



10/6

10/1

OBSERVATIONS

ON THE

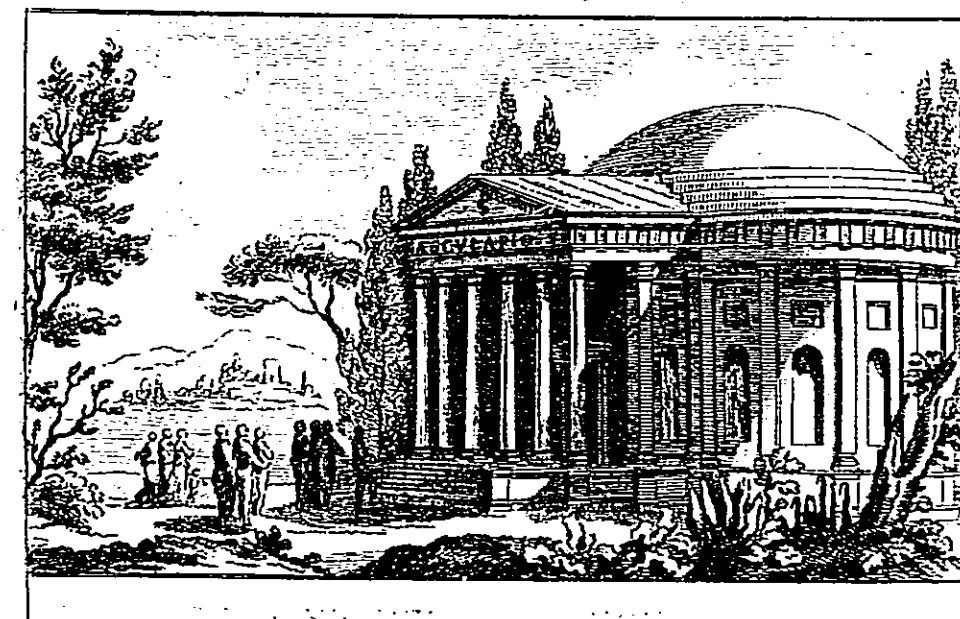
Diseases of the Army,

BY

JOHN PRINGLE,

Physician in Ordinary to Her MAJESTY.

The FIFTH EDITION corrected.



L O N D O N :

Printed for A. MILLAR, D. WILSON, in the Strand; T. DURHAM, at Charing  
Cross; and T. PAYNE, next the Mews-gate, near St. Martin's Church.

MDCCLXV.



## P R E F A C E.

*THE diseases of the army, as far as it appears, have been treated of by none of the ancient physicians; nor have we any information about them from the historians, unless when some uncommon or very fatal distemper attended an expedition. Xenophon, in his relation of the famous retreat of the Greeks, mentions their being liable to the fumes canina, to blindness, and to a mortification of the extremities, from the snow and excessive cold which they were exposed to on their march. Pliny, the naturalist, is the first who takes notice of the stomacace, the distemper now called the scurvy, which afflicted the Roman army in Germany after it had continued two years in that country\*. We likewise find the Romans under a necessity of shifting their camps, on account of the noxious vapours from the adjacent marshes. Plutarch observes, that Demetrius, in his last expedition, lost above eight thousand men by a sickness which followed*

\* Ancient Germany included the northern parts of the Netherlands; and it seems to be that marshy country which PLINY means; for, he subjoins these words *trans Rhenum maritimo tractu*, which agree with the account that TACITUS gives of the expedition under GERMANICUS.

国立公衆衛生院附属図書館	
受入先	
受入日	
登録番号	
所在	
Library, National Institute of Public Health	



## P R E F A C E.

a scarcity of provisions. Livy informs us of a pestilential distemper that seized both the Romans and the Carthaginians in Sicily. And Diodorus Siculus describes another pestilence, attended with a flux of blood, which almost utterly destroyed the latter at the siege of Syracuse: and though he refers the immediate cause of this calamity to the Gods, incensed against that people on account of their impiety, yet he explains the natural causes in a more full and satisfactory manner, than is usually done by historians on like occasions.

But excepting these and a few more instances, there remains no account of the diseases incident to the armies of the ancients. It may seem strange that Vegetius, in his book *de re militari*, should write a chapter containing directions how to preserve the health of soldiers, and yet not mention any disorder which they were particularly subject to; and that he should speak of the physicians attending the camp, without taking notice of their manner of disposing of the sick, whether in hospitals or otherwise. The silence of the ancients upon this article is the more to be regretted, because as war was their chief study, it might be expected that the orders relating to the care of the sick, were good in proportion to their skill in the other branches of the military art. And indeed as their troops were constantly in the field, and in different climates,  
the

## P R E F A C E.

the physicians of those days had it greatly in their power to furnish many useful observations on the nature and causes of camp-diseases, and on the proper methods of treating them.

Nor had this defect been supplied, when I was first employed in the army, by any of the modern authors whom I had read, unless by such as had either little or not at all attended the service, at least the military hospitals; and who, on that account, could not be supposed to write better on the diseases there, than that author who composed a treatise on the art of war, without having seen a campaign. So that after all, this part of medicine, which ought long ago to have been complete, seemed to be still in a manner new: so little is a military life consistent with that state of tranquillity requisite for study and observation.

Perceiving therefore what little assistance I was to expect from books, I began to mark such observations as occurred, in hopes of finding them afterwards useful in practice. And having continued this method to the end of the former war, I then put those materials into order, and with as much clearness and conciseness as I could, endeavoured from my own experience to supply, in some measure, what I thought so much wanting on this subject.

I have

I have divided the work into three parts. In the first, after a short account of the air and diseases more peculiar to the Low-Countries (so often the seat of our wars) I give an abridgment of the medical journal which I had kept of the several campaigns. In this I mention the epidemics, as well as the more frequent diseases of our troops, in the order in which they occurred, the embarkations, marches, encampments, cantonments, winter-quarters, the seasons, the changes of the weather, and in a word all the circumstances that seemed to me most likely to affect the health of an army. In this part I have entered but little into the description of diseases, much less have I touched upon their cure, reserving both those subjects to be treated of afterwards. My chief intention here, was to collect materials for tracing the more evident causes of military distempers, in order that whatever depended upon those in command, and was consistent with the service, might be clearly stated, so as to suggest measures either for preventing, or for lessening such causes in any future campaign. And I have been the more studious of exactness in this account, as I foresaw that in whatever manner the whole was to be received, this part at least would be acceptable, as being a narration of facts by one who was present and employed all the time. My inferences are few and short, as a full discussion of those points would have too much interrupted

rupted the series of incidents that were to be presented in this place, at one view.

I have therefore thrown most of the reasoning that results from the first part into the second, in which, after having divided and classed the diseases common to a military life, I inquire into the more general causes of them, namely such as depend upon the air, the diet, and other circumstances usually comprehended under the appellation of the non-naturals. And here I have ventured to assign some sources of disorders, very different from the sentiments of other writers upon this subject; and I have also shewn how little instrumental in producing sickness some other causes are, which have been thought the most frequent of any. Nor will this liberty, I hope, be condemned, when it is considered what opportunities I have had beyond others to make such remarks; and that as natural knowledge is daily improving, those authors who write last on subjects connected therewith are most likely to be in the right.

Among the chief causes of sickness and death in an army, the reader will little expect that I should rank, what is intended for its health and preservation, the hospitals themselves, on account of the bad air and other inconveniencies attending them. However, during the former

former war one considerable step was made towards their improvement. Till then it had been usual, for the security of the sick, to remove them a great way from the camp, whereby many were actually lost before they came under the care of the physicians; or, which was attended with equally bad consequences, if the hospitals were nigh, they were for the same reason frequently shifted according to the motions of the army. But the Earl of Stair, my illustrious patron, being sensible of this hardship, when the army was encamped at Aschaffenburg, proposed to the Duke de Noailles (of whose humanity he was well assured) that the hospitals on both sides should be considered as sanctuaries for the sick, and mutually protected. This was readily agreed to by the French general, who took the first opportunity to shew a particular regard to his engagement. For, when our hospital was at Feckenheim, a village upon the Maine, at a distance from the camp, the Duke de Noailles having occasion to send a detachment to another village upon the opposite bank, and apprehending that this might alarm our sick, he sent to acquaint them, that as he knew the British hospital was there, he had given express orders to his troops not to disturb them. This agreement was strictly observed on both sides during that campaign, and though it has been since neglected, yet it is to be hoped that on future occasions the contending parties will make it a precedent.

After

After having explained the general causes of the sickness in armies, I proceed to point out the means of removing some, and rendering others less dangerous; for, without this addition the former considerations could have been of little use. But it is easy to conceive, that the prevention of diseases cannot depend on the use of medicines, nor upon any thing which a soldier shall have in his power to neglect, but upon such orders as shall not appear unreasonable to him, and such as he must necessarily obey.

I conclude the second part with comparing the numbers of the sick at different seasons, in order that the Commander may know, with some degree of certainty, what force he may at any time rely upon for service, the effects of short, or long campaigns upon the health, the difference between taking the field early, and going late into winter-quarters, with other calculations founded upon such materials as were furnished by the war. The data are perhaps too few to deduce certain consequences from them, but as I found no other which I could depend upon, I was obliged to make the best use of these, which at least will serve for a specimen of what may be done in this way upon further experience.

These two parts being intended for the use of officers as well as physicians, I have endeavoured to relate the

b

facts



*facts and draw my inferences in the plainest manner, and with as few scientific terms as was consistent with the nature of the subject; and I hope with perspicuity enough to be understood by any reader not unacquainted with the common principles of natural knowledge.*

*But the third part, containing the practice, is designed for those of my own profession only, as it could neither be properly explained, nor prove instructive to others. In composing this from my notes I was long in doubt how to proceed, whether wholly to omit such things as were commonly known, or to treat all the disorders mentioned there in a full and regular manner. But at last I determined upon the following course. I conceive the diseases, to which an army is most subject, to be divisible into two classes; one, comprehending those which are also common in Britain; and the other, such as are more peculiar to a different climate, or to the condition of a soldier. Now, as the first have been fully treated of by several learned authors in the hands of every physician, and also occur in daily practice, I pass them cursorily over, being satisfied with laying down my general method of proceeding, with the difference, if any, to be observed in prescribing in military hospitals.*

*But with regard to the other class, including the bilious, and malignant fevers, and the dysentery, as they*  
are.

*are disorders less frequent in this country, I thought proper to handle them more at length, and indeed in so full a manner, as I hoped might instruct those who had been little conversant with them before.*

*My observations on the hospital or jail-fever were first published in the year 1750, in a letter to Dr. Mead. But as that piece was hastily written, occasioned by the jail-distemper breaking out at that time in London, some things were omitted, and mistakes were made, which I have since endeavoured to supply, and rectify in this work wherein that dissertation is included\*.*

*To this account of the hospital or jail-fever, as well as to that of the bilious fevers and the dysentery, I have subjoined my conjectures about their internal and more latent causes, though I am aware that an attempt of this kind may tend rather to weaken than confirm my observations; as we too often see the judgment influenced and perverted by such speculations. But the reader may be assured*

\* In the year 1722, a treatise was published here, intitled *A Rational Inquiry into the Nature of the Plague, drawn from Historical Remarks*, by JOHN PRINGLE, M. D. As the subject was similar to mine, and as the author was of the same name, the writer of the Index to M. DE HALLER's edition of BOERHAAVE's *Methodus Studii Medici* has referred this piece, my Letter to Dr. MEAD, and my Inaugural Dissertation (at Leyden) *de Marcore Senili*, to one person. In justice therefore to the worthy author of that *Inquiry*, I take this opportunity of informing the public of this mistake, which indeed it was natural for a foreigner to fall into.



