

An outline of the history and cure of fever, endemic and contagious : more expressly the contagious fevers of jails, ships, & hospitals, the concentrated endemic, vulgarly called the yellow fever of the West Indies : to which is added, an explanation of the principles of military discipline & economy, with a scheme of medical arrangement for the army : and a refutation of the strictures made by the late Dr. Currie on that part of the work which relates to the affusion of cold water on the surface / by Robert Jackson, M.D.

Contributors

Jackson, Robert, 1750-1827.
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Publication/Creation

Edinburgh : Printed by John Moir, Royal Bank Close, for Thomas Bryce, and Co. medical booksellers, 3 Infirmary Street, Edinburgh ; John Murray, Fleet Street, John Callow, Crown Court, Prince's Street, Soho, and W. Grace, West Smithfield : London, 1808.

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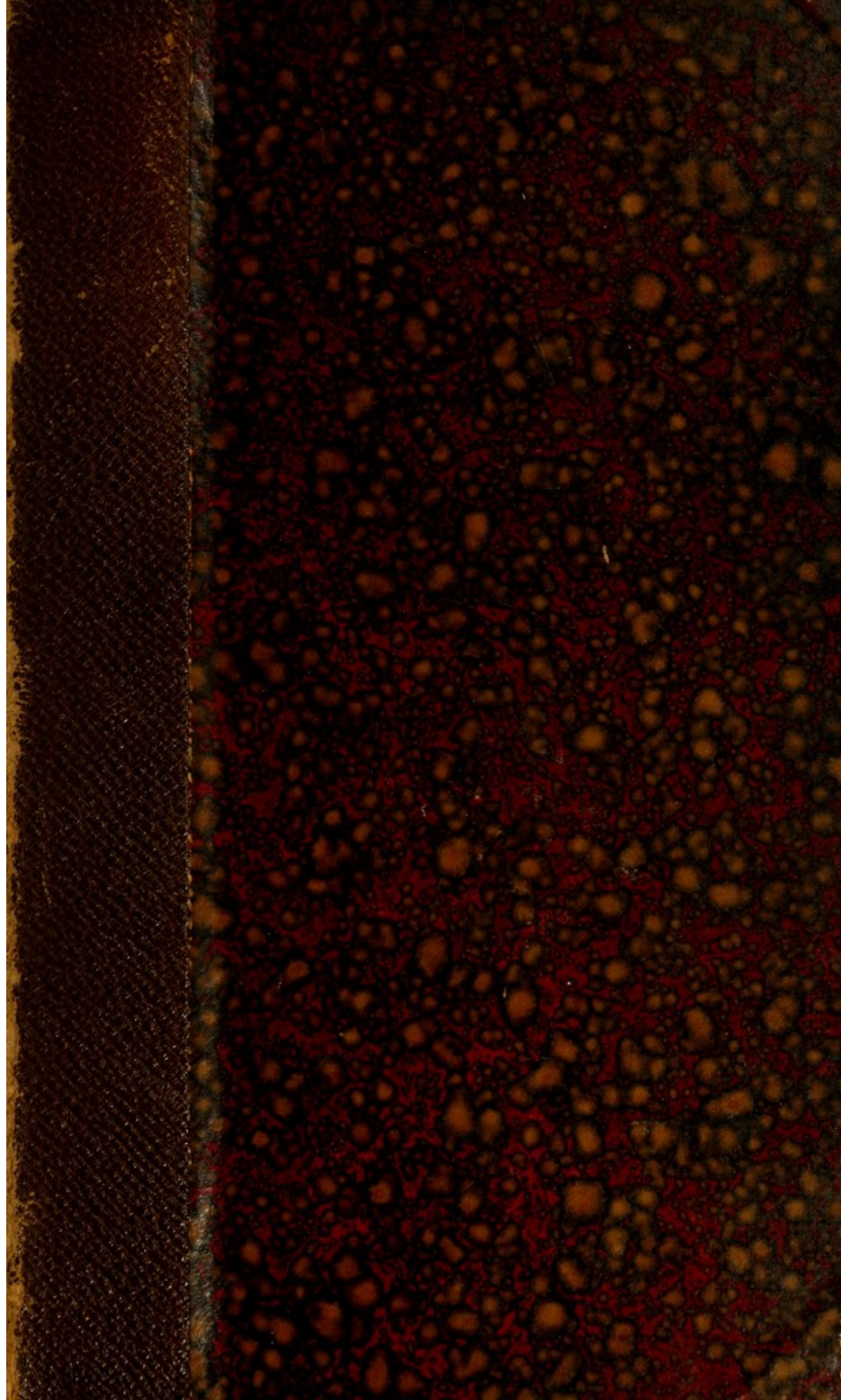
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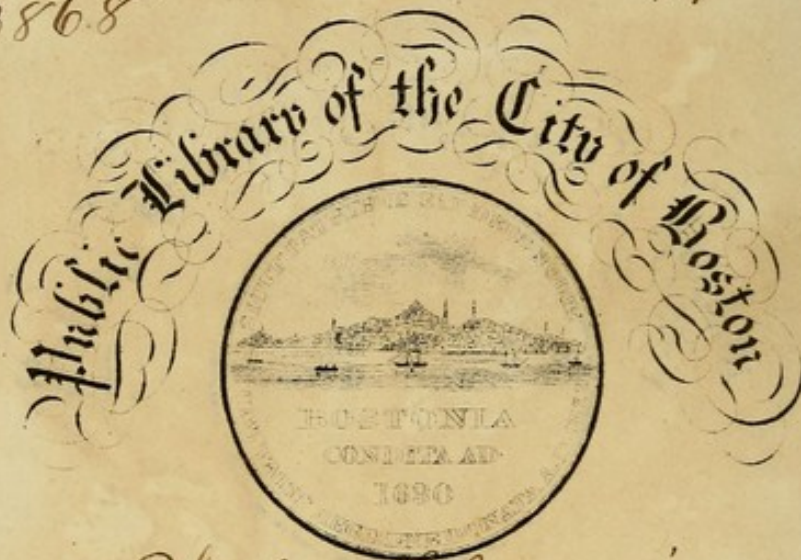


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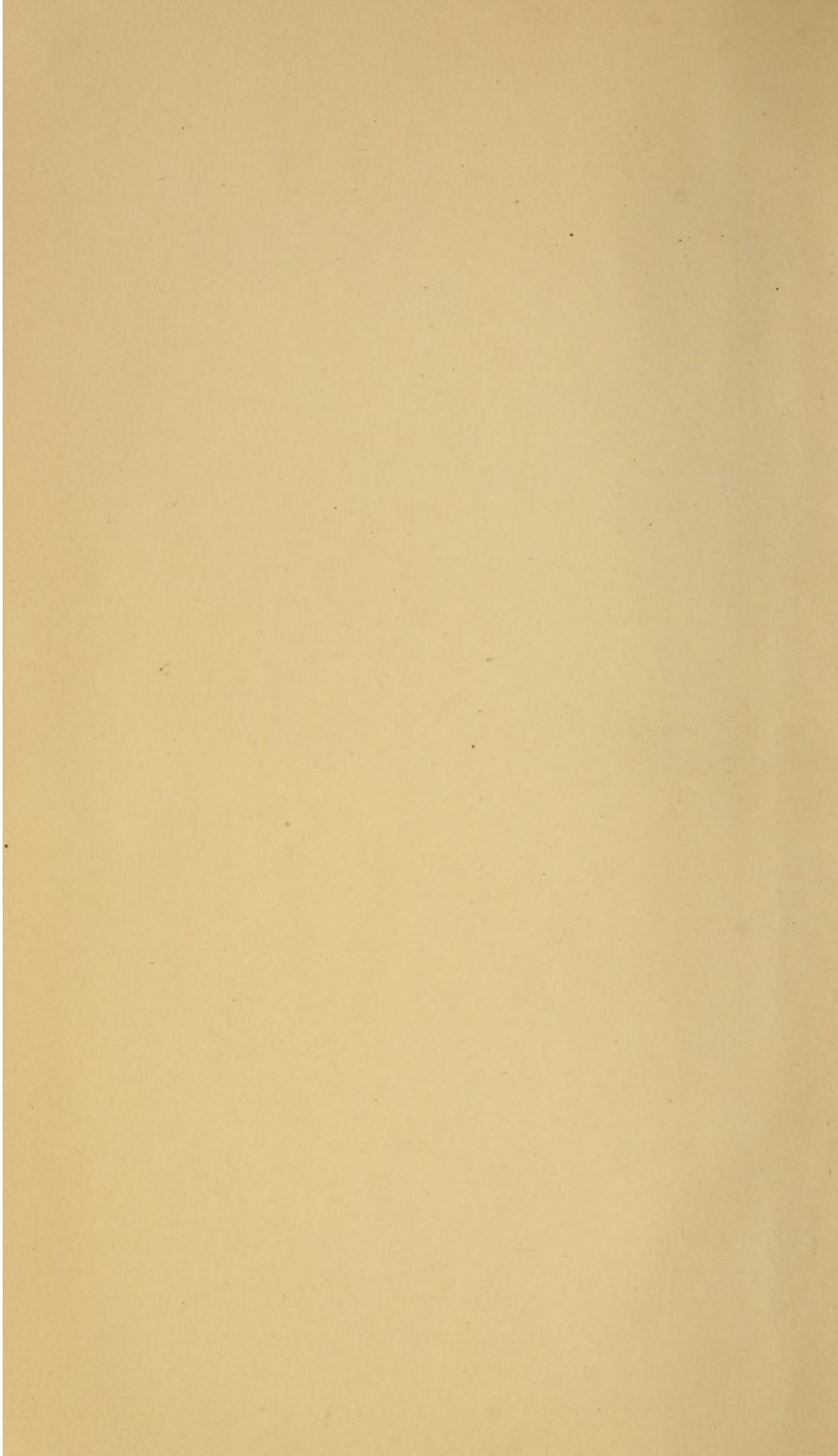
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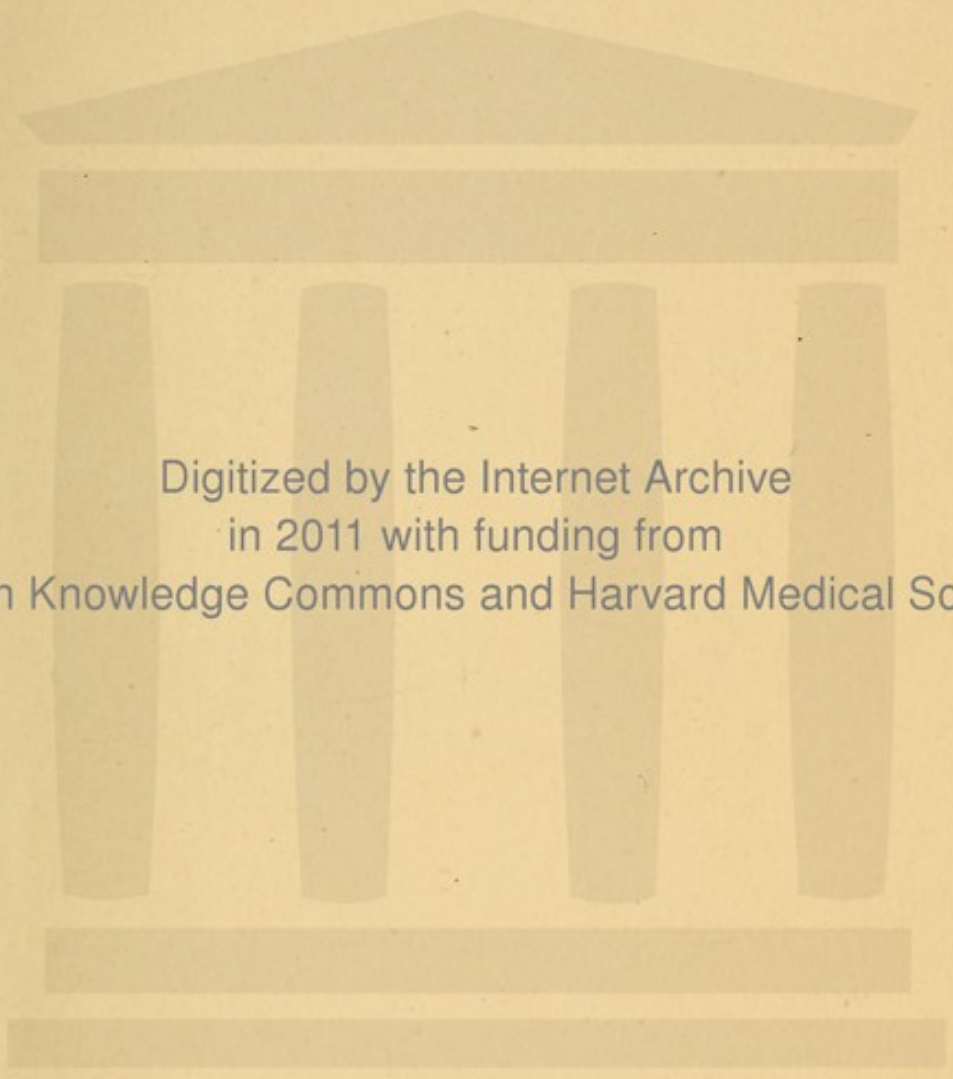
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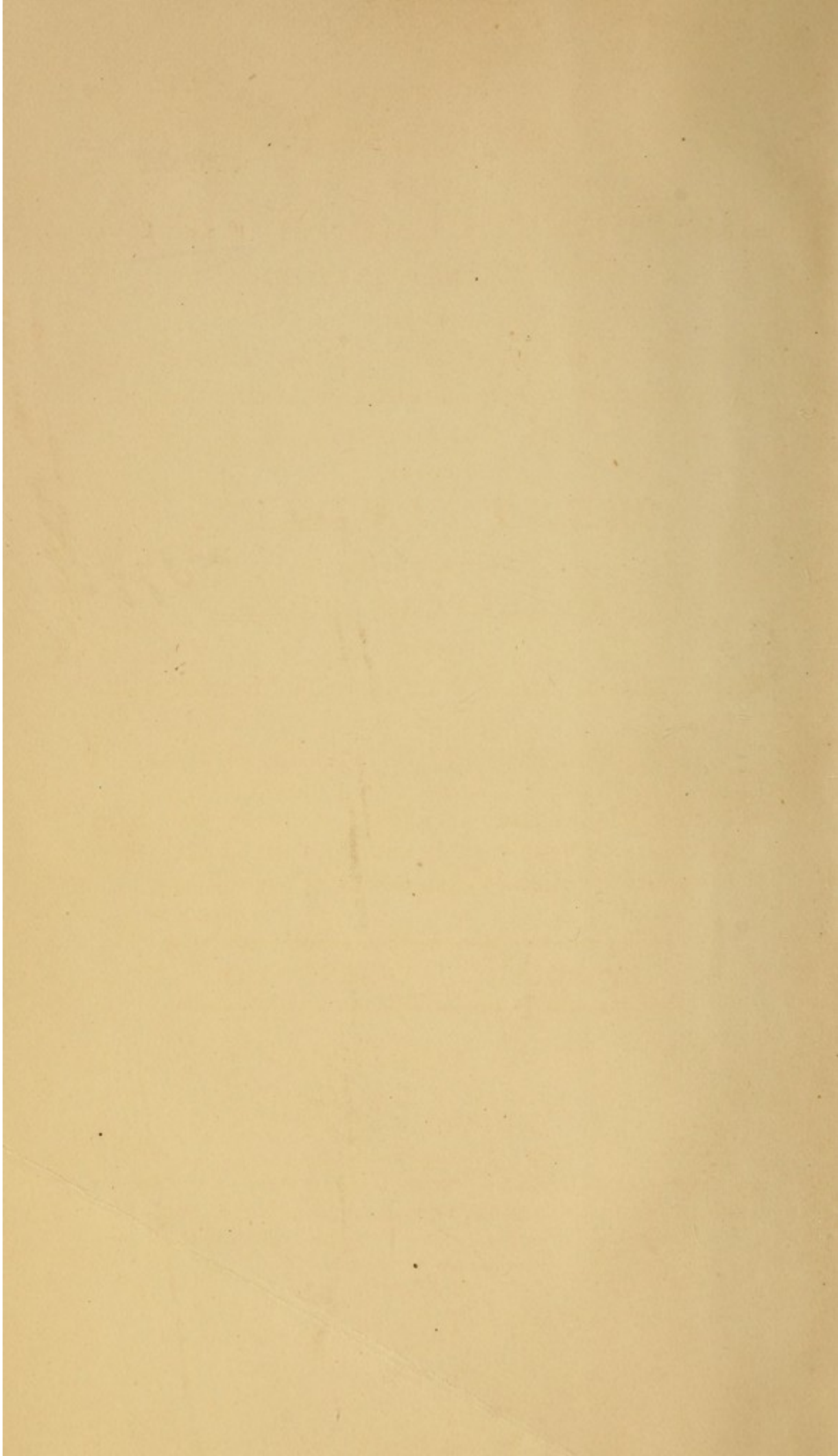
By Walter Channing, M.D.
Received Nov. 18, 1856.

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AN
OUTLINE
OF THE
HISTORY & CURE OF FEVER,
ENDEMIC AND CONTAGIOUS;
MORE EXPRESSLY THE
CONTAGIOUS FEVERS OF JAILS, SHIPS. & HOSPITALS,
THE CONCENTRATED ENDEMIC, VULGARLY CALLED
THE YELLOW FEVER
OF THE
WEST INDIES.

TO WHICH IS ADDED,
AN EXPLANATION
OF THE
PRINCIPLES OF MILITARY DISCIPLINE & ECONOMY;
With a Scheme of
MEDICAL ARRANGEMENT FOR THE ARMY:
And
A REFUTATION OF THE STRICTURES MADE BY THE LATE
DR CURRIE ON THAT PART OF THE WORK WHICH RELATES
TO THE AFFUSION OF COLD WATER ON THE SURFACE.

By **ROBERT JACKSON, M. D.**

SECOND EDITION.

EDINBURGH:

Printed by John Meir, Royal Bank Close,

FOR THOMAS BRYCE, AND CO. MEDICAL BOOKSELLERS, 3. INFIRMARY
STREET, EDINBURGH; JOHN MURRAY, FLEET STREET, JOHN CALLOW,
CROWN COURT, PRINCE'S STREET, SOHO, AND W. GRACE,
WEST SMITHFIELD,
LONDON.

1808.



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Walter Channing, M.D.

March 18, 1856

ADVERTISEMENT.

THE materials contained in the following pages are drawn from a wide field of experience. They are genuine : on that account they may be useful ; I therefore put them before the Public at this time, accompanied by a refutation of the Strictures which were applied, by the late Dr Currie of Liverpool, to that part of the work which relates to the management of cold bathing. The Public has already passed opinion on the Outline ; and, as it was generally a favourable one, I consider it to be a duty which I owe to the Public to state the points which have been doubted or controverted, fairly and fully ; so that those who are disposed to investigate may have an opportunity of contrasting the different views, and judging, from correct evidence, which is the better founded, viz. that of the Author of Medical Reports, or of the Author of this publication.

ROBERT JACKSON.

Edinburgh, 10th April 1808.

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THE
HISTORY
AND
CURE OF FEVER.

CHAPTER I.

A short History of the Origin and Progress of Contagious Fever, as it appeared in different Divisions of the British Army, during part of the year 1793, the years 1794, 1795, and part of 1796.

THE writer of the following pages joined the Third Regiment of Foot, or Buff, in quality of surgeon, in the month of November 1793. The Buff, embarked upwards of six weeks, was then lying at Spithead, in the daily expectation of sailing for the West Indies, on an expedition under command of Lieutenant-General Sir Charles Grey. This regiment, like many others, had received recruits, in the course of the summer, raised on the footing of independents; and, in a similar manner with others, had suffered from fever previous to embarkation. The corps was originally designed, as has been observed, for the service of the West Indies; but Government having thought it expedient to form an armament

to invade, or to make a demonstration of invading the coasts of France, the destination was changed on the eve of sailing.

It may not be improper to remark in this place, that the disease, from which the Buff had suffered during the summer, was nearly dormant at the time of embarkation: cases of fever occurred occasionally; but the disease could not be said to prevail. Towards the end of December, when the greater number of the transports assembled at Cowes, in the Isle of Wight, after a fruitless demonstration of invading the coasts of France, and a dangerous detention in the road of Guernsey, under boisterous and stormy weather, its existence was obvious;—its progress was even considerable. The Buff, the 19th, and 42d regiments, the brigade of Major-General Lord Cathcart, was ordered to proceed to Lymington in the month of January. The Buff, on this occasion, left at Cowes fifteen men, in a condition not proper to be embarked with the regiment, especially as no previous preparation had been made for the accommodation of sick:—these were removed to the general hospital then forming at Southampton.

It was remarked above, that fever did not prevail, in regular form, or in a material degree, till towards the end of December; yet it deserves to be known, that eruptions of the scabby or leprous kind, blotches, usually called scorbutic, even spreading ulcers and sores of the legs, with occasional instances of diarrhoea, existed from the time of embark-

ation : the knowledge of this fact is important :—
A contagious fever had been introduced into this, as into almost every corps in the service, by means of recruits from independent companies ; but it was now dormant, weakened, or changed in form, and continued so for a certain time ; the seeds of it however still existed ; they were called into action, on board of ship, and they speedily acquired force, producing a febrile disease genuine and concentrated ;—the list of sick in fact increased. During the months of January, February, and part of March, there were seldom fewer than seventy or eighty in the report ; of these, sore legs, eruptions and blotches formed a considerable portion ; cases of diarrhœa were not unfrequent ; but the prevailing malady was fever in genuine form, and often concentrated in degree. In February, the regiment was disembarked from the transports, and dispersed in barns at the farms contiguous to Lymington ; the cause thus became diffused ; the disease was weakened, but it still existed. In the latter end of March, the corps embarked for Jersey, and arrived in two days at St. Helier, where it occupied the barracks lately possessed by the 63d regiment. The 63d had been sickly :—the air of the barracks was by no means pure : disease, which was weakened in the Buff, but not extinguished, now extended itself, and acquired force, till such time as an encampment was formed at Fort Henry, near the sea. This was in May : the weather was then warm and pleasant ; bathing was enjoined as a part

of regimen ; personal cleanliness was attended to ; exercises and amusements were recommended, and duly practised. From the example of the light company, a spirit of activity was diffused over the battalion ; the general appearance of the corps became healthy, and, in some degree, military :—At the end of six weeks, the period of leaving Jersey, not a man was numbered in the list of sick.

It will not be improper to note, cursorily, the corresponding states of health in those regiments nearly connected with the Buff, quartered in the same cantonments, or employed on the same services. The Buff, the 19th, and 42d regiments, the brigade of Lord Cathcart, was removed, as has been observed from Cowes to Lymington in the month of January : the sick list of the Buff then was numerous ; that of the 19th was still greater, amounting to at least one third of the whole corps : in the 42d, a pattern of military and moral virtues, the proportion was comparatively small. The form of the disease prevailing in the Buff has been noticed ; that of the 19th was in general similar, only the course was more tedious, relapses more frequent, the termination in diarrhœa more common : in the 42d fever was a rare occurrence ; when it did occur, marks of reaction were conspicuous.

The 63d regiment had occupied the barracks at St. Helier during the winter ; and like other corps, filled up from independents, had suffered from sickness, and sustained some loss ; yet the loss was upon the whole small, in proportion to the numbers at-

tacked. The 88th arrived from Ireland about the beginning of June : This was a new regiment, and like most other new regiments, was composed of heterogeneous and unsound materials. It was sickly when it arrived, and sickness raged during the time it remained in the island, with violence and devastation. Besides this there were quartered in Jersey, between seven and eight hundred recruits, belonging to different corps : these were under the care of two hospital mates : sickness prevailed among them to a great degree, and mortality was great beyond measure.

Besides the brigade of Lord Cathcart, three other brigades, consisting of the 27th, 28th, 54th, 57th, 59th, and 2d battalion of the 78th, were of the army under the command of Earl Moira. The greater number of these were quartered in the neighbourhood of Southampton, and most of them experienced a considerable degree of sickness. The economy of the 27th was exact, the discipline severe, and the corps, upon the whole, was healthy : the 78th had been well recruited, and as yet had little communication with other corps : the rest suffered severely from fever ; in some the mortality was great.

The disease, which prevailed among the troops under the command of Earl Moira, was a fever of a contagious kind, introduced into the army, as appears from undoubted testimony, by the recruits of the newly raised independent companies. It prevailed in different degrees of force among different

corps, and assumed different modes of action in the same corps, according to a variety of causes. In the Buff, the cause of the disease had a varied action: It seemed to occasion eruptions of a scabby or leprous kind at one time; sore legs or spreading ulcers on the extremities at another; diarrhœa or flux on many occasions:—fever, of different forms or of different degrees of force, was considered as the pure and genuine mode of operation.

The symptoms of the febrile form differed in force, as they differed in the mode of action: sometimes they were violent and threatening, particularly affecting the moving or muscular powers of the body with tremors, startings, and partial convulsions; accompanied, on some occasions, with great commotion of the vascular system, on others with a commotion very inconsiderable. This irritated action was general in the system at one time; at another it more especially affected particular organs; and that, either uniformly or alternately: hence affection of the chest, or of the organs of respiration, was sometimes a prominent and a constant feature of the disease; sometimes an uncertain one, ceasing and returning at intervals, or alternating with affection of the head: a grim and cloudy, or bloated aspect, was usually connected with the affection of the chest alluded to; and, though the form was usually a form of danger, yet, as in other cases where reaction is vigorous, the termination was often decided and final, the critical period seldom extending beyond the seventh day. At other times, the ac-

tion of the moving or muscular powers was less disturbed ; but the commotion of the vascular system was considerable ; the pulse was frequent, quick and irritated ; the heat great, sometimes intense and ardent ;—a condition frequently terminating in expansion of the arterial pulsations, and a change of heat into warmth, followed by perspiration and crisis : on the contrary, where the pulse was disturbed, but defective in energy of stroke ; where the heat was caustic and pungent, rather than great and strong, the symptoms often subsided at a given period, but final crisis did not take place : the powers of life sometimes, indeed, emerged in such cases, and the patient recovered slowly ; yet a fatal termination was, upon the whole, oftener observed, within the space of twenty-four, or thirty-six hours from the decided change, than even this imperfect recovery. The duration of this form of fever, where the cause acted by producing irregular, violent and irritated motions was usually short, the violence of the symptoms often subsiding on the third day, and life terminating on the fifth : on some occasions also, where reaction was obscure, and little commotion perceptible, the third, and even an earlier period, was fatal.

The above are the more violent, the more rapid, but the rarer forms ; it happens, six times perhaps for once, that the symptoms are moderate, the actions of the vascular system and of the moving powers little disordered, the skin dry, often tender of the touch, with small increase of thirst, but with

depraved taste, loss of appetite, and want of rest. From small beginnings, these symptoms gradually increase to a given point: they usually change about the seventh: sometimes health returns at this period, by regular crisis; sometimes the vital energies subside, the pulse gradually, as it were, enveloping itself, and retiring from the extremities and surface of the body; petechiæ make their appearance; an important organ, frequently the brain, becomes oppressed; life moves on heavily, and at last stops altogether. Sometimes, instead of the recovery alluded to, or the gradual subsiding into death, another train of symptoms commences at this time, and runs over another course; viz. a development of the vascular system, a vigorous circulation in the extremities, with a free, energetic, and expanding action of the artery, a lively delirium not unlike mania: in such cases, crisis occurs frequently on the fourteenth, or the disease, changing form, continues seven days longer;—sometimes only five. In other cases, the action of the fever is moderate, and more immediately confined to certain parts of the system: thus a diarrhœa, or flux, with or without severe gripings and bloody evacuations, is often the leading symptom throughout. This form is of long continuance: it slowly exhausts life; unless where the evacuations are suddenly suppressed by accident or design;—in such case a fatal termination is sometimes unusually rapid.

