navy of G. Britain.
1699. *Franc. Poupert*, physician at Paris.
Arch. Pitcairn, an eminent Scots physician.
1705. *Yvo Gawkes*, a Dutch physician.
1708. *Herman Boerhaave*, the celebrated Leyden Professor.
1712. *Jo. Hen. de Heucher*, Professor at Wittenburg.
1720. College of physicians at Vienna.
1734. *Jo. Freder. Bachstrom*, a Dutch physician.
1734. *Damianus Sinopeus*, chief physician to the marine hospital at Cronstadt.
1737. *J. G. H. Kramer*, physician to the Imperial army in Hungary.
1739. *Frederic. Hoffmannus*, a celebrated author, First Professor of Medicine at Hall in Saxony, &c.
1747. *Abraham Nitzsch*, physician to the Russian army.
1747. Dr. *Jo. Geo. Gmelin*, Professor of chemistry and natural history, supposed at Tubingen.
1749. The learned Dr. *Richard Mead*, physician to his late Britannic Majesty, &c.
1750. Dr. *Richard Russel*, physician at Lewes in Suffex.
1750. Dr. *John Huxham*, a celebrated physician at Plymouth.
1752. Dr. *Charles Alston*, a learned Professor of Botany and Medicine at Edinburgh.
1752. Dr. *Anthony Addington*, physician in London.

1753. *Baron Van Swieten*, First physician to the Emperor and Empress of Germany, &c.
1755. *Charles Bisset*, surgeon at Cleveland in Yorkshire.
1761. *John A Bona*, an Italian physician at Verona.
Solomon de Monchy, City physician at Rotterdam.
1764. Dr. *Richard Brocklesby*, Physician to the British army.
 Dr. *David Macbride*, physician in Dublin.
 Dr. *Donald Monro*, physician to the British army.
Lewis Rouppe, a Dutch physician.
1767. *Poissonnier Desperrieres*, a French physician.
1768. *John Christian Lange*, physician at Copenhagen.
 Dr. *Nathaniel Hulme*, physician in London.
1769. Dr. *William Farvey*, an English physician,

An Alphabetical Index of AUTHORS, &c.

Those who do not treat of the scurvy, are marked in Italic characters.

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Page	Line
2	1 of the note, <i>Amsterodanum</i> read <i>Amstelodanum</i> .
4	12 after <i>it</i> add <i>had</i> .
14	17 of the note, <i>Hic</i> read <i>Hinc</i> .
26	12 of the note, <i>Cocochymia</i> read <i>Cacochymia</i> .
ibid.	penult. of the note, <i>half rotten in</i> read <i>in the most putrid state of</i> .
59	19 <i>effected</i> read <i>affected</i> .
89	9 <i>Disease</i> read <i>Diseases</i> .
107	8 of the note, after <i>possibly</i> dele <i>to</i> .
117	3 <i>black ash</i> read <i>blackish</i> .
146	17 of the note, add <i>R.</i> before <i>Cremoris Tartari scrup.</i>
165	3 <i>Ilair</i> read <i>Hair</i> .
181	antepenult. dele <i>and</i> read <i>apples if they can be got</i> .
203	9 of read <i>or</i> .
211	19 of the note, <i>ad stomachios</i> read <i>ad stomachicos</i> .
265	19 <i>mediciis</i> read <i>medicis</i> .
272	19 <i>Colchester</i> read <i>Polchester</i> .
300	antepenult. of the note, <i>fulividaque</i> read <i>sublividaque</i> .
305	14 <i>Pliniique</i> read <i>Pliniique</i> .
324	15 <i>generally</i> read <i>general</i> .
350	ult. of the note, <i>ff</i> read <i>misce</i> .
388	ult. of the note, dele <i>b</i> .
475	7 after <i>ounce</i> add <i>of</i> .
476	26 <i>callus</i> read <i>callous</i> .
479	18 after <i>sunk</i> add <i>when immersed</i> .
487	6 <i>Nyclalopia</i> read <i>Nyctalopia</i> .
488	1 of the note, add <i>R.</i> before <i>Gummi</i> .
498	13 dele <i>themselves</i> .
503	17 <i>vena larva</i> read <i>vena cava</i> .