*that not only the descriptions, but the treatment of all these diseases were in a good manner fixed before I thought of assigning those causes, and which indeed were sometimes first suggested by the effects of the medicines. Yet a theory may be useful, not only for discovering more powerful remedies, but for varying those we are already acquainted with, oftener than can be taught either by mere empiricism, or even by analogy from other fevers.*

*In reasoning upon the nature of these distempers, I have so much recourse to the septic principle, that the reader may imagine that I have considered it as a more universal cause than I really think it; but excepting these and one or two more I have alluded to in this work, I have hitherto referred no other disorder to that origin. As to the reality of such a principle, though I think I have sufficiently ascertained it in these sheets, yet to some it may be satisfactory to know, that the corruption of the humours, as the cause of certain diseases, was first hinted at by Hippocrates, further taken notice of by Galen, and still more fully treated of, and applied to medicine in later times, as appears by the Aphorisms of Sanctorius, and other noted works of his age. And though it was afterwards sunk in the systems of Sylvius, and of Willis, as well as in that of the first mechanic writers, yet it was revived by Hoffman and Boerhaave; and especially by the latter, who*  
under

*under the article of alkalis comprehended all that he thought septic or putrid. But as that celebrated physician had not time to ascertain every part of his doctrine from his own experience, it was no wonder that some mistakes were made, and that the extent of this principle was not fully understood.*

*Two things induced me to prosecute this subject; the great number of putrid cases that were under my care in the hospitals abroad; and the authority of Lord Bacon, who offers good reasons for considering the knowledge of what brings on, and retards putrefaction, as most likely to account for some of the more abstruse operations of nature. My papers on this subject being read at several meetings of the Royal Society, the three first were published in the Transactions; but while the rest were still in the hands of the secretary, in order likewise to be inserted there, finding it necessary to make frequent references to those experiments, I thought it proper to annex the whole to this work, in the same order wherein they were presented; with the addition only of some notes, to explain what might not have been fully or clearly enough expressed before, and by way of connecting those facts with the preceding observations.*

*This work was first published in the year 1752, and reprinted in the year following with some additions. In*  
the

*the third edition I corrected some of my observations, from further experience in the camps which I attended in England, for three seasons in the beginning of the last war, before I quitted the service. But as I found the diseases of those hospitals similar to what had occurred during the former war, though milder on account of the nature of the climate, and from the soldiers not suffering the hardships which troops are exposed to in sight of an enemy, I judged it unnecessary to offer any account of those easy campaigns.*

*In the fourth, and in the present edition I have revised the whole, and from more mature reflection, from my private practice, and from conversing with others who had been employed in the hospitals abroad, in different climates, from the beginning of the late war till the peace, I have had an opportunity of making further improvements, by expressing with more confidence some of my former remarks, about which I had been diffident before, and by omitting others which I had advanced without sufficient foundation. I have likewise added some new observations to most of the articles in the third part, and especially to the chapter on the dysentery, having had more experience in that distemper, which though uncommon in this place was frequent in autumn 1762.*

*I am*

*I am sensible that notwithstanding all my care and attention, both in making the observations and the experiments, and the repeated opportunities which I have had of revising and correcting this work, not only many inaccuracies but mistakes may have escaped me, which those will most readily excuse, who having themselves made researches of this kind are not unacquainted with the difficulties attending their publication. Yet, however imperfect these sheets may be, I have the satisfaction to find that they have served as a foundation for others to build upon, who, by making improvements on these subjects, have concurred with me in attempting to draw from the calamities of war some benefit to mankind.*

London, 13 September, 1765.



CONTENTS.

---

---

C O N T E N T S.

P A R T I.

C H A P. I.

*O*F the air and diseases of the Low-Countries. Page 1

C H A P. II.

*A general account of the garrison diseases of the British troops, in Flanders, and in the cantonments in Germany, in the years 1742, and 1743.* II

C H A P. III.

*A general account of the diseases of the British troops, during the campaign in Germany, in the year 1743; and the ensuing winter in Flanders.* 17

C H A P. IV.

*A general account of the diseases of the campaign in Flanders, in the year 1744.* 28

C H A P. V.

*A general account of the diseases of the campaign in Flanders, in the year 1745.* 34

c

C H A P.



## CONTENTS.

## CHAP. VI.

*A general account of the diseases of the campaign in Great Britain, 1745 and 1746.* page 39

## CHAP. VII.

*A general account of the diseases of the campaigns in Dutch Brabant, in the years 1746 and 1747.* 52

## CHAP. VIII.

*A general account of the diseases of the campaign in Dutch Brabant, in the year 1748.* 59

## PART II.

## CHAP. I.

*Of the division of the diseases most incident to an army.* 72

## CHAP. II.

*Of the causes of the diseases most incident to an army.* 78  
 §. 1. *Of the diseases occasioned by heat, and by cold.* 79  
 §. 2. *Of diseases occasioned by moisture.* 81  
 §. 3. *Of diseases arising from putrid air.* 84  
 §. 4. *Of diseases arising from errors in diet.* 86  
 §. 5. *Of diseases arising from excess of rest, and motion; of sleeping, and watching; and from want of cleanliness.* 91

## CONTENTS.

## CHAP. III.

*Of the general means of preventing diseases in an army.* page 93  
 §. 1. *How to prevent diseases arising from heat, and cold.* 94  
 §. 2. *How to prevent diseases arising from moisture.* 96  
 §. 3. *How to prevent diseases arising from putrid air.* 99  
 §. 4. *How to prevent diseases arising from improper diet.* 110  
 §. 5. *How to prevent diseases arising from errors in exercise.* 113

## CHAP. IV.

*The seasons compared, with regard to the health of an army.* 115

## PART III.

## CHAP. I.

*Observations on colds, and inflammatory fevers in general.* 123

## CHAP. II.

*Observations on particular inflammations.* 133  
 §. 1. *Of the inflammation of the brain.* ib.  
 §. 2. *Of the inflammation of the eyes.* 135  
 §. 3. *Of the inflammation of the throat.* 137  
 §. 4. *Of the pleurisy and inflammation of the lungs.* 139  
 §. 5. *Of the inflammation of the liver.* 145  
 §. 6. *Of the inflammation of the stomach and intestines.* 146  
 §. 7. *Of the rheumatism.* 155

## CONTENTS.

## CHAP. III.

*Observations on coughs, and the phthisis pulmonalis.* page 163

## CHAP. IV.

*Observations on the fevers called bilious, or the autumnal remitting, and intermitting fevers of the army.* 168

§. 1. *Of the symptoms of the remitting, and intermitting fevers of the camp.* 169

§. 2. *Of the symptoms of the remitting, and intermitting fevers in low and marshy countries.* 173

§. 3. *Of the causes of the remitting, and intermitting fevers of the camp, and those of low and marshy countries.* 183

§. 4. *The remitting, and intermitting fever of the camp and cantonments compared with the summer and autumnal fevers of other places.* 187

§. 5. *Of the cure of the remitting, and intermitting fevers of the camp, and of those of low and marshy countries.* 199

## CHAP. V.

*Observations on the obstructions consequent on the remitting, and intermitting fevers of the camp, and those of marshy countries.* 214

## CHAP. VI.

*Observations on the camp-dysentery.* 217

§. 1. *A description of the camp-dysentery.* ib.

§. 2. *Of the dissections.* 237

§. 2.

## CONTENTS.

§. 3. *Of the causes of the dysentery.* page 251

§. 4. *Of the cure of the dysentery.* 258

## CHAP. VII.

*Observations on the jail or hospital-fever.* 287

§. 1. *Of the rise of the jail or hospital-fever, and the manner of the infection.* ib.

§. 2. *Of the symptoms.* 290

§. 3. *Of the prognostics.* 298

§. 4. *Of the dissections.* 300

§. 5. *Of the cure.* 305

§. 6. *Of the causes of malignant fevers in general.* 319

## CHAP. VIII.

*Observations on the itch.* 340

APPEN-

## APPENDIX.

## PAPER I.

*Experiments shewing that putrid substances are not to be called alkaline; that neither the volatile nor the fixed alkaline salts tend naturally to promote putrefaction within the body, being of themselves antiseptic. That the combination of two antiseptics may produce a third weaker than either. Experiments upon the comparative powers of some neutral salts in resisting putrefaction. And of the strong antiseptic qualities of myrrh, camphire, snake-root, camomile-flowers, and the Peruvian bark.* p. iii

## PAPER II.

*A continuation of the experiments and remarks upon antiseptic substances. A table of the comparative powers of salts in resisting putrefaction. Of the antiseptic quality of several resins, gums, flowers, roots, and leaves of vegetables, compared with common salt. Attempts to sweeten corrupted animal substances by means of camomile-flowers, and the Peruvian bark. A conjecture about the cause of intermitting fevers, and about the action of the Bark in curing them.* p. xiv

## PAPER III.

*Experiments on substances resisting the putrefaction of animal humours, with their use in medicine. Astringents always antiseptics, but*

*but antiseptics have not always a manifest astringent. Of the use of putrefaction in general, and particularly in the animal oeconomy. Of the different means of inducing putrefaction. Some substances reputed septics have a contrary quality. And the real septics are some of those very substances which have been the least suspected to be of that nature, viz. chalk, the testacea, and common sea-salt.* page xxvi

## PAPER IV.

*A continuation of the experiments upon septics. Conjectures about the causes of the decline of putrid diseases. Of the difference between the effects of the testacea and lime-water. An account of a power discovered in putrid animal substances of exciting a vinous fermentation in vegetables; and of what use the saliva is in that process: with an application of these experiments to the theory of digestion.* xxxix

## PAPER V.

*Experiments and remarks on the fermentation of vegetables, by means of putrid animal substances, continued. An austere acid produced by such fermentations. The probability that most vegetables are fermentable; not excepting the acrid, antiscorbutic or alkalescent class. Of the fermentation of milk. How far the aliment ferments in the stomach. Of the use of the saliva in alimentary fermentation. Of various causes of indigestion. Of the cause and cure of the heart-burn. And from what cause a sourness of the stomach proceeds.* li

## PAPER



## CONTENTS.

## PAPER VI.

*Experiments upon substances hastening, retarding, increasing, and diminishing alimentary fermentation, with remarks upon their use in explaining the action of digestion, and shewing how that may be occasionally assisted by acids, bitters, aromatics, wine, &c. What substances come nearest to the saliva in its digestive quality, and how these are to be varied according to the habit. Of the difference between the action of the bile and that of common bitters. Sea-salt, in different quantities, either promotes, or retards alimentary fermentation; but the other septics always hasten that process. In what properties the testacea, lime-water, and the fixed alkaline salts agree, and differ. What aliments are the easiest, and what the hardest of digestion.* lxxiv

## PAPER VII.

*Experiments and remarks upon the putrefaction of blood, and other animal substances. Of the nature of the inflammatory crust or the sily part of the blood. Of the fecal acid. Uses drawn from observing the colours of corrupted blood. Of the nature of purulent matter. The resolution of the blood, the relaxation of the fibres, and the emission of air, are the consequences of putrefaction: hence several symptoms of putrid diseases accounted for. The marrow not soon corruptible. The blood may become really putrid whilst the animal lives. The different effects of alkaline salts, and of putrid substances, upon the nerves. That there is properly but one species of the true scurvy; and that this arises from putrefaction.* lxxiv

*An answer to Professor de Haen, and to M. Gaber, concerning some remarks made by them on the preceding work.* xciv

OBSER-



OBSERVATIONS  
ON THE  
DISEASES OF THE ARMY.

## PART I.

## CHAP. I.

*Of the air and diseases of the Low-Countries.*

**T**HE river *Lis* rising in *Artois*, and joining the *Scheld* at *Ghent*, separates the high and dry part of *Flanders* from the low and wet. Between this line and the sea the country is flat, marshy and unhealthy, including several barrier towns belonging to the *Dutch*, the *French*, and the *Austrians*; of all which *Furnes* and *Sluys* are the most sickly. But the other part of *Flanders* being

B

higher,

higher, is, as well as the rest of the *Austrian Netherlands*, a dry and healthful country.

Great part of the *United Provinces*, with *Dutch Brabant*, from *Grave* downwards along the *Maes*, being likewise low and wet, is subject to the same distempers with the flat part of *Flanders*. But the air is worst in *Zealand*; as that province is not only low and watery, but surrounded with the oozy beaches of the eastern and western *Schild*, and the most marshy parts of the country; so that almost every wind, except from the sea, adds to its native moist and unwholesome exhalations.