It is a remark of some importance, that distinct and

final crisis is rare in this disease. Relapse is frequent, and relapse may always be expected to occur where the disease subsides without obvious marks of crisis, —sweat, perspiration, or some other sensible evacuation. The patient, in those cases, appears to emerge, and for six or eight days often appears to gain strength ; yet upon a narrow examination, the marks of a suspended, rather than of a departed disease, present themselves ; fever recurs ; it ceases, and recurs again, often for four or five different times ; the symptoms, in relapse, frequently differ materially from those of the original disease :—diarrhœa is one of the common forms ; and, where the event proves fatal, diarrhœa is the more common termination : where relapse occurs, but does not occur in form of diarrhœa, irregular motions, flying pains, sudden and unaccountable qualms, often harass the patient for a length of time.

The mortality of this disease is not great inherently ; but it becomes great and alarming, by neglect in the commencement, or by the crowding of sick into ill ventilated hospitals : the mortality appeared uniformly to be greater among men of large, than of middling size ;—(the grenadiers thus suffered more remarkably than the men of the battalion) : mortality was also greater in the general hospital at Southampton, than in the hospitals of regiments. The Buff lost one man, out of more than one hundred, treated in the hospital of the regiment, between the month of November 1793, and the latter end of July 1794, the period of leaving Jersey :

of about thirty sent to Southampton, under the same disease, one third was reported to have died in the same time. The precise proportion of deaths, among the troops under the command of Earl Moira, as treated in general or regimental hospitals, is not in the knowledge of the author; he knows however with certainty, that the proportion of deaths was inferior in regimental hospitals, though deficient of many comforts, and not always well conducted, to what it was in the general hospital of Southampton, furnished, in an ample manner with comforts of all sorts, attended by physicians of the regular schools, and superintended by a man of experience and reputation. This remark is not made with the design of obliquely conveying a censure. The author conceives it to be a duty to state a fact,—to trace an effect to a cause, that error, from a similar source may in future be avoided. The properties of the house, employed for the purposes of an hospital at Southampton, were alone sufficient to counterbalance, nay more than counterbalance all the good that the medical art, in its highest perfection, could ever be supposed to effect. A disease, originally of moderate symptoms, became concentrated in force, and rapid in course in this hot-bed of contagion. The fact is simple, and will explain itself. A granary, or malt-house, storey raised above storey, low roofed and imperfectly ventilated, every niche of it occupied by a sick man's cradle, could not well fail, under the best care and management, of becoming a source of pestilence. Such it in fact

became; the mortality of the disease being aggravated beyond its natural character, and the virulence of the contagion extending to the nurses and attendants, obviously from the properties of the house alone.

The Buff embarked at St. Helier, in Jersey, in the latter end of July, and arrived at Bergen-op-zoom, after a passage of eight days; at this period there was not a man sick. At Bergen-op-zoom gin was easily procured; intoxication was the consequence, and the effects occasioned inconvenience the day following, on the march to Rosendael, the place of encampment:—The feet of some men were blistered by the journey, and others suffered indispositions from the excesses of the preceding night.

The army was now retreating, and in expectation of being pressed upon by the enemy. That encumbrances, under such circumstances, might be as few as possible, it had been judged proper, that those soldiers, who by reason of indisposition became incapable of continuing in the line of march with arms and accoutrements, should be removed to general hospitals;—an order necessarily complied with, as regiments were not supplied with the means of transporting, in their own train, extra encumbrances. A regiment consisting of five hundred men, a regiment in some respects awkward and unexperienced, as entering upon its first campaign, could not be expected to remain many days without furnishing recruits for an hospital. It happened so in fact;—the Buff, previous to moving from Rosendael, was

under the necessity of sending thirteen men to the hospital at Rhenen, not one of them ill of formed disease, but for the time unfit to continue in the line of march, or perform the duties of soldiers. Parties, under a similar predicament, were dispatched to the same receptacle on the eve of every movement; by which means, about one hundred and sixty of the Buff found themselves in general hospitals before the middle of November, few of whom suffered from complaints, which rendered such removal necessary, had the regiment been allowed, only very limited means of conveyance, in the event of changing ground.

The British army passed the Maese towards the end of September. Previous to this period, such sick men of the Buff as had been sent to general hospitals, had been sent there chiefly on account of accidents, feverish or dysenteric indispositions, which rendered them incapable of performing a long march without assistance. But though sickness had hitherto been accidental and sporadic, on the day of arrival at the heath of Moek, a position on the right bank of the Maese, between sixty and seventy men, fifteen of them belonging to the company of light infantry, were attacked with fever within the space of twenty-four hours. The sudden invasion of this sickness appeared extraordinary; and it is not yet known where to look for its cause.

The symptoms of the complaint were violent in the commencement; the headach attacked suddenly, and severely distressed the patient; the eyes

were often hot, painful and turgid ; the countenance flushed, cloudy and grim ; the limbs ached grievously, similar to the achings in the cold stage of intermittents, or accompanied with sensations of gnawing or tearing, more particularly along the shoulders and arms ; the skin was generally dry, tender of the touch, or did not bear pressure without pain ; the heat was often ardent, and sometimes pungent ; the pulse was insidious, sometimes agitated and irregular, sometimes apparently little disordered in point of time, but seldom energetic, elastic and expanding ; the tongue was usually white and slimy ; to which was often added nausea, and sometimes vomiting ; thirst was irregular ; rest was altogether wanting, or the sleep was disturbed by dreams ; the state of the bowels was uncertain ; costiveness prevailed, or a purging approached to dysentery ; in many instances there were convulsive or spasmodic motions of the moving powers, tremors, startings, affection of the organs of respiration, alternating with affection of the head. This disease did not terminate in regular intermissions ; but it was disposed to subside in three days, or in five,—it seldom extended to seven. It relapsed after a short interval ; and these relapses recurred frequently. It often terminated finally in a form of dysentery, or in local disease of an organ.

In six or seven days after arrival at Moek, the Buff was ordered upon a detached service. Two thirds of the sick, mentioned above, not being as yet sufficiently recovered to undertake an active duty, were ordered to Nymegen, and from thence to the

great hospital at Rhenen. The corps remained on detachment at Nyfterick, Battenburg, or on duty at Graaf, for upwards of three weeks. It returned about the 20th of October, and encamped on the glacis of Nymegen. The accumulation of sick and convalescent, during this period, amounted to no more than nine men;—none of them dangerously ill, —From the 20th of October till the evacuation of Nymegen, about the 7th of November, every person indisposed, so as to be unfit for duty, was sent to a general hospital.

The British troops having been withdrawn from Nymegen about the 7th of November, the Buff, with the other regiments of the brigade, 40th, 55th, 59th, and 79th, was ordered to encamp near Lint, on the right bank of the Waal. The position was secure at the time, and supposed to be fixed for the winter: the sick of the regiment, with consent of the commanding officer, instead of being removed to Rhenen, were received into a barn, formed into an hospital. It need scarcely be mentioned that the inconveniencies and even hardships of this encampment were great; the ground of encampment was plowed field, or meadow often covered with water; the rains were frequent during a great part of November; the tents or huts afforded only a very imperfect protection; straw was often deficient, and the ground, at all times damp, was sometimes an absolute mire: the frost began early in December; the cold was intensely severe; and though some things were

furnished, some were still wanting, necessary to comfort,—perhaps even necessary to health.

The sickness, which had increased in the army with the progress of the season, now spread rapidly in the Buff, as it did in the other regiments of the brigade. In the short period of six weeks, one hundred and fifty patients entered the hospital of the regiment, under one or other of the forms of fever, though the strength of the corps did not then exceed three hundred men. On the 31st of December, the Buff was ordered to leave the encampment;—the sick of course were sent to the general hospital:—they amounted in the whole to forty-five men, thirty of whom were in such a state of convalescence, as to walk to Arnheim on their legs,—a distance of eight or nine miles.

It will be proper to be noticed on this occasion, as serving to give some idea of the real causes which increase or diminish mortality, that the house occupied as an hospital by the Buff was no other than a barn, in which it was not possible to have a fire, or even stove; that the cold was intensely severe; and that the soldiers were not in general well clothed; that some of them were destitute of blankets, and that the corps had not any extra bedding for the hospital present:—Other regiments were in a similar situation, some perhaps better, others worse.

The disease, which afflicted the Buff in this encampment, was the contagious fever which had prevailed in the British army, from an early period of the war, varied in form according to more general

or more accidental causes. In some the attack was sudden ; the headach violent, particularly the pain of the forehead and eyes ; the aspect of the eye was disturbed, and the countenance was often dark and cloudy ; the skin was generally dry, sometimes purplish : the heat was great, or rather ardent and caustic ; pains were severe and irregular, sometimes proceeding, as it were in explosions along the shoulders and arms ; the joints ached, similar to the aching in the cold stage of an intermittent ; the surface of the skin was frequently sore, or tender of the touch ; the action of the vascular system was irregular, sometimes active and irritated, sometimes torpid or unenergetic ; the tongue was white and slimy, exhibiting, on some occasions, a leaden aspect ; the thirst was variable ; nausea was not uncommon ; but vomiting was rare, unless about the period, when the fever subsided, or changed its mode of action, on which occasion, there were some instances of a vomiting severe and irrestrainable ; tremors, startings, convulsive and spasmodic motions appeared frequently ; affection of the chest alternated with affection of the head ; want of rest was a common occurrence, or sleep was disturbed by dreams and wanderings approaching to delirium. These symptoms, which were violent in the commencement, continued violent, or increased to the third day,—often to the fifth, and sometimes to the seventh. About these several periods the disease manifested a disposition to subside ; decided crisis was not common, but recovery seemed

to go on for a few days, when relapse occurring suddenly, with similar or different symptoms, ran over a course, for the most part, of similar duration.

In other forms, the pulse differed little from natural in point of time; but it was deficient in energy and expansion; the heat appeared moderate, when the arm was touched superficially, when closely pressed it appeared caustic, or imparted an unpleasant sensation; the skin was usually dry, sometimes flaccid and withered, in some cases, greasy and dusky, and generally tender of the touch; aching of the limbs was distressing; the headach was, for the most part, moderate; the disorder in the head gave a sensation of confusion, or, as the patients expressed it, a sensation of mazes rather than of pain; the tongue was clean, moist, and differing little from the natural appearance, on most occasions in the commencement of the disease, sometimes it was smooth and pale, sometimes covered with a roughness, firmly adhering to it, but of very little thickness; in the more advanced stages the tongue was often covered with a black crust, or sooty pellicle, sometimes it was smooth, dry, parched, and shining or glossy;—the respiration was seldom much disturbed. This form rarely changed before the seventh; at this period it sometimes terminated finally, sometimes it only changed form, and ran over another course of similar duration, with considerable excitement of the vascular system, sometimes with lively delirium, or a species of mania.

Of this disease there was another form, where

diarrhœa or purging was the leading symptom, sometimes with moderate, sometimes with severe pains or gripings; the tongue, in those cases was frequently clean, or but very little changed from the natural appearance;—the common marks of fever were obscure yet the disease followed the regular febrile periods; if purging was by any means suppressed, fever became conspicuous; purging reproduced, fever disappeared or abated. This species of diarrhœa ceased and recurred repeatedly, in a manner similar to fever in genuine form; the gripings were sometimes severe, the pains spasmodic and periodical; at other times, the pains were moderate, but the uneasiness was constant.

The above fever in all its forms, though often alarming in its appearances, was not by any means a disease of inherent mortality:—Out of one hundred and fifty patients, admitted into the regimental hospital, during a period of six weeks, only one man died;—one was removed to the general hospital, at Arnheim, in very unpromising circumstances.

On the 1st of January 1795, the Buff marched from the encampment, at Lint, the sick, as has been observed, having been previously removed to the hospitals at Arnheim, or to houses, allotted to that purpose, in the neighbourhood. The threatening movements of the enemy kept every part of the army alert; the Buff marched and countermarched between the Waal and the Rhine day after day, during the first part of January: the sickness did

not much abate ; for from the first to the 20th of the month, not fewer than forty men were conveyed to hospitals, the circumstances of the service not permitting them to be transported in the train of the regiment. From the 20th of January, or period of arrival at Deventer, liberty was given to press waggons, and to transport, in the train of the corps or brigade, sick and other encumbrances ; in consequence of this arrangement, the Buff resumed the plan of keeping the sick with itself. The weather during this retreat was often excessively cold, and sometimes wet ; the marches were frequently protracted till late at night, and a barn was the general place of accommodation,—furnished however, for the most part, with a sufficient provision of straw. From Deventer to Bremen, or from the 29th of January to the beginning of April, the Buff sent not a man to the general hospitals ; on the contrary having picked up, on different occasions, sick men of the corps travelling with the hospital waggons, the number to be transported was seldom under thirty during the first six weeks—often above it. During this period one man died ; a man, who had been ill for three days at out-post, before he was attended to : in the beginning of April, when the corps passed through Bremen, on its way to Bremenlehe, two men only were unable to continue the march on their own legs.

The above sketch comprehends a summary of the medical history of the Buff, or third regiment of foot, during the service of that corps on the conti-

ment, between the months of August 1794 and April 1795; a period memorable for sickness, and still more memorable for mortality among British troops.

The medical history of the retreat of the British troops, through Holland, furnishes some facts deserving the notice of the statesman and general, as well as of the physician. The contagious fever, introduced into the army, as formerly observed, in the beginning of the war, by improper modes of recruiting, by want of attention and care in incorporating recruits, rendered virulent by accumulation in general hospitals, propagated and widely diffused by defects of discipline and arrangement, prevailed almost universally among the infantry, and in a degree nearly equal to what has been noticed in the Buff—it was little known among the cavalry. The Netherlands, the scene of the campaign under view, is a level country, abounding in water; the endemic disease is an intermitting or remitting fever, a disease common with the inhabitants at certain seasons of the year, and from which strangers seldom escape; yet, intermitting fever of genuine form was rarely seen during this campaign; it was not known in the Buff, and, as far as the author could learn, was seldom seen in other corps; yet it deserves to be remarked, that the prevailing disease had naturally a disposition to subside at a given period, and to return again after a certain interval; but it possessed no other mark of the intermittent.

It may not be improper to observe in this place, though the information relative to the subject is not

sufficiently exact, that four regiments of infantry arrived in the Scheldt late in August, and remained for some time in Zealand; of these the 80th and 88th, imported with them a contagious fever,—one of the others,—the 79th, was healthy at the period of arrival; but it soon suffered from attacks of intermittent, the endemic of the country. It joined the rear of the army in November, and encamped, near Lint, with the brigade of which the Buff formed a part: its sick list was then small, compared with that of other corps; it consisted chiefly of relapses of intermittent, or of bowel complaints the consequence of intermittent: these ceased in the course of December, contagious fever then began to make its appearance, increased during the months of January, February, March, and April, and even committed considerable ravages the following summer, after the regiment returned to England. The principal mortality in the 80th, and 88th,—and it was exceedingly great, is known to be owing to contagious fever; but whether an intermittent also prevailed in these corps, as in the 79th, during the sojourn in Zealand, and to what extent it prevailed, is not within the knowledge of the author.

The author, being removed from the Buff, and appointed to do duty in the general hospital, was, in a few days after arrival at Bremen, ordered to Bremenlehe, to arrange the embarkation of the sick and convalescent of the infantry, then under orders to be withdrawn from the continent. A fleet

of ships had arrived from England for the purpose of transport ; but it was found upon examination, that tonnage was deficient for the removal of the sick, and other encumbrances of the army ; yet this was not discovered, till the sick had been ordered from the hospital at Bremen, even till some of them had actually arrived at Bremenlehe. Four ships only were allotted to the transport of sick,—not much short at that time of one thousand men. Under this deficiency, it was judged most proper to embark those only, who were in a certain state of convalescence, the others being removed to villages in the neighbourhood, to remain under the care of the officers of the hospital, till a provision could be made for them. The men embarked were actually convalescent at the time of embarkation ; but as convalescence from hospital fever is liable to many accidents of relapse, and as the vessels were, in various ways, crowded beyond the calculation, sickness appeared in almost every ship during the passage ; and even some men died.

The number of sick, remaining, after the embarkation of the convalescent, exceeded six hundred. These men, the gleanings of the hospitals of the continent, exhibited a melancholy picture of the miseries of war,—or rather of bad arrangement. Accommodation was now provided for them, in the best manner circumstances permitted, at three different villages within a circle of ten miles from Bremenlehe : Of these Dorum was the largest, the last occupied, and the one at which the writer was stationed ; it

received its full proportion of miserable objects : the barns and houses of this village were as good as could be expected ; clean straw and good provisions were supplied in abundance ; but the ordinary clothing of the soldier was bad, and bedding was altogether wanting. With difficulty fifty blankets were procured ; these afforded only an imperfect relief to two hundred and twenty men, the half of whom, at least, were covered with rags, incrusted with dirt, and over-run with vermine, emaciated, to the last degree of emaciation, by dysentery, or rather by fever in dysenteric form ; the degree of weakness in many was extreme, some were speechless and insensible, others delirious, and two or three maniacal, but advancing, as is commonly observed to be the case, in the recovery of health : the misery was great, and the means of relief were inadequate ;—such as existed were diligently employed. It was uniformly the first object, in the present circumstances, to remove the infected rags, to cut off the hair, to wash the body clean, and to lay the patient, who often became, as it were, a new man by this operation alone, in clean straw, covered, where it could be procured, with a clean blanket. The washing of the body and changing of the straw was a daily operation ; the persons employed in it, as well as those employed in washing the shirts and blankets, notwithstanding the use of many precautions, were every one of them attacked with fever ; yet notwithstanding this uncommon contagion, the virulence of the disease was found to be diminished,

in less than three weeks, though relapses still frequently occurred. In the course of one month, the whole of those who escaped the grave, returned to Bremenlehe, in a certain state of convalescence, in order to be embarked for England:—Of the two hundred and twenty collected at Dorum, near thirty died.

The description of sick, allotted to Dorum, consisted chiefly of subjects in the latter stages of disease; recent fever of course was rare; but the contagion being of uncommon force, extended itself to the nurses, attendants and washerwomen, by which an opportunity was furnished of observing some instances of the action of a febrile cause, in its highest state of concentration. In those instances of recent disease, the attack was sudden; sudden giddiness, vertigo, even stupor like deep intoxication or apoplexy gave the first notice of approach; the pain of the head was frequently intense, particularly the pain of the forehead; pain and burning of the eyes, or a full staring idiot-like appearance was common; the countenance was agitated, grim and cloudy, or lurid, leaden, and inanimate; the pulse agitated, irregular, quick and frequent; or frequent, oppressed and small; the heat ardent and caustic; the skin dry, or clammy and disagreeable, without material increase of heat; stricture, heavy breathing and affection of the chest alternated with delirium or affection of the head; the tongue was slimy, white and foul,—seldom dry,—sometimes covered with saliva, foul and leaden coloured. Under the ap-

pearances of oppression or stupor, resembling intoxication or apoplexy, death took place in thirty-six hours or less; in other forms, particularly where there were obvious marks of fever and some degree of excitement, the symptoms often subsided on the third day; but the aspect remaining clouded and threatening, the disease returned again on the sixth or earlier, and brought life into danger. If the febrile symptoms continued to the seventh day, progressively advancing, the termination was often final; at least a train of symptoms of a different cast took place, which after another septenary period frequently terminated in complete or perfect crisis; sometimes only changed form, and ran over another course with uncertain event.

The British cavalry remained on the continent, cantoned in the neighbourhood of Bremen, for some months after the infantry was withdrawn. During the retreat, this part of the army had been little subject to sickness; and even at the beginning of September, when the author returned to England, no acute disease was yet known. This fact, contrasted with the deplorable state of the infantry, is singular, and furnishes an important remark to statesmen and generals. The cavalry was not filled up by the recruits of independent companies; and the acquisition of rank was here less a matter of traffic than of qualification and service: the principles of discipline were consequently better understood, and economy was more strictly attended to.

In summing up this sketch of the medical history

of the British army, on the continent, it is proper to remark, that it was a common practice, from the beginning of the war, to collect the sick into general hospitals:—from the commencement of the retreat, orders to this effect were express. The great hospital was formed at Rhenen behind the Rhine; there was also an hospital at Gorcum on the Maese; a number of sick were kept on board of ships at Schevingdaal near Dordrecht; temporary or flying hospitals were formed at Nymegen on the Waal, at Arnheim on the Rhine, and occasionally at other places contiguous to the rear of the army: nay further, bidders, employed for the transport of sick to the different depôts, were converted into hospitals on many occasions. When the right bank of the Rhine was finally abandoned, the sick of the army became scattered, in many different towns, on the route to Embden and Bremen. A considerable embarkation of sick took place at Embden early in the season; the remainder, as has been observed, left Bremenlehe in May.

The exact proportion of mortality, in the different hospitals on the continent, is not known to the author; it is presumed, it cannot be ascertained with perfect accuracy by any one. An officer of rank, who was curious in his inquiries on this subject, reports it to have been three in five; and, from the small number of the Buff who rejoined the corps from hospitals, there is cause to believe that his calculation is not overrated. But be this as it may, the muster roll of the army will show that it was prodigiously great; and, as far as has come to the know-

ledge of the author, it was uniformly greater in general hospitals, than where corps were left to their own medical resources.

The infantry of the British army having been withdrawn from the continent in the month of May 1795, the attention of Government seems to have been directed to a conquest of the French islands in the West Indies. With this view two expeditions were formed of great magnitude, and apparently of some promise of success. Lieutenant-General Sir Ralph Abercrombie was appointed commander in chief, and accompanied in person, the one directed against the Charibean Islands, said to consist of near fifteen thousand men,—the élite of the British army; the other, destined for St. Domingo, assembled at the Cove of Cork, and was chiefly composed of drafts from newly raised regiments, serving in Ireland. Major-General John Whyte was employed to collect and conduct it to the West Indies:—The author occupied a situation on the medical staff.

The expedition, or reinforcement for St. Domingo, consisted of the 17th, 32d, 39th, 56th, 67th, 93d, and 99th regiments of infantry, the 13th, 14th, 17th, 18th, 21st, 29th, and part of the 26th regiments of cavalry; in all amounting to near nine thousand men. The old regiments being much reduced in strength, some of them indeed being actually without soldiers, it had been judged proper by Government to fill them up by the drafting of new corps. Of these new corps, the majority had been raised in manufacturing towns, composed, as might be expect-

ed, of men radically ill calculated for soldiers, unsound in health, dissolute in morals, aggrieved and discontented on various accounts. Mutiny actually took place at Cork in the month of September; its attendants were, as usual, drunkenness and irregularity, its consequences broken spirit and despondence: Desertion prevailed, and still greater desertion was apprehended; to prevent which, as much as possible, an encampment was formed on the Island of Spike,—an unsheltered island in the harbour of Cove.

The author arrived at this encampment about the middle of October: the weather was then wet, boisterous and stormy; the tents, pitched on this exposed island, were frequently thrown down by the wind; the soldiers were thus almost daily drenched in rain, while the bare wet ground, or rotten straw was their bed. In this situation they remained till about the middle of November, when transports arriving from England, the healthy part was immediately embarked. It was proposed to the General commanding, that a ship for sick, or rather a ship for convalescents, should be allotted to each regiment of infantry; but the deficiency of tonnage did not admit of an accommodation so desirable; an order was however given, that no men should be embarked with the companies to which they belonged, who either were ill at the time, or who had been ill of fever or flux since arrival on the island; but the order was not duly attended to:—A motive of humanity, a desire of removing the suffering soldier from a bleak, wet

and unsheltered encampment, was, perhaps, the chief cause of the inattention.

The seeds of a contagious disease were known to exist among the troops assembled on Spike Island; there was even reason to believe, that the seeds of this disease were carried on board of ship at the time of embarkation; and as no person, in the least acquainted with the medical history of the present war, could be unconcerned at the consequences, an order was given, that no time should be lost in removing from the transports to the hospital on shore, or to the hospital ships in harbour, all persons, without exception, who discovered symptoms of fever. This order, however important, was executed with little punctuality;—sometimes perhaps from inattention, oftener from boisterous and stormy weather, which did not permit a boat to put to sea with safety; but from whatever cause the neglect might proceed, the effect was the same; two thirds of the ships, in which the infantry was embarked, soon became infected: sickness prevailed to considerable extent in the fleet, and even some men died, on board of transports, before there was an opportunity of removing them to the hospital on shore: this was particularly the case in the months of January and February.—Thus, from the badness of the weather, preventing the removal of the sick, many of the transports actually became hospital ships; while from the extraordinary accumulation in the hospitals on the island, the disease was aggravated to an unnatural degree of virulence.

The troops, destined for St. Domingo, had been expected to sail early in October; but the ships for transport did not arrive till about the middle of November. A part of the troops, as has been observed, had been for some time encamped on Spike Island, and had suffered considerable inconvenience and hardship from bad weather, and the ennui of confinement. The author arrived about the middle of October, and proceeded to make some inquiries respecting the state of health. In obvious appearance there was not much febrile disease, twelve men only being ill of that complaint, about double the number of diarrhoea, generally slight in degree, but of a kind which indicated latent seeds of mischief; the number of sores and spreading ulcers on the legs, little short of four hundred, appeared extraordinary and unaccountable: Men with fore legs, according to a general regulation, are rejected from the service of the West Indies; but it was thought proper to make an experiment with a few of the above. About thirty sores, slight in degree, and in subjects who, in other respects, had the appearance of being good soldiers, were put on board of a vessel, prepared on purpose, and treated with care according to the ordinary rules of surgery: At the end of three weeks, no progress was observed; on the contrary slight sores had degenerated into spreading ulcers.

The weather, as has been observed, was wet, boisterous and stormy, the condition of the troops, encamped on the island, uncomfortable: so that from the middle of October, the sickness increased daily;

diarrhœa and dysentery, or a dysenteric form of fever was the chief complaint: in the 17th and 93d regiments, fever, in genuine form, was more frequent than among the other corps. The 17th occupied a small house as an hospital; in this hospital diarrhœa or dysentery changed frequently, and often suddenly into fever: the sick of the other regiments were under tents till towards the end of October, when some small vessels were prepared for their reception; on board of these vessels, the disease underwent the same changes, as in the hospital of the 17th regiment of foot.

The whole of the infantry embarked about the middle of November, after which sickness seemed to be, in a manner, suspended for the first fortnight, or three weeks; diarrhœa and dysentery ceased or became less frequent; such attacks of illness as did occur, during that period, were chiefly febrile: towards the end of December genuine fever was frequent; by the middle of January it was so general, that every place that could be procured on Spike Island was filled with sick; and before the 23d of February, the day of the final sailing of the expedition, one half of all the regiments of infantry, except the 67th and perhaps the 93d, either were or had been, during this detention, numbered among the sick. The 67th, previous to embarkation, had not fewer than seventy men ill, chiefly of diarrhœa, or slighter forms of dysentery; but these disappeared in a short time, and fevers occurred so accidentally and rarely, that the sick list of that

corps seldom exceeded ten or twelve men. The 93d regiment brought with it to Spike Island a fever in genuine form, and suffered the greatest mortality of any, while it remained encamped: After embarkation the sickness did not increase—perhaps it abated upon the whole. The 106th, drafted into the 56th, arrived in good health: sickness soon made its appearance, and it increased so rapidly, that the 56th was considered as one of the most unhealthy. The 17th, 32d, 39th, and 99th, suffered in a great, and nearly in an equal proportion: some ships of the 39th and 99th particularly, were struck, as it were, with a sudden blast of pestilence, twenty or even thirty men sometimes sickening in one night.—Such was the general state of disease among the infantry.

The greater number of the regiments of cavalry were strangers to sickness, at least experienced little mortality. The 13th, 14th, and 17th, scarcely sent a man to the hospitals, or had a man sick in their reports; the sick list of the 18th was considerable; but few or none died; the 21st was not healthy when it arrived at Cove; the sickness increased during detention, at that place, and on arrival at Barbadoes was not inferior to that of any corps of infantry; the 29th brought with it to Cove a fever of a suspicious character; it was banished from one of the transports, but it gained ground in the other; the same disease was found among the detachment of the 26th; but it did not become general.

The fleet, with the troops embarked, detained by contrary winds from the middle of November, failed on the 9th of February ; but it failed, in a state with respect to health, not well prepared. The tempestuousness of the weather, which had all along prevented the sick from being regularly removed on shore in the commencement of the illness, occasioned an accumulation in many of the ships at the time the order was given for sailing. The order for sailing was sudden, and circumstances not permitting the removal intended, the sick were consequently carried to sea. The wind becoming foul, soon after getting clear of the harbour, a great part of the fleet returned, others bore away for England, some made for the nearest ports of Ireland, and several of the larger vessels, persisting in their cruise, reached the West Indies :—among the latter were the *Indoſtan* and *Abergavenny*, *Indiamen*. The sickness increased on the passage in most of them, and the mortality was great, particularly in the *Indoſtan*. Of the transports which returned to the harbour, some returned with a sickness aggravated in an uncommon degree : Of these the ship *Flora*, in which was embarked part of the 99th regiment with the commanding officer of the corps, was literally an hospital ship. This vessel was cleared out and cleaned ; the men in the mean time encamped on *Hawl Bowling Island*, were new clothed, and re-embarked on the eve of sailing. The disease appeared to be weakened by this process, but it still existed : a considerable number sickened during the passage, and

four men died, besides the commanding officer. The other ships were immediately cleared of their sick, on their return to the harbour; and the fleet sailed finally on the 23d of February, with better arrangement, and more preparation for a voyage.

The passage to the West Indies was a short one; the wind was generally fair, the weather fine; and, unless in a few ships, the sickness did not spread with any rapidity of progress, or occasion much mortality. Upon the whole, the total loss was less in the great body of the fleet, which arrived at Barbadoes on the 1st of April, than in those few ships which pursued their course from the first departure, and arrived about a fortnight earlier.

The fleet, which sailed from the Cove of Cork on the 23d of February, anchored at Barbadoes on the 1st of April. A fever still prevailed; it was still of the same kind, but it, in some measure, lost the power of propagation. The division of troops, destined for St. Domingo, sailed from Barbadoes on the 19th of April, and arrived at the Mole on the 1st of May. Between five and six hundred men were on this occasion embarked from hospitals, under the name of convalescents: among these, relapse was frequent; sometimes in form of fever, oftener diarrhœa or dysentery: the duration of relapse was generally short, and the power of propagating to nurses and attendants was visibly weakened.—During the passage six men died. After arrival at the Mole, relapse continued frequent through the greater part of May, but the contagion of the dis-

ease seemed to be spent : the relapse was often in form of an irregular remitting fever, of short, but uncertain duration ; the symptoms were sometimes of an unpleasant aspect, with agitation and tremor of the moving powers ;—diarrhœa or dysentery, with severe gripings, and often with copious evacuations, was common.

The sickness, which prevailed among the troops collected in Ireland, for the service of St. Domingo, was uncommonly great, and the mortality was considerable. From the middle of October to the middle of February, not fewer than five hundred men were numbered with the dead ; during which period, not fewer than three thousand had been mustered on the list of sick. The causes of this sickness and mortality are obvious, and similar to the causes which produced such ravages on the continent, viz. the seeds of infection, incautiously introduced into the army by the recruits of independent companies, or of new levies raised on the footing of independents, called into activity by a variety of causes, concentrated and exalted into a degree of pestilential virulence, by accumulation in narrow space.

It is proper to be known in this place, that no provision of hospitals had been made for the sick of the troops collecting in Ireland, for the expedition of St. Domingo ; nay, that the island on which these troops were encamped, and to which it was resolved they should be confined, could not furnish the means of covering the infirm from the inclemencies

of weather. Towards the end of October, four small vessels were fitted up for the reception of the sick of the worst description; but as these vessels were not capable of receiving more than one hundred and twenty men, a great number were still under the necessity of remaining on shore, under tents,—on wet ground and in stormy weather. Further, by this relief, inadequate as it was, soon was curtailed, two of the vessels becoming infected, and unfit for the purposes of an hospital. The Island of Spike, the place of encampment, is an unsheltered island, on which there is a fort of Government. The barracks of this fort had been applied for early; and they were actually given up, in the month of November, for the accommodation of the sick; but all the apartments belonging to them, which could be allotted to this purpose, were not capable of containing, in a proper manner, more than one hundred and forty men: the sick, who required separation from their comrades, amounted early in December to four hundred,—latterly they much exceeded this number. Besides the accommodation of the fort, an hospital ship, capable of receiving about one hundred men, arrived from England in the month of November; but it was absolutely necessary that the greater part of this vessel be reserved for the reception of sick during the passage to the West Indies. Under those confined circumstances, a transport ship and two small brigs were allowed to receive convalescents from the hospitals on shore, with the view that these

convalescents might undergo a purification, and acquire some degree of strength previous to their return to their respective regiments.

With these means of accommodation, deficient in a prodigious degree, the business was dragged on to the middle of January: from this period the sickness increased so fast, and so far outran the casualty of the hospital, that a necessity arose of fitting up every hovel, barn or stable in the island for the reception of sick: some sheds were also constructed; and, by the middle of February, the accommodation, though not of a good kind, was adequate in extent: the delay of these measures is imputed to the daily expectation of sailing.

The state of health on board of the different transports deserves a remark;—for it did not seem to be always connected with the actual cleanliness or size of the vessel. The Indiamen were among the most sickly of the transports; yet space was there ample,—every thing was clean, and apparently in good order. In some of the smaller and confined ships, where no praise of cleanliness was due, health suffered little. There were also a few transports, in which were embarked detachments of unhealthy regiments, which experienced no sickness during the whole period of embarkation; a fact only to be explained, by supposing that the seeds of contagion, either by accident, or by a more than ordinary attention in separating the unsound from the sound, had not been received on board. On the same cause perhaps depends the explanation of a

fact frequently observed in the transporting of troops; viz. that foreign soldiers generally arrive in the West Indies in good health, though the persons of the men are rarely clean, and the ships are for the most part abominably dirty. The Germans, it must be observed, are well recruited with respect to health; and they seem, on what cause it may depend, is uncertain, to have less disposition in their habits to generate contagion, when confined in narrow space, than English soldiers. German soldiers are chiefly recruited from among the peasantry of the country, English soldiers from among the manufacturers of large towns,—from a class of men spending their lives in sedentary occupations, in impure air. Under sedentary occupations and in impure air, health is not only deficient in vigour, but the habit seems to fall into a disposition to generate contagion;—a disposition, which perhaps, more readily recurs at future periods, when similar causes arise.

Of the different regiments of infantry, assembled at Cove, the 67th, as observed before, was the only one which recovered a due degree of health after embarkation, and which preserved it during the voyage. This corps consisted of formed soldiers; and it practised at all times a correct economy. The 93d, a new regiment, arrived at Spike Island suffering from genuine contagious fever; the ravages of this disease, previous to embarkation, were considerable; after embarkation, contrary to what happened in most other corps, they somewhat abated.

What part of this improvement depended upon the arrangements of the officer appointed to the command, will be left to others to determine ; but the benevolent and affectionate care, which Lieutenant-Colonel Gammel, on every occasion, bestowed on the concerns of the foldier, impressed at the time, and will ever continue to impress a sentiment of gratitude on the heart of the author, who, in his official capacity, had daily opportunities of observing his conduct. The 29th light dragoons were also sickly on their arrival at Cove : the seeds of a contagious fever were evident among them ; and it is worthy of remark, that the transport, in which Lieutenant-Colonel Hay, the commanding officer embarked, a man well known for judgment and exactness in military economy, suffered no loss, and actually arrived at Barbadoes without a man sick ; in the other, the sickness was great, and the loss equal to that of transports of infantry of like numbers.

But though the real causes of sickness be not always obvious, or according to appearances, there being many instances where good health has been preserved for a long voyage in small and dirty vessels, and under defects of personal cleanliness ; while, on the contrary, the most serious and destructive sicknesses have prevailed on board of vessels, large and airy, and in which no attentions of cleanliness and propriety, personal or otherwise, appeared to be omitted ; yet the history of the transport John, employed as an hospital ship on the passage to St. Domingo, affords proof, that something may be effected

by vigorous measures in the most aggravated degrees of sickness, even on board of ship. There were on board of this vessel, at the time of her departure from Cove, one hundred and twenty persons, eighty of whom were actually sick, or lately received from the hospitals on shore, in a precarious and uncertain state of convalescence; the others belonged to the hospital corps, relieved, on the eve of sailing, from orderly attendance on the sick at Spike Island. These were attacked with fever,—the greater number of them, soon after embarkation, and they furnished, in their illnesses, examples of a disease concentrated and alarming in an extraordinary degree. Some were instantly knocked down, as it were, by a blow on the head, appearing, as if in a deep intoxication, or an apoplexy, speedily arresting or suffocating the powers of life: the aspect of countenance, under these concentrated forms, was usually dark and cloudy, the colour of the visage like mahogany, with a tinge of yellow: Sometimes there was excessive pain of the head, and the eye generally was glossy and inanimate; but there seldom was any material increase of heat, or increase of strength and frequency of pulse; suspension of secretions was obvious, and death sometimes took place within forty-eight hours. In the first ten days, twelve of these men were carried off by this disease,—the most of them within the fifth day.

The John transport, notwithstanding daily cleaning and frequent fumigation, was deeply infected, owing to a constant succession of sick or conva-

lescents from infected hospitals for upwards of three months. The situation of the officers of health, as well as of the ship's crew, was by no means pleasant; life was in danger, and it became a matter of concern to all, to use every endeavour to mitigate the evil;—to eradicate the seeds of contagion, while on board of ship, was not thought to be possible. It happened fortunately, under those perplexing circumstances, that the wind was fair and the weather fine;—an event which gave an opportunity of bringing every person upon deck, during the day, and of cleaning and fumigating the berths below. The persons of the patients were also stripped naked, and washed clean daily; clean linen was furnished at least three times a week, and clean bedding once or oftener; for it was discovered, that, not only the persons of men, but that dirty clothes and dirty bedding may be made sweet and clean, by the addition of oatmeal to salt water. These means were punctually followed up, and the virulence of the disease became sensibly diminished in less than three weeks. It was remarked above that twelve men died in the course of the first ten days; during the remainder of the voyage, the deaths amounted only to seven, three of whom were received, in a hopeless condition, from a sickly transport, on the passage: But though the virulence of the disease was thus diminished, yet relapse occurred frequently, and the atmosphere of the ship was so generally infected, that scarcely a person escaped sickness in one form or other; it

was however frequently turned off in the commencement, and, if decisive measures were employed in time, the danger of it was little to be dreaded.

The action of the cause of fever, on board of this ship, was irregular, and chiefly manifested itself in severe headaches, increasing and abating periodically, in occasional giddiness or faintness, in nausea, in sickness, in bad or depraved taste of the mouth, in want of appetite, in increase of thirst, in the appearance of a foul and slimy tongue, in disorder of the bowels, sometimes a purging like diarrhoea, sometimes costiveness, from seeming want of power of the intestinal canal, in want of sleep, or in sleep disturbed by dreams of a frightful kind, with a variety of other complaints, influenced perhaps by the habits of the individual.

The sickness, which prevailed among the troops assembled at the Cove of Cork, for the reinforcement of St. Domingo, furnishes an extensive field of observation on the nature of the contagious fevers of armies. The operation of the cause manifested itself in a great variety of forms. It was evidently connected with sores and spreading ulcers of the legs, and more evidently still with diarrhoea, with dysentery, or severe gripings and bloody evacuations: the irregular forms, and slighter degrees of fever were numerous, the violent and threatening occurred daily, and the concentrated, suspending life, as it were by a direct operation, appeared on several occasions. It was observed above, that, while the

troops were on shore under tents, in wet and stormy weather, the prevailing form was dysenteric; that it often became febrile under a roof, or on board of the small vessels employed as hospitals; and that it generally became febrile after embarkation. It may be further remarked, that the form was, or soon became febrile, violent and concentrated in the crowded hospital in the fort; that mortality was great, and that life there seemed often to be suffocated or arrested without struggle or resistance: the disease in this situation seldom terminated in crisis, but it appeared to subside; the patient staggered about for a few days, and perhaps was esteemed convalescent, when an attack recurring suddenly overwhelmed the vital powers by a rapid oppression, or consumed them slowly, by the effects of a local affection,—chiefly of the dysenteric kind. In the barns, hovels and sheds, the appearances of the disease were more irregular, and the symptoms were more threatening; but the mortality was comparatively small, and recoveries were frequently rapid. On board of transports, where the patients remained below the greater part of the time, the disease was violent, concentrated and speedily fatal; where brought on deck, and remaining on deck during the day, the effects were similar as in the sheds on shore; the symptoms then became irregular, the duration was short; and, though a few days of convalescence was ordinarily succeeded by relapse, yet the relapse was usually of less force, and less danger than the original:—Under confinement between decks, the disease seemed

to retain its full power of contagion ; under exposure to the air on deck, this power was evidently weakened ; and where to this exposure were joined daily washing of the body and purifying of the bedding, it was so far weakened, that its existence, by the time of arrival in the West Indies, was in many cases, doubtful. In proportion as the force of the disease was weakened by the admission of pure air, by moving about in pure air, by washing in cold water, and by frequent change of linen, the appearances became fluctuating, the duration short, the relapses sudden, but slight, the forms remitting, intermitting, dysenteric, sometimes dropical, for the most part periodical, but irregularly so, at least following a law, different from the periodical movements of endemic fevers.

The preceding pages exhibit a summary view of the state and progress of the contagious sickness, which prevailed in that part of the British army, with which the author was connected, from the year 1793 to the year 1796. As the same or similar causes have produced the same or similar effects in other situations ; and as they will continue to produce them at other and future periods, it becomes a matter of no small importance, to inquire into the sources of the error from which the calamity originally arose, the causes, by which it has been propagated, and, on many occasions, aggravated from slight beginnings, to the most extreme degrees of virulence.

Soon after the termination of the American war,

the strength of established regiments was reduced to a low standard. The number of troops, deemed sufficient for the peace establishment of the country, being agreed upon, it was judged to be better, to preserve the basis of a larger proportion of regiments, ready to receive recruits, in the event of war, than to augment the army by new corps, on the first exigence of service. The reason is obvious, and the propriety of the measure cannot be controverted; but it was found upon trial, that the ordinary progress of recruiting was slower, than the circumstances of a nation, rushing rapidly into war, required. An expedient was therefore adopted of augmenting the troops to the requisite number, by raising companies on the footing of independents. These companies, as to be raised in the shortest time possible, fell chiefly to the lot of men of wealth and influence,—mostly young subalterns. To accomplish the object, jails, workhouses and manufacturing towns,—the great sources of recruiting, were laid open; a certain number of men were speedily collected, submitted to inspection, and, after some fluctuation of opinion about the manner of employment, incorporated into regiments, destined for service. Had the question been to bring together, and clothe in uniform, by the speediest means possible, a given number of two legged animals, the business was done; but, the end and design of recruiting an army, being to select men of sound bodies, capable of undergoing the fatigues of war, and of virtuous minds impressed with the importance of defending the honour of their country,

no progress was made ; for, though the muster roll was extended, effective strength was perhaps diminished, by a load of encumbrances,—by the introduction of disease and vice ; for to the incorporation of recruits from independent companies is traced the origin of contagious fever ; and to the same source, in the opinion of officers of discernment, is attributed the lamentable degeneracy of morals, which has been so conspicuous during the war.

The apparent strength of the army was augmented to a certain extent, by the incorporation of independent companies into regular regiments ; but the addition was, by no means, equal to the exigence. The recruiting of the independent companies had been accomplished in a short time ; and as there seemed not to be any other calculation but that of numbers, a similar principle was adopted for the raising of entire new corps. A great field of speculation and adventure was hereby opened to those possessed of wealth and influence, or of activity and address in the arts of recruiting ; the usual sources were laid open, and Colonels and corps rose up as by enchantment,—forms without substance. There are a few of them, and a few only which have attained a respectable name ; the majority have disappeared, and so nugatory has been the service performed by them, that it is presumed the precedent of augmenting the army, by similar expedients, will not descend to posterity. Disease and vice entered the army with the recruits of the independents ; the mass was infected, but there still re-

mained some mixture of good ; the new corps were nearly homogeneous,—particularly those from Ireland, and from some of the large manufacturing towns.

Such, in a few words, is the source from which disease was introduced into the army. Under good regulations and a wholesome discipline, it might have been checked, perhaps it might have been speedily banished ; but while rank and command were more certainly attained by the money of a school boy, or the activity of a crimp, than by a knowledge of the duties of an officer, or by the toils of active service in the field, such expectations were visionary. Thus in the false estimate, which the minister of war formed of the value of a soldier, originated measures which threatened disorganization of the army. The current is now checked ; but to repair the injury done will require time, skill, and the exertions of a rigid virtue.

Besides the above causes, depending upon the arrangements of the higher powers, other accessories are found, upon many occasions, to propagate the contagion, and to concentrate its force. Among these may be reckoned defect of care in examining and ascertaining the state of health, existing among troops, previous to embarkation for foreign service. From such neglects, disease, even the latent seeds of disease, introduced on board of ship is called into activity, and gains strength rapidly in the confined air of a crowded vessel ; the virulence is aggravated, in many instances, to the most extreme degree ; the

ship receives an infection, difficultly eradicated, and disease is left, in legacy, to the successors in a future embarkation. It is proper to remark, for it is no more than just, that greater pains have been bestowed upon the accommodations of transports during the present than in any former war; yet the mortality on board of ship was never half so great, the qualities of the subjects embarked far over balancing the advantages of the accommodation provided.

It will further be proper to observe in this place, that, besides the mischief arising from the incautious manner of embarking troops in transport ships, the arrangements of the medical department have added much to the calamities of the army. General hospitals, instituted for the relief of the sick and suffering, have often, through want of attention, served to extend and propagate fever; or to render it mortal, when not inherently of a fatal nature. The contagious fever of jails, hospitals and ships is proved by undoubted experience to be a disease of little mortality, under a pure air, and with ordinary attention; in crowded, and ill ventilated apartments, its ravages are dreadful. The preceding pages furnish melancholy proofs of this fact: in general hospitals the mortality was prodigious; in regimental hospitals, or where men were dispersed in small parties, as is usual with the sick of regiments, it was commonly trifling.

It appears clearly from the preceding sketch of the medical history of the British army during the present war, that contagious fever is an artificial

disease, that the mortality of it is increased and aggravated by artificial causes. It becomes the sacred duty of a physician, to expose the foundations of these causes; as it then will be the duty of the higher authorities, to adopt measures, founded upon principles of science, to prevent a renewal of their operation: The ravages of war are to be regretted at all times; ravages arising from ignorance are to be lamented, from inattentions and neglects to be deprecated. Means of remedying the evils alluded to do exist, and they are not of difficult discovery; they present themselves to a mind of ordinary discernment, on the perusal of an accurate detail of facts.

CHAPTER II.

Remarks on the Local Aspects of such Situations, in St. Domingo, as are occupied by British Troops; with a Summary History of the more General Forms of Disease, prevailing at different Posts, and in different Districts.

SECT. I.

THE town of the Mole, St. Nicholas, is situated at the opening of a gorge or ravine, upon a flat and narrow piece of land, of a porous and open soil, left by the sea or washed from the mountains. The bay, or harbour of the Mole is bounded, on the north-east side, by a peninsula, rocky, barren, and of moderate height, running directly into the ocean; the

advanced point of the harbour on the south-west is nearly parallel with the other; the hills which bound its side are elevated, and retire backwards into the country, somewhat in an amphitheatrical form, and, as it were, with certain steps of gradation, enclose a basin of about two miles in width, and five or six in depth. The aspect of the surrounding country is uninviting, barren and rocky, or covered with brushwood and low trees of stunted growth. A stream of water, of excellent quality, passing down the ravine, is conducted through the town by means of artificial canals; but these canals not being covered in, or in general not even lined with stone, are, in many places, gutters rather than aqueducts: the sea breezes are usually strong, and temper the heat; when withheld, or when blowing from the west, heat is great and oppressive. Here also rains are rare: the houses are, for the most part, small, low, and without the convenience of piazzas.

In May 1796, the time at which the troops arrived at this place, the Mole afforded only very feeble defences against an interior enemy, and a very circumscribed accommodation for a garrison: the sea breezes were then often faint; the air was heated beyond common, and rendered less fit for the purposes of life, by the great number of human beings and other animals collected into a narrow space. The Mole, at present, has a much better appearance: a chain of blockhouses with good roads of communication, secure it against desultory attack; barracks, erected on the first banks of the

amphitheatre, within the chain of blockhouses, afford good lodging for the troops ; but the aspect of a barren soil, and stunted vegetation still fatigues and offends the eye. The climate of the Mole is by no means agreeable ; heat is oppressive on some occasions ; and cold, in the mornings of December and January, is often unpleasant and piercing, particularly when the wind is directed through the funnel of a ravine. It has been customary to consider the Mole as one of the most healthy places of St. Domingo ; but the adventitious causes of the mortality of June and July 1796 set aside, the balance does not appear greatly in its favour.

The town of *St. Marc* is situated at the bottom of a deep bay, enclosed on the sides by high hills or mountains. The houses are well built and commodious ; and there is through the whole an appearance of neatness and order. A flat or valley surrounds St. Marc, and extends to some distance in the rear ; two small rivulets also pass through it ; the currents of which are sometimes considerably interrupted. The level surface of the plain in the rear necessarily affords exhalation ; and St. Marc, since its first possession, has ever been a fatal post to British troops ; even the native inhabitants suffer severely in certain months of the year ; and, in some seasons, sickness is fatal and epidemic among them, particularly in the south-west quarter of the town : rains are frequent ; the sea breeze is regular, and ordinarily strong.

L'Arcabaye. The principal town of this parish

is placed upon the margin of the sea, in a plain six or seven miles in breadth, and upwards of twenty in length. The plain is watered by means of canals, and the sugar estates are in admirable culture; the soil is light, and, in many places, gravelly. The plain of L'Arcahaye has not, during the war, been a permanent station of British troops; but the detachments, which have occasionally done duty in the district, have suffered as on other plains; on the contrary, troops cantoned in the mountains have almost always been strangers to sickness.

The town of *Port-au-Prince* is situated in the recess of a bay, on a triangular plain, inclining gently towards the sea; a mountain, of considerable height, covers it on the south side; the east, and part of the north are bounded by smaller hills of stony, gravelly soil, or chalky porous rock, called *tûf*; the western aspect is open to the sea. In this manner, the site of Port-au-Prince represents an oven in form; while it possesses in effect the quality of the oven in reflecting heat, which is consequently great at this place, during four months of the year. The sea breezes, during summer, are ordinarily weak, and delayed beyond the usual hour of arrival at other parts of the coast; land winds, in dry weather, are often strong and unpleasant, parching up both animal and vegetable life; rains, in the season of rain, are frequent and heavy. The soil of the plain of Port-au-Prince appears to have been formed by washings from the mountains, and the mud of the ocean; some part of the town was for-

merly swamp, several of the lower streets being actually founded on piles, or logs of wood. The borders of the sea, on either side of the town, are muddy, foul and overgrown with mangroves, log-wood, noisome plants and weeds, more particularly about the western gate, called the gate of Leogane. The post of Bizoton, a fortress about two miles from Port-au-Prince, on the road to Leogane, deserves notice. It occupies a round eminence of tûf or chalky stone, and is surrounded by swamps and foul ravines.

In viewing the general form of the bay in which Port-au-Prince is situated, the high land of the platform and Cape Tiberoon are two opposite and distant points; from the one, a ridge of mountains runs eastwards, from the other ridges, or the extremities of ridges, interrupted sometimes by intervening plains, but, from the point of St. Marc continued in an unbroken line, run in a south-easterly direction, gradually converge, and form the sides of a funnel, which conducts into the interior of the country. In the sea, comprehended within the extreme points of this funnel, lie several islands, of which Gonave and Cayemittes are of considerable extent. The sides of the funnel approach each other, and where the sea terminates the distance is perhaps not less than twelve or fourteen miles; the shores of this extremity of the bay are low and foul, over-run with mangroves and offensive weeds; the plain, which extends from thence into the interior, as far as the Salt Lake, which penetrates to the centre

of the island, is known by the name of Cul de Sac; the soil of this plain is various, often light and porous, in some places rich and fertile, in some swampy and uncultivated, in others dry, stony and barren. In the wet season the sea coasts, which are of a deep soil, are often overflowed; and unless, where drained and cultivated, actually under water;—a certain tract, on the north-eastern side of the plain, from the termination of the sea to the commencement of the lake, is in some measure a salt marsh. The cultivated part of the plain Cul de Sac, prior to the revolution, was admirably well watered by numerous canals or aqueducts; but many of these are at present in bad repair, the greater number of the plantations are ravaged, the houses destroyed, the fields overgrown with weeds and rubbish. The north-eastern boundary of this plain,—a continuation of the mountains of L'Archaye, joining with those of Grand Bois, is ill provided with water, and the lower parts of it have a stéril appearance; the south is more fertile in soil, well watered, and, in former times, was well cultivated.

Croix des Bouquets, a large village, or rather bourg, placed in the centre of the plain Cul de Sac, stands upon a dry and gravelly soil, and such as might be supposed to be healthy; but it has for some time past been the stable of horses and cattle; it is consequently dirty and offensive, and perhaps less healthy than it formerly was.

The south-west division of St. Domingo, the part

of which in possession of the British, known by the name of Grande Anse, affords some remarks of importance in the history of health.

Pestel, a post on an insulated rock on the sea-coast, one of the extremities of the eastern cordon, has been occupied for some time by a detachment of English soldiers. The soil of the country surrounding this rock is a dry and husky red mould; no water, stagnant or running, is found within some miles of it. Intermitting and remitting fever, the disease of tropical climates, is little known at this post; where it has appeared, it has seldom been of a bad kind; bowel complaints are more common, and more troublesome; and sores, or spreading ulcers of the legs prevail so much, that one-fourth, at least one-fifth part of the detachment is usually confined on that account.

Cayemitte lies about ten miles west of Pestel, near the mouth of a considerable stream of fresh water, with swamp on each side, extensive and unusually offensive. British detachments have suffered severely at this place; and the natives themselves are not exempted from formidable attacks of disease.

Jeremie, the principal town of the district, is placed upon the declivity of a hill, open and well exposed to the breezes from the sea; the air is cooler and more refreshing, particularly at night, than on most other parts of the sea-coast, yet in those houses, which occupy the sea-beach, or that are placed in the ravines, of which there are several, the heat is uncommonly great. The

fort is on the summit of a ridge of hill, running in a north-east direction between the sea and the embouchure of a considerable river, the plain on each side of which is extensive, and some part of it liable to be overflowed in wet weather, but that portion of it which most regards the fort, is planted with sugar cane. Jeremie has always been considered as a healthy situation, and it unquestionably is so, compared with other places, yet intermittents and remittents appear frequently, and diarrhoea or dysentery is often troublesome.