All this tract of the *Netherlands* being little higher than the level of the sea, or the rivers that pass through it, was once so much exposed to inundations from floods and high tides, that till dykes and drains were made it was one large morass; and even now, after incredible labour, the country is liable to be overflowed by extraordinary floods and other casual inlets of water. By the evaporation of this water, as well as by that of the numerous canals and ditches, in which various plants and insects die and rot, the atmosphere, during the latter part of summer and autumn, is filled with moisture, and with putrid and insalutary vapours.

A second, but less obvious source of humidity, is from the water under ground, which in that country lies so near the surface, that a dry ditch is seldom seen; and as the soil is light, the moisture easily transpires, and in sum-

mer.

mer loads the air with vapour, even where no water is visible. This is the condition of most of *Dutch Brabant*, where the people are more or less subject to intermitting fevers, in proportion to the distance of this water from the surface; so that by looking into their wells, one may form a judgement of the comparative healthfulness of the several villages: for these wells being fed by the subterraneous water, with which they are always on a level, and sinking in proportion to the droughts of summer, are a proof of the constant exhalation of this concealed moisture, through the pores of the earth, by the heat of the sun.

In *Zealand*, and upon the coasts of *Flanders* and *Brabant* opposite to that province, is observed a peculiar kind of damp, rising at low water from a beach that is covered with slime and mud, and which is perhaps the more apt to corrupt on account of the mixture of the fresh with the salt water\*. In those parts the people are sickly; but at *Ostend*, which is situated upon the ocean, and where there are no marshy grounds very near, the inhabitants are in general healthy.

Another cause of the humidity and corruption of the atmosphere, is an imperfect ventilation. There are no hills to direct the winds in streams upon the lower grounds; hence the air is apt to stagnate, and the more so by reason of

\* Vide LANCIS. De Nox. Palud. Effluv. lib. i. p. i. c. v.

the large plantations made for pleasure, inclosure, or fuel. The farms and smaller villages are crowded with trees, which not only confine but moisten the air by their transpiration. But in the towns, in which there is less of this kind of moisture, where the houses and pavement of the streets in a great measure prevent the rising of the damps, and where are continual fires, the aquatic diseases are both milder and less frequent.

To these causes of fevers in flat and marshy countries, may be added the impurity of the water in common use; which being either collected from rains, preserved in cisterns, or drawn from shallow wells, is in hot and dry seasons soon corrupted. This being the case, the general tendency to putrefaction must be increased by the use of such water, as well as by the meats, which in a close, hot and moist air are easily tainted. Several circumstances therefore in that country concur in summer, not only to relax the solids, but to dispose the humours to putrefaction; and as the combination of heat and moisture is the great cause of the speedy corruption of animal substances, so it is observed in every place to produce fevers, and other distempers of a putrid kind, similar to those that occur in the low and marshy parts of the *Netherlands*.

This is the nature of the country. But according to the various degrees of heat and moisture of the season, the epidemic diseases begin earlier or later, are of longer or shorter duration,

duration, and are attended with milder or more alarming symptoms. When the heats come on soon, and continue throughout autumn, not moderated by winds and rains, the season proves sickly, the distempers appear early and are dangerous. But when the summer is late, or tempered by frequent showers and winds, or if the autumnal colds begin early, the diseases are few, their symptoms mild, and their cure easy\*.

And here it may be proper to distinguish between the moist and the rainy seasons; for in marshy grounds, intense and continued heats, even without rain, occasion the greatest moisture, by the exhalation which they raise and support in the atmosphere; whereas frequent showers, during the hot season, cool the air, check the rise of the vapours, dilute and refresh the corrupted water, and precipitate the putrid and noxious *effluvia*. But if heavy rains fall in the beginning of summer, and are followed by great and uninterrupted heats, then the water collected by the rain, stagnating in the lower grounds and corrupting there, furnishes matter for more exhalation, and thereby renders the season more sickly and the diseases more fatal.

It ought also to be remarked, that the sickness never begins till the heats have continued long enough to give

\* All this is agreeable to the register of the weather and diseases, kept for several years by Dr. STOCKE physician at *Middelburgh* in *Zealand*.



time for the putrefaction and evaporation of the water. The epidemics of this country may therefore be generally dated from the end of July, or the beginning of August, under the canicular heats; their sensible decline, about the first falling of the leaf; and their end, when the frosts begin: the rest of the year is much less disposed to produce any distemper.

Again, we are to observe, that though in the month of September the greatest heat of the season is past, yet the distempers continue, from the greater variations of heat and cold; for the days are still warm, but the nights are cold and damp, often foggy; and it is by such interchanges that the perspiration is checked, and the more putrescent parts of the blood retained in the body, where they produce either a fever or a flux. It is also to be remembered that the summers are hotter on the continent than in *Britain*; and that in the *Netherlands* the heats are more stifling than in hilly countries.

The epidemic of autumn, and prevailing distemper of this and other marshy countries, is a fever of an intermitting nature, commonly of a tertian form, but of a bad kind; which, in the dampest places, and worst seasons, appears as a double tertian, a remitting, a continued putrid, or even an ardent fever\*. All which, however varying in

\* An ardent fever is defined, part iii. ch. iv. § 2.

their appearance, according to the difference of constitution and other circumstances, are nevertheless of a similar nature; for though in the beginning of the epidemic, when the heats are greatest, the fevers assume a continued and ardent form, yet by the end of autumn they usually terminate in regular intermittents.

In *Zealand*, where the air is worst, this fever is called the *Gall-sickness*; and indeed both the redundance and deprivation of the gall in this distemper are sometimes so great, that it was natural to refer the cause to the corruption and overflowing of that humour. But whatever be the immediate cause, the disease may possibly be continued, and the symptoms aggravated by an increased secretion and putrefaction of the bile, occasioned by the fever. There may be in this, as in other disorders, a first cause producing an effect, and that effect producing new symptoms.

In proportion to the coolness of the season, to the height and dryness of the grounds, this fever is milder, remits or intermits more freely, and recedes farther from the nature of a continued putrid, or an ardent fever. But to judge from its worst state, we must refer most of the symptoms to a septic origin; since these fevers are attended with intense heat and drought, foulness of the tongue, bitterness in the mouth, desire of acids, a *nausea*, aversion to animal food, offensive vomitings, great oppression  
about

about the stomach; sometimes with livid spots, and the like indications of corrupted humours. And as, with such symptoms, the disease still puts on an intermitting or remitting form, it should seem as if even the more benign intermittents of the season were owing, in a lesser degree, to the same cause.

The *cholera* and the dysentery, though rarely epidemic, are nevertheless frequent diseases of moist countries. They appear in the same season with the fevers, and seem to be particular determinations of the vitiated humours; to which, if the first passages give vent, a *cholera*, or a flux ensues; but if they be retained, and carried into the blood, they produce an intermitting, a remitting, or a continued fever.

Both fevers and fluxes are often accompanied with worms, which are not to be deemed the cause of either, but only a sign of the bad state of the bowels, of the corruption of the aliment, and of a weakness of the fibres of the intestines, owing to the heat, moisture, and the putrid state of the air.

These are the acute epidemics of the marshy parts of the *Netherlands*. The chief chronical disorder is a scurvy incident to those who live in a moist and corrupted air, and especially if they use salted meats: this though in a milder degree, yet agreeing so nearly with  
the

the sea-scurvy, may be accounted the same disease. The exhalations of the canals and marshes in hot weather act like the steams of a foul and crowded ship; they corrupt the blood, and stop perspiration. The sea air is not the cause of the scurvy; for on board a ship, on the longest voyages, there are preservatives against the marine scurvy; and upon the sea-coast, it is not in the dry and elevated parts, but in the flat and marshy, where the inhabitants suffer by that distemper\*.

In general, it is the higher ranks of people who are least liable to the diseases of the marshes. For such countries require dry houses, apartments raised above the ground, moderate exercise without labour in the sun or in the evening-damps, a just quantity of fermented liquors, and victuals of good nourishment. Without such helps, not only strangers but the natives themselves are sickly, especially after hot and close summers. The hardiest constitutions are little more exempted than others, and therefore the *British* soldiers have always been subject to these fevers and fluxes in the *Netherlands*; not indeed to the scurvy, as their stay in the moister parts of the country has never been long enough to contract that disease.

Now, though in the marshy parts of *Flanders* and *Holland*, the summer and autumnal distempers are frequent

\* The nature of the scurvy is more fully explained in the Appendix, Paper vii, under experiment xlviii.

and violent, yet there are few countries, however dry, that are totally exempted from them. For the heats, if great, relax the solids and tend to corrupt the humours; under which circumstances, if the body be exposed to fogs and nocturnal damps, to any stoppage of perspiration, or receives improper food, the same kind of disorders, though less characterized and less frequent, will be incident to dry as well as to marshy countries. Hence, even in the driest damps, after great and continued heats, these summer and autumnal fevers and fluxes are more or less common; for, besides the natural moisture of a tent, the men will either by duty or by misconduct often suffer from wet ground, wet clothes, nocturnal damps and colds. And the danger of their falling into these diseases is the greater, as the interchanges of heat and cold are more sensible and frequent in the field than in quarters.

But a sudden stoppage of perspiration, coming upon relaxed fibres and a putrescent state of the blood arising from a constant exposition to the sun, if not timely remedied, will generally occasion a remitting or an intermitting fever, a *cholera*, or a flux; so that these distempers may be considered almost as incident to a camp as to a low and marshy country.

## C H A P. II.

*A general account of the garrison diseases of the British troops, in Flanders, and in the cantonments in Germany, in the years 1742, and 1743.*

IN the beginning of June, 1742, the *British* troops began 1742. to embark for *Flanders*. There were in all, of foot and cavalry, about 16,000: the winds were favourable, the several passages short, the men landed in good health and went into their several garrisons.

The head-quarters were at *Ghent*, with most of the cavalry, three battalions of guards, one marching regiment, and the artillery; eight battalions were quartered at *Bruges*; two at *Courtray*; a regiment of dragoons lay at *Oudenarde*; and another was divided between *Alost* and *Grammont*. There was a general hospital at *Ghent*, but in the other garrisons, the care of the sick was committed to the surgeons of the respective regiments.

During the summer and autumn the weather was good, the heats moderate, and the country in general healthy. The *British* officers continued well, but many of the common men sickened; and this seems to have been the reason.

*Ghent* is situated between the high and the low division of *Flanders*; one part of the town, called *St. Peter's-bill*, is



1742. much higher than the rest, and in this the barracks, having drains and free air, were quite dry; so that the soldiers who lay there enjoyed perfect health. But those who were quartered in the lower part of the town (mostly on the ground-floors of waste houses, unprovided with drains, and of course damp) were sickly. The battalion of the first regiment of guards was a remarkable instance of this difference of quarters. Two of the companies lay on *St. Peter's-hill*, the remaining eight in the lower part of the town, in rooms so very damp that they could scarce keep their shoes and belts from moulding. In the month of July, the sick of this battalion amounted to about 140; of which number only two men belonged to the companies on the hill, and the rest to those in the lower town. But in the middle of August, upon changing these unhealthy barracks, the sickness suddenly abated. The rest of the garrison suffered much less in proportion; the highest returns at no time exceeded 70 in a battalion of foot\*, and 40 in a regiment of dragoons†. Now the returns including all accidents that unfit a soldier for duty, though the above numbers were more than triple what such corps commonly have at home, yet the sickness in this

\* A complete battalion consisted then of 813, but after deducting the *ineffectives*, and the commissioned officers (who are never put into the returns of the sick) we are only to reckon this corps, when full, at about 750 private men and non-commissioned officers, whose names, upon being by indisposition unfit for duty, are once a week returned to the commanding officer of the regiment.

† This consisted of three squadrons, and each squadron of 158 men, not including commissioned officers.

garrison

garrison was accounted moderate. The highest returns 1742. were in the month of August, when the distempers were chiefly intermitting, and remitting fevers, diarrhoeas, and a few dysenteries.

The sickness was more considerable at *Bruges*, a city of the lower division of *Flanders*, and moister than *Ghent*. The soldiers had besides damper barracks. The remitting and intermitting fevers began in July; but in August the intermittents were most numerous, which continued throughout September, diminished in October, and ceased upon the setting-in of the frosts in November. These fevers were not only of a worse kind than those at *Ghent*, but three times more numerous, and more in proportion died. Next to the fever, fluxes were most frequent; and though not always with blood, were generally of the dysenteric kind. It was then observed, that such as lay in the upper stories enjoyed much better health than those who were below on the ground-floors, which were all very damp.