The village of *Donna Maria* consists of a few houses, placed on the sea-beach, near the embouchure of a considerable stream of fresh water. The soil, similar to that of most other sea-coasts in this island, appears to be an accumulation of sand and mud left by the sea, or washed from the mountains; on either side of the village are small lagoons of stagnant water. The natives suffer considerable sickness during the rainy months; the few British, who were stationed here for a short time in autumn 1796, fell down rapidly, and died in great proportion.

Irois, a bottom or plain surrounded on three sides by an amphitheatre of hills, in which is built a fort upon an insulated eminence or ridge, nearly surrounded in wet weather, by impracticable swamps, or lagoons, formed by interruption to the course of a rivulet, which runs through the valley. This valley, embosomed in mountains, is of an extreme richness of soil. It was formerly planted with indi-

go, it is at present over-run with noisome weeds ; the heat is excessive ; the rains are frequent, and the exhalations are actually offensive to the senses.

The above are the chief posts on the sea-coast occupied by British troops ;—some few in the interior require to be mentioned.

After passing over the chain of mountains, which bound the north-eastern side of the plain Cul de Sac, we enter the district of Mirebalais, an extensive valley of beautiful prospect, interspersed with numerous small hills, intersected by ravines and rivulets, and irregularly covered with woods. The Artibonite, a large river, which frequently and suddenly overflows its banks, runs through the middle of the valley. The principal town of the district stands upon high ground, within a few hundred yards of the river ; the situation is pleasant, but it is not remarkable for health. The power of the sun is usually very great in this valley, during the months of summer. In May, June, and July 1796 the weather was uncommonly dry, the heat was excessively great, a fever raged epidemically among the inhabitants, carried off considerable numbers of them, and nearly annihilated a detachment of the 82d regiment of foot stationed at this place.

Banica, a town in the Spanish part of St. Domingo, and nearly in the centre of the island, was taken possession of by a detachment of Colonial troops, with some European cavalry, in August 1796. This part of the island has scarcely known culture ; numerous herds of cattle feed on the plains,

and small patches of cassava and Indian corn are planted near the cabins or hovels of the indolent inhabitants, who usually fix their abodes near rivulets. Banica is placed upon the banks of the Artibonite, where it is a fordable, but considerable river. The air is light, and the heat, though sometimes high, is rarely oppressive; an unaffiliated European is capable of taking exercise, even of walking, without fatigue, and without danger. The detachment of cavalry sent to this place remained in good health till the period of their recall.

SECT. II.

THE majority of the infantry, embarked at Cove in the month of November 1796, for the Island of St. Domingo, was originally of a bad quality; but in addition to the original quality, hardships on shore, from bad accommodations during bad weather, and other causes which depress the mind, and influence the health, require to be estimated in viewing the history of this expedition. In each regiment ordered for this service, the 67th excepted, a fever prevailed of a high degree of contagion and of great virulence. A disease appeared in the month of October in dysenteric form, in the encampment on Spike Island, and from unavoidable accumulation in the fort, the only place which could be obtained for an hospital, the form changed to febrile, of great force, and latterly of great mortality. It does not belong to this place to trace in detail the causes of

the miseries of this expedition. A contagious fever has been, in a manner, engrafted on the British army, since the commencement of the war; it has been propagated from corps to corps through negligence and defects of interior economy; in the present instance, it was aggravated to a degree of uncommon virulence, by accumulation in narrow space. But though the disease was of a character highly contagious on Spike Island and in the harbour of Cove, nay continued so, in some ships, till the arrival at Barbadoes, yet where proper arrangements were adopted, and proper plans of cleanliness pursued, the virulence abated gradually in advancing to the southward; the malady changed its character at Barbadoes; relapses, it must be allowed, were still frequent, and original invasions occurred in some instances, but the power of communicating was visibly and materially weakened.—On the 1st of May the remains of the expedition arrived at the Mole. Contagion was then traced with difficulty; relapses were frequent, but they, for the most part, assumed a dysenteric or a remitting form, less regular however, in their periods than the remitting endemic of the country.

May 30. Many relapses occurred among the troops from Ireland in the early part of May; but they were generally slight, and often assumed a remitting form. Towards the end of the month, several instances of the concentrated endemic, usually called Yellow Fever were observed, exhibiting strong marks of vascular excitement in the

commencement, and terminating frequently with black vomiting, and hæmorrhage from different parts of the body.

St. Marc, June 9th. A small detachment of the 69th regiment of foot embarked at the Mole for Port-au-Prince, on the 30th of May. Every individual of the detachment was in health at the time of embarkation. The corps had arrived in St. Domingo about four months previous to this date, and the detachment at the Mole had as yet suffered no sickness: the day after embarkation several men became ill, and on the 3d of June twenty were sent on shore at St. Marc, from one ship only; three of these died next day, and eight or nine more within the three days following;—the disease, the concentrated endemic of the West Indies, commonly called Yellow Fever:—the leading features were the following.

There was vast anxiety and distress in the early stage, restlessness and an undescribable fidgetting; there was also, for the most part, some commotion in the vascular system in the beginning, but it was soon over, so that by the end of the second day, the pulse could scarcely be distinguished from the pulse of a man in health, unless by a want of expansibility and energy of contraction; the skin was at the same time dry, the countenance dry and withered; the tongue was frequently clean, particularly on the edges; thirst was seldom troublesome; vomiting was sometimes observed, but bilious vomiting was rare; the eye was inanimate, and the colour of the white

was often dusky, and as it were marcid, but rarely of the orange yellow till towards the close of the disease, when, together with the yellow colour of the tunica albuginea, there was also an appearance of inflammation, or more properly speaking the veins appeared distended with red blood, as if filled by injection. In some cases there was purging of blood, or rather a constant oozing of blood through the whole tract of the alimentary canal; hæmorrhage from the lungs occurred in some, hæmorrhage from the nose in many; the matter thrown up, when vomiting did take place, was usually clear and ropy,—in the last moments it was sometimes black; jaundiced yellowness was by no means common, even in the late periods, but the aspect was at all times dusky, and such as may be called marcid; a certain wandering of delirium occurred in some; but in general the intellect was clear, and the mind singularly strong, or rather indifferent to the approaching event.

Mirebalais, June 19th.—A detachment of the 82d regiment of foot, consisting of three hundred men, went to Mirebalais about the time the district was taken possession of by the British. The corps had arrived in St. Domingo in the month of August 1795; the possession of Mirebalais followed soon, and the detachment employed on this service remained healthy till the beginning of April 1796. From the 1st of April until the 19th of June, it lost ninety-two men, and several officers: the destruction of the detachment was foreseen, if it remained at Mirebalais; it was therefore proposed, that it should be instantly

removed to the skirts of Grand Bois ; but the proposition was not complied with : from the 19th of June to the 13th of July, forty more died ; and, by the end of September, only ten of the private men were left ;—the officers and non-commissioned also suffered severely : the surgeon died early in June ; and, from that period, the care of the sick was intrusted to a French practitioner, a native or resident of the place.

This fever, as appeared by actual inspection on the 19th of June, was frequently a disease of type, most usually of the double tertian form, with bilious vomiting and purging, or particular affection of the alimentary canal and biliary system ; the shades of yellowness were various,—from a slight tinge to that of a Seville orange : but though the more common form was remitting, or like an aggravated endemic in autumnal months in tropical or warm climates, there occurred, on many occasions, instances of the purer form of yellow fever of rapid course, terminating with black vomiting, and hæmorrhages from different parts of the body.

The author, at this time had not determined, in his own mind, the relation, which, the form of disease named Yellow Fever, bears to the ordinary endemic of the West Indies. The facts connected with the history of this detachment convinced him, that, the fever of the West Indies, aggravated and speedily fatal, or remitting, mild and long protracted is fundamentally one disease, arising from one common cause,—of difference indeed in point of force,

of some difference perhaps in modification, but chiefly influenced, in its mode and form of action, by the circumstances of the subject. It was also proved to him, by the history of the sickness prevailing among the inhabitants of Mirebalais, during the months of June, July, and August, that natives, or those long resident in tropical climates, are not exempted from occasional attacks of fevers, so concentrated and violent, as to exhibit the common signs, or to assume the character of the yellow fever of Europeans.

Port-au-Prince, July 29th. The uncommon degree of sickness which has occurred, in every embarkation of troops, proceeding from the Mole to Port-au-Prince, or other post in St. Domingo, appears singular and not easily explained. The 29th light dragoons embarked at the Mole about the end of June;—the men embarked were in perfect health. During a passage of four or five days, the sick list became formidable, and one ship alone lost thirty men; the store and merchant ships, which sailed under the same convoy, all lost men during the passage, and several of them in considerable numbers.—A similar, perhaps even a greater sickness and mortality was experienced by the York Hussars, in their passage from the Mole to St. Marc.

The disease, under which the 29th light dragoons suffered, was generally a disease of a most concentrated kind; in many cases the powers of life were, in a manner, suffocated, or rapidly overwhelmed;

in some there was considerable excitement,—a furious delirium, and a course finished within twenty-four hours,—often by convulsion; in the greater number, there was lividness of countenance, a lividness of the limbs, a purplish colour of the hands, feet and joints, similar to the lividness of sea scurvy; the eye was often clear, vacant, and idiot-like; the pulse was small, confined or oppressed, rarely irregular, quick and energetic, or with much increase in point of frequency; sighing, deep breathing, and inability of expanding the chest were common; there were times of great distress, and times of apparent ease, but there were not any distinct paroxysms and remissions; there was often a general torpor of mind as well as of body,—a suspension, or sluggishness of the vital energies; the circulation of the blood seemed to be impeded, the current moving on heavily, or appearing, on some occasions, to stagnate in the veins.

The Rohan Hussars also suffered dreadfully, during June and July. This corps had been long embarked on board of ships: it touched at the Mole, remained a short time, and arrived at Port-au-Prince in excessively hot weather. The form of disease was a violent one, and very fatal, the mortality, under the first attack, exceeding one half:—the leading features were extreme lividness, hæmorrhages, purgings of blood, black vomiting, and purging of similar matters, yellowness of the deepest cast, and, in some instances, convulsions and rapid death.

It was observed on this occasion, that the form of the disease was influenced by the qualities of the situation, in which the original cause was supposed to exist, as well as by the qualities of the place of actual invasion ; for instance, the form was continued, and often violent on board of ship, in dry, barren and parched situations ; type, though obscure, was perceivable in wet and swampy ones. In this manner, men attacked at Bizoton, or who appeared to have received the seeds of the disease on the duty of that fortress or similar situations, experienced in general a fever of type, the paroxysms usually subsiding at a given period, though without distinct marks of solution :—the patient, whose aspect was often dry and withered from the beginning, sunk down on the fifth day, in stupor or coma, and seldom survived forty-eight hours from this accession,—this occurrence of a new form of symptoms.

Mole, September 13th. The most concentrated form of the disease of the country,—the yellow fever in all its horrors, prevailed at the Mole during the months of June and July in a great and uncommon degree. It appears by description,—for the author was not present at the time, to have been for the most part, a fever of a continued kind, concentrated in degree, and occasionally varied in form. It existed in August, and it exists at present, though its ravages have abated considerably, except in the 67th regiment. The men of this regiment are generally young, bulky and muscular ; they suffered little from the contagious fever at the Cove of Cork, and, till

the month of August, were strangers to general sickness; they are, and have been much exposed to the sun, but the confined situation of the Mole does not permit of the execution of plans of regular and active exercises, of the value of which, in the preservation of health, the commanding officer of the corps is one of the few military men of the present day, who entertains just and proper ideas. The symptoms of this disease, among a set of men vigorous by nature, and often transgressing the rules of temperance, were ardent and violent, with much vascular excitement in the earlier periods, often subsiding on the third day, and terminating rapidly in black vomiting, and a formidable train of horrors. The 56th regiment, encamped upon the same ground with the 67th, suffered dreadfully in the month of July, and the sickness was still considerable in the month of August. The qualities of the 56th are different from those of the former; the 56th had suffered much from the contagious fever at Cove, and on the passage to the West Indies;—the corps possessed little energy, the symptoms of the disease were less violent than in the 67th, the progress was often slow, and the appearances insidious in the commencement; a slight febrile indisposition, a purging of watery stools, an obscure or slight remittent, after a continuance of four or five days often terminated suddenly and unexpectedly in withering, in lividness, in black vomiting, in delirium, or convulsion.

The sickness which prevailed at the Mole, during the months of June and July, was great, and the

mortality was alarming; the uncommon sickness and mortality also, which took place under every transport of troops to different posts, appeared inexplicable. It was believed by some that contagion lurked in the ships, but this was very clearly proved not to have been the case. A detachment of the 67th regiment was embarked for Port-au-Prince in the beginning of August, in perfect health at the time of embarkation, in vessels free from the most distant suspicions of mischief, and with every convenience of accommodation; yet on arrival at Port-au-Prince, a voyage of four or five days, the sickness and mortality nearly equalled that of the 29th light dragoons mentioned above.

Irois, October 10th. The disease which prevails at Irois is generally a disease of type, but paroxysms and remissions are not always distinct and clearly marked. The complaint is often so slight in the beginning as not to give alarm; but on the fifth day it often changes into a comatose affection, and terminates fatally, perhaps in another revolution; sometimes it continues for seven days, as a bilious remittent, with purging, vomiting, thirst, great internal heat, dry tongue, anxiety and fallow aspect, but without threatening immediate danger; on the eighth the head becomes affected with delirium: coma, stupor, torpor, suspension or exhaustion of the nervous energy supervene, and the disease terminates on the twelfth, or fourteenth, fatally more frequently than favourably:—the nails often appear black during the course of this disease, and the blackness gra-

dually advances forwards, like a blemish, in the progress of recovery.

Croix des Bouquets, January 10th, 1797. The regiments of Rohan and Hompesch, with the legion of Montallembert, chiefly Europeans, are cantoned in the plain Cul de Sac. The legion has been longer in the country than the others, and is consequently better assimilated. The Rohan, as has been mentioned, arrived at Port-au-Prince early in June, and suffered dreadfully from a most concentrated form of fever, during that and the following month. The Hompesch arrived later, was cantoned in the plain, and suffered less till the month of September, during which and the two following the rage of sickness was as great, as it ever had been in the corps of Rohan. Of the Hompesch, some companies were quartered on ruined, and consequently uncomfortable habitations,—amidst stagnant water and other nuisances; others occupied plantations, in some state of repair, and furnished with tolerable accommodations; sickness prevailed in all, but it was different in degree, according to the obvious qualities of the respective situations. The disease, upon the whole, was generally a disease of type in the beginning; it continued so for several days in many; even ceased, and, after some time, relapsed in continued form, with torpor, suspension of the nervous energy, and rapid withering; in some instances the first, and in many the second paroxysm of these relapses proved fatal. In this disease, even under remitting form, there was deep yellowness in some; in others a livid

colour, or dusky brown, like mahogany ; petechiæ were not uncommon during the course, and they even sometimes remained, after considerable progress in recovery ; hæmorrhages from different parts of the body were frequent.

A circumstance was observed in one of the companies of the Hompesch quartered at Vaudreuil, a plantation on the plain, that deserves perhaps to be mentioned.—Ophthalmia prevailed, in an uncommon degree, during the rage of sickness in the other companies of the corps ; and it followed the febrile periods so faithfully, as to suggest the idea that it originated in a febrile action, locally exerted ; the eyes, and eyelids were exceedingly inflamed and watered much ;—if this inflammation was forcibly repressed by astringent applications, flux or formal fever was often the consequence.

Port-au-Prince, April 3d. Intermitting and remitting fevers became frequent among the troops, in garrison at the Mole, in the months of October and November, and carried off a considerable number of subjects. The sickness abated in December, and ceased in January. March and February were healthy months in every part of the island : there were then few or no recent attacks, though many chronic complaints, the suite of acute diseases, still remained in the hospitals.—It is worthy of remark in this place, that symptoms usually called nervous, or such as shew sensibility and action of the moving powers, tremors, startings, derangement of intellect, &c. were rarely seen in the fevers of the troops

quartered in the plain, before the beginning of January. From that period, an increased action of the arterial system was more obvious;—from a state of oppression, its motions seemed gradually to develope, and as it were extricate themselves by a continuance of effort.

Port-au-Prince, May 3d. In the course of last month sickness increased rapidly in the garrison of Port-au-Prince and its neighbourhood, but more especially among the detachments, which supplied the duty of the post of Bizoton. Two thirds at least, of officers as well as men, who spent a fortnight at this place, either returned ill, or became ill, in a very short time after return.—The disease preserved its usual character of obscure remission, and deficient excitement during the paroxysm;—the mortality as yet has been inconsiderable.

SECT. III.

PORT-AU-PRINCE, November 15th, 1797. The post of Bizoton, which ever since its first possession by the British, has been one of the chief sources of sickness and mortality to the troops serving in the district of Port-au-Prince, was given up in the month of May to the defence of colonials. Since that period the recent attack of fever has been more rare; but relapse of fever, contracted while on the above duty, continued to fill the hospitals, and served principally to swell the list of mortality of the month of June. Bizoton was always esteemed a chief source of de-

struction to the garrison of Port-au-Prince, and had proofs been wanting of the truth of the opinion, the events of the months of April and May furnished decided ones ; a party of the 5th West Indian regiment, consisting of seventeen men and four officers, the greater part of them in some measure inured to a tropical climate, experienced severe attacks of this fever, (one man excepted), in a residence of less than one month ; nay further, the black troops, who succeeded the British in the duty of the fortress, suffered and continued to suffer considerably ; and of the Creole French officers, several have been extremely ill, and some have actually died.

The form of this fever is most usually double tertian ; the paroxysms are marked by a peculiar torpor, or suspended action of the moving fibre, principally observable in the motions of the vascular system ; this suspension insensibly gives way after a certain duration ; the pulse, as it were, developes ; the faculties of the mind emerge ; the countenance brightens up, or becomes serene and clear, but these flattering appearances are seldom of long continuance ; a similar suspension recurs at a short interval, and the patient dies, in a few hours, torpid and comatose. Spasms and local pains, tremors, startings, active and lively derangement of intellect, or other signs of reaction are rare in those concentrated forms. It moreover happens frequently, that this fever of Bizoton begins mildly and insidiously, sometimes in form of a diarrhoea or flux, sometimes as a single tertian, the type of which anticipates ir-

regularly, overstepping, by long strides, the ordinary laws of anticipation ; or from single it becomes double, at a certain period of the course. Under such circumstances, stupor, coma, apoplexy, torpor, or suspended action of the moving fibre assume the place of a regular paroxysm, which sometimes vanishes gradually, but rarely has a termination by sweat ;—these unfavourable changes happen at different periods, but the fifth day is, upon the whole, the most remarkable.

The minor symptoms of this disease are various and fluctuating ; but there are some appearances usually present in this, as in other fevers originating in similar situations, which deserve remark ; of these a torpid and dusky aspect, a tongue dry, rough and foul, oftener moist, smooth, foul and of a milky whiteness, sighing and heavy breathing, anguish, anxiety or uneasiness at stomach, and in the epigastric regions, thirst, or an absence of thirst not corresponding with appearances, nausea, vomiting, want of rest, uncomfortable sensations, and, upon the whole, signs of increased or deranged action of the alimentary canal and biliary system are the most conspicuous.

It had long been proposed to establish hospitals of convalescence in the interior of the Grande Anse, or on the mountains of L'Arcahaye, in both which situations European troops had usually enjoyed good health. The Grande Anse was thought to possess advantages over L'Arcahaye, in several respects, but the vicinity of L'Arcahaye to Port-au-Prince

occasioned a preference to be given to the latter. The proposal had been often made, and, as it carried with it convincing proofs of benefit, it was always approved of in general terms, but still nothing was attempted to be done. The representation of its benefits was renewed in the month of April, pressed with earnestness, and measures were at last taken to carry the plan effectively into execution. A field officer, with medical assistance and hospital furniture, thirty men in health, and twenty in a state of convalescence, was ordered towards the end of May to proceed to L'Arcahaye, and from thence to the mountains and quarter agreed upon, to lay the foundations of the establishment. The commandant of the district, by previous agreement, had charged himself with the transport of the men and baggage, and the necessary accommodation of lodging; but he was so little attentive to the execution of his promise, that it was found necessary, after a detention of six weeks on the plain, to order the party to return to Port-au-Prince, the convalescents, by this time, having relapsed to a man, and even the greater part of those, who left the garrison in health, being actually ill. The design was thus abandoned; and the failure of the undertaking, while it furnishes a proof of the inferior consideration, in which medical arrangements are usually held in armies, served to fill the hospitals, and added considerably to the mortality of the month of July.—The plain of L'Arcahaye is unhealthy to Europeans; but chagrin and ennui probably aggra-

vated the ordinary operation of morbid causes on this detachment.

The evacuation of Mirebalais and Grand Bois, unquestionably a suspicious transaction, made such an impression upon the immediate proprietors, and even upon the people at large, that the re-possession of these districts, independent of their value in a military point of view, became a measure of necessity, in order to regain the confidence of the inhabitants. An expedition was accordingly planned, and undertaken for this purpose ; and the object was effected, without material loss or opposition. The black infantry composed the body of the force ; it marched to Mirebalais by two principal routes, accompanied by British, foreign and colonial cavalry. The heat of the days, the cold of the nights, occasional rains, scarcity of food, scarcity of water, and tedious, interrupted travelling on bad roads, were considered as hardships ; and they certainly were so to troops, not inured to military service ; some few individuals were overcome by the power of the sun ; but bleeding, washing with cold water, where the means were at hand, or rest for a few hours, under the shade of a tree, uniformly restored them ; no serious accident happened, and in seven or eight days, the British and foreign cavalry returned to the plain of L'Arcahayé, with some men indisposed, but with less sickness than ordinarily happens in a like period of rest.

Ease and indulgence followed this spurt of exertion, and in four or five days fever began to make

its appearance, more or less in every corps, but more generally among the hussars of York than in any other ;—it increased rapidly for eight or ten days. The plan of another expedition having been formed in the interval, those actually sick were sent to hospitals, those in health were ordered to move on to St. Marc. The march, from L'Arcahaye to St. Marc, cannot be justly considered as a march of fatigue, but the troops met with disappointment on their arrival. The movement did not take place at the time intended ; and in less than a fortnight, few were left to undertake it ;—they were nearly all sick.—The consequences of this expedition filled the hospitals for the month of July, and the diseases resulting from it, may be considered as the principal cause of the mortality of that, and of part of the ensuing month.

The apparent effect of this expedition upon the health of the troops deserves a cursory remark. It is a doctrine, commonly maintained by military men, that European soldiers are not capable of undergoing the fatigues of field service in the tropical climates of the West Indies ; and the sickness, which followed this excursion to Mirebalais, has been considered as a direct proof of the opinion ; but if effects be traced to their proper causes, the fact will be found to be directly the reverse ; for though it be true, that some men failed from the fatigues of the march, or from causes of accident, yet it was not till after three or four days of indulgence, that sickness, properly so called, began to appear. This

sickness increased rapidly ; yet those, who, by duty or otherwise, were kept in a state of employment and activity, generally escaped : hence the maxim of so much importance in military operation, viz. that health is best preserved, even in tropical climates, by exertion of body and energy of mind, instead of being overturned, is established by the experience in question. The fact is certain, and the causes of the fact are obvious to men acquainted with the laws and economy of the animal body, but these causes will not soon present themselves, in a convincing shape, to the bulk of mankind, easily deceived by appearances, which correspond with pleasurable impressions on the external senses. It is thus usual, to impute disease to immediate sufferings from hunger or hard living, continued labour, or fatigue ; a rich table, and a bed of down are not believed to have a share in the evil ; yet indulgences were here, as in other instances, the direct causes,—the power of which causes was increased, in a high proportion, by the preceding abstinence and fatigue.

The post of Fourmier, on the ridge of mountain, which covers Port-au-Prince on the south, furnished a considerable number of sick to the hospitals, during the months of June, July, and August. The complaint was chiefly of a dysenteric form, and not without danger. The first ridge of mountain, though very elevated, is not perhaps beyond the reach of exhalation from the plain and sea-coast. This exhalation might, indeed, be considered as the

source of the evil; but accidental causes, there is reason to believe, had also some share in the production of the malady, at least in modifying the form. The provisions were often exceptionable; and it is easy to conceive, that salt pork and bread of indifferent quality, with rain water for drink, were likely to occasion diarrhœa, which in time degenerated into flux. The disease was slow in its progress, and without distinct marks of fever; but the event was often unfortunate, when persons, advanced to the latter stages, were removed to Port-au-Prince;—they died speedily, or remained valedudinary for months.

The course of the present year has furnished matter of remark, on the subject of preserving health, or of obviating the ordinary fatal tendency of endemic disease, in the islands of the West Indies. A detachment of Dutch artillery, consisting of ninety-six men, arrived at Port-au-Prince in the beginning of August.—The detachment had not experienced sickness during the passage from England, so that whatever hereafter occurred may with justice be attributed to climate. On the night after landing, eight men were brought to the hospital, seven of them under the first attack of fever;—the other had been ill two days, and died in twenty-four hours; the seven were attended to immediately, treated with vigorous means, and they recovered speedily.

The fever of St. Domingo having uniformly destroyed a great proportion of new comers, foreign

as well as English, it was recommended to the surgeon of this detachment, to employ such modes of preparation, as seemed best suited to prevent the attack, or to mitigate the violence of the expected disease. These new comers were accordingly bled to such quantity as circumstances indicated, purged, or otherwise evacuated as judged fit, carefully watched by the non-commissioned officers, and in general removed to the hospital on the first appearance of the slightest febrile indisposition. The principles of the plan recommended in the following pages were held in view, and the first part of it at least, was carefully executed.—No loss, except of the man mentioned above immediately after landing, and of another, early in November, neglected by some accident or other, till the third day of the disease, has occurred hitherto; and though the period of trial may not appear to be sufficiently long, to warrant the forming of a final conclusion, still the history of the detachment, as far as it goes, furnishes a presumption, that if it be not in the power of the medical art, always, or ordinarily perhaps, to cure fever when actually formed, it is, in some measure, in its power to prevent, by timely aid, its fatal ravages. In support of this opinion it may not be unimportant to remark, that the master, and more than one half of the crew of the ship *Bangalore*, the transport which carried the Dutch artillery to St. Domingo, are already dead,—the disease yellow fever,—the treatment, according

to report, calomel and other forms of mercury,—the prevailing fashion of the times.

The second regiment of the Irish brigade, a corps composed of very heterogeneous materials, possessing little of the outward form of military discipline, and still less of interior economy, arrived at Port-au-Prince about the middle of September. One hundred and thirty men were then in the list of sick, and upwards of thirty had died on the passage from Jamaica. In this list were included a considerable number of individuals, incapable of service, from the infirmities of old age, not fewer than twenty labouring under putrid sores and spreading ulcers of the legs; the remainder were either actually ill, or in a certain progress of recovery from fever.

The fever, which prevailed in the second regiment of the Irish brigade, had much of the external aspect of fever found on board of crowded ships, or infected hospitals; the re-action of the vascular system was feeble; the patient died, withered and dried up like a blasted plant, sometimes of an olive dusky colour, sometimes deeply yellow;—the duration seldom exceeded the eighth day; recovery, when recovery did take place, was gradual; the powers of life emerged by degrees, but the skin remained impervious for some time. Such was the usual progress of the disease, when left to itself; when attended to immediately, or soon after the attack, and treated according to the principles of the plan recommended in this outline, the course was interrupted, and the mortality was trifling.

This corps was disembarked, in a few days after arrival in the harbour, and sent to a cantonment in the plain Cul de Sac. The endemic fever, in the form which it usually assumes with strangers, more frequently of the second, than of the first form, appeared among men and officers like an epidemic; but, from the attention and decision of the surgeon, who adopted the principles of the plan recommended hereafter, the loss was comparatively small.