The two battalions at *Courtray* were differently lodged; one had dry barracks, the other damp; and this last had double the number of sick throughout the autumn: but their greatest return did not exceed 70.

*Oudenarde* is in the higher division of *Flanders*; but the barracks being damp; having no drains, and the situation low,

1742. low, the Welsh Fuzileers, who lay there, suffered as much in proportion as the garrison of *Bruges*.

But at *Alost* and *Grammont*, towns in the same division, where the dragoons were billeted in private houses, that corps was so healthy, that when the army marched into *Germany* it left not a man behind.

The great number of sick, and our want of experience in the cure of diseases incident to a moist climate, were the reasons, that at this time the fevers were perhaps less successfully treated than afterwards. Many of the remittents degenerated into continued fevers, which were often fatal; and the intermittents, by being stopped before the proper evacuations were made, or not secured against relapses, changed likewise into continued fevers, or ended in dangerous obstructions of the *viscera*.

After the frosts in November, the intermittents never appeared, unless upon catching cold; and then only such as had been ill in autumn were subject to relapse.

Now, the autumnal epidemic ceased, and the winter disorders began, which were colds in various forms. The most common, were hard coughs, stitches, rheumatic pains, inflammations of the lungs, and the like; to all which, our soldiers, unused to garrison duty and cold quarters, and unprovided with clothes suited to the country, and

to the season, at this time particularly sharp, were very 1742. subject.

There was no other considerable ailment except the itch, which indeed was soon after landing so general, that many believed that either the salt-provisions at sea, or the change of air, must have been the cause of so sudden and extensive a complaint. But this was solely owing to the contagion of a few, who having the distemper before the embarkation, communicated it to their companions on board the ships, and in the barracks after their arrival.

These were the principal diseases of our troops before they marched. The less frequent, were dropfies and consumptions; whereof the former were the consequences of obstinate autumnal fevers ill cured; and the latter, of neglected colds.

But that which was the most alarming was a fever of a malignant nature, slow in its course, attended with a sunk pulse and a constant *stupor*: the novelty and danger, more than the number seized, made this distemper considerable. The cause was at first mistaken, but afterwards it appeared to arise from the foul air of some of the wards of the hospital crowded with sick; especially of one room in which a man lay with a mortified limb. This fever was confined to the hospital; and as it generally begins either there,

1742. there, or in jails, it shall hereafter be distinguished by the name of the *jail* or *hospital-fever*.

1743. In the beginning of February, the troops moved from their winter-quarters, and marching into *Germany*, were cantoned in the country of *Juliers*, and at *Aix-la-Chapelle*. Only part of the cavalry was left at *Brussels*; and the sick and weak, to the amount of 600, being collected from all the garrisons, were put into the general hospital at *Ghent*. The weather being favourable, the troops entered *Germany* in good condition.

Soon after, the *Influenza* \* passed through a great part of *Europe*; it was sensibly felt at *Brussels*, though but little in the cantonments, otherwise than that many, who in the preceding autumn had been seized with agues, then relapsed. As to the other disorders, they were the same as in *Flanders*, viz. coughs, pleurifies and the like, from taking cold in a rigorous season.

From the arrival of the troops at their cantonments till the beginning of May, the weather was very cold, with extraordinary snows, that began to fall towards the end of March and continued for seventeen days; in the midst of which the troops left their quarters, and crossed the *Rhine*. The march was long, and the roads deep; but as the soldiers came every night into warm houses, and had

\* A short fever attended with a violent catarrh.

good

good provisions, so few fell sick by the way, that in both 1743. marches, from *Ghent* to the cantonments, and from thence to the place of encampment, in winter, and in the worst weather, we did not lose twenty.

In the beginning of May, the weather suddenly changed, and the troops, on the 17th, encamped at *Hoechst*, on the banks of the *Main*, in an open and healthful country.

### CHAP. III.

*A general account of the diseases of the British troops, during the campaign in Germany, in the year 1743; and the ensuing winter in Flanders.*

THE ground, though naturally good, was not yet tho- 1743. roughly dry; and though the days were now warm, the nights were still cold and condensed the vapours. These interchanges of heat and cold, joined to the moisture inseparable from tents, could not but affect the health of men unused to the field; and accordingly many were seized with inflammatory disorders of sundry forms.

The flying hospital was opened at *Nied*, a village in the neighbourhood of the camp, which in three weeks received about 250 sick. When the number was 220, the distempers were classed, and stood thus: of pleurifies and

D

peripneu-



1743. peripneumonias, 71; rheumatic pains with more or less of fever, 51; inflammatory fevers, without rheumatic, or pleuritic pains, 25; intermittents, 30; hard coughs without fever, 9; old coughs and consumptions, 7. The rest had either fluxes, or some inflammatory symptom different from these; and several slighter cases remained in the camp. The intermitting fevers and fluxes were also accompanied with a considerable degree of inflammation.

This, with little variation, is the first state of the camp-diseases; for the nights being yet cold, and the ground wet, it is easily conceived in what manner our men must suffer, who lie in tents without any covering. Besides, soldiers are often exposed to rain, and have not the means of drying their clothes; at other times, for want of occupation, they are apt to lie down on the grass and fall asleep in the sun.

Hence the diseases, from the first encampment till past the summer solstice, are all highly inflammatory. Fluxes, remitting, and intermitting fevers, during this period are never general; and such as occur are never without some inflammation.

The cavalry had not near their proportion of sick, and indeed never have in camps; for the care of the horses gives the men an easy but constant employment, their cloaks keep them dry in rains, and serve for bed-clothes  
at

at night. The officers enjoyed perfect health, as they always do in the first part of a campaign. 1743.

On the 22d of June, we marched to *Aschaffenburg*, where the army encamped on a dry and airy field. In the hospital were left 500; so that in five weeks the proportion of the sick to the whole, was about 1 to 29. Before this motion of the troops, the sickness had sensibly decreased, and it still continued to decline in the new camp; for the weakest were already in the hospital, and the rest were somewhat inured to the field. Add, that the nights were now warm, and that there had been no rain to wet the clothes of the men, or the ground on which they lay.

On the 26th, in the evening, the tents were struck, the army marched all night, and next morning fought at *Dettingen*. On the night following, the men lay on the field of battle, without tents, exposed to a heavy rain; next day they marched to *Hanau*, where they encamped in an open field, and on good ground; but it was then wet, and for the first night or two they wanted straw. By these accidents, a sudden change was made in the health of the army. For the summer had begun early, and the heats had been great and constant; but the free and uninterrupted perspiration, attending those very heats, had as yet prevented any general sickness. Now, the pores were suddenly stopped, and the humours tending to putrefac-

1743. tion were turned upon the bowels, and produced a dysentery, which continued for a considerable part of the season. In the space of eight days after the battle, about 500 were seized with that distemper; and in a few weeks, near half the men were either ill, or had recovered of it. The disease was common, though not nearly so frequent, among the officers; of whom those were first seized who happened to lie wet at *Dettingen*; the rest suffered by contagion.

The dysentery, the constant and fatal epidemic of camps, began sooner this season than it did in any succeeding campaign. Now, as the usual time of its appearance is not before the latter end of summer, or beginning of autumn, the cause has been unjustly imputed to eating fruit in excess. But the circumstances here contradict that notion; for this sickness began and raged before any fruit was in season (strawberries excepted, which, from their high price, the men never tasted) and ended about the time the grapes were ripe, which growing in open vineyards were freely eaten by every body.

To this, add the following incident. Three companies of *Howard's* regiment, which had not joined us, marched with the King's baggage from *Ostend* to *Hanau*; where arriving a night or two before the battle, and having orders to stop, they encamped for the first time at a small distance from the ground that was afterwards occupied by the  
army.

army. These men had never been exposed to rain, nor had 1743. lain wet; by this separation from the line, they were also removed from the contagion of the privies; and having pitched close upon the river, they had the benefit of a constant stream of fresh air. By means of such favourable circumstances, it was remarkable, that while the main body thus suffered, this little camp almost intirely escaped\*; though these men breathed the same air, the contagious part excepted, used the same victuals, and drank of the same water. This immunity continued for six weeks, until the army removed from *Hanau*; when these companies joining the rest, and encamping in the line, were at last infected: but they suffered little, as the flux was then much upon the decline.

The dysentery continued all the month of July and part of August, to which the weather contributed. For soon after the above-mentioned rains, which had cooled the air, the heats returned, and for some weeks were so great, that the humours, already disposed, were farther prepared to receive the infection. Of this, the chief *fomes* seemed to be the foul straw and the privies; for, as soon as we left that ground, on which we had so long encamped, the sickness visibly abated.

The numbers infected occasioned worse symptoms; as in the case of the small-pox, plague, and every other pu-

\* I heard of only one man that was taken ill of the bloody flux.

1743. trid and infectious distemper. But the flux is particularly destructive in full hospitals, where the corrupted steams being accumulated, are raised to a high degree of virulence; of which fact, this sickness afforded the following fatal instance.

The village of *Feckenheim*, a league from the camp, was employed for an hospital; into which, during our stay at *Hanau* (besides the wounded from the field of battle) about 1500 sick were sent from the line; and of that number the greatest part were ill of the dysentery. By these means, the air became so much vitiated, that not only the rest of the patients were infected, but the apothecaries, nurses and others employed in the hospital, with most of the inhabitants of that place. To this was added a still more alarming distemper, namely the jail or hospital fever, the common effects of foul air from crowds and animal corruption. These two combined occasioned a great mortality in the village; while such of the men as were seized with the dysentery, and not removed from the camp, though wanting many conveniencies that others had in hospitals, kept free from this fever, and commonly recovered.

On the 16th of August, we decamped from *Hanau*, and came to *Wissbaden*; where four fresh battalions from *England* joined us. On the 23d, we crossed the *Rhine*; and on the 30th of the same month, encamped at *Worms*, along  
the

the river, where we remained till the 25th of September. 1743. All these encampments were on dry ground, and in an open country.

The month of August was warm and dry, without fogs; and during the rest of the autumn the weather continued fine, allowing for the abatement of heat, and the usual dews of that season. In the end of August, though the days were still hot, the nights grew cool; and in the beginning of October the cold was so far advanced, that the fields were covered with hoar-frost in the morning.

From the time of our leaving *Hanau*, the dysentery so sensibly abated, that the change could only be ascribed to our leaving the infectious privies, the foul straw, and the filth of a long encampment. When the army crossed the *Rhine*, this distemper made but a third part of the sickness, from having been lately almost the only complaint. In a month after, it was scarce seen, unless in a few, who by reason of imperfect cures, colds, or errors in diet, happened to relapse.

About the middle of August, when the flux was on the decline, a new disease appeared; and daily increased as long as the troops kept the field. This was a remitting fever, the paroxysms of which came on in the evening, with great heat, drought, a violent head-ach, and often a *delirium*; all these symptoms lasted most of the night,  
but



1743. but abated in the morning with an imperfect sweat; sometimes with an hæmorrhage of the nose, or a looseness. The stomach, from the beginning, was disordered with a nausea and sense of oppression, frequently with a bilious and putrid vomiting. If evacuations were either neglected, or too sparingly made, the patient fell into a continued fever; and sometimes grew yellow, as in a jaundice. When the season was farther advanced, so that colds became frequent, this fever was attended with a cough, rheumatic pains, and the blood was fizy. The officers were not so subject to it as the common men, being less exposed; and for the like reason the cavalry, who had cloaks to keep them warm in the nights, were less liable to fall ill. Others, who belonged to the army, but lay in quarters, were least of all affected; and the less in proportion to their being little exposed to heats, night-damps, and bad lodgings. This distemper, another constant epidemic of an army, shall hereafter be distinguished by the name of the *bilious*, or *autumnal remitting* and *intermitting fever of the army*.

Both in the dysentery and in this fever, several voided round worms; a symptom that occurred in these disorders every campaign. But we are not to imagine that the worms were the cause of the fever, or of the flux\*; but only that when joined to either, they made them worse.

\* See chap. i.