Circumstances of service made it necessary to remove the corps to the mountains of L'Arcahaye in the beginning of November; the actual sick were brought to Port-au-Prince in waggons; and they seemed, in general, to be benefited by the journey; but the march of the healthy part having been badly conducted, or performed under unfavourable circumstances, an increase of sickness was the consequence; while such as became ill, deprived at this juncture, by the indisposition of the surgeon, of the usual early attention, did not, in many cases, appear at the hospital before the second or third day of the disease; of these the greater number died, under the ordinary appearances of yellow fever; the others, attended to in time, generally recovered, the constitution even seldom suffering material injury.

The importance of attending to the disease in the early stage was evident in the present instance;—it is further confirmed by what happened to the officers of this regiment. These suffered attacks of fever in the same manner as the privates; but as

the most of them were seen by a medical person in the commencement, and treated with vigorous means, no loss has hitherto occurred; in two of them, fever was in progress before decided means were adopted, and life was saved with difficulty.

An appearance of some curiosity has occurred several times at Port-au-Prince, in the course of the summer. Some persons, under fevers of a continued or obscurely remitting type, became covered about the period of crisis with watery vesicles or blotches, containing a whey coloured or yellowish serum: convalescence seemed to go on, and, in some instances, was so far advanced, that the subjects were thought fit to return to duty, but they usually relapsed unexpectedly, and sometimes died suddenly;—the appearance seemed, in some manner, to resemble the description of pemphigus.

St. Marc, November 3d. St. Marc, since the first arrival of the English in St. Domingo, one of the most destructive districts in the island, has not materially changed its character during the present year. The disease, which prevails at this place, has, upon the whole, much of the remitting type; bilious symptoms are common; coma, oppression of the brain, and general torpor of the moving fibre not unfrequent. This endemic is often so severe among the inhabitants, particularly in a certain quarter of the town, during the months of July and August, as to bear the name of epidemic, and sometimes, though not justly, to be considered as contagious.—Convalescence from the disease is slow, perhaps more

tedious, and less complete than at Port-au-Prince ;— a sickly, withered look, similar to the look of the inhabitants of the swampy banks of the large rivers, in the southern states of North America, remains long.

Mole, St. Nicholas, December 5th. The Mole bears the general character of being one of the most healthy situations in St. Domingo. It is, upon the whole, more so than Port-au-Prince or St. Marc ; yet the regiments quartered here have suffered in an equal, if not in a greater proportion, during the months of August, September, October, and particularly of November, than those of the former places.—The weather for some time past has been more sultry than in ordinary seasons ; and more rain has of late fallen at the Mole, than for several years past, during a like period. The 56th and 67th regiments compose the garrison of the Mole ; and of these the 67th is the most sickly at present. The men of this corps are the most athletic, the best formed, and in the highest military order of any in the island ; but they often transgress the bounds of temperance, or fall into irregularities, not easily avoided by high spirited soldiers, precluded from service of enterprise, and active exertion in the field. The character of the disease, which prevailed among them, appears, by report, to have been of a remitting form, during the months of August, September and October ; towards the end of November, according to actual observation, the attack often commenced with coldness, like that of an intermittent,

generally of long continuance, but seldom of the degree denominated rigor or shaking, or followed by marked increase of heat, and regular termination by sweat. On some occasions marks of stupor, torpor and oppression were observable at the commencement: the first train of symptoms, active or otherwise, passed over or abated, but intermissions, even remissions were obscure, or difficultly perceived; the skin was cool, dry and husky; or damp, cool and greasy; the pulse was small and confined, not frequent in general in point of time, but without re-action, without elasticity, or alternate contraction and relaxation of effective force; the tongue was sometimes foul, milk-white and slimy, at other times moist, clean, and, in some instances, dry, glossy and shining; the eye was seldom red, inflamed or agitated, often torpid, and without lustre; headach was sometimes severe, but this was not a constant symptom;—headach, in some cases, made no part of the complaint; pains of the back and limbs were then sometimes excruciating; the fleshy parts were tender of the touch, as if bruised; and the joints seemed dislocated or broken; vomiting was common, periodical and severe,—the vomited liquor yellow or green; the eye in some instances became yellow, towards the latter stages, but this was not very commonly the case; the tongue was then often brown and dry, with marks of a bilious fever, or of a disease exerting its chief force upon the biliary and mesenteric systems; the countenance brown and withered,

with agony at stomach, and gradual extinction of the vital powers; sleep was irregular, either altogether wanting, or disturbed with wanderings and dreams; delirium was not a common occurrence; when it did appear, it generally indicated an approaching change in the mode of action, or seemed to take the place of vomiting or purging. In this case it was dangerous; in the other, it often appeared at a critical period, or marked a departing torpor and beginning re-action; if the ideas ran in a lively train, the sign was favourable; if they were indistinct, in consequence of change of place with vomiting or purging, coma and death were frequently the termination; crisis was seldom distinct and final; the patient emerged gradually, but the commencement of change was generally at the regular period.

Such was the more usual course of the form of fever, prevailing at the Mole in the month of November; yet, in many instances, the form was intermitting or remitting, the paroxysms regular and distinct for two or three revolutions; after which, the action of the vascular system became confined, and lost energy, the countenance became withered, dusky and dry, or damp and greasy; and life was suppressed, by slow degrees; at other times,—more frequently on the fifth day than on any other, the aspect of things changed suddenly, torpor, coma, or oppression of the brain took the place of paroxysms of regular parts, and life often terminated in twelve hours, or in a shorter space from the period of change.

It was remarked above that more rain had fallen at the Mole, during the autumn than is customary in ordinary seasons ; and it may be farther observed, that the soldiers often attributed illness to sleeping in wet clothes. It is known that the present situation of the Mole does not easily admit of general and extensive plans of exercise for troops ; and consequently that the garrison most usually remains inactive ; but the enterprise of Lieutenant Colonel Stewart, the commandant, has of late frequently carried out the light company of his regiment upon excursions ; this company in consequence has experienced little or no sickness, while the grenadiers and battalion, employed only on rare occasions, have suffered much, and, for the most part, most remarkably after a day of exertion. This fact, which has not escaped the notice of the commandant, serves to confirm the important opinion, that active and frequent exercises or enterprise contribute to the preservation of health, that accidental fatigues are occasions of disease.

Grande Anse, January 18th, 1798. The British troops being dispersed over a great extent of district, and cantoned in posts of different local qualities, a better opportunity, of judging of the advantages and disadvantages of situation, is offered in this dependency, than in the other quarters of the island. The chief positions on the coast, Pestel, Jeremie and Irois, have been noticed, and the general effects upon health have been briefly stated.

Pestel, as has been observed, furnishes but few

cases of fever, and of these few, still fewer are of a bad kind; bowel complaints occur sometimes, but they are seldom severe, or mortal; sore legs are common;—one-fourth, at least one-fifth part of the detachment is usually confined on this account.

Jeremie. Diarrhœa is not uncommon at this place; in some seasons it has appeared as an epidemic; and mortal dysentery sometimes prevails among the inhabitants. The 40th regiment arrived at Jeremie in May last, and for several months suffered considerably from a bilious diarrhœa,—not in general dangerous, but tedious and obstinate, if neglected in the commencement. The form of the endemic fever, of ordinary seasons, is remitting or intermitting; and of less malignity than at most other places on the sea-coast; sore legs are rare and accidental.

Irois has been, and still is one of the most unhealthy situations in St. Domingo; the accommodations for troops have been improved lately, and some part of the swamp has actually been filled up or drained; but the ravage of disease is still great, during the wet season;—it is indeed great at any season, among men newly arrived from Europe, or from the interior and mountainous parts of the island. The type of the fever is commonly single tertian, anticipating in its progress, by long strides, or becoming double at a certain period of the course. In subjects lately arrived from Europe, or from the interior of the country, the ordinary appearances of yellow fever are not uncommon;—*Irois* may, in fact, be considered as the grave of the British, in the

Grande Anse, either by actual mortality happening at the post, or by the seeds of disease communicated to those, who have been ordered to the post on occasional duty ;—sore legs occur rarely.

Pestel, Jeremie, and Irois, may be considered as permanent stations on the sea-coast ; Cayemitte, Petite Riviere, and Ivonet, either immediately upon, or within influence of the sea-coast, have only been occupied occasionally by detachments of Europeans.

Cayemitte. A small detachment of British was sent to this place, in the latter end of March ; sickness soon laid hold of it ; several died, and the remainder was so miserably diseased, when the removal was effected in the month of May, that it might be said to be lost to the service.

Petite Riviere, a post or plantation, situated near the embouchure of a small river of pure and limpid water ; the house of the plantation is placed upon an eminence ; but the valley surrounding it, which is of some extent, is overgrown with weeds and rubbish. Two companies, of the 40th regiment, were ordered to occupy this situation in the month of September ; these companies were then in health, and no material sickness was experienced for near six weeks, at the end of which period, dispositions were made to attack Tiberoon, which occasioned a movement among the troops, quartered in the western district ;—these two companies were of the number. The marches were fatiguing, and performed under the disadvantages of bad roads and

heavy rains. The military object was not accomplished ; the troops returned to their posts, and this detachment, from Petite Riviere, to Vincent le Dent, some miles in the interior. Sicknefs began to shew itself immediately upon arrival ;—scarcely a man escaped, and several died ; the form of disease was concentrated remittent ;—the change of place, and the desultory exertion were probably causes of its sudden appearance and uncommon violence.

Ivonet, a post or plantation, situated upon a height of considerable elevation, about two miles in a direct line from the sea-coast. The height is cleared of wood, and the soil is dry ; but the space, between the bottom of the height or mountain and the sea, is either swamp or uncultivated luxuriant plain, affording exhalation, carried directly to the summit of the mountain by the current of the ordinary sea breezes. The light company of the 69th regiment, which had been twelve months on the mountains of L'Arcahaye, where it enjoyed perfect health, was ordered to this post about the end of May or beginning of June. Fever soon after arrival made its appearance, and there were few who had escaped an attack before the month of August. The disease was of a remitting type in general ; but, in some instances, it appeared with such marks of concentration, as to resemble the yellow fever of Europeans, newly arrived ;—the mortality was considerable.

The character of the endemic disease of the West Indies is different in the interior, and on the sea-

coast. This difference is strikingly marked, in reviewing the different posts, established by the British, in the interior of the Grande Anse.

Millet, the only interior post in the Western division occupied by British soldiers, is about nine miles in a south-east direction from Irois. It is situated upon the summit of an insulated hill, at the conflux of three streams, which form what is called the great river. The hill which is entirely cleared of wood, is very steep; the channels of the streams and ravines surrounding it are deep, grand, and majestic; like the other parts of the western extremity, Millet experiences great falls of rain.—Here fevers and bowel complaints occur occasionally, but they are upon the whole rare, and hitherto have not been fatal; sore legs are troublesome; they arise spontaneously, or originate in accident, but difficultly admit of cure;—one-fourth part of the detachment is usually confined by them.

The eastern boundary of the British possessions, in the Grande Anse, is formed by Pestel, Camp Desfrivaux, Camp du Centre, and Post Raymond;—the prevailing state of health at Pestel has been noticed.

The *Fort at Desfrivaux*, which is about nine miles interior from Pestel, is situated upon a ridge of high ground, the margin of a valley, about half a mile in breadth. Fevers of the intermitting kind sometimes appear at this post, but they are, upon the whole, rare and rarely severe; bowel complaints are more frequent, but they are seldom fatal; sore legs are the chief malady, and they are a very per-

plexing one, the fourth part of the detachment being often confined from this cause.

Camp du Centre, about fourteen miles more interior than Desfrivaux, is situated in the centre of a coffee plantation, in a bottom of brick mould, encircled by hills, chiefly covered by wood ; much rain falls at du Centre, yet the situation is, upon the whole, more healthy than that of Desfrivaux ; fevers or bowel complaints are rare,—scarcely ever fatal ; and sore legs are, perhaps, not altogether so frequent, or so obstinate, as at the former place.

Post Raymond, about five miles from du Centre, situated at the summit of the central ridge of mountains, commands a prospect of the sea on both sides of the island. In point of health, Raymond is not inferior to the most healthy situations of Europe ; sickness of any form has scarcely been seen, and even sore legs, so common at all the other interior posts, are unknown ; accidents heal speedily ;—at other places, a small scratch often festers, and degenerates into an ulcer, which ultimately affects the bones.

The history of the forms and degrees of disease, which prevail at the different posts in the Grande Anse, as it is the history of the whole Island of St. Domingo, possessed by the British, and perhaps of all the islands in the West Indies, is important to the concerns of armies, and of consequence in the science of medicine. In most situations on the sea-coast, the character of the endemic is strongly marked ; in the wet or unhealthy season, the febrile

form of disease chiefly prevails ; in the spring and earlier part of summer, more particularly under slight and accidental rains, diarrhœa is not uncommon,—it is even sometimes, in a manner, epidemic. In higher situations, or on the first chain of mountains, intermittents or diarrhœa are frequent in wet weather,—fore legs are troublesome at other times. In situations still more interior,—on the mountains, or in the valleys lying under the second chain of mountains, intermittents and diarrhœa, though occurring occasionally, become gradually more rare ; fore legs take their place, and appear actually to be the endemic disease of that tract of country. In the highest situations, or on the central ridge, neither fevers, fluxes, nor fore legs are known, at least they occur so seldom as not to deserve notice.

The history of health, throughout the Island of St. Domingo, corresponds more or less with the above detail, drawn from actual observation in the district of the Grande Anse. The character of the endemic fever is strongly marked at Port-au-Prince ; from April to December, fever, in one form or other, may be considered as the reigning disease, though diarrhœa occurs not unfrequently, in the earlier parts of summer. It ought also to be remarked in this place, that diarrhœa, purging, dysentery or flux are common at all seasons ; at an average, the different forms of bowel complaints compose one-third part of all the sick in hospitals, particularly in the latter part of the year ; but the

diarrhœa alluded to at present, is diarrhœa of original form,—the others are, in reality, the sequel of fever, the effect of local derangement in one or other of the abdominal viscera, or in the alimentary canal itself, in consequence of preceding illness.—Sore legs are rare at Port-au-Prince, and surgical operations succeed well. The form of disease, in the plain Cul de Sac, and in the plain of L'Arcahay, follows similar laws. On the summit of the mountain, which covers Port-au-Prince on the south, and among the mountains of L'Arcahay, intermittent fever, but more especially diarrhœa, is not unfrequent during the greater rains ;—sore legs are troublesome at other times.

St. Marc is placed under circumstances, very similar to those of Port-au-Prince ; the remitting fever is endemic ; diarrhœa sometimes takes its place ; diarrhœa, dysentery, and diseases of the viscera frequently are its consequences ;—sore legs are uncommon.

Mole. Very little rain falls at the Mole in ordinary seasons ; no actual swamp is near it ; and little more than the very site of the town is level ground. The character of the endemic however is more varied, than in most other parts of the island ; diarrhœa occurs sometimes epidemically ; intermitting or remitting fevers prevail in the autumnal months, and beginning of winter ; continued fevers, sometimes with strong, sometimes with obscure marks of vascular excitement, are frequent, especially during dry and hot weather, and among subjects newly

arrived from Europe; fore legs appear on various occasions; and surgical operations have not ordinarily succeeded well.

It may not be improper to mention cursorily in this place, as the information is from good authority, that the form and degree of endemic disease follows nearly the same rule in Jamaica, as in St. Domingo. The character of endemic fever is strongly marked at Spanish Town and Kingston;—diarrhœa has its season, but fore legs are of rare appearance. At Stoney Hill, intermittents and diarrhœa occur sometimes, but the fever is seldom of a dangerous kind;—fore legs are frequent, and of difficult cure. At Maroon Town fevers and fluxes are not often seen; but fore legs are not uncommon.—It may be presumed, though not yet ascertained by trial, that in still higher situations, sickness and fore legs will be as little known, as they are on the central ridge of the mountains of St. Domingo.

It is remarked above, that different forms of disease, as fore legs, diarrhœa, and fever are, in a more especial manner, peculiar to different districts or tracts of country; there is also some variation of the form in the same district, according to the different seasons of the year; fore legs, for instance, are more common in the dry and healthy months; diarrhœa in spring, and the earlier part of summer; fever in the latter months of summer, and in autumn; and, in more concentrated form, in some months of autumn than in others. In October and November, attacks are not more frequent, than they are in the

preceding months, but they are, upon the whole, more malignant, more insidious and more unexpectedly fatal ; the disposition to coma, or oppression of the brain, is more common, as also a disposition to more various combinations of affection of what is called the nervous system ; for example, it happened on many occasions, in the course of last autumn, that the patient became cold, as if actually dead, that the pulse ceased to beat at the wrist ; nay that obvious appearances indicated, that the current of life was about to stop ; yet at a certain period, heat and circulation returned, and life was often eventually saved. In such cases, the breathing was usually easy, the countenance serene, the eye clear, the intellect unimpaired, with other signs which gave hopes that the coldness and suppression of pulse did not proceed from a mortal cause.

It appears from a history of the relative states of health, at the different posts in St. Domingo, that the endemic disease in that island, and perhaps in all the islands of the West Indies is fever, diarrhoea or flux, sore legs or spreading ulcers of a particular kind. These complaints moreover appear so connected with each other, as to afford a presumption, that they depend fundamentally upon the same general cause, different in degree of force, or differently modified according to circumstances of season, place and situation. The connection alluded to is obvious in the endemic, and a similar connection is observable under the action of the contagion of jails, hospitals, crowded barracks, and crowded ships. Itch, or scor-

butic eruptions, sore legs or ulcers appear often in ships, or in barracks, ill ventilated, and too much crowded ; such appearances denote a latent seed of contagion, and, in reality, often precede, or accompany contagious fever. Diarrhœa makes another gradation of the action of a febrile cause ;—the causes which influence it are often evident ; the transition, from this form to proper fever, is sometimes rapid and complete ; sometimes diarrhœa and fever exist together ; and sometimes they alternate or change places ;—the healing of an ulcer is also frequently followed by a fatal flux or dangerous fever. It appears however upon the whole, that if the cause be naturally strong and concentrated, or if it meet with certain aptitudes in the habit of the individual, the febrile form prevails ; if the general cause be weak, if it meet with local weaknesses, or peculiar dispositions in the subject, the action assumes a different aspect. Dysentery, flux or purging, a frequent effect of endemic fever, is also a common, and often a fatal consequence of that arising from contagion ; it depends, in the same manner, upon local affections of the menses, the system and alimentary canal, the effect of the action of preceding febrile disease.

It appears from a perusal of history, that nearly all the islands of the West Indies are under similar laws, with regard to health. In towns and on plains, near the sea-coasts, European soldiers sicken and die ; in the mountainous and interior parts of the country, health suffers little, and mortality is inconsiderable. It appears also,—at least ordinary observation forms

the conclusion, that one general principle of defence is applicable to all, or nearly to all. Thus, the interior, for the most part, presents a citadel, which may be considered as impregnable, if defended by troops active and organized; the sea-coasts are extensive, abound with bays and are open to invasion; the shores of Jamaica, for instance, are so extensive, and so accessible, that the army of England, dispersed in posts, would scarcely be sufficient for their defence, against a respectable attack. A landing effected, the first views are directed to cut off communication; this object accomplished, the defences of the sea-coast fall in detail. But, if, instead of numerous posts on the sea-coast, the principal protection of an island of the West Indies, be trusted to a work of regular fortification, covering the capital, the history of every war furnishes proof, that works of art, however regular and complete, fall almost without exception, if an attack be made with skill, and prosecuted with perseverance;—the island of course follows the fate of the fortification. On the contrary, if the military magazines be placed in the citadels of the interior, the regular troops so disposed, as to secure communication, and means of operating in concert, the inhabitants properly trained in the use of arms, and instructed to assemble at certain points, on given signals, the forces thus collected, and moving from a centre, would seldom fail to gain the point of threatened attack before a landing could be effected. It is probable, that the designs of an enemy would thus be often frustrated in the

attempt,—should however a landing be actually effected, the causes of embarrassment would still be great,—without works to secure magazines and cover operations, open to constant annoyance, in a difficult and almost impenetrable country, discomfiture and retreat it is presumed would be the issue. A town might be destroyed, or a plantation ravaged, but the general safety of the country would not be in danger.—In fact, the greater number of the islands of the West Indies appear to be impregnable, if defended according to the principle alluded to, by troops active and energetic, aided by inhabitants zealous in the defence of their independence; on the other plan, there are few of them, perhaps, that present much difficulty of conquest.

The islands of the West Indies are exposed to the invasion of foreign enemies; they are also exposed to another inconvenience,—the insurrection of slaves. Doubts may arise, of the propriety of trusting the chief defences of the islands against invasion, to troops and inhabitants in mass, pouring down upon the shores from the fastnesses of the country; no doubt will arise, of the propriety of cantoning the military force in the interior, as the best security against revolt: revolt is not likely to happen in towns, where white men are numerous and watchful; if, by chance, it arises upon estates in the plain, it will be speedily crushed by a force descending from the mountains; if it originates among the mountains, or if the insurgents have the means of refuge to the mountains, it must always be formidable.

It is suggested above, that alteration, in the principle of disposing of troops for the defences of the West Indian possessions, might be adopted with advantage; alteration, in the principle of arranging forces and directing operations, in those islands which are the seat of actual war, seems no less necessary. It is mentioned with regret, that the features of a country as indicating health, have seldom been regarded in disposing of troops; it is not even obvious to vulgar apprehension, that military features always command the choice of cantonments or military posts. The chief European force in St. Domingo, for instance, is allotted to towns and fortresses on the sea-coasts. The possession of a town or niche of sea-coast requires the aid of a very warm imagination to be converted into the conquest of a country. To those acquainted with the climate, the extent and internal resources of St. Domingo, and who have some knowledge of the qualities of those by whom it is at present occupied, such possession will not perhaps be esteemed a step of much progress. In the revolution of one season, two-thirds at least of the European garrison will perish by disease; while the possession of a sea-port, by which communication with foreign nations is cut off, will not much annoy a people, who know to find their subsistence, and to supply their chief wants from the productions of the soil. But though the natural wants of negroes be easily supplied, and though experience has proved that they will not barter their independence for a Madras handkerchief, or an.

ear-ring, still they are by disposition so indolent, so unenergetic in action, and so divided among themselves, that it is probable, nay more than probable, that, by a comprehensive and systematic plan of arrangement, the conquest of St. Domingo might have been effected;—it is proved that by the one hitherto pursued, conquest, or rather preserving of conquest, is a visionary project.

It appears in the medical history of the present war, that armies in Europe have been nearly destroyed by artificial disease,—by contagious fever, a disease, which never ought to be seen among troops, and which will not long exist, where principles of sound science are known and rigidly applied in practice. In the West Indies mortality has been great, and though the endemic be less avoidable than the contagious fever, yet it is evident, from a detail of the state of health in the different positions in St. Domingo, that the great loss has been chiefly owing to defects of arrangement,—to an unjudicious disposition of the European forces. It might reasonably have been expected that the various informations, communicated on different occasions, respecting the preservation of health, would have produced, before this time, a disposition of military forces, different from that which exists: For though colonists and merchants, whose object is gain and whose views, in forming settlements, are chiefly directed to facilities of trade, may be allowed to build towns and storehouses in bays, creeks, and on the muddy banks of rivers; yet statef-

men, governors and leaders of armies, who are supposed to possess the general principles of science, and who are expected to embrace, in their arrangements, the interests and concerns of the nation at large, will not easily vindicate the practice of stationing troops on the borders of swamps, swampy rivers, or on scorching plains destructive of health, much less in towns, near swamps and sea-coasts destructive both of health and morals, unless where it is found to be impossible, that the purposes of service can be answered by other means. To determine this question requires the investigation of unprejudiced and capable men; the author does not enter upon the subject; he is aware that to offer political counsels, or to furnish military suggestions may be deemed presumptuous or impertinent; but information, on the subject of health, is the duty of his station, and convinced that health has suffered, and still suffers from inattention and defects of arrangement, he could not in justice to that duty withhold a few remarks.

The remarks offered in this tract, which are not strictly professional, may be deemed foreign or officious; but one thing is clear, that on whatever principle the defence of the islands be conducted, whether by forming the interior mountains into citadels, or by erecting fortifications on the most important positions on the plains, the question of preserving the health of the European soldier belongs to the subject, and requires minute and accurate attention. Healthy and unhealthy situations are known

to the inhabitants of a country by experience, they are known to medical men upon surer grounds, by actual examination and a proper estimate of causes; thus the means of attaining information on the subject are easy and sure, but they are not ordinarily employed.—The neglect has been grievously felt, and human life has on numerous occasions been lavishly sacrificed to temporary accommodations. In order to obviate this evil,—this continuance in error, it is proposed, that, previous to the erection of forts and barracks or fixing the cantonment of troops, a professional survey be made by a committee of military and medical officers;—that the advantages and disadvantages of the situations be fairly and fully estimated, and stated to the ruling power. From a survey of this nature it is scarcely possible, but that such lights will arise, as may enable those intrusted with the direction of affairs to combine defence and convenience, with proper regards to the preservation of health; yet this measure, plain and simple as it is, does not appear ever to have been adopted.—In most of the islands, the situations of forts and barracks are unfavourable to health;—where otherwise, accident has had more share in the business than design.

CHAPTER III.

Remote Causes of Fever.

It is perhaps no longer disputed, that those derangements of the human frame denominated fevers, whether endemic or contagious, owe their origin to two sources only, viz. one natural and generally diffused over the surface of the globe, the other artificial and insulated :—it is difficult, in many cases, to define their limits precisely, but the matter is of such importance as to demand an attempt.

The first,—a vegeto-animal source, usually called *marsh* exhalation, occupies the wide extended bosom of the earth; it is generally diffused in the atmosphere, abounds more in some situations than in others, and is rendered more or less active by a great variety of causes,—causes, sometimes of regular connexion in the system of the world, sometimes apparently of accidental occurrence,—at one time obvious to the senses, at another obscurely perceived, or altogether imperceptible. This cause produces disease, and frequently such a derangement of the system as is incompatible with life; but it is lost in its first operation.

The second, deriving from an animal source, more expressly from an altered condition of the living human body, is confined in its sphere of action, communicated only by contact, by near approach, or by a medium connected with the source. This cause produces disease, and under that disease such

a derangement of the system arises, as begets a multiplication of the original cause, which extending itself to a certain distance from the source propagates similar disease through a series of subjects.

The first source, the exhaling surface of the earth, affords the cause as is commonly known of the numerous forms and degrees of endemic fevers. These are observed to prevail in certain climates, in certain seasons, and in certain local situations of the same climate more than in others; they are upon the whole more frequent in tropical and warm countries, than in high latitudes and frozen regions; they are more frequent in spring, and particularly in autumn, than during the other periods of the year; and they are uniformly more frequent on sea-coasts and plains, near swamps and rivers than in the interior and mountainous parts of a country. But besides that these endemics are generally periodical, and in some manner connected with the causes which influence the vegetation of plants, they sometimes also appear irregularly and epidemically,—at one time accompanied with extraordinary, but visible causes, while at other times nothing extraordinary is perceptible; they further affect strangers more generally and more violently than the natives of the district, and men under constant and active labour less than those in a state of rest,—or after desultory exertion.