On

On the 25th of September, the army, free from the dysentery, but with a daily increase of the remitting fever, advanced to *Spiers*, but came back on the 13th of October. The weather, during this march, being cold and rainy, upon the return of the troops, above 800 were sent into the hospital, and most of them ill of this fever.

Three days after, the army moved to *Biberic*, and there breaking up camp, on the 25th of October, the *British* in different divisions began to return to the *Netherlands*. The weather being favourable to the march, which continued a month, and the soldiers coming every night into good quarters, so few fell ill by the way, that our troops arrived at their several garrisons with scarce the loss of a man.

But three thousand sick were left in *Germany*; part at *Feckenheim* near *Hanau*, and the rest at *Osthoven* and *Bechtheim*, two villages in the neighbourhood of *Worms*. The state of those at *Feckenheim* has been already mentioned\*: there the hospital-fever and dysentery grew daily worse. Few escaped; for however mild or bad the flux was, for which the person was sent to the hospital, this fever almost surely supervened. The petechial spots, blotches, parotids, frequent mortifications, contagion, and the great mortality sufficiently shewed its pestilential nature. Of fourteen mates employed about the sick, five died; and, excepting one or two, all the rest had been ill, and in danger. The

\* Page 22.

E

hospital

1743. hospital lost near half of the patients; but the inhabitants of the village having first received the flux, and afterwards this fever by contagion, by the two were almost all destroyed.

The condition of the two hospitals near *Worms* was better; the men had more room, they had been admitted in a cooler season, and the distempers were less putrid. But one general hospital being established at *Newied*, the sick were removed from their several quarters, and carried down the *Rhine* to that place; where, by the change of air, those from *Feckenheim* were indeed at first relieved; but the rest, who were mixed with them, caught the infection, which the following circumstance rendered still more general and fatal. For, orders coming soon after to remove all the sick from *Germany* to *Flanders*, they were embarked in bilanders, and conveyed by water to *Ghent*; where they did not arrive till the middle of December. During this voyage, the fever having acquired new force by the confinement of the air, by the mortifications, and other putrid *effluvia*, it became so virulent, that above half the number died in the boats; and several of the remainder, soon after their arrival. Its resemblance to a true plague was farther evinced by this memorable incident. A parcel of old tents being sent on board the same bilanders with the men, were used by them for bedding; these tents, in order to be refitted, were put into the hands of a tradesman at *Ghent*, who having employed 23 *Flemish* journeymen

journeymen about the work, lost 17 of them by the distemper which they received by contagion. 1743.

The proportion of men left in the hospitals at the end of the campaign, to those who came safe into garrison, was about 3 to 13.

The winter quarters assigned the troops, were *Brussels*, *Ghent*, *Bruges*, and *Ostend*: of these, *Brussels* is the highest and the best aired. But in winter, as there is little exhalation, and consequently no dangerous moisture in the air, the situation of the place is a matter of less consequence; so that the chief concern is to have warm and dry barracks, with a sufficient allowance of fuel. The best quarters were at *Brussels*; and accordingly the sickness was there inconsiderable, in comparison to what it was at *Ghent* and *Bruges*, where the dampness of the barracks, concurring with some remains of the diseases of the field, occasioned frequent disorders in the beginning of winter. For though the troops returned to *Flanders* in apparent health, yet, soon after their arrival, several were taken ill of the remitting fever attended with inflammatory symptoms: by which it appears, that the seeds of this fever may lie some time latent in the body, and break out upon catching cold, before the frosts have restored the tone of the bowels, braced the rest of the fibres, and purified the blood.

1744. In the beginning therefore of winter, these remittents were the prevailing disease of the garrisons; and next to them, jaundices without any fever. At *Brussels*, where the barracks were dry and warm, the fevers were few, and the jaundice uncommon; but at *Ghent* and *Bruges*, both were numerous. Yet the continuance of the fever was short; for it disappeared in December, and was succeeded by no other disorder than coughs and inflammations from colds, just as in the preceding winter.

No epidemic appeared in the spring. The only disease, besides colds, was the malignant fever, which came from *Germany*, and was still fatal in the hospital at *Ghent*. Some degree of it was likewise felt in the regimental infirmaries at *Bruges*, which had been too much crowded upon our first coming into winter quarters.

#### C H A P. IV.

*A general account of the diseases of the campaign in Flanders, in the year 1744.*

THE allies first encamped at *Anderlecht*, within a league of *Brussels*, on the 13th of May; on the first of June, we moved to *Berleghem*, and lay there till the 31st of July, when we crossed the *Scheld*, encamped at *Anstain*, in the territory

territory of *Lisle*, and there remained almost all the rest 1744. of the campaign.

This year the *British* took the field with five new battalions, and at *Berleghem* we were reinforced with five more from *England*; which number, with the *additional*s to the dragoons and with the recruits, made our national troops, in this campaign, exceed those of the former by upwards of ten thousand.

The first three days of the encampment were warm for the season, the succeeding ten were cold; but afterwards the weather becoming mild and so continuing, with moderate heats, the summer proved very favourable for the field. Before the army passed the *Scheld*, there being no hard duty, and the forage being at hand, the men suffered little by wet clothes, and had no fatigue: hence the sickness was so moderate, that during the first ten weeks encampment, we sent only about 600 into the hospitals, which were at *Ghent* and *Brussels*, viz. not above  $\frac{1}{11}$  part of the whole.

Two thirds of these disorders were merely inflammatory, being either pleurifies, peripneumonies, quinseys, rheumatisms with fever, or the like. The rest were mostly vernal agues, with a few fluxes and other casual diseases, generally accompanied with inflammation, as in the beginning of the former campaign\*.

\* Page 18.



1744. Now, as to the inflammatory diseases of a camp, it may be proper once more to observe, that though upon first taking the field, coughs and stiches, with inflammations of the lungs and sides, are the common effects of catching cold, yet towards the summer solstice, as the weather grows warmer, the breast is less liable to be affected; so that the colds then are rather productive of a continued, or a remitting fever, with fizy blood, than of any of the above-mentioned inflammations. It ought also to be observed, that this fever, with proper management, may generally be removed in a few days; but when neglected at first, by the omission of bleeding, by the sick continuing in camp, or being carried in waggons to distant hospitals, it is never without danger.

After the army came into the territory of *Lisle*, an hospital was opened at *Tournay* on the 23d of August; into which at first were sent only 50 sick; and these being all that had been taken ill since the troops crossed the *Scheld*, shewed how healthful the camp then was. But in this small number there appeared a change in the disorders from inflammatory to putrid; most of them being either remitting fevers, or dysenteries.

From the end of August to the middle of September, there fell a great deal of rain; so that the men, who went out on foraging parties, were often wet; and the ground whereon the foot encamped being low, retained the

the water. Hence, by the first of October, we had in the hospital above 450 ill of the dysentery, besides some slighter disorders that remained in the camp.

This however was the height of that distemper, which, considering the number of our troops, was inconsiderable, compared to its frequency in the former campaign. The reason was plain; the last summer had been so hot, that by the end of June the humours had already acquired an acrimony; in which state, the rains at *Dettingen*, and the lying wet, giving a sudden check to perspiration, many were seized at once; and from thence sprung the infection, which was increased by the hot weather, and by the privies of a long encampment: but, by the temperature of this summer, the dysentery did not begin till late, and then could make little progress, from the constant coolness of the season.

The remitting fever of the camp, more regular in its appearance than the flux, began but a little later than in the preceding year, was frequent in the end of September, but never so general as before. The symptoms were also more moderate, and there was seldom any yellowness on the skin as in the former campaign; but when the weather grew cold, this fever was often attended with a cough, infarction of the lungs, or rheumatic pains; which symptoms, as was said above\*, did not properly belong to the

\* Page 24.

fever,

1744. fever, but were only accessions to it from extraordinary colds.

The rains were succeeded by fine weather, which continued till the beginning of October; but then being followed by heavy and cold rains, the sickness must have increased had not the campaign ended soon after: for on the 16th some of our troops were sent into winter-quarters, and in a few days they were followed by all the rest.

On breaking up, we had about 1500 sick in the hospitals at *Tournay*, *Ghent* and *Brussels*; which made only the 17th part of all that took the field. The number of those who died during this campaign, and in the hospitals after it, did not exceed 300. The mildness of the season, the dry encampments, the frequent exercise given to the troops by foraging parties (when the camp was fixed at *Anstain*) and the early retreat into winter-quarters, all concurred to preserve the health of the army.

The troops returning so soon and so well into garrison, carried with them few seeds of diseases. The dysentery, having been for some time on the decline, was but a little revived by the wet weather. And as half the army had been hardened by two campaigns, the remitting fever, in quarters, was chiefly confined to the recruits and new regiments which had encamped this summer for the first time.

The

The *British* returned to the same garrisons which they had left. At *Brussels*, the general hospital was kept up, but at *Bruges* and *Ghent*, the several regimental surgeons had orders to take care of all their sick in barracks which were provided for them, and they had medicines and other necessaries at the public expence. In each of these garrisons was stationed a physician, to whom those surgeons were occasionally to apply for assistance. This scheme of separate regimental infirmaries, though only intended to save the charge of one great hospital, answered another purpose, which was that of preventing infection, the common consequence of a large and crowded house.

At *Ostend*, remained two battalions, which having garrisoned the town during the campaign, enjoyed good health, with the exception of a few disorders. The remitting fever was unknown there, and the intermittents, with some mild fluxes, were confined to the common soldiers, who by out-guards and night-duty were most exposed to cold and wet; for neither our officers, nor the people of the place, had any sickness among them.

F

CHAP.

## CHAP. V.

*A general account of the diseases of the campaign in Flanders, in the year 1745.*

1745. ON the 25th of April, the army taking the field encamped again at *Anderlecht*, and on the 9th of May advanced to *Briffoel*.

The weather being mild, the sickness was moderate, and of the same kind with that of our former campaigns. Inflammatory disorders were common, and, as before, mostly in the form of a pleurisy, or peripneumony; not so often in that of an acute rheumatism, as the weather was yet too cold for tempting the men to sleep on the grass, the common cause of that distemper. The vernal intermittents were also of an inflammatory kind, as were likewise the few fluxes that appeared. The small-pox was the only new disease, which came with the recruits from *England*, but did not spread; and indeed we have never known it of any consequence in the field.

The battle of *Fontenoy* was on the 11th, on which day the weather was fair, and the following night was so dry and warm, that though most of the men lay without cover, and all had been fatigued, yet no sickness ensued. Next day an hospital was opened at *Ath* in the cazernes of *St. Roc*, which received about 600 wounded: the rest,

to

to the amount of above 1200, were carried off by the 1745. *French*.

On the 16th, the army removed from *Ath* and encamped at *Lessines*, where we continued till the 30th of *June*. The greatest part of May being dry, and moderately warm, was favourable both to the wounded and to the men in camp. But June being cold and wet, the vernal agues and fluxes returned, and though little affecting the old and hardened troops, were severe on *Price's* and *Mordaunt's* regiments, which, with the draughts, were new, and had encamped at *Lessines* for the first time.

From this place the army moved to *Grammont*, where they lay ten days, and from thence marching to *Brussels* encamped on the plain of *Dieghem*; which being a dry, open and elevated piece of ground, is reputed the most healthful for a camp in the *Netherlands*. From hence, after a month's stay, we moved to *Vilvorde*; where the soil being still dry, the country airy, and the weather temperate, the men continued so very healthy, that in the middle of September few battalions returned above twelve sick; which was as low a number as could be expected in the best quarters.

The mildness of the weather, the dryness of the ground, and the little fatigue which the troops underwent, concurred in making the autumn, usually a sickly season,

F 2

uncommonly



1745. uncommonly healthful. The dysentery had been frequent in the new regiments only, and was easily cured; nor could the remitting fever ever be called epidemic. For though it began about the end of August, and was the most frequent disease throughout the rest of the campaign, yet so inconsiderable was it, that no battalion at any time returned above seven or eight ill of that distemper; and those with milder symptoms than had been known in the former campaigns.

It was observable, that when the army made a small remove to form a line along the great canal, the ground being low and close-planted, the effects of moisture were immediately seen; but upon returning to our former camp, they soon disappeared.

On the 24th of October, the weather continuing fair and temperate, the camp broke up, and the troops went into winter-quarters. Some time before, ten battalions had been sent home; and in the beginning of November, the whole *British* infantry, with part of the cavalry, being recalled to suppress the rebellion, marched to *Willemstad* and embarked for *England*.