The source of this cause is known, and many of the laws which influence its action are clearly ascertained, but little or no progress has as yet been made in the discovery of its intimate nature and

properties. Its presence is often connected with something offensive to the senses,—to the smell, and perhaps even to the taste. A certain degree of salivation, nausea, sickness and headach are often occasioned by the exhalations of a swamp, or by the air of an infected apartment, but distinct febrile action is not ordinarily the immediate consequence. To produce fever a space of time is required, different according to circumstances, but generally of such duration as to prove, that the febrile operation is not the direct effect of a disagreeable impression on the external senses. In a given time after exposure to the known source of the disease, more frequently at the expiration of a fortnight than any other period, the healthy action of the human body becomes suspended, impeded, or disturbed in different degrees; action of a new form arises, generally or locally exerted according to circumstances; this continues for a certain and stated time, terminates completely or partially, and health returns in a corresponding proportion; it however often happens, that the immediate action of the cause, or the effects consequent to that action, speedily and irrecoverably derange the organization of the frame, so that death ensues.

It will perhaps be doubted, for it does not admit of positive proof, that the cause of fever is fundamentally the same with the cause or principle of vegetation; but if not the same, it is evident there subsists a strong connexion between them. Endemic fever is almost uniformly prevalent, where vege-

tation is luxuriant, at least, where the requisites of a luxuriant vegetation greatly abound. In this manner, as vegetation is more luxuriant in tropical and warm climates than in temperate and frozen regions, so notoriously is endemic fever. Vegetation is more luxuriant, or the causes of vegetation more generally abound in valleys, plains, near the coasts of the sea, near the swampy and oozy banks and mouths of rivers, than on hills and mountains, in inland countries, and in soils, light and dry; so does endemic fever. But though the matter and active principle of vegetation be generally most abundant in the situations alluded to, yet such situations are not uniformly covered with the most luxuriant and healthy vegetable productions;—something depends upon adventitious circumstances. Plants, as well as animals, are seen to sicken and die from excess of nourishment, and, in consequence of this perhaps it is, that excessively rich and swampy grounds are often bare, or possess only a stunted vegetation. In such cases the neighbourhood is unhealthy; for it would appear, that the materials of vegetation abounding in excess, acted upon by a powerful cause give out a principle, which, not being expended in the growth and nourishment of plants, is diffused to a certain extent in the atmosphere, occasioning a derangement of such bodies as come within the sphere of its action. To this excess of an unappropriated vegetable principle, may perhaps be imputed the increased degrees of unhealthiness, so often observed in the neighbour-

hood of swamps, newly cleared of their woods, as on a contrary cause, may be understood the explanation of a fact frequently noticed, that swamps and luxuriant soils lose their noxious qualities, when planted with sugar cane and other productions which have the capacity of receiving much nourishment.

The rise and progress of endemic fever are obviously connected with the different periods of the season, and this connexion may be supposed to afford some illustration of the opinion just now mentioned. In spring, the principle of vegetation is extricated in great quantity, while the capacities of plants are still small; an excess is consequently generated, and this excess extends its influence to a certain distance around. In summer, the extrication of the principle still increases, but the capacities of plants being extended in a greater proportion, the means are more adequate, and the excess is actually less. In autumn, the growth of plants being completed, while causes still continue to produce a great extrication of the principle of vegetation, the excess abounds and occupies a wider circle.—Upon this principle also, may perhaps be understood the occasional unhealthiness of lands dry and rocky, bare and barren, or that produce only shrubs and trees of stunted growth. The Mole, St. Nicholas, in St. Domingo, affords an example of this. The Mole cannot be said to be a healthy situation, yet the soil is not rich, nor is there swamp or stagnant water near it. The breezes from the sea are, for the most part, regular and strong, and there is

upon the whole very little rain—the reputed cause of fever; but the surrounding hills have a sterile aspect, and produce only a few stunted shrubs and plants of low growth: hence perhaps it is, that the principle of vegetation, extricated, at certain periods, in greater than usual quantity, abounds in excess, and diffused in the air to a certain extent affects the health of man.

The regular rise, progress and decline of endemic fever, as connected with the periods of season, seem to be explained by the supposition of an excess of the principle of vegetation, extricated by known causes from known and visible materials; but it sometimes happens, that fever becomes epidemic in a country, in a district, or in a particular spot, out of season and without the visible and obvious causes usually connected with the rise, progress, and decline of such diseases. It is to be lamented that accurate observations, on the state of the vegetable kingdom, have not been made on such occasions; but it is probable, that if the state of things could be exactly known, the capacities of vegetable productions would be found to be preternaturally diminished, at such periods; or that the extrication of the vegetable principle was then increased in an extraordinary degree from general or accidental causes.

It has thus been observed, that a cause, originating from a vegeto-animal source of materials, occasions a derangement of health, denominated fever; but it has also been observed, that this cause is lost

or changed in its first operation. It often rapidly destroys life ; but it begets no process in the human system by which it propagates itself. In short, endemic fever may be, and often is, epidemic ; but it is not contagious, the individual requiring, in all cases, to be approached to the original source before infection. Common observation allows this to be generally true, accurate observation would perhaps prove it to be universally so ; for it seems to depend upon a general law impressed upon matter by the Creator of the universe. Bounds are set to the propagation of animals of a different genus ;—the neutral does not multiply : bounds seem also to be set to the propagation of disease, the cause of which has proceeded from heterogeneous materials. Thus, the various vegetable and dead animal matters, which cover the face of the earth, give out, in decomposition, a neutral compound, the contact of which disorders the usual laws of human health, perhaps destroys life, but in the mean time occasions no derangement of the system, which originates the production of a similar cause. This fact is certain, and it is consistent with the infinite wisdom of the Creator ; for, as the sources of endemic fevers are common to the surface of the globe, had the diseases, arising from these sources, been capable of multiplying causes, endued with the quality of producing similar diseases, the world must soon have become an hospital or a desert.

The source of endemic fever is a natural one,—common to the whole earth ; the source of conta-

gious fever is artificial, produced by arrangements which take place among men in certain states of society. The cause, and consequently the disease, is found in large, particularly in manufacturing cities, more especially among classes of men confined to sedentary employments, slothful and dissipated in habits, oppressed with poverty, clothed in rags, confined and crowded in their apartments, and suffering from want of fuel. It is common in jails where men are crowded together, deprived of the benefit of pure air, suffering hardships of body with various anxieties and afflictions of mind. It is, on the the same account, frequent in work-houses, or poor-houses. It sometimes originates, but is oftener transplanted to hospitals, where it spreads with rapid growth. It appears on some, though on rare occasions in the country among the families of poor cottagers. It is not peculiar to season or to climate, but it appears oftener in winter than in summer, and in temperate than in hot countries; yet, as it depends every where upon adventitious and artificial causes, it sometimes commits ravages in summer, and it has even appeared in the torrid zone.

Such are the sources in which this disease originates, and the situations in which it is most frequently found. Artificial constraint and confinement in narrow space, by inducing a new process of secretion in the living system, seem to be the leading instruments in generating the cause. The organization of the human body is proved to be such, that

it does not preserve a healthy action, unless under pure and free air; nor does it possess vigour, unless under frequent change of place, and active exercises, calling forth the exertions of the moving powers. It indeed appears, that the accession of pure air, and the active employment of the limbs or powers of motion, are the principles given by the Author of nature to preserve the health of the animal system; for whenever, the human body becomes deprived of these essentials, its health languishes, and its vigour decays; nay, the actions, which support life, are then not only languid, but they become diseased or fall into unnatural movements; in consequence of which, the ordinary secretions are so changed, that, though the actual existence of fever be not apparent, something noxious seems to escape from the system, which, to a certain extent from its source, affects the health of others. In this manner it has often been observed, that persons from jails, work-houses, and other places of artificial confinement, though not at the time, and what is still more remarkable, though not observed at any period to have laboured under formal disease, carry in themselves or in their clothes, causes which occasion fever, in its most formidable aspect, to those who approach near to them. This silent as it were, and gradually changed secretion is sometimes found among large bodies of men, whose atmosphere proves certainly noxious to the irritable habits of full health, but affects in a smaller, if in any degree, those situated similarly with themselves. It is further to be observed, that the

cause thus generated, speedily produces a fever in the body of a healthy man; and that the fever so produced is accompanied with such alterations in the secretions of the system, as to generate a cause, occasioning similar disease, through an endless variety of subjects. This is a curious and an important fact. The fever, which owes its origin to certain connexions with vegetable and dead animal matter, shows no disposition to propagate itself; the fever, which arises from a connexion with the living human body, in a diseased state, multiplies with great activity; frequent ablutions, change of place, and change of clothing, under a warm and freely circulating air, dissipate the cause, but do not change the nature of the disease. A fever, originating from a contagious source, preserves the quality of contagion as long as it exists, though often prevented by management from spreading its influence to a wide extent.

The sphere of action of the cause of contagious fever is not extensive, but the extent to which it is capable of being diffused from its source can not be precisely known; perhaps it is not uniformly the same in all cases, probably depending upon original degrees of force, as on a variety of adventitious causes. It is condensed, or rendered more powerful by states of the air connected with cold and moisture; it is dissipated and weakened by the opposite. It is not extinguished by intense degrees of cold; but if adhering to the walls of apartments, or lodged upon clothes, it requires heat and moisture

before it assumes a state of activity. It is more powerful in its condensed, than in its recent and diffused state; and consequently more noxious as deposited on clothes and bedding, than as directly proceeding from the living body.

CHAPTER IV.

SECT I.

Cases of Contagious Fever.

FEVERS, though arising from one cause, and affecting subjects living under the same air and same regimen, seldom appear in any two instances exactly alike. There is a shade of variety in almost every separate case, though the general mode of action may hinge upon the same principle. These varieties appear in single histories; for general description embraces no more than what is most common, classed under general divisions, and representing, in the clearest possible order, the more usual combinations, successions and changes of appearances, during the different periods of the course.—A few cases are selected in this place, in order to give a more distinct view of the disease as it actually appears among individuals:—from a greater number of such, the general history which follows has been formed.

March 2d, 1794.—Sergeant B——n, a man aged thirty years, of a muscular form and florid complexion, was attacked in the morning, with headach

uncommonly severe, with severe pains of the limbs and joints, general distress of feeling and considerable commotion of the vascular system. *3d*, The violence of the symptoms is increased; the countenance is grim and cloudy; the tongue slimy and white; the pulse irregular and quick; the skin hot and dry; the respiration heavy and oppressed with anxiety, restlessness and apprehension of the event.—Blisters, applied to the forehead and temples, have relieved the headach in some degree; calomel with James's powder has opened the bowels,—but the skin remains dry. *4th*, The symptoms do not abate; the headach is severe, with a staring wildness of the eyes, delirium, startings, tremors and convulsive agitations; the respiration is oppressed, and the countenance is overcast. Blisters were applied to the head, chest and neck; bark with snakeroot, camphire with James's powder and opium, in large doses, were often repeated; fomentations of warm water to the extremities;—washing the rest of the body in water from the pump was frequently employed. *5th*, Somewhat relieved; the skin less hot and softer,—the warmth more natural; delirium, headach and oppression of the chest are more moderate, but still exist, and, in some degree, alternate with each other. *6th*, Things are more promising; the pulse opens and expands, the stroke is energetic and regular in time and force; the skin is soft,—the body open. *7th*, Appearances still improve, though there is as yet no crisis. Some affection of the chest and head still remain, and still seem to alternate.

8th, Signs of crisis approach. 9th, Crisis decided.—This man recovered; he did not suffer a relapse in form, but for six weeks he had at intervals strange and uncommon symptoms, and at one time symptoms, which gave apprehension of consumption.—The disease was formed before a remedy was applied.

April 23d, 1795. B——l, a stout and healthy man, employed as an attendant on the sick in the hospital at Dorum, seized suddenly with fever of uncommon violence, with headach intensely severe, spasmodic and convulsive twitchings frequent and alarming; the heat is caustic and pungent; the pulse quick, irregular and frequent; anxiety and uneasiness are distressing; breathing is deep and heavy, with frequent sighing;—aspect clouded and grim.—He was vomited, purged and blistered very soon after the attack;—Dover's powder was given, in repeated doses, with the intention of exciting perspiration. 26th,—The symptoms described above are aggravated in degree, and are in reality of uncommon alarm; the breathing is heavy and oppressed; the intellect disordered; the eye turgid and red; the countenance dark and grim; the skin dry; the heat great and pungent, with startings, tremors and actual convulsive motions recurring frequently.—The danger of the case appeared to be great;—an attempt was made to obviate it, by exciting the energy of the system to complete re-action. In this view a powder composed of salt of hartshorn, antimonial powder, opium, snakeroot and valerian

in large quantity, was administered every two hours, with half a gill of Port wine or a glass of brandy; blisters were applied to different parts of the body; the extremities were fomented with flannel wrung out of hot water; the rest of the body was washed with water from the spring. The end proposed,—a general perspiration, was effected within a few hours; it was supported for some time; the symptoms abated, and health was speedily and finally established without relapse.

March 6th, 1796. Cr—d, wardmaster in an hospital ship, attacked on the 4th with symptoms usual in fever,—horror, headach, confused and muddy eye, nausea, white tongue and frequent pulse. An emetic was given immediately; which operating well, was followed by ten grains of calomel, purged off by the help of Glauber's salts. The head was shaved and blistered; a blister was also applied to the nape of the neck; the calomel was repeated:—in consequence of the blisters the headach was relieved; the other symptoms were also mitigated. *7th*, Passed a restless night; the skin hot; the pulse quick; the tongue foul, but moist:—the calomel repeated with antimonial powder. *8th*, He was bled freely; the headach was instantly relieved, but the skin is still hot, the pulse small and quick;—body costive:—calomel and antimonial powder repeated. *9th*, The body is opened; the headach has not returned, but the skin is still hot, and the pulse quick:—calomel and antimonial powder repeated. *10th*, The pulse open, and expansile;—

no return of headach; the tongue becoming clean on the edges; the skin soft and moist;—marks of crisis evident. *11th*, Sound sleep. *12th*, Skin open and free. *13th*, Recovered—no return of fever. The cause of disease might be supposed to have been very concentrated, as the young man was almost constantly between decks among the sick;—the symptoms were rather violent, but the fibre seemed to retain its irritability throughout;—the period of crisis was regular, and the marks of crisis distinct.

May 10th, 1794. *C—ns*, a grenadier of large size and gross habit, in the regimental hospital of the Buff for some weeks, under cure of a sore on the leg. The sore was healed: on the eve of being dismissed he was suddenly attacked with fever:—having no duty to perform, he made no complaint immediately, so that the disease had advanced to the third day before it was known that he was indisposed. The pulse was then quick and frequent; the headach uncommonly distressing, with much thirst and a most ardent heat; the skin was dry, and so tender of the touch that grasping the arms or legs with force, caused him to call out; to this was added a certain lividness of the countenance,—and even some marbledness of skin, with great restlessness, uneasiness and want of sleep. Laxatives and sudorifics,—antimonials with calomel, camphire and opium, &c. were employed freely, but without benefit.—On the morning of the *6th*, the pulse was observed to have lost force and energy; it was small,

frequent and contracted ; the heat of the skin was below natural, but the skin was still tender of the touch ; the eye and countenance were heavy and inanimate ; the intellect was not clear. Wine was given in large quantity, but the coldness of skin increased ; the intellect became more and more confused ; the pulse seemed to retire gradually, and the period of total failure did not appear to be distant. In this situation, a large glass of gin, with twenty grains of salt of hartshorn, a drachm of bark, ten grains of snakeroot and one of opium, was given every two hours or oftener ; blisters were applied to different parts of the body, and washing with cold salt water was repeated several times during the day. In consequence of perseverance in this plan the pulse became strong, full and open ; the heat returned and even exceeded natural ; the countenance resumed animation ; the motions of the eye became lively ; and though spasms and startings still continued, they were at longer intervals, and otherwise indicated increase of vigour. During the 7th, 8th, and 9th, matters improved much ; the intellect was clear ; the eye and countenance animated and lively ; the pulse strong, full and expanding ; the skin warm, but still dry ; evacuations regular. 10th, and 11th, No progress ; the countenance, on the contrary, less animated ; the motions of the eye more languid, the twitchings less frequent indeed, but also less powerful ; upon the whole signs of diminishing energy evident. 12th, He died suddenly, in the

act of swallowing, without any material change having preceded the fatal convulsion.

The first period of this disease was marked by ardent, pungent heat, by great restlessness and distressing headach. These symptoms subsided about the 6th; and a gradual collapse appeared to be taking place: Stimulating powers quickened the tide of circulation, restored the heat, and apparently the energy of the system; but the effects were not completed, probably owing to neglects or defect in management.

April 15th, 1795. D——d, an officer, who was on duty at Dorum for the space of ten days, and whose commendable zeal and humanity led him frequently into the barns or hospitals among the sick, was attacked, soon after his return to Bremen-lehe, in a sudden manner with giddiness, dimness of sight, followed by headach, horror and other usual symptoms of fever. During the first period, or first seven days, the more prominent features of the disease were anxiety, a certain undescribable distress of feeling, irregular pains, and spasms in different parts of the body, a disposition to sigh frequently, with a sensation of stricture on the chest, uneasiness at stomach, disorder, or unusual irritability of the alimentary canal, the tongue white and foul, the aspect grim and clouded, the skin dry, the heat pungent but not intense, or great in degree, the pulse frequent and quick. On the 6th a moderate dose of calomel, with some grains of James's powder, procured a dozen evacuations; and,

matters not bearing a very promising aspect, blisters were applied to the neck and other parts. On the 7th he seemed paralyzed or motionless for some hours, though he retained his recollection. Next day the aspect of things was changed, instead of anxiety and restlessness, pains, spasms, cloudy aspect and distress about the stomach, the feelings were easy, the mind cheerful, the features bright, and the eye lively, but the head was affected with delirium, the ideas were gay and pleasant, the pulse developed, or became full, expansile and elastic, the skin became soft and moist, a covering, formed upon the tongue of a brown colour and moderate thickness, began to separate at the edges, sleep returned, and in seven days more, or, on the 14th from the commencement, a crisis, complete and final, was effected. This disease had two periods; in the first, the symptoms were irregular and the irritation considerable; in the second appearances tended to regular crisis, by a gradual development.

N. B. The five cases, detailed above, are among the more regular forms of contagious fever. The excitement of the system was evident from the commencement; and the period of crisis or change was about the seventh,—the more usual period of perfect termination.

April 30th, 1795. *M——n*, employed as ward-master in the hospital at Dorum, and necessarily living among men in the most aggravated states of disease, was attacked in the morning with giddiness,

sensations of coldness, pains, aching of the limbs, and headach uncommonly severe. The tongue, in the course of the day, appeared white, slimy and foul, the countenance grim and cloudy, the eye unusually white and staring, the heat deep seated, and rather pungent, the skin dry and unpleasant; the pulse quick and frequent,—but frequent in no very remarkable degree. An emetic was given immediately, blisters were applied to the forehead, temples and neck; calomel with James's powder was also prescribed to him. *May 1st*, Symptoms abated, but the skin is dry, and the pulse has not recovered energy and expansion. *2^d*, The fever is subsided, but the countenance is still dark and grim, the eye white—the disease suspended, but not finally departed. *3^d*, Seems better. *4th*, Rather advancing; but though there is no pain, no formed complaint, he is still under some morbid impression. *5th*, Went to Bremenlehe and embarked for England. *12th*, He relapsed on the *7th*,—has been excessively ill, and now has a livid and grim aspect with delirium, spasmodic and convulsive twitchings. *13th*, The spasmodic twitchings have ceased, the intellect is clear, the pulse full and free, the countenance brightened up, the vigour increased, the tongue becoming clean; in short, there are general signs of crisis, but from the toes to the rise of the calf, a blackness, like a pair of half boots, appears on both legs. The sudden appearance of partial mortifications on cessation of febrile symptoms is not uncommon, but to the extent, and in the form

of the present is certainly rare.—The final event of this case is not known to the author.

December 26th, 1794. M——y, serjeant of the regimental hospital of the Buff, attacked with the ordinary symptoms of fever in the evening, with some degree of chilliness, severe aching of the limbs, joints and particularly of the arms,—severe and irregular pains in various parts of the body;—the headach violent in an uncommon degree. *27th*, Restless night; intense and ardent heat of the skin; a dark and clouded countenance; a white, slimy and moist tongue; severe pains, shooting irregularly along the shoulders and arms at intervals, as if in explosions. *28th*, The skin still dry; the heat caustic and fiery; the pulse frequent and quick, but without energy of stroke; the countenance grim; the headach severe. Emetics, purgatives, sudorifics and blisters were employed at the usual times, but their good effects were small. *29th*, The night restless;—in the morning washed all over with cold water;—the headach and pains in the other parts of the body were immediately assuaged, the countenance brightened up, the heat no longer imparted the fiery caustic impression, the skin became soft and warm, but the tongue is not yet clean. *30th*, Better,—rested tolerably well. *31st*, Better, but the appetite is not yet returned.—He was moved to Arnheim, and so much did he improve by being moved through the pure air of an intensely cold day, that he soon became able to walk on his own legs, and actually walked a great part of the way.

March 20th, 1794. Sergeant M——ns, attacked with fever;—the symptoms violent in the commencement, but, by reason of his being at an out-post, no assistance was afforded till the evening of the 21st, the headach was then uncommonly severe, with a certain foreness of the skin or tenderness of touch; there was besides considerable agitation, with symptoms of the convulsive kind and disorder of the intellect. Calomel and James's powder, blisters to the forehead and nape of the neck were the first remedies employed; the room where he lay was small, admitting pure air very scantily. 22^d, The appearances by no means favourable, the heat subsided, the pulse small and frequent, the skin damp and greasy, the head affected with delirium. 23^d, Delirious,—nearly insensible,—the urine and stools passing involuntarily or unconsciously; the pulse scarcely perceptible; the skin greasy, clammy; the lips pale; the countenance scarcely animated; the eye languid:—in short, appearances indicate the near approach of death. In this state he was carried from his room in a blanket; his hands, face and breast were washed in cold water; he was conveyed through the fresh air, a distance of four or five hundred yards, in a wheel-barrow; he was immediately revived; he spoke distinctly, his recollection returned, and his recovery was completed in a few days.—In about three weeks, when on the passage to Jersey, he suffered a relapse. The symptoms were similar to the preceding, but not so high in degree; he was carried ashore, on

arrival in the harbour, washed in cold salt water; in the course of a few hours he suffered an attack of severe griping, followed by some stools with a considerable mixture of blood.—He recovered apace.

December 27th, 1794. W——ms, attendant on the sick in the hospital of the Buff at Lint, was attacked in the evening with fever of great violence, stupor and violent affection of the head, succeeded by spasms, excruciating pains of the limbs and ardent heat. Emetic, blisters, purgatives. *28th*, Somewhat easier; a considerable remission, but still an uncommon aching of the limbs, thirst, white slimy tongue and clouded countenance. *29th*, Symptoms more severe; heat ardent; pains excruciating,—with much foreness of the flesh; body open; some nausea and disposition to vomit. *30th*, The skin cool; the pulse, increased in the frequency of its strokes, diminished in force and expansion. Vomiting severe and incessant,—the quantity thrown up far exceeding the quantity drank. *31st*, Vomiting continues;—sent to the general hospital;—the event unknown to the author.

February 10th, 1794. J——n, attacked with severe headach, excruciating pains of the limbs, pains of the sides,—the pulse frequent and quick,—the heat considerably increased,—the skin dry,—the tongue foul and the thirst very troublesome.—An emetic was given immediately; it operated well, and was followed by a dose of calomel and James's powder;—blisters were applied to the forehead, temples and

neck. *11th*, Relieved considerably, but he breathes with difficulty,—complains of pains, in various parts of the body, frequently changing seat ;—to which is added a good deal of agitation, with spasmodic or convulsive motions. *12th*, Bad rest ;—the breathing difficult,—the pulse intermits. *13th*, The pulse small, intermitting, the eye and countenance indicate something uncommon ;—the urine is suppressed, with severe pain. *14th*, Bloody urine in great quantity ;—the pulse natural ; the skin soft ;—marks of crisis apparent. This man suffered two relapses of this disease in the same form, but of less violence, —the termination always marked by suppression of urine, followed by discharges of blood from the urinary passages.

December 15th, 1794. Sergeant D——n, attacked in the morning with chilliness, headach excessively severe, pains of the limbs and spasms of uncommon alarm ; the pulse frequent, irregular, and disturbed ; the eye glossy and shining ; the tongue white and slimy :—an emetic was given immediately, followed by calomel and James's powder, with one blister to the forehead and another to the neck. *16th*, Somewhat easier ; the severity of the symptoms abated, but the disease not removed ; the skin hot and dry. *17th*, The symptoms recurred with aggravation ; the local pains and spasms severe ; the aspect clouded, the eye glossy ; the tongue white and slimy. *18th*, Rested well ;—the symptoms subsided, but the marks of crisis not decided and clear. This man advanced in recovery for eight days, at which period

he relapsed ;—the relapse similar in kind and of the same duration ;—the crisis not decided and final ;—at another septenary period he suffered another relapse, but in the event his health was established.

The above six cases furnish examples of a form, the duration of which does not exceed the 5th day ; it frequently terminates on the 3d. It sometimes terminates by crisis or sensible evacuation, oftener in a certain subsiding or suspension of diseased motions ; in either case it is subject to recur at a short interval.

November 30th, 1793. Ch——y, seized with slight symptoms of fever, some headach and much aching of the limbs,—little disorder in the pulse. *December 6th*, The disease has advanced by slow and regular progress ; the tongue is often dry, and sometimes blackish ; the skin is dry, and the rest bad. *13th*, Marks of crisis ; the skin soft and moist ; the tongue becoming moist and clean ; the pulse approaching to natural and rest returning.—The medical treatment consisted in antimonials, camphire, snakeroot and wine. The continuance of the complaint was a fortnight ;—during the second week, there was a gradual developement of the action of the vascular system ; and the disease was finally terminated by marks of crisis, but convalescence was slow.

March 18th, 1796. S——l, aged fifty-five, living in the air of a highly infected ship, attacked with fever, much headach, a dark grim and withered countenance, a small and weak pulse, no great increase of heat, a dry and foul tongue.—An emetic,

calomel and antimonial powder,—the head shaved and blistered.—*20th*, The skin dry ; the pulse small and weak, the headach abated—ten grains of camphire and snakeroot every third hour. *23d*, Some perspiration, but neither fluid nor warm ;—continues the medicine. *24th*, Not worse ; the pulse in the morning somewhat more open ;—in the evening distressed by hiccup—æther was given frequently. *25th*, The pulse sunk, and imperceptible, the extremities cold and clammy ; ten grains of camphire, in three ounces of spirit of wine every hour. *26th*, Somewhat better ; the pulse perceptible ; the heat returning : continues the medicine. *27th*, Improving. *29th*, Much better.—He relapsed on the *3d* of April ;—recovered—relapsed again ; and at last attained established health.

The two cases above mark a disease, where there was little apparent increase of action in the vascular system ; in the one, the powers of life seemed to emerge from a given period ; in the other, at the same period, they seemed to be on the point of subsiding finally. The *7th* was here the day of change.

April 16th, 1795. P——n, attendant on the sick in the hospital at Dorum, went out in the evening to light a candle, and returned, in a few minutes giddy and stupid as if dead drunk ; considered as such, by his companions, he was concealed from the medical officer for twelve hours ; next day he showed marks of an oppressed brain ; he was deeply comatose ; the pulse was nearly extinguished ; the skin was purplish, cool and clammy ; he was speech-

less,—and died in the night, in less than thirty hours from the attack.

February 26th, 1796. *W——n*, an orderly attendant on sick, had been drooping for some days, but said nothing; to-day seized suddenly with pain of the head, as if knocked down by the blow of a hammer; the eye white, glossy and inanimate; the countenance grim and cloudy, with a tinge of a dusky yellow exhibiting a colour not unlike that of mahogany;—the pulse, superficially observed, appeared natural, closely examined, it seemed deficient in elasticity and expansion; the heat low on the surface and extremities, pungent on the trunk of the body, or on forcible pressure of the arm; the tongue foul, white and slimy,—but moist; the saliva tough and ropy: the head was blistered; the warm bath was prescribed; and the body was opened by means of calomel and James's powder. He seemed easier towards evening. *27th*, Seized with a convulsion, and died suddenly;—the countenance like mahogany, with a tinge of yellow,—the eye clear, glossy and inanimate.

The above two cases are of the most concentrated form; re-action, or increased action of the vascular system did not take place, at least was not generally established.

April 10th, 1795. *H——y*, attacked with chilliness or horror and severe headach in the night; there are marks of much anxiety, with a certain undescribable distress; the degree of heat on the skin is moderate, but the skin is dry and constricted;—

to this are added nausea, some disorder of the bowels, spasmodic and convulsive twitchings, with some derangement of intellect. He was vomited and purged very freely, blistered, &c. *11th*, The symptoms subsided, but something still remains that is very singular. *12th*, Another paroxysm has occurred, in which the ordinary symptoms of fever are moderate, but the fears, horrors and apprehensions are great and uncommon; he is much agitated, as if in fear of life from violence; the tongue is foul and white; the secretions are irregular, and sleep is much disturbed; there is little increase of thirst.—From the *12th* of April to the *10th* of May, he suffered a peculiar derangement of intellect, aggravated in paroxysms, but never absent; the marks of fever were not very evident, only the tongue was white and foul, the veins of the eyes red, and the colour of the eye yellow, the aspect grim and cloudy, his apprehensions were sometimes gloomy and threatening, at other times lively, but singular and strange. He gradually recovered health and understanding.

The above is an example, where the cause of fever seemed to act chiefly, by occasioning a mental derangement.

March 4th, 1796. *C——l*, attacked four days ago with violent griping, and severe purging. *5th*, Purging abated, a sensation of want of power of the alimentary canal remains; calomel, antimonial powder and aromatic confection. *6th*, Tongue dry, skin hot, eyes yellow, pulse quick and small.—Glysters and warm bath. *7th*, Better,—body open;

three stools.—8th, Better. 11th, Yellowness gone, —recovering fast.

The above is an example of fever, in dysenteric form, suffering changes from treatment.

January 20th, 1796. S——n, a man near sixty years of age, had been ill of fever and seemed recovering,—walked about and was considered as convalescent, when he was seized suddenly with chilliness, a collapsed and withered aspect, accompanied with a deep seated, caustic heat, dry skin, small, confined and frequent pulse.—21st, Died in the course of the day, with an aspect withered and shrunk like a plant blasted by frost or mildew.

January 31st, 1796. B——n, a young man, in the act of embarking among convalescents, appearing pale, dry and withered, was sent back to the hospital. Fever was immediately obvious; an ardent, caustic, deep seated heat; a pulse small, frequent and inelastic; a shrunk and withered aspect. *February 1st,* Died in the course of the day, withered and consumed, as if the powers of life had been arrested by the direct operation of the morbid cause.

The above are two cases of relapse, where the first operation of the cause proved fatal.

SECT. II.

Cases of Endemic Fever.

September 1. 1796. A SERJEANT of the 67th regiment was attacked, two days ago, with severe head-

ach and other signs of fever; the heat ardent, the pulse tense, quick and frequent. Nothing was done till the evening of the second day, when fourteen ounces of blood were drawn from the arm; the headach was instantly relieved: James's powder was given immediately, with eight grains of calomel;—copious evacuations by vomit and stool were the consequence.—This morning the headach is abated; the appearance of the eye is less inflamed; the heat is diminished, as also the quickness and frequency of pulse, but the force of the stroke is diminished and there is not any tendency to perspiration; there is likewise a sense of oppression at stomach, with sickness, great internal heat and restlessness. Evening. Extremely uneasy, anxious and restless; vomits matters glutinous and flakey; the pulse small, confined and hesitating; the body open; the countenance changing colour often,—flushed or pale; no perspiration. 2d, Extremely uneasy; no rest in any posture; the uneasiness referred to an anguish at stomach; vomiting and purging of watery stools severe and harassing.—The vomiting abated about ten o'clock; he became insensible, convulsed,—and died about noon.

August 19th. Jn—m had been rather unwell during the earlier part of the day, in the evening seized with headach, chilliness and fever. 20th, This morning the skin is hot; the face flushed; the tongue foul; the pulse strong, frequent and quick; the eye muddy and somewhat inflamed.—Jalap and calomel in large dose. Evening. The heat rather

abated; the skin dry; the pulse strong and frequent;—the medicine operated severely. 21st, Purging still considerable; the skin hot and dry,—the heat pungent; the pulse tense and hard; the eye muddy, with headach, foul tongue, frequent sighing and heavy breathing: bled,—and bathed in warm water in the evening. 22^d, Slept during the night; the headach abated, the eye less muddy; the extremities cool; the chest and præcordia pungently hot; the pulse weak, but diminished in frequency,—scarcely febrile; the tongue red at the edges,—or beginning to become clean; the body open,—even to purging; no sickness, or vomiting; the lips dry; the skin dry, with a certain tinge of yellow about the neck and corners of the mouth. Evening. He sighs frequently, but does not complain of pain; the heat of the skin above natural; the pulse fuller than in the morning; the tongue moist, and clean at the edges; the præcordia hot; the breathing thick, and chiefly performed by the muscles of the abdomen; the countenance grim and cloudy; some degree of purging,—perhaps in consequence of having drank plentifully of beverage of cream of tartar. 23^d, Considerable purging during the first part of the night;—at present he vomits flakey matter; the veins of the eye are become red, as if injected; the countenance is dusky and livid; the skin cool and dry; the pulse sinks; the breathing is thick and oppressed.—He died about noon.

August 24th. Y—g, attacked with the usual symptoms of fever in the night;—bled in the morn-

ing,—bled again about noon. Evening. He expresses relief, but still complains of thirst; the skin is hot, without signs of approaching perspiration; the pulse tense and quick. Salts and emetic tartar have operated freely. 25th, Slept during the night; is easier, but does not perspire; the body is open, and the fever moderate. Evening. He began to perspire about noon with relief; the skin is now warm and moist; no particular complaint, but the pulse is still febrile. 26th, Slept during the night; the pulse subsided; but the skin dry, and marks of crisis not decisive. Evening. Nausea and desire to vomit; the skin dry. 27th, The pulse flow, soft and full; the skin warm, with general sweat and marks of crisis.—Recovered rapidly. *N. B.* Besides the bleeding and emptying of the first passages by means of salts and emetic tartar, this patient was bathed in warm water, and obliged to continue in the bath, till he was upon the point of fainting, after which he was washed with water from the sea.

September 3d. *E*——s had been ill of fever two days, but was not attended to till late last night; the heat was then strong and deep seated, the headach severe, the eyes muddy and inflamed: He was bled immediately, to the quantity of twelve or fourteen ounces,—bathed in warm water,—the head was shaved and blistered; and the bowels were opened freely by means of salts and emetic tartar. The external marks of fever are less prominent this morning, but the skin is dry and husky; the headach is somewhat abated, but the eye is still inflamed

and muddy; the tongue is foul; the lips dry; the thirst considerable; purging is in excess;—the stools are watery and large; the pulse is without expansion of stroke. Evening. The pulse became gradually weaker in the course of the day, and now is not to be felt at the wrists.—He died about eight o'clock.

N. B. The above four cases of fever furnish examples of that form of disease, where there is a considerable degree of vascular excitement in the early stage, terminating commonly by deranging the functions of an organ of importance,—most frequently the liver or stomach. Yellowness and black vomiting are common, and it is more especially to this form, that the name of Yellow Fever has been applied; but, though the yellowness and black vomiting be common, they are not constant and essential. Determinations sometimes change suddenly,—the brain becomes overwhelmed, and stupor or convulsion then cut short the ordinary rapid course.

August 25th. *B—r*, attacked yesterday, early in the morning with chilliness, giddiness and pain of the limbs; at present complains much of headache, pain of the eyes and general uneasiness; the pulse is small, weak and frequent, but the skin is not hot, in any remarkable degree; the tongue is foul and moist,—the colour of its covering somewhat brown or buffy; the eyes are muddy, watery and twinkling. This man was bled, purged with salts and emetic tartar, bathed in warm water,

washed afterwards in water from the sea,—the head shaved and blistered. Evening. The headach is somewhat abated; the eyes are brighter, but the pulse is still small, frequent and confined; the skin is dry, with thirst; the evacuations downwards have been copious,—he has also vomited; he sighs often and breathes deep;—a blister applied to the stomach,—camphire, snakeroot, volatile salt and opium in bolus, repeated every six hours. *26th*, Slept tolerably well during the night; the headach is easier, and the eyes are brighter; the tongue is rough and brown; the body is open,—rather loose; the skin dry; the pulse small and confined, but not tense; the eyes twinkle, appear watery and confused. Evening. The skin moist, but the moisture does not deserve the name of sweat,—the pulse more full;—the bolus repeated, with the alternate use of warm and cold bathing. *27th*, Slept well and comfortably; but there is no perspiration, and the pulse is small and frequent, with some pain of the eyes and considerable thirst; the body is open; the tongue is white and foul;—fever still subsists. Evening. Hot and uneasy; the bolus repeated with warm and cold bathing.—*28th*, Slept well,—free from pain; the tongue foul and rough, with thirst; the pulse more free, but still small and frequent; the heat somewhat above natural. Evening. The tongue clean; the skin soft and of a temperate heat; the spirits light and cheerful;—several free evacuations by stool. *29th*, The eye clear; the

pulse flow, regular and free ; the skin soft. 30th, Marks of crisis decided.

September 7th. D——y, attacked yesterday with a most violent, almost insupportable headach and severe pains of the abdomen ; was bled to the quantity of twenty ounces,—and is now quite easy. 8th, Skin open, but he has not as yet any return of appetite. Evening. The stomach inflated,—nausea ; no headach, or return of fever. 9th, Inflation of the stomach,—tongue foul. 10th, Uneasiness at stomach ; throbbing headach ; frequent chills and flushes of heat ; blister to the stomach, with a bolus of antimonial powder, camphire and snakeroot. 11th, No sleep ;—a sense of chilliness ; pains in various parts of the body changing place frequently ; tongue white,—lips dry ;—warm bath ; blister to the back of the neck ;—some acceleration of pulse and marks of formed fever. 12th, Better ;—no fever. 13th, Better.—Recovered completely in a few days.

September 4th. Pr——e, seized with intense pain of the head and limbs, chilliness and increased frequency of pulse ; the pulse, at present, frequent and small ; the headach severe,—the pain over the eyes ; the tongue white, and of an unpleasant appearance : bled immediately to the quantity of twenty ounces ; alternate warm and cold bathing ; the head shaved and blistered ;—a solution of salts and emetic tartar operated freely. Evening. The frequency of the pulse is abated ; the heat is moderate ; the pains are gone ; and there has been a slight perspiration.

5th, Slept tolerably well; the tongue is clean; the pulse more frequent than natural; the skin dry, with some increase of thirst;—no return of appetite. Evening. The tongue dry; the skin dry; the pulse febrile;—giddy when he moves. 6th, Slept in the night; tongue clean and moist; the giddiness gone; the eyes heavy; the pulse febrile; the skin warm; the body open;—soreness of the limbs;—deficient animation of countenance. Camphire, snakeroot, antimonial powder, in bolus; the warm bath, followed by washing with cold water from the sea. 7th, Several stools in the night; no sickness or nausea; the skin dry; the pulse more frequent than natural,—and not full; the eye more lively;—no complaint of pain, or uneasiness. Evening. Better. 8th, Tongue clean, skin cool; pulse more open and free:—Recovered completely in a few days.

August 26th. P——k, attacked last evening about nine o'clock with giddiness blindness and deprivation of sense, from which he recovered, complaining of a most violent pain of the head and eyes, pains of the limbs and joints, alternate flushes of heat and cold. In the evening the pulse was strong and quick, with much headach and considerable heat of the skin; bled to twenty ounces; bathed in warm and cold water; blistered, and purged by a solution of salts. 27th, Slept some part of the night; the skin is cool, but dry; the pulse small and quick, with headach and pain of the limbs; thirst, and foul white tongue: bled to sixteen ounces. Evening. The common marks of fever are gone; the skin

is soft and warm :—no pains or complaint. 28th, Slept well ; some return of appetite ;—no complaint. 29th, Seems languid, slept well. Evening. More lively. 30th, Better :—recovered fast.

August 14th. C——t, attacked, about twelve o'clock, with pain of the head, pain of the loins and limbs. 15th, No rest during the night ; the headach continues ; the tongue is foul ; the pulse is slow and small ; the body open ; and heat not materially increased ;—half an ounce of strong mercurial ointment was rubbed into the thighs, in the course of the day. 16th, The headach abated ; he perspires and is easier in every respect, though the pain of the back is not gone ;—the pulse is low and small ; the tongue foul ; the body open :—the friction continued. 17th, Pains of the bowels like spasms ; no marks of fever in the pulse. 18th, The abdomen inflated, with purging, thirst and dryness of the lips. 19th, The belly still inflated. 20th, Easier. 21st, Much purging in the night. 22^d, Severe griping and purging during the night,—at present abated. Evening. Pain in the left side, under the spleen, with uneasiness and hurried respiration, but without distinct marks of fever. 23^d, Considerable purging in the night ; pain in the side in breathing. 24th, Griping and purging during the night. 25th, Better.—*September 1st*, Advanced in recovery,—seized suddenly, in the evening, with pain and uneasiness at stomach, anxiety and uncommon distress ; the pulse frequent, small and feeble ; the lips pale, with marks of uncommon exhaustion. 2^d, Evening.

Somewhat easier ; the skin warmer ; the pulse less frequent and more full ; purging,—the stools small, frequent and bloody,—with tenesmus. *3d*, Easier ; but still purged. Evening. Much distress ; pulse small and frequent ; pains of the legs and thighs insufferable ; no material increase of heat ; breathing thick ; the sensations uncomfortable ; thirst, with an aversion to every species of food ; the eye clear, but glossy and inanimate. *4th*, Night restless,—evacuations frequent ;—the stools black and bloody, slimy and small,—with constant tenesmus ; the pulse frequent and small. *5th*, Easier ; slept some part of the night,—had four motions ;—the pulse more expanded. *6th*, Slept tolerably well ; the purging abated ; the tongue is become foul, with an increase of thirst, greater frequency and force of pulse. Evening. Very much griped, with constant tenesmus, and frequent black, foetid, bloody and slimy evacuations. *7th*, The number of the evacuations lessened,—the pulse slower. Evening. The evacuations have been numerous in the course of the day ; but they are more instantaneous and effective than formerly. *8th*, Slept well ; the purging abated, and the nature of evacuations changed. *9th*, Better ;—recovered in a few days.

August 10th. C——e, a young man, of a clear complexion and full habit, was seized three days ago with fever, the leading symptoms of which were headach and vomiting : to-day the skin is cool and dry ; the pulse is not like the pulse of departed fever, though it is difficult to describe its precise

character ; the tongue is clean ; whatever is drank is thrown up ; there is, at the same time, a considerable degree of purging ; the headach is abated, but the skin is dry, and the aspect withered. *11th*, The skin dry ; the aspect withered and dusky ; the eye dull and red ; the pulse small, and more frequent than natural ; the lips dry ; the tongue red :—on superficial observation, it appears as if natural,—narrowly examined it is found to be dry and glossy ;—to these are added giddiness on motion, frequent sighing, deep breathing and great uneasiness of sensation. Evening. The withered aspect of the countenance and diminution of the vital energies have made great progress in the course of the day ; the pulse is sinking fast, the skin becoming livid and cold ; alternate warm and cold bathing produced no sensible effect. *12th*, He vomits matter like the grounds of coffee,—is cold and clammy ;—he became delirious, and died about ten o'clock.

September 30th. *V—b*, attacked with fever three days ago, commencing with alternate flushings of heat and cold,—the cold very slight,—with headach, pain over the eyes, muddiness of the eyes, thirst, nausea, distress and uneasiness of sensation : he was purged with calomel and antimonial powder. —Yesterday morning the skin was hot, the heat, though not great, was of the pungent kind ; the thirst was considerable ; the headach distressing ; the eye muddy ; the tongue foul, with a very bad taste in the mouth ; the pulse rather small, confined, and frequent : bled to the quantity of fourteen ounces,

fainted, perspired and was upon the whole relieved ; the heat still in some degree pungent or unpleasant, the internal sensations of it exceeding the external signs ; to this is added nausea, or an uncommon feeling at stomach. Evening. A blister was applied to the pit of the stomach. To-day there is much strangury,—a certain irritation on the alimentary canal combined with want of power, nausea, even vomiting of matters in some degree bilious ; the countenance dusky and brown ; the eye clearer and more composed than yesterday ; the headach assuaged ; frequent sighing, interrupted breathing, and occasional tendency to faint ; the pulse frequent,—not strong or full ; the skin moderately hot ; the taste of the mouth disagreeable ; the action of the vascular system deficient in energy, but there are no marks of a subsiding disease ;—a great desire of cool air, with unpleasant sensations of internal heat. *October 1st*, Easier ; had several stools in the night, but did not sleep ; no headach,—no sweat ; the skin warm ; the pulse improved ; occasional nausea and faintness. *5th*, Evening. He has continued without threatening symptoms, though without signs of crisis or decided recovery. He slept usually at night, and, according to his own report, has perspired sometimes. The skin at present is dry, the lips are dry ; he complains of thirst, and of an uncommon bad taste of the mouth,—a nauseous and offensive taste ;—the tongue is covered with a reddish tough pellicle or crust,—an exudation of blood ; the pulse is small, confined, not frequent in any remark-

able degree, but imparting a sensation of diminished energy. *6th*, Slept at times, and lies seemingly at ease; the countenance is collapsed and withered; the eye has a yellow tinge and a lifeless aspect; the skin is dry; the pulse small and more frequent than natural; the lips are dry; the tongue is reddish,—covered with a crust of blood, which seems to ooze from the whole surface of the alimentary canal;—purging;—stools dark, bloody and foetid. *7th*, Restless,—much griped,—stools as yesterday; the tongue the same. Evening. The pulse more expansile; the skin warmer and more soft, but the exudation of blood from the alimentary canal continues; intellect clear, but sensations uncomfortable.—He died in two days.

N. B. The above seven cases furnish examples of a form of disease, where the vascular system suffered less commotion than in the former;—determinations were sometimes irregular and changed suddenly, but organs did not seem to be generally destroyed by excess of excitement.

August 4th. *F*——*n* complained yesterday, but did not much attend to it, to-day, about noon, attacked with severe headach, strangury, stricture on the chest and many unpleasant sensations; the countenance is livid and grim; the pulse frequent, and without expansion of stroke,—hard, starting and irregular; the tongue is whitish and slimy; the heat of a pungent kind, but not great in degree; he is uneasy in himself, restless and under considerable agitation and apprehension of mind:—the head was

shaved, camphire, antimonial powder, opium and volatile salt in bolus were given immediately afterwards. *5th*, Very restless, during the night,—much distressed by strangury, and otherwise uncomfortable. Evening. A slight perspiration; the pulse more dilatable and more regular; the headach abated, but he still complains of a tightness about the eyes, and an unpleasant sensation through the whole head; the strangury is somewhat less troublesome, but there are still feelings of want of power,—a suspended or disturbed action of the moving fibre, with flatulence and nausea;—blisters were applied to the temples. *6th*, Slept a good deal during the night; the eyes seem better, but there is still an unusual sensation in the head; the skin is soft and perspirable; the pulse abated in frequency, but not soft and full; the skin cool; the tongue white,—the coat forming upon it becomes thicker, and acquires a brownish cast; the stomach is irritable;—there is a sense of pressure in the region of the bladder; the lips are dry, with a withered darkness of countenance:—medicines continued. Evening. The eye and countenance seem more cheerful; the skin is soft or damp, but the pulse is still tense and confused; the strangury is not gone, though less distressing than formerly; the stomach is inflated,—the intestines labour under a defect of power,—he is uneasy, but cannot affect a motion:—a feeble eruption begins to make its appearance on the upper lip. *7th*, Has slept during the night, but the intellect is not altogether clear; the pulse is tense

and confined ; the skin damp : washed in cold salt water ; the pulse became softer, but not stronger or more expansile ;—the eye appears heavy and suffused. Evening. The countenance withers ; the body is open,—perhaps amounting to purging ; there is also nausea, sickness, thirst, dry lips, a dry and cool skin, a pulse weak and confined in its stroke,—the eruption on the upper lip does not advance, the intellect is not clear :—two ounces of mercurial ointment were rubbed upon the legs and thighs. 8th, Rested pretty well ; the skin warmer, and the pulse fuller. Ten o'clock ;—the skin cool, the pulse small ; easy in his feelings ; the tongue moist ; the skin, particularly upon the neck and near the mouth, of a yellow dingy appearance ; the eye heavy and furcharged,—the veins loaded :—he seems easy and appears to sleep :—musk, æther and other powerful stimulants have been applied to no effect :—the powers of life failed gradually, and he died about ten o'clock in the evening,—not strictly yellow, but of a dark and dingy colour, not unlike a shade of mahogany.

August 15th. K—g, a man in the regimental hospital of the 56th regiment for the cure of an ulcer on the leg, now in a healing state, attacked in the night with coldness and shivering, headach and violent pains of the loins ; the pulse quick and frequent, with a general sense of foreboding all over the body : an emetic was given immediately, the head was shaved and blistered, calomel with antimonial powder was prescribed after the operation of

the emetic and repeated at intervals, mercurial ointment was rubbed upon the legs and thighs. Evening. The skin cool, the pain of the head somewhat abated, the skin damp. 16th, Headach severe, the pain of the loins abated, the tongue clean, but dry and glossy; the eye clear,—unusually white and vacant,—costive,—calomel and mercurial friction repeated. 17th, Very uneasy, complains of his legs and thighs as suffering severely, vomits at times; the pulse is weak, easily compressed, and not more frequent perhaps than natural; the heat of the skin moderate; he sighs often, breathes deep, and moans; the countenance is flushed, or more properly grim and cloudy, as in sea scurvy; the eye muddy; the gums spongy, as if affected by mercury; but there are not any marks of an approaching salivation:—the medicine repeated with the addition of stimulants. Evening. The tongue clean, but dry; the pulse small and confined. 18th, The countenance more grim and dusky; the lips and teeth dry,—and as it were parched; the skin dry; the body open; he vomits sometimes, but not severely; the eyes muddy and heavy; he sighs often and breathes deep. 19th, Very grim in countenance—livid or like a violet all over,—sinks fast,—died about two o'clock.

August 25th. R—g—n seized, in the morning, with headach and pain of the limbs, chilliness and affection of the stomach. Evening. Walked to the hospital, under a cold, clammy sweat,—the pulse small, frequent and confined:—an emetic was given

immediately. 26th, The pulse is feeble and small, but more frequent than natural; the head aches severely; the eyes are muddy; the countenance cloudy; the tongue not materially foul; the lips dry;—there is pain of the loins, and a particularly severe pain of the shin-bones:—salts. Evening. The salts have operated freely; the headach continues; and the skin is hotter than heretofore; a blister applied to the forehead. 27th, The headach still severe; the eye sad and muddy; the countenance flushed, or rather cloudy and grim; the tongue slimy; the thirst considerable; the body open; the frequency of the pulse exceeding natural, but the heat of the body little increased; uneasy and restless to an extreme degree. Noon. Bled; extremely uneasy; the pulse small and frequent; the lips dry; the countenance almost livid; the pain of the head excessive, with a constant tossing and restlessness: the vein was opened again, but the blood did not flow freely,—the pulse remained the same,—or was scarcely perceptible: bled again in the course of an hour,—expresses relief,—the pulse small, and just to be felt,—the lips dry; the countenance livid, or dark;—a disposition to coma, and at the same time a peculiar and uncommon restlessness. Evening. Bled again,—seems as it were to awake, the pulse rises; bathed in warm, and afterwards in cold water; the pulse becomes more distinct and full; he is easy and speaks cheerfully;—the countenance brightens up. 28th, Still complains of headach; the pulse more open; the

countenance brighter and more cheerful, but he has not slept in the night,—is still restless and tosses much; the tongue, in some places clean, in others, covered with patches of a mealy, white paste; the skin dingy,—with an inclination to vomit. Ten o'clock. Bled again; bathed in warm, and afterwards in cold water,—perfectly sensible; the countenance clear; the feelings comfortable; the skin cool; the pulse not frequent, but not strong,—no perspiration; the eye clear; the lips ruddy. Evening. The eye and countenance cheerful; the pain of the head abated; thirst is great and uncommon,—throws up sometimes;—evacuations downwards copious and dark coloured; the pulse not strong and elastic; the skin cool and impervious.

29th, The countenance and lips sometimes pale, sometimes ruddy; the pulse becoming stronger, and more open; the skin warm, but dry; the expressions of ease obvious in the countenance, but the thirst is great,—almost insatiable; he throws up watery liquor, retains brandy, or brandy and water,—the skin appears dusky and dirty, notwithstanding the frequent bathing and washing; the eye is not clear; the tongue not of one appearance,—in some places clean, in others white and foul;—the hypochondria are tense, with sensations of uneasiness at stomach, and sometimes obscure hiccups.

Evening. Seems easier,—from his own words better,—the pulse is free and open,—the skin soft and warm,—the countenance and lips change colour often;—there is not any delirium, properly speak-

ing, but the perceptions are strange and out of the common train. He has had some evacuations downwards, and the anxiety at stomach is diminished. 30th, The pulse good; the skin warm and soft,—perfectly sensible,—has slept well and does not complain of any particular uneasiness, except thirst;—has brought up a worm about six inches in length. Evening. Throws up what he drinks,—hiccups sometimes, but does not complain of local pain,—the lips change colour very often,—they are dry; the eye is heavy;—he changes posture frequently and seems uneasy, though he does not refer his uneasiness to any particular cause:—he complained all of a sudden of an internal weakness or failing—and died about midnight.

N. B. A few particulars of the appearances upon dissection are added here, as differing materially from those of other cases, and as produced perhaps by the mode of treatment.—No particular marks of congestion were found in the head,—no turgid blood vessels or signs of inflammation; the cortical part of the brain appeared unusually grey in colour, and perhaps less firm in texture than natural; the lungs adhered to the pleura on one side, but were not diseased; the liver was little if at all changed in structure; the gall bladder was full of bile,—of a colour somewhat more dark than common; the stomach contained a large quantity of frothy liquor, like beer in the act of fermentation,—the inner coat was red,—in many places dark, but these spots or discolourings did not appear to extend deeper

than the inner coat,—consisting in fact in a certain congeries of distended blood vessels, or of blood effused and entangled in the mucous membrane. Every mark of distention in the vascular system was removed,—if distention had actually existed as in cases similar;—the action of the arteries, which at one time was suffocated or oppressed, became developed before the fatal event took place;—the cause of death would appear to have been local.