Thus far an account of the health of the main body: the state of the separate corps was as follows. In the end of August, *Ostend* having surrendered, the garrison, consisting of five battalions *British*, was conducted to *Mons*, where

where they continued about three weeks. These men 1745. had been so healthy, that when they marched out, upon the capitulation, they left only ten sick; but the same corps being put into damp barracks at *Mons*, whilst the town itself was surrounded with an inundation, the autumnal diseases so much prevailed, that in this short time 250 were taken ill, and left behind when the rest set out for *Brussels*. The disorders were dysenteries, remitting and intermitting fevers; and to these fevers, as is usual towards the end of autumn, were joined coughs, rheumatic pains, and other effects of cold; not without some mixture of the jail-fever, produced by the close and crowded barracks at *Mons*.

*Handyside's* regiment, another detached corps, came over this summer for the first time, and about the middle of July was put into the citadel of *Antwerp*. The air of that city is moist; the fort in particular is exposed to the exhalations of the adjacent marshes; and the barracks were on ground floors and very damp. In consequence of this, the dysentery, with remitting and intermitting fevers of a bad kind, became general among these men. In the beginning of October the sick of this battalion amounted to 163, a number five or six times greater than there was in any other corps then in the field. Such a disproportion seemed only to be owing to a greater degree of moisture; since the other new regiments, that were then in camp, suffered little; and in the town of *Antwerp*, fluxes, remitting

1745. remitting and intermitting fevers were also frequent among the inhabitants, whilst the people of *Brussels* enjoyed perfect health. And when *Ghent* was taken, part of *Rich's* dragoons having escaped from thence and returned to *Antwerp*, were seized with the epidemic diseases of that place; whilst the rest of the regiment, which lay in camp, continued free both from the fevers and the flux.

Upon the whole, when the campaign ended, we had in the hospitals at *Antwerp*, *Brussels* and *Mons* only about 1000 sick: a small number, when we consider that during this summer there had been in *Flanders*, besides the cavalry, 29 battalions, whereof some had never been in the field before. From the beginning to the end of the campaign, exclusive of those who were killed in battle, or died of their wounds, the deaths did not exceed 200. The moderate heats, the dryness of the grounds for encampment, the little fatigue, and little exposition to wet and damps on marches or other duty, and the early return to winter quarters, were circumstances tending to make this, of the whole war, the most healthful campaign.

## C H A P. VI.

*A general account of the diseases of the campaign in Great Britain, 1745 and 1746.*

TOWARDS the end of the campaign 1745, the three bat- 1745.  
talions of foot-guards, and seven others, embarked in *Holland* and landed in the south of *England*. The passage was short, and the troops leaving the field before the nights grew cold arrived in perfect health. The rest of the infantry, having lain longer in camp, embarked later in the season; and being detained long on board by contrary winds, came sickly to *Newcastle*, *Holy-island* and *Berwick*. For some of the men, during the voyage, being taken ill of the remitting fever, this fever, by the crouds and the confined air of the *hold*, was soon converted into the jail-fever, and became infectious.

At *Newcastle*, an hospital was made for the sick that landed there; and the houses taken for that purpose, receiving also those who fell ill in the army commanded by Marshal *Wade*, were so much crouded, that the air was soon corrupted. The disease became so infectious, that the nurses and most of the medical attendants were seized with it; insomuch that three of the apothecaries of that place, with four of their apprentices and two journeymen employed in the hospital, died of it.

1745. *Ligonier's* and *Price's* regiments landed at *Holy-island*. Both had embarked in good health, after leaving their sick at *Antwerp*; but by the time they arrived, they were in no better condition than those who came to *Newcastle*. Their distress was unforeseen and unprovided for. Ninety-seven were taken out of the ships ill of the jail-fever, whereof forty died; and the people of the place receiving the infection, in a few weeks buried fifty, the sixth part of the inhabitants of that island. The same fever was carried into *Berwick* by the soldiers who landed there; but the sick being fewer, the distemper did not spread.

In the beginning of December, a body of troops, consisting of 12 battalions and 3 regiments of cavalry, under the command of his Royal Highness the Duke, assembled at *Litchfield*. The *Quakers* had made a present of flannel under-waistcoats to the soldiers, which was a seasonable provision for a winter campaign. The march was dry; the army encamped at *Packington* for three days only; at *Stone*, the men lay for one night upon their arms: but at all other times lying in houses, and having plenty of straw, fuel and provisions, they were more healthy than could be expected in a campaign at that time of the year.

Towards the end of December, most of the infantry were sent into quarters, whilst the cavalry and 1000 foot advanced

advanced to *Carlisle*. The few who fell ill on the march 1745. were left in the towns on the road to the care of the country surgeons, and were well treated.

But the troops having continued several days at *Litchfield*, a greater number of sick was left in that place than in any other. On this account, the work-house was fitted up for an hospital; where too many being admitted, the air was corrupted, and the common inflammatory fevers putting on a malignant form, several died. But at all other places where the soldiers were taken ill, and where there was no common hospital, this jail-fever was unknown.

The autumnal remitting fever, disguised with many symptoms of cold, could be traced in the troops that came over from *Flanders*, till the frosts in December put an end to it. But the prevailing disorders were hard coughs, stitches, pleuritic and rheumatic pains, with a few fluxes, the natural consequences of the men being exposed to colds and rains on duty, or wet feet on the march. There were some intermittents besides, but all with such a mixture of coughs and infarctions of the lungs, as made bleeding the most necessary remedy. In general, bleeding was so requisite, that in every town through which the troops past, and where the sick were to be left behind, the physician of the army believed the surgeons and apothecaries



1746. caries of the place more than half instructed about the cure of the patients committed to them, when he had inculcated the necessity of large and repeated bleedings: for the men were at this time well fed, and from taking cold, their blood was soon inflamed.

*Carlisle* was invested in the beginning of January, and taken in a few days. The shortness of the time, the mildness of the weather for the season, and the good cover which the troops found near the works, made the sickness so inconsiderable that only one man died there. And during the whole expedition this Body did not lose above 40 men, though there had been in all between 600 and 700 ill.

On the 10th of February, the army, under the command of his Royal Highness the Duke, marched from *Edinburgh* for *Perth*. It consisted of 14 battalions and three regiments of cavalry; which being too large a number to be all billeted in the private houses of that town, two battalions were quartered in the churches. Provisions were in plenty, but the quarters were generally cold; so that many fell ill of the common inflammatory disorders of winter. The hard coughs, in particular, with pleurifies and peripneumonies were most frequent.

In the beginning of March, the troops advanced from *Perth* to *Montrose*, and from thence to *Aberdeen*, leaving 300  
sick

sick behind, who were well accommodated in the corporation-halls, or in the private houses of those towns.

Till the end of March, the whole infantry was quartered in *Aberdeen*; but afterwards nine battalions were cantoned at *Inverurie* and *Strathbogie*; and at this time, one battalion more landed at *Aberdeen* and joined the army.

The weather being all this time sharp, with frost, snow, and easterly winds, the inflammatory diseases continued. But whilst the men suffered by cold beds, guards, and out-duties, or by their own mismanagement, the officers escaped, having warm quarters, and being less exposed to cold: only in the beginning of March, when the weather was very cold, a few were seized with the gout.

The sick were well lodged in the town-hospital and in other large houses, where having a free air, they were preserved from the hospital-fever. Including those at *Inverurie* and *Strathbogie*, about 400 sick were left behind when the army moved; but of this number a small proportion died.

On the 23d of April, the army first encamped at *Cullen*; the next day, we passed the *Spey*; and on the 17th, after the battle of *Culloden*, we advanced to *Inverness*, and encamped on the south side of the town.

1746. At *Strathbogie* and *Inverurie*, the duty had been constant to guard against a surprize; one day's march had been long and rainy, the encampment early, and colds caught by wading the rivers: all these circumstances concurred to make the sickness considerable. Before we reached *Inverness*, about 70 men fell sick, and were left in towns by the way. After taking the field, the inflammatory diseases still increased, and were the more severe, as the climate was cold, and the camp exposed in an open country to piercing winds. The pleurifies and peripneumonies were particularly violent, and tended quickly to suppuration.

At *Inverness*, two malt-barns received the wounded; in all 270. There were several who had cuts of the broadsword, till then uncommon wounds in our hospitals; but these were easily healed, as the openings were large in proportion to the depth, as they bled much at first, and as there were no contusions and eschars, as in gun-shot wounds, to obstruct a good digestion.

Besides these barns, two well aired houses were prepared for the sick. The regimental surgeons had also orders to provide quarters for their men when they were taken ill, with the liberty of sending to the general hospital such a proportion of the worst cases as would not croud it. By this dispersion of the sick, and the preservation

1746. preservation of a pure air in the wards, it was hoped that any contagion might be moderated, if not prevented; though it was more than ever to be apprehended, from the smallness of the town, the jails filled with prisoners, many of them wounded, the prospect of a long encampment and camp-diseases, the crowds and filth of a place where the markets of an army were kept; and lastly, a morbid state of air, from the measles and small-pox which had prevailed in the town before the arrival of the army.

All these circumstances concurred to put us more upon our guard, and therefore the greater care was taken to divide the sick, and to keep the wards clean. An order was likewise given to clean the jails every day, to remove speedily the bodies of those who died in them; and to lessen the croud, part of the prisoners were sent on board some ships that were lying in the road, with a liberty of coming upon deck for the air.

In this manner the month of May passed without any infection; and the weather, for the climate, being unusually dry and warm, the inflammatory sickness in the camp had visibly declined, when an unforeseen accident rendered the malignant fever more general and fatal than had been at first apprehended. For, about the end of that month, *Houghton's* regiment, which with three more had  
been



1746. been sent as a reinforcement, landed at *Nairn* and joined the army. A few days after, twelve men of that corps were sent to the hospital with fevers, and were bled largely upon admision. But next day, not observing the coughs, fitches, and rheumatic pains, the common symptoms of the fever at that time prevailing in the camp, and finding that the bleeding had sunk the pulse, and that some had an uncommon *stupor*, the physician immediately referred this fever to the malignant kind; concluding it had taken its rise from the confinement and bad air in the ships during the voyage; yet he thought it strange, that this battalion, and none of the rest who failed with it should be so sickly.

But upon further enquiry, he was informed that this fever came directly by contagion from the true jail-distemper, communicated in the following manner. Not long before, a *French* ship had been taken on the coast of *England*, on board of which some troops had been sent to assist the rebels, and amongst them a few *English* soldiers, who in *Flanders* had gone over to the enemy. These deserters upon being taken were thrown into jails in *England*, where they were kept till an opportunity offered of sending them by the transports to be tried by a court-martial at *Inverness*. They were in all 36, and having brought with them the jail-fever gave it to this battalion with which they happened to be embarked.

In

1746. In three days after coming on shore, six of the officers were seized with it, and the regiment, in the few days they were quartered at *Nairn*, left about 80 sick; in the ten following, while in camp at *Inverness*, they sent to the hospital about 120 ill of the same fever: and though the virulence of the distemper diminished afterwards in their march to *Fort-Augustus*, and from thence to *Fort-William*, yet that corps remained for some time very sickly.

The symptoms of the jail-fever were in every point so like those of the hospital-fever, that, as they were formerly only conjectured to be the same distemper, they were now proved to be so really. Being thus introduced, it soon spread, not only in the hospitals but among the inhabitants of the town, whilst the ordinary camp-diseases, after the beginning of May, sensibly declined both in violence and number. The weather being all the month of May not only dry, but warm for the climate, the camp at this time was subject to no other diseases than such as always attend the beginning of a campaign; except that there were fewer agues, and more diarrhoeas. For, a looseness accompanied most of the disorders, but was slight, and seemed not to be so much the effect of colds as of the river-water, which comes out of *Loch-Ness*, and has generally been accounted laxative to people unaccustomed to it. This looseness ceased without medicines, or soon yielded to astringents.

9

On



1746. On the 3d of June, four battalions were left at *Inverness*, and nine, with a regiment of horse, marched to *Fort-Augustus*; leaving in the hospital about 600 sick, besides the wounded.

The new encampment was close by the fort at the end of *Loch-Nefs*, in a valley surrounded by mountains, except where it opens upon the lake. This lake is a large body of fresh water, twenty-four miles in length, somewhat more than a mile broad, lying between two parallel and straight ridges of mountains, and affording the prospect of a vast canal. It is curious on account of its great depth, and its never freezing. The common soundings are from 116 to 120 fathoms, and in one place they run to 135. The water is perfectly soft and sweet, and readily bears soap; yet to some it proves laxative, and is generally diuretic. The people of the country recommend it for the scurvy; and indeed from these qualities there is reason to believe it may be proper in some *species* of that distemper\*. A great many small but heavy stones, of the marcasite kind, are found upon the beach; and it is not improbable that the bottom may be covered with the like. But whether the water is preserved from freezing by some mineral prin-

\* *Viz.* In scurfs, tetters, and lesser degrees of the *lepra*, which are commonly, but improperly, supposed to proceed from a scorbutic humour. *Vid.* part iii. ch. vii.

ciple,

ciple, by its vast depth, or by some hot springs, has not been determined\*. As it is stored with large and good fish, and is without any particular taste, it should seem to be little, if at all, impregnated with any mineral. And besides being always cool, there is the less reason to suppose any hot springs at the bottom, as none of that kind are found any where else in the country. The lake is fed by several small rivers which are liable to have ice, and empties itself by the *Nefs*, a large clear river, which after a course of six miles runs into the *Firth of Murray* at *Inverness*, and, like its source, is never known to freeze.

*Fort-Augustus* has always been a healthy garrison; but *Fort-William*, which lies towards the west coast, at the distance of 28 miles from the other, has ever been sickly, and in particular productive of agues and the bloody-

\* It is most probable, that the not freezing of this lake is owing to its great depth. For Count MARSILLI observes (*Hist. Phys. de la Mer*) that the sea, from 10 to 120 fathoms, is of the same degree of heat from December to the beginning of April, and he conjectures that it remains so for the rest of the year with little variation. Now, it is reasonable to believe, that the great depths in fresh water will be little more affected, than those of the sea, with the heat and coldness of the air; and therefore that the surface of *Loch-Nefs* may be kept from freezing by the vast body of water underneath, of a degree of heat considerably greater than that of the freezing point. Another circumstance may concur: there is never any perfect calm on the lake, and the wind blowing always from one end to the other, makes such an undulation as must very much obstruct the freezing of the water. This account seems to be confirmed by an observation commonly made in the neighbourhood, which is, that when the water is taken out of the lake and kept without motion, it then freezes as soon as any other.

H

flux.

1746. flux. On the west coast there are continual rains, and the fort stands in a narrow and moist valley furrounded by mountains; so that there is not only a greater fall of rain, but a slower evaporation in that part than in any other of the country.

There being no straw at *Fort-Augustus*, the men were ordered to cut the heath for bedding; and it was observable, that such as were most careful in providing themselves with a due quantity, and renewing it often, were least sickly.

The weather, for the last half of May and beginning of June, had been uncommonly dry and warm, but afterwards it grew cold and rainy. Upon this change, the dysentery began to be more frequent; but there being constant winds, which kept the ground tolerably dry, the increase of the distemper by contagion seemed to be thereby prevented.

The flux, and every other disease of this encampment, being attended with fizy blood and other marks of inflammation, we found that large and repeated bleedings were more necessary here than in a warmer climate. But vomits were not so efficacious as they had been abroad, though at this time they were of more service than in the spring; as if, even in this latitude, some degree of corruption in the humours could be traced in the summer.

Besides the dysentery, there were fluxes of a milder kind among the soldiers, proceeding either from errors in diet, wet feet, or wet clothes; or accompanying fevers, when, from the want of sufficient covering, the sick could not freely perspire.

The inflammatory fevers, in proportion as the summer advanced, appeared with less violent symptoms, and unless from extraordinary expositions to cold, had not so often the form of a peripneumony, pleurisy, acute rheumatism, or the like; but were chiefly distinguishable by the fizyness of the blood.

The intermittents partook both of a putrid and inflammatory nature, and therefore required both bleeding and evacuations of the *prime via*. But they were not numerous; as the constant winds prevented a stagnation of the air, and soon dried the ground after rain.

In this camp, we had no other accommodation for the sick than a few huts in the neighbourhood: apprehending therefore bad air, we sent as many as could be transported to *Inverness*; and by this precaution the hospital-fever was retarded but not prevented. For when the sick multiplied, these infirmity-huts were soon crowded, the air was vitiated, the hospital fever broke out and became fatal; and when joined to any common inflammatory disorder, a mixture of the two arose which



1746. produced some perplexing cases, from the indications of cure being so contradictory.

In the middle of August, the camp broke up, leaving at *Fort-Augustus* between 300 and 400 sick, who were afterwards carried to *Inverness*. By this time the hospital-fever was frequent among the inhabitants of that town; but was milder than usual, from the coolness of the weather, and the open situation of the place.

From the middle of February, when the army crossed the *Forth*, to the end of the campaign, there had been in hospitals upwards of 2000 men, including the wounded; of which number near 300 died, and principally of this malignant fever.

#### CHAP. VII.

*A general account of the diseases of the campaigns in Dutch Brabant, in the years 1746 and 1747.*

1746. THIS was the state of the health of the troops in *Britain*. In the *Low-Countries*, from the beginning of this campaign, there had been only three battalions and nine squadrons *British*. In August, four battalions were sent from *Scotland* to join the army, which landing at *Willemstad*, and remaining some time in that low and marshy ground,

ground, during the height of the sickly season, were soon 1746. afflicted with the remitting and intermitting fevers of the country, and before they marched, were obliged to send many to the hospital at *Oosterhout*.

The campaign abroad being attended with several fatiguing and wet marches in autumn, after a hot summer, and continuing late, proved very sickly. For at breaking up, exclusive of the wounded from the battle of *Rocoux*, about 1500 of our men were in hospitals, which made at that time nearly a fourth part of our whole number. But there was nothing uncommon in the diseases, being such as regularly occur in the course of every campaign\*.

In the ensuing spring; 1747, the army took the field on 1747. the 23d of April, encamping first at *Gilsen* near *Breda*. The *British* consisted at first of 15 battalions and 14 squadrons, and some time after, seven battalions more arrived from *England*; but four of these being employed in *Zealand*, and three in the lines of *Bergen-op-Zoom*, these seven never joined the army.

The first days of the encampment were cold, then the weather grew mild, and continued so till the beginning of June, when it became hot. From taking the field, till

\* As the author attended the army in *Scotland* during this campaign, he could not give a more particular account of the diseases of the troops employed in the *Low-Countries*.

towards.



1747. towards the end of June, there was little rain, and all the camp-grounds were dry.

In the first six weeks, about 250 were sent into hospitals; a moderate number, considering how early the troops had left their quarters. The distempers took their usual course, that is, were mostly inflammatory.

The battle of *Laffeld* was on the 2d of July, and from about that time till towards the end of the month, there fell a good deal of rain which cooled the air. About 800 wounded were brought into *Maeſtricht*, where, among other places, a large church was employed for an hospital: this not only held a considerable number, but by its spaciousness prevented the hospital-fever; though many lay in it, during the season, who were ill of fluxes and other putrid diseases.

After the battle, the army crossed the *Maes* and encamped at *Richolt*. In a few days we moved to *Richel*, and afterwards to *Argenteau*, still keeping in the neighbourhood of *Maeſtricht*. The situation of these camps was dry and airy, and there being at first no extraordinary night-duty, the distempers were few and but little inflammatory. The dysentery did not as yet appear, unless among the guards, which, at *Richolt*, encamped on a low ground then a little wet with the rains; but the cases were few, and the symptoms mild.

From

From the 20th of July till the 10th of September, the 1747. weather was sultry, and till the middle of August the nights were nearly as hot as the days. During all that time the camp was healthy, but the wounded suffered; for the great heat either brought on slow fevers, or by relaxing the fibres and rendering the humours acrid, sometimes kept the wounds from closing, and at other times disposed them, when healed, to break out afresh. About the middle of August, though the days were still hot, yet the nights began to grow cool, and the dews to fall; and from these interchanges, to which the men in camp were most exposed, the dysentery took its rise; as it usually happens upon the perspiration being checked by cold and damps, after the humours have become acrid by continued heats.

Above half the soldiers had the distemper more or less, and it was also more frequent among the officers than had been hitherto known. The contagion ran through the neighbouring villages, and was mortal among the peasants, who either wanted medicine altogether, or used what they had better been without. But *Maeſtricht* suffered little, though it had a constant intercourse with the camp; for this town standing on a large river, in an open country, is well aired and very clean.

Notwithstanding the violence and frequency of the flux, few of our people died of it; for the sick were more dispersed,

1747. perfed, the hospitals were better aired than ufual, and the regimental furgeons having been taught by experience, either cured the men in their field-hospitals, or made fome neceffary evacuations before they fent them to the general hospital at *Maeftricht*.

In the beginning of October, we had much rain, and fuch as happened to be expofed to it, were feized with the dyfentery: but to the army in general, this rain was a favourable circumftance, as it cooled the air, and thereby foon put an end to the difeafe.

About this time the autumnal remitting fever, which had firft appeared about the end of Auguft, was frequent, but with nothing new either in the fymptoms or cure.

In a few days after the rains, the army moved towards *Breda*; and as the weather began then to be cold, coughs, pleuritic fitches and rheumatic pains, became common, either alone or combined with the remitting fever.

On the 12th of November, all the *British* got into winter-quarters.

Although there had been much ficknefs in the great camp during the campaign, there was little mortality; and at breaking up, confidering how late in the feafon it was, the numbers fent from the main body into the hospital were moderate.

But

But in *Zealand*, the ficknefs was great among the four 1747. battalions which had continued there fince the beginning of the campaign. Thefe men, partly in camp, and partly in cantonments, lay in *South-Beveland* and in the ifland of *Walcheren*, two diftricts of that province, and both in the field and in quarters were fo very fickly, that at the height of the epidemic fome of thefe corps had but 100 men fit for duty; which was lefs than the feventh part of a compleat battalion. The *Royal*, in particular, at the end of the campaign, had but four men that never had been ill. Now, the nature of the air in *Zealand*, and its effects in producing remitting and intermitting fevers and fluxes having been already fhewn, it will be fufficient to refer to that place for a general account of thefe diftempers\*; and for a more particular one, to the third part of this work †. I fhall only obferve here, that the epidemic fever, by reafon of the great heats of the feafon, not only began more early in *Zealand* than ufual, but was more fevere, and fully as fatal to the natives as to us. Our officers there were alfo fickly; though by more timely and greater care, their fevers were attended with lefs ardent and malignant fymptoms than thofe among the common men. But Commodore *Mitchel's* Squadron, which lay all this time at anchor in the channel between *South-Beveland* and the ifland of *Walcheren*, in both which places the diftemper raged, was neither afflicted with the fever nor the

\* Chap. i.

† Chap. iv. § 2.

I

flux,



1747. flux, but amidst all that sickness enjoyed perfect health; a proof, that the moist and putrid air of the marshes was dissipated, or corrected, before it could reach them; and, that a situation open to the wind is one of the best preservatives against the diseases of a neighbouring low and marshy country.

In proportion as the autumn grew cool, the fever abated of its ardour, and changed more easily into an intermittent; though irregular, and of a bad kind. The dysentery was never general, but not uncommon; and it was observable, that those who were seized with it, usually escaped the fever; or, if any man had both, it was alternately; so that when the flux began, his fever ceased, and when the former was stopped, the other returned: hence it appeared, that though the two distempers were of a very different form, yet they proceeded from a like cause.

As to the three other battalions which were sent to *Bergen-op-Zoom*, they encamped in the lines of that place, and remained there during the campaign. The town itself stands on a small eminence, but the country around being in some parts marshy, the air, though not so moist as in *Zealand*, was less dry than about *Maastricht*. The sickness was in the same proportion, being, both in kind and violence, of a middle degree between what prevailed in these two places; that is, the fevers were as much below the

rage

rage of those in *Zealand*, as they were above the mildness of the remitting ones of the great camp. And if the dysentery was more frequent in the lines of *Bergen-op-Zoom* than in *Zealand*, the reason was, that the men in the lines, doing more duty, were oftner exposed to rain, and, by being in a fixed camp, had the distemper more by contagion.

At the end of the campaign, we had in hospitals, from the main body of the *British* troops and all detachments, exclusive of the wounded, above 4000, which was something more than a fifth part of our whole number. But it is to be remarked, that the four *Zealand* battalions furnished near the half; so that when those corps went into winter-quarters, their sick in proportion to their men fit for duty were nearly as four to one.

## C H A P. VIII.

*A general account of the diseases of the campaign in Dutch Brabant, in the year 1748.*

THIS campaign, which was the last, opened early. For, upon the 8th of April, the army encamped at *Hillenraet* near *Roermond* with 15 battalions and 14 squadrons *British*. From the time of our taking the field till

I 2

the



1748. the beginning of May, the weather was cold, with some snow, high winds, and rain; but the duty was easy, and the ground naturally dry.

On the 12th of May, the army left *Hillenraet*, and in a few days came to *Nijstelroy*, where we encamped for the last time, leaving in the hospital at *Cuick* about 500, and those, as usual, mostly ill of inflammatory diseases. There was indeed an uncommon proportion of intermittents, which were not all recent cases, but for the most part relapses in such as, during the preceding campaign, had been seized with fevers in *Zealand*, or in the lines of *Bergen-op-Zoom*. These relapses were also, from the coldness of the season, attended with some degree of inflammation.

In this camp the *British* were augmented by seven battalions from *England*.

The weather was now warm, and the days often hot; but some seasonable rains, with thunder and lightning, seemed to prevent any sultry heats, and to purify the air of what was most insalutary. For, it has been remarked of thunder, that as it is most frequent in close and marshy countries, it may have for a final cause the cooling the air, and correcting the putrescency of the vapours in it when the heats are most intemperate\*.

\* Vid. MUSSCHENROEK Infit. Phys. cap. xl.

The

The ground was also dry, and the camp airy; so that the sickness was inconsiderable while the troops kept the field. 1748.

From this good state of health, the four battalions which had been in *Zealand* the last campaign were an exception, as being subject to relapse into irregular agues terminating in dropsies. So that their sick being numerous, and crowding the regimental infirmaries (which were in the cottages near the line) they soon bred a malignant fever, which they carried to the general hospital at *Ravenstein*. But there, the wards being spacious and well aired, though several of the sick were brought in with petechial spots, the contagion spread no farther.

On the 9th of July, the camp broke up and the troops went into cantonments. The head-quarters were at *Eyndhoven*, with the three battalions of guards; the rest of the foot were quartered in the adjacent villages, and the cavalry near *Bois-le-duc*.

At this time, we had only about 1000 in all the hospitals, including such as had remained from the last winter and the preceding campaign; but, in a few days after leaving the field, a fever appeared, which soon became as frequent as any that had hitherto afflicted the army. It was thus accounted for:

This

1748. This part of *Brabant* is nearly as flat as any of the *Netherlands*; the only inequalities being some sand-hills and insensible risings which give the advantage of a few feet in height to some of the villages. The soil is a barren sand, and so little water is seen, that at first sight the country might seem to be dry and healthful. But the appearance is deceitful; for, water is every where to be found at the depth of two or three feet; and, in proportion to its distance from the surface, the inhabitants are free from diseases. The country bordering upon the lower part of the *Maes* is not only unhealthful on this account, but, by reason of floods from the smaller rivers, lies all the winter under water, and continues damp throughout the summer. The moisture and corruption of the air were much increased by the inundations which had been made about the fortified towns since the commencement of the war, and sensibly became more noxious upon letting off part of the water, in the beginning of summer, after the preliminary articles of the peace were signed. For these grounds, which were once intirely covered, being now half drained and marshy, filled the air with moist and putrid exhalations. The *States of Holland* being made sensible of this, by the sickness which raged at *Breda* and in the neighbouring villages, gave orders to let in the water again, and to keep it up till winter.

This sickness was much greater near *Breda* and *Bois-le-duc*, than at *Eyndhoven* which lay at a much greater distance

from the inundations and from other marshy grounds. 1748. The moisture therefore in most of the cantonments arose principally from the subterraneous water which exhaled through the sand\*. There were two villages near *Eyndhoven*, called *Lind* and *Zelft*, the one ten, and the other fourteen feet above the surface of the water (an extraordinary height in that country) and it was observable, how much better the soldiers kept their health in both these places, than in any other of the cantonments.

At *Eyndhoven*, two battalions of the guards were quartered in the town; and the third, in the peasants houses in the country; all within the compass of a mile; yet, it was remarkable, that the battalion which lay out of the town had always three times more in the *returns* than either of the other two, though one of them had been sickly the year before in *Zealand*. Now, the height of the ground being alike to all, the difference in point of health could be ascribed to nothing but to the greater moisture of the cottages †; for, in other respects, these corps were equal, *viz.* as to diet, duty, and exercise. A similar case occurred in the cantonment of a regiment of foot, whereof one company being quartered in houses that stood upon a heath enjoyed a tolerable degree of health, while the rest, that dwelt in a wood, were very sickly. And, as a further proof how prejudicial it is to confine the air by

\* See chap. i. p. 2.

† See chap. i. p. 4.



1748. plantations, in a moist country, it was observable, that the Dutch camp at *Gilsen*, bordering on our cantonments, but lying upon an open heath, preserved a good share of health while we were at the worst.

Thus far an account of our situation; we shall next see how much the weather concurred in forming this epidemic.

The summer had been hitherto warm, but throughout July and August, whilst the sickness was greatest, the weather was fair, close and sultry. Near the inundations, the nocturnal fogs were thick and fetid. The heats abated in the beginning of September, and the distempers in proportion; but till the 20th of October, the season was never cold. About that time, we had some days of rain and high winds, and, towards the end of the month, some nights of hard frost; then the weather grew milder, and continued so while the troops remained in that country.

The first and worst appearance of the epidemic was in the form of an ardent fever. The men were suddenly seized with a violent head-ach, and frequently with a *delirium*. If sensible, they complained also of grievous pains in their back and loins, of intense thirst, and a burning heat, with sickness and oppression at the stomach, or with retchings, and vomiting of bile. Others had an evacuation of the bile by stool, with a *tenesmus*, and pains in the bowels.

bowels. This fever generally remitted from the beginning, especially upon bleeding and evacuations of the *primæ viæ*; but if these precautions were omitted, the disease went on in almost a continued form. Such was the tendency to putrefaction, that some had spots and blotches, and even mortifications almost always fatal.

With these and such other symptoms most of the cases were accompanied, during the first rage of the distemper, in the cantonments next to the inundations; but those who lay farther from the water, and were only annoyed with the natural moisture of the country and the heat of the season, had both fewer and milder fevers.

Thus, though the sickness was general, those who were near the marshes suffered by far the most, both in number and violence of the symptoms. The *Greys*, cantoned at *Vucht* (a village within a league of *Bois-le-duc*, surrounded with meadows either then under water or but lately drained) were the most sickly. For the first fortnight, none were ill; but after continuing five weeks in that situation, they returned at one time 150; after two months, 260, which was above half the regiment; and at the end of the campaign, they had in all but 30 men who had never been ill. *Rotbes's* and *Rich's* dragoons, who also lay near the inundation, were likewise very sickly. *Johnson's* regiment of foot at *Nieuland*, where the meadows had been floated all winter and were but just drained, returned some-



1748. times above half their number. And the *Scotch Fuzileers* at *Dinther*, though lying at a greater distance from the inundations, yet being quartered in a low and moist village, had above 300 ill at one time. But it was remarkable, that a regiment of dragoons cantoned at *Helwoirt* (a village lying only half a league south-west of *Vucht*) were in a good measure exempted from the distress of their neighbours, having remitting and intermitting fevers of a more favourable kind, and in a much smaller number. Such was the advantage of that distance from the marshes, of the wind blowing mostly from the dry grounds, and of a situation somewhat higher than the rest upon an open heath.

Thus the troops had scarce been a month in the cantonments when the *returns* of the whole were increased by two thousand, and afterwards they rose much higher. For the sickness continued throughout August, and only abated with the heats in the middle of September. Then indeed the fevers began to decrease in number as well as violence, the remissions were also more free; so that insensibly, with the coolness of the weather, this raging fever dwindled into a regular intermitting, and intirely ceased upon the approach of winter. It was curious to observe how these agues declined proportionally to the withering and fall of the leaf. At that time less moisture ascends, and by the shedding of the leaves, the villages become

become more open and perflated, and of course more dry 1748. and healthful.

Throughout all the cantonments the officers were much less sickly than the common men; an advantage they owed to good beds, dry rooms, and a better diet.

The peasants were great sufferers, particularly those near *Breda* and *Bois-le-duc*; but in the towns, there was less sickness, and fewer in proportion died\*. In general, the fever was most frequent among the poorer sort, who lay on ground-floors, fared ill, and wanted medicine: for without artificial evacuations, nature was able either to make no cures, or but slow and imperfect ones. This country had not known such distress for a number of years; as two such causes had not concurred; I mean the inundations, with a hot and close summer and autumn.

All this while the dysentery was little frequent; a circumstance which seems to require some attention, when one considers the corruption of the humours, and their disposition to affect the intestines. It may be remembered, that the flux was said to appear, when after great heats the perspiration was suddenly stopped by wet clothes, wet ground, or night-fogs and dews; but these, though common occurrences in a camp, are rare in quarters. Add, that the spreading of the dysentery is not owing so directly to the season, wet clothes, or other accidents, as

\* This is accounted for, page 4.

1748. to the contagion arising from the putrid excrements of those that happen to fall first ill of that distemper. Now, in the cantonments, the men were not only less liable to have their clothes wet, but when any were really taken ill from such a cause, they were so much dispersed, that their excrements could not spread the infection.

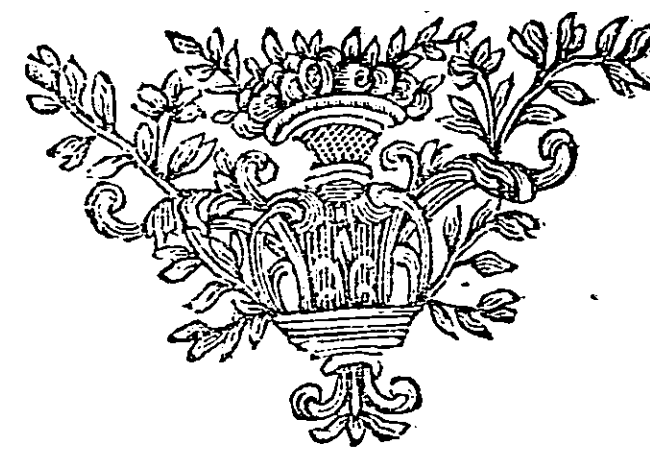
About the middle of November, the peace being concluded, the troops moved from their cantonments to *Willemstad*, and there embarked for *England*; but the wind being contrary, several of the ships lay above a month at anchor, and, after all, meeting with a tedious and stormy passage (during which the men kept mostly below deck) the air was corrupted, and produced the jail or hospital-fever.

This distemper was worst in the ships which transported the sick from the general hospital at *Oosterhout* to *Ipswich*; for, from some seeds of the disease already among them, but chiefly from the men being crowded in the hold, where they were confined for three weeks, most of them were seized with this fever either on board or soon after they landed. It was observable, that the greatest number and the worst cases were in one of the ships, in which there happened to lie two men with mortified limbs; which accident was not only the means of spreading the infection at sea, but also in the wards in which they lay after coming ashore.

The

8

The hospital, prepared at *Ipswich* for the reception of the sick from *Oosterhout* only, was obliged to admit several more from the other transports which by stress of weather put in on that coast; so that in all, we had about 400, and most of them ill of this malignant fever. As so many were brought from the hospital-ships in the last extremity, the infection and mortality were at first considerable; but by the largeness of the wards, and by billeting in the town every man as soon as he recovered (thereby removing him from new contagion and gaining more room for those who were still sick) the air was daily purified, and the distemper abated sooner than could have been expected. The hospital then broke up after it had continued about three months in *England*.



OBSER-