August 24th. *M—n*, about four in the morning, seized with headach, chilliness, sickness at stomach and pains of the limbs. Evening. Came to the hospital,—the skin cool and covered with a clammy sweat,—the pulse small, frequent and confined,—the countenance flushed, confused and grim,—the eye white and glossy:—bled,—the blood very dark, and, though the orifice was large, it only flowed by pressure along the vein. *26th*, The orifice opened of itself during the night and a good deal of blood was lost;—in the morning much relieved;—the tongue is foul,—the headach is moderate,—the pulse is soft and full,—the skin soft and warm,—the body open,—even to purging,—the thirst considerable,—the eye and countenance more cheerful. Evening. External marks of fever more evident,—the skin hot and dry,—the thirst great,—the tongue moist, but not foul,—covered with a ropy saliva,—smooth and of an unpleasant appearance. *27th*, No sleep,—no perspiration,—skin warm, but not hot,—the pulse quick and strong, with pains of the limbs,—the tongue moist,—the thirst mode-

rate,—the stomach squeamish. Noon. Bled,—the blood flowed so freely it could scarcely be restrained,—the pulse quick,—not weak,—the skin dry,—the eyes clear,—the neck, and the angles of the mouth of a dingy colour;—the body open,---throws up what is drank,---intermixed with flashes of mucus:---camphorated jalap, with a proportion of white vitriol. Evening. Copious perspiration; general relief, the vomiting abated, but some squeamishness and irritability at stomach still remain. 28th, Slept well and sweated copiously;—fever gone. 29th, Skin hot;—the pulse strong and full. Noon. Perspiring freely,—the fever going off. *N. B.* This disease assumed a distinct remitting form,—the paroxysms were marked by some degree of coma, and the eye and countenance had a considerable tinge of yellow.—He was completely recovered by the 10th of September.

August 26th. *H—g*, attacked on the 23d with headach, languor and faintness,---was sent to the hospital and purged immediately with strong doses of jalap and calomel:---the pulse small, confined, and as it were sunk deep in the arm. 24th, seemed easier,---slept a little,---ate something with indifference, the tongue neither clean nor foul,---the skin cool,---the countenance languid, dark and greasy,---the eye glossy and white. 25th, Much the same. 26th, Complains of general uneasiness, ---the countenance desponding,---dark,---approaching to livid;---the eye glossy and languid;---the pulse small and weak,---very little increased in fre-

quency ;---heat not above natural ;---nausea ;---no perspiration ;---the skin clammy and greasy. Evening. The pulse small and sunk ;---the countenance and lips livid :---the whole aspect unpleasant. *27th*, The pulse improved,—the countenance more animated,—the skin warmer,—the feelings less uncomfortable. Evening. Nausea troublesome ;---the pulse small and sunk ;---the skin dry ;---the countenance and lips livid. *28th*, Much as yesterday. *29th*, The skin moist and cool ;---the pulse more distinct. Evening. Breathes with difficulty and seems upon the point of suffocation ;---pulse scarcely perceptible.—Bled. *30th*, Easier,—the breathing relieved,—the countenance still dark ; the lips dry and pale ;---the eye glossy and languid,—torpid and inanimate. Evening. Appearances somewhat more promising. *31st*, Appearances rather improving ;---the countenance still dusky, dark and torpid,—the skin moist, but greasy and clammy ;---the pulse small and weak ;---the body open ;---the tongue rather dry. *September 1st*, The eye rather more animated ;---the countenance less torpid ;---the tongue moist ; but covered with a black pellicle. Evening. Advancing in recovery. *2d*, Coldness during the night of long continuance, but without rigor or even horror ;---at present the coldness is changing to warmth, with some marks of a febrile paroxysm ;---sensations of uneasiness ; pulse small, and weak. Evening. Perspired a little during the day ;---the tongue is black and dry, but the general feelings are less uncomfortable. *3d*, Better upon the whole ;---the eye

and countenance more cheerful ;—the voice stronger. 4th, Much the same. 5th, Improving. 6th, Recovers.

December 9th. L——y, on the morning of the 7th, about eight o'clock, attacked with giddiness, so as to fall down, pain of the head, chilliness and symptoms of concentrated fever ;—bled ;—an emetic was given immediately. 8th, Extremely uneasy and very ill, but no symptoms detailed :—a blister applied to the neck, with a large dose of calomel and antimonial powder. 9th, In the night extremely restless, complains of pains in every part of the body,—throws up every thing he takes,—breathes short, and seems to be checked or confined in breathing :—a blister was applied to the stomach,—the distress is great, but it is not easily described, as not referable to a particular part ;—the skin and countenance are dingy and violet coloured ;—the tongue is rough, foul,—its blackish colour is perhaps owing to a quantity of red wine which has been given to him ;—the skin is moist or damp, but the moisture seems to be from agony, rather than the effect of the emerging powers of the vascular system,—the pulse is small, frequent, and as it were confined,—strangury is troublesome, and the alimentary canal appears to have lost the power of effecting its offices,—the eye has a desponding appearance :—bled,—the blood flowed reluctantly,—it was remarkably dark coloured, and remained loose or without separation of parts ;—he however immediately expressed relief, or as he termed it lightness of heart :—mercurial ointment was rubbed into the legs and thighs,—

the camphorated jalap with white vitriol, was grateful to the stomach, removed the anxiety and repressed the hiccup and vomiting. Evening. More apparent ease;—the pulse sometimes full, free and expanding, sometimes small and confined;—perspiration sometimes warm and fluid, sometimes more clammy and unpleasant;—the eye glossy,—the tongue black, but moist;—copious dilution of beverage of cream of tartar. 10th, Did not sleep,—wandered and followed fancies in his slumbers,—started often;—the pulse is small and confined;—the lividness of the countenance increases;—the skin is particularly dark at the edges of the blistered places;—on the neck, and at the angles of the mouth, a dusky tinge of yellow is conspicuous;—the tongue is black and moist,—the hypochondria are tense,—the breathing laborious,—the body costive,—the bowels torpid, resisting strong doses of jalap and calomel,—the lips are dry with much thirst;—the gums red, as if affected by mercury;—the extremities cold;—the pulse small and weak,—not more frequent than natural;—vomiting occurs at intervals,—the vomited liquor clear and ropy. Noon. Eight ounces of blood drawn from the arm,—the blood dark in colour,—the pulse more distinct, with an expression of some relief;—he vomits often,—throws up more than he actually drinks. Evening. Three or four large black stools,—the vomiting ceased,—the pulse more distinctly felt,—he breathes thick and seems to suffer distress in the region of the liver;—he became delirious

about ten o'clock,—furious,—convulsed,—died about midnight.

N. B. The six cases above, furnish examples of a form of disease, which, from the dark and clouded aspect of the countenance and other circumstances of suspicion, seems naturally to attach to itself the appellation of malignant. There is either a good deal of irritation of the moving powers, or there are marks of oppression and torpor, but the action of the vascular system is not fully and regularly excited.

December 3d. *H—n*, was attacked with fever, yesterday in the evening, with severe headach, chilliness, followed by heat, thirst, &c. ;—the tongue is at present clean; the skin is open, but the perspiration is clammy; the pulse is small,—the countenance fallow :—an emetic was given immediately upon arrival at the hospital ;—a blister was applied to the nape of the neck, and a large dose of calomel and antimonial powder followed the operation of the emetic. Evening. The skin hot ;—the pulse quick ;—spirits cheerful. *4th*, The skin moist and warm,—the pulse frequent and small,—the tongue dry, with a good deal of thirst ;—the operation of the calomel upon the bowels severe. Evening. Better ;—the thirst abated ;—the perspiration copious ;—the pulse full and free ;—bark to be given in quantity. *5th*, Better ;—no thirst,—no pain or complaint. Evening. The skin warm and moist ;—the pulse small and frequent ;—complains of internal heat. *6th*, Slept well ;—the tongue red on some places,—white on others, or with coverings like a paste of meal ;—the

pulse small and frequent ;—no return of appetite :—
blisters applied to the thighs. 7th and 8th, The pro-
gress of the disease advanced. 9th, Extremely low ;
—the pulse scarcely perceptible ;—the skin damp
and clammy ;—the breathing performed by the
muscles of the abdomen ;—the blistered parts deeply
livid ;—the general aspect withered and dry ;—he
died in the course of the day.—It was proposed after
the first remission to have made a trial of the powers
of bark, but the directions were not properly exe-
cuted

November 25th. D——y, seized four days ago,
with a paroxysm of intermittent, of which he has
had regular attacks, but his account is not distinct ;
—at present the complains of headach ;—the tongue
is foul, but moist ;—the skin is moist ;—the pulse
quick, frequent and small ;—the countenance suspi-
cious.—Calomel ;—two stools. 26th, Easier ;—the
tongue rough and foul ;—no appetite ;—the eye
rather yellow ;—he still complains of some headach,
but, being a Pole by nation, his ideas are perhaps
not clearly understood, as his French and German
are both very barbarous. Evening. Headach in-
creased,—chilliness,—great thirst,—skin dry,—pulse
confined ;—cough with pain of the side. 27th,
Headach continues ;—the tongue is clean,—the eye
and countenance not satisfactory,—the aspect dingy
and withered ;—the pulse small and confined,—not
preternaturally frequent ;—the body bound ;—skin
dry. Evening. More cheerful. 28th, Slept toler-
ably well ;—the pulse small and confined ;—the

skin cool. 29th, Has not slept well;—the pulse better;—the countenance still unpleasant;—no actual fever. 30th, No appetite;—upon the whole better. December 9th, Was dismissed on the 5th as a convalescent, returned to-day under a paroxysm of ardent fever. 10th, Pungent heat,—countenance withered,—skin dry and parched,—hiccup. 11th, Tongue parched and dry;—countenance withered and dry,—blistered parts livid and dry; pulse small and low;—hiccup ceases and returns by intervals. 12th, Tongue moist,—clean;—the pulse regular,—not weak;—the skin dry,—cool;—the eye and countenance more animated;—the hiccup continues. 13th, The same. 14th, Died in the course of the night, after bleeding from the nose and ears.

December 1st. A——I attacked, about noon, with severe headach, pain in the bottom of the eyes, some degree of chilliness and great distress. Evening. Delirious, with marks of considerable vascular excitement. 2d, Vomited much in the night;—the delirium gone, but the headach still severe, with uneasiness at stomach;—the heat above natural;—the pulse quick, tense and frequent. Evening. Has had three copious evacuations, from drink of cream of tartar;—the fever is abated;—the headach is easier;—the pulse is calm, but the vessel is still tense;—the perspiration small and partial. 3d, Much uneasiness at stomach and in the bowels,—inflation;—tongue slimy and foul;—the thirst great;—the countenance dusky;—the eyes painful and

red. Evening. The countenance brighter ;—the pain of the head and eyes still distressing ;—several evacuations downwards ;—no perspiration :—warm bath and beverage of cream of tartar. *4th*, The fever returned in the night with symptoms of great ardency, burning heat of the eyes, &c. Evening. The fever is subsided ;—the skin is moist, and the nausea is less distressing. *5th*, Rested well ;—the skin soft ;—the pulse slow, but confined ; the tongue foul and slimy ;—the thirst is not great, but there is no return of appetite, and he still complains of pain and uneasiness at stomach ;—he has had numerous evacuations downwards. *6th*, The fever returned in the night with great heat and severe vomiting of four matters,—a sense of burning at stomach,—and nausea on every change of posture ;—the pulse is slow and regular, but not strong ; the skin is cool, dry and dusky. *7th*, Much the same. *8th*, The fever returned in the night ; he spits blood, which seems to be an exudation from the mucous membrane of parts about the throat. *9th*, The pulse slow, soft and regular,—not weak ;—the skin warm, moist ;—the lips moist and red ;—the tongue clean, but thirst still continues ;—the eyes and skin yellow, but not of a deep tinge ;—the lustre of the eye returning ; eruption about the mouth,—some desire for bouillon. *10th*, The spitting of blood continues ; the appetite not returned. *11th*, The same. *14th*, From the operation of an emetic he threw up a great quantity of billious matter and recovered rapidly.

N. B. The three cases above, furnish examples of a form of disease of a remitting type, terminating rapidly in death by oppression like the more formidable species, or showing marks of yellowness and exudations of blood in recovery not unlike the concentrated disease called Yellow Fever.

CHAPTER V.

Description of Fever.

THE general character of the *Class Fever* is not perhaps so comprehensively and so explicitly defined in the writings of authors, as to include and express every condition of febrile action. The definition of Dr. Cullen is unquestionably the most precise, and the most scientific; but though the conditions expressed in that definition mark the undoubted existence of a fever, yet there are modes of action of a febrile cause, under which some of the circumstances there mentioned are not clearly discerned. Horror or a sense of cold is a common sensation in the commencement of fever; yet it happens sometimes that this sensation is not perceived,—perhaps does not actually take place;—if so, horror is not essential to the existence of the disease. In the same manner, increased frequency of pulse is often present, and is usually esteemed an indication of the action of a febrile cause, yet there

are instances of febrile action, where this increased frequency of pulse is not obvious: hence these two symptoms are not absolute,—they are only relative to a certain condition of action, but not indispensable in the chain of febrile operation;—they are sometimes wanting, at least not observed in the commencement of the most concentrated or suddenly fatal forms. But though a sense of cold and an increased frequency of pulse do not constitute indispensable parts, in the action of the cause of fever, yet an irregular and irritated, an impaired and diminished, or, in some shape, an altered condition of the alacrity of motion and vigour of the limbs is not perhaps ever absent. Thus an impeded or suspended, an irritated or irregular action,—a changed condition of the state of the moving fibre, arising suddenly and acting generally, marked by its effects upon the functions of health and vigour, seems to constitute the primary and constant feature of the operation of a febrile cause.

The cause of fever arises from different sources, and according to a variety of circumstances affects the body in different manners, yet certain generalities belong to all. Thus the action of a febrile cause, from whatever source the cause may proceed, is observed to obey certain laws of rise and decrease at given periods,—in other words, fever consists of a series of paroxysms repeated at different intervals. The tertian, or period of forty-eight hours, seems to be the hinge of febrile revolution; and the compounds of the tertian appear to be so multiplied on

some occasions, as to fill up or occupy every portion of time, producing a fever apparently continued in form—or confounded in its periods. This general prevalence of a tertian period explains the noted connexion of odd days with the changes and terminations of fever;—the changes and terminations, which sometimes happen on even days, depend upon the existence of a compound form, and are explained, according to the fundamental principle of febrile revolution, by a simplification of the form. But besides, that the rise and fall of febrile action is subject, during the continuance of fever, to obey laws of periodical movement, the great changes,—the crisis or final termination,—the cessation of one mode of action and commencement of another, are also under the rule of period, or defined portions of time. Among these the seventh day is most remarkable, either for final termination or change of action; for, as a fever, of the duration of seven days, consists of a repetition of more or fewer paroxysms during that duration; so a fever, of seven weeks, consists of various changes of action,—of cessation of one mode and commencement of another at certain intervals,—most commonly at the interval of seven days. The seventh day, on what cause ultimately depending cannot be known, is a noted day of revolution;—it seems in fact to be the critical period of fevers of distinct and regular form; for though changes and terminations happen at other times, they are comparatively few in number and rarely final in event. Of fevers, the slightest

and the most violent are usually of the shortest duration ; for where the cause is of inferior force, and the power of resistance strong, the derangement effected being inconsiderable or without a stable basis, health is often restored on or before the third day ; where the cause is of concentrated force, the power of resistance generally or locally weak so as to be easily overwhelmed, or the principle of irritability, in such a condition, as to be easily exerted to inordinate or increased action, a change or termination—favourable or fatal, often takes place at the same period ;---in some cases, termination or death happens earlier than even this, but where death happens at an earlier period, it will seldom be found that a distinct febrile action has been properly established.

But besides the above mentioned rise and fall of febrile action at certain periods, there also exist general modes of that action, common to the operation of the cause of fever, whether that cause may have proceeded originally from an endemic or a contagious source. In a state of full health and vigour, the moving fibre of the human body regularly and alternately acts and ceases to act ; on this alternate action and rest seems to depend the fundamental operation of life,—an operation essentially disturbed by the action of a febrile cause, not however disturbed at all times after one manner and one form : Force or concentration of cause, perhaps modification independent of actual force, but oftener aptitudes and circumstances of subject produce shades of

great variety : a clear explanation of the causes of these varieties lies not perhaps within the reach of comprehension; but the fact will not be disputed by those who have considered the subject with attention, that the reputed cause of fever, endemic or contagious, shows its action, at one time under the form of ulcer of the extremities, of eruptions on the surface of the body, diarrhœa, dysentery or flux, at another time under the form of genuine fever, various in degree and aspect,—and changing in various manners in the progress of the course.

The cause of endemic and contagious fever is radically different, but the mode of action, on the human body, is in many respects similar. In describing the gradations and forms of this action, it will be convenient and useful to class the appearances, according to certain general and prominent features, usually combined together and seeming to depend upon certain conditions or primary modes of operation. The deviations from health, arising from the action of a cause of fever, are different in kind and degree and are differently combined, but upon the whole, the principal modes may be referred to action of the moving fibre, diminished in force and energy, suspended or impeded in usual range of freedom, disturbed in time—more frequent or more slow ; to a mode of action irritated beyond the common degree of irritation, disturbed in time—quick and frequent, but without freedom and effective force ;—this last mode is complex, and the appearances arising from it are fluctuating, irregular,

and often seemingly of opposite natures. These different forms of action seem to have their periods in the ordinary course and duration of a fever,—the impaired or suspended mode is perhaps primary,—it is also final where the disease proves fatal: irritated motions arise under certain conditions, terminate in increased action which terminates in recovery of health; or irritated motions, failing to establish an effective re-action, suspension or oppression recurs—general or local,—and death is the consequence. These modes, besides being different in kind and degree, are also such as to deserve the name of general at one time, the name of partial, at another; sometimes they appear generally in the whole body, though different in degree, sometimes more particularly in one system or series of parts, sometimes chiefly in one organ, or the functions of one organ, and at other times, in parts of an organ only, and partially in its functions.

SECT. I.

Description of Contagious Fever, as it appeared in the British Army, in England, Holland, and Ireland, during the years 1793, 1794, 1795, and part of 1796.

Class I. HISTORY of that form of fever, in which marks of suspended or impaired action are more conspicuous than of action increased in force or irregular in time. This form has various shades and

degrees, is of different duration and liable to many changes during the course.

1st, Slight in degree. The commencement of this form is usually marked by a sense of disagreeable feeling at stomach, nausea, vitiation of taste, coldness of long continuance, an increased sensibility to cool air, or want of warmth rather than horror or chilliness, dimness of sight, giddiness, dulness of perception, languor, pains and aching of the joints; impaired and feeble action of the limbs, a sad, desponding and lifeless aspect of eye and countenance; the pulse is small,—sometimes, when superficially attended to, seemingly not much changed from its natural state, carefully examined appearing to be feeble, languid and confined, sometimes—but not always, more frequent than natural, sometimes, but rarely, more slow: the degree of heat is moderate,—judged by the superficial touch of the surface and extremities, it does not seem to be above the natural standard,—upon the hollow parts of the trunk or on pressure, it appears to be pungent, though not strong: the state of the skin is usually dry, sometimes clammy and greasy: secretions are impaired, with great deficiency of alacrity in the functions.

The above foundations of derangement being apparent in the first twenty-four hours of the disease, the greater number of symptoms increase in degree, or suffer some change of form during the continuance of the course: the appearances of the tongue are irregular, sometimes the tongue is moist and little changed, sometimes it is rough and moist, or

with a thin coat firmly adhering, sometimes white, slimy and foul,—it is seldom dry in this stage of the disease, but it is not unfrequently covered with a ropy saliva, smooth and without papillæ:—some degree of nausea is often present, but there is seldom any vomiting; the body is sometimes open, sometimes bound,—when open, the evacuations are for the most part small and ineffective: there is usually an unpleasant taste in the mouth,—or want of taste, almost always a dry or a greasy skin, a fullen aspect, a pulse not much changed in time, but feeble and unenergetic in the stroke; pain of the limbs and joints, like the achings in the cold stage of intermittent, sometimes tenderness of the touch: bad rest,—dreams and wanderings often disturb the sleep. At a certain period, sometimes on the third, oftener on the fifth, and still oftener on the seventh day, these symptoms undergo a great and material change; the action of the system, particularly the action of the arterial system, develops, secretions are restored and the signs of health return; or instead of health, a new train of morbid action commences. The cause, which had hitherto only in a slight degree impaired the energy of the vital functions, either by a sudden accession of power or by an increase of aptitude in the subject, acts with vigour and sometimes rapidly overwhelms life. Where the action is general in the system, the progress is usually more gradual and the term of existence is longer protracted; where the action is par-

tial, the functions of parts become oppressed and death takes place speedily.

The signs of gradual extinction are chiefly found in a pulse, small, weak, sometimes frequent and always feeble, wrapped up as it were in itself, retiring from the surface and extremities of the body, irregular, intermitting and finally failing,—in a corresponding decline and failure of animal heat, in a state of skin dry and impervious, sometimes greasy, clammy and dirty, sometimes purplish or livid,—in secretions impaired or suspended, in drowsy torpor, but diminished sleep, with an imperfect possession of intellect: the tongue during this progress, particularly where the progress is not rapid, is often black and dry, covered with a sooty pellicle, sometimes smooth, clear and glossy, the lips too are generally dry, and a black crust or pellicle sometimes covers the teeth and gums. Where the action is partial, the appearances are more irregular:—irritated motions are variously combined with suspended or diminished energies, and according to circumstances the symptoms are of great variety, and in some respects opposite in their natures. In one case, the head is principally affected:—delirium, different in degree and different in kind, occupies the chief notice; in another, affection of the moving powers gives rise to a multitude of alarming symptoms, startings, tremors, convulsion, &c.; the chest suffers principally in one, so that the functions of the lungs become suffocated and oppressed; the stomach and alimentary canal have a great share of the sufferings

in all and at all times; in the latter stages these organs often seem to lose power in a more especial manner,—the abdomen becomes inflated,—involuntary purging takes place, accompanied on many occasions with involuntary or unconscious discharges of urine.

It likewise happens frequently at this period of change, that, instead of cessation of disease, a new train of morbid appearances arise, which are different in aspect from the preceding, and lead for the most part to different issue,—they are chiefly conspicuous in the changed action of the vascular system; the pulse, from small, weak and confined, deep, and as it were sunk in the arm, becomes gradually open and full,—the whole system seems to fill and expand, or the tide of circulation flows freely to the surface and extremities of the body, the mind also becomes cheerful and even gay, delirium of the gentle, but lively sort is a frequent occurrence, and often appears to be a leading feature; sleep is found, or disturbed only by pleasant fancies and wanderings, the energy of the functions is restored, the secretions resume their natural course, and marks of crisis are generally decided and final. During this gradual progress to health, the tongue is usually dry,—a coat or covering forms upon it, becomes thick and separates at the critical period, most usually the fifth or seventh from the new train of action.

2d, Aggravated in degree. Appearances, in the more aggravated degrees of this form of febrile

action, vary according to the series of parts principally affected,—the different shades are painted in the countenance. The signs of the commencement are not very different from those of other fevers, viz. disagreeable sensations at stomach, nausea, flatulence, listlessness, languor, feeble action of the moving powers, sense of cold, or want of natural warmth, headach, from heaviness and confusion, or mazes as the soldier usually terms it to a degree, which gives the impression of being knocked down by the blow of a hammer,—a stupor like that of deep intoxication,—a total inability of holding up the head. The appearance of the eye and countenance indicates strongly a material deviation from health, but an accurate picture is not easily conveyed in words; the eye is sometimes glossy,—the look vacant and idiot-like, torpid, sad and desponding, the countenance collapsed, dry, and withered like a plant nipt by frost, or failing from want of rain, sometimes flaccid, and dirty, as if washed in greasy water, sometimes full, swollen, torpid, and inanimate, like a statue, sometimes lurid, dark and grim, resembling a piece of mahogany;—this last is often connected with heavy breathing, deep sighing and stricture of the chest.

The symptoms above mentioned appear in the first twenty-four hours, and increase in degree, according to their several forms, for different spaces of time,—three, five, or seven days. The countenance, during this period, becomes daily more flaccid, withered and dry, more dirty and greasy, more swollen

and inanimate, more lurid and dark ;—in all, there is a dusky hue, with a lighter or deeper shade of yellow ; the changes of the eye observe the same rule of progress,—the veins become large, and the motions are languid with considerable changes of colour ; the pain of the head, if severe in the commencement, is often changed at a certain period to a sense of mazes or confusion,—a want of power to command thought. There are sometimes mutterings and wanderings during the night, with want of sleep, but delirium, properly so called, is not common in this stage,—where the course is rapid, it sometimes precedes convulsion,—it is often the sign of change of action and marks the commencement of a development of the energies of the vascular system. The pulse in this form of fever does not offer much information to superficial observations ; it is many times little altered from what it is in perfect health, sometimes neither more frequent, nor more quick, but generally, when minutely attended to, less expansile,—without force of contraction or free dilatation ;—a want of energy of stroke, a defect of irritability seems to characterize it when closely examined,—cursorily noticed, it often seems neither small nor weak. This nearly natural state of pulse continues with more or less variation for some time ; at a certain period it becomes frequent, quick and active, free and expansile ; or the torpor increasing, it wraps itself up, withdraws from the surface and extremities and finally fails. The state of animal heat, another of the signs from which an

opinion is usually formed of the nature and degrees of fever, affords little remark to common notice. In touching the arm lightly, the heat seldom seems to be increased, in pressing it closely, it is often found to be caustic and pungent,—unpleasant, and differing from the nature of warmth,—it is deep seated,—irregularly diffused,—concentrated about the præcordia,—deficient in the extremities.—The skin, corresponding with the aspect of the countenance, is sometimes dry and impervious, flaccid and withered, sometimes dirty, greasy and clammy, sometimes livid, and in a manner marbled about the tendinous parts,—the knees, feet and hands, bespotted with petechiæ on some occasions, and on many fore, or tender of the touch : gangrenous spots are not uncommon on the feet, hands, knees, nose and ears ; extensive and large mortifications sometimes make their appearance on other parts ; pains, or achings, like those in the cold stage of intermittents, are common and distressing. Some idea of the state and progress of fever may be, and usually is formed from the aspect and condition of the tongue. In several instances, the tongue does not appear to be materially changed, being moist, and with only a thin covering of mucus, in others, it is moist, smooth, and without the ordinary prominence of papillæ,—it is sometimes rough, but cannot be said to be foul, at other times it is covered with a mealy, milk-white paste, of different degrees of thickness, the mouth overflowing, at the same time, with a ropy saliva :—similar also to the aspect of the countenance, the

tongue is sometimes torpid in its motions, cold and pale, or large, swollen and livid or leaden coloured. In the progress of the disease, the coat, by which the tongue is covered, usually becomes thicker, sometimes dry, rough, brown, and even black: about the period of crisis, termination or change—this covering loosens and separates at the edges, and at last through the whole extent; the tongue thus becomes clean, but if the disease runs on through another period, it turns rough, dry, often black, covered with a black crust or pellicle extending sometimes to the teeth and gums; sometimes it remains clean, smooth, glossy, red and parched. Thirst often bears a correspondence to the state of the tongue and fauces; yet thirst is sometimes intense, without the corresponding appearance, or inconsiderable, where according to the ordinary rules it would be supposed to be great. The taste is changed, or depraved,—there is seldom a relish for food, though food,—at least spoon meat is sometimes swallowed with indifference; nausea is not uncommon, but vomiting is rare; yet vomiting sometimes happens in consequence of a change of determinations. The functions of the alimentary canal are much disturbed; in some cases there is costiveness, even resisting strong purgatives, in others there is purging, but the evacuations are seldom effective,—they are watery or small;—severe gripings or pains are not uncommon:—fullness, tension and inflation of the hypochondria, and, towards the latter periods, involuntary stools are among the ordinary appearances.

Secretions are generally diminished, and among these, the secretion of urine is scanty, with complaint of pain and difficulty in rendering it. There is usually a want of rest in this form of disease, at least a want of refreshing sleep, but anxiety, tossing and change of posture, are by no means common; there is however, on many occasions, a sense of stricture on the chest,—a dry, and teasing cough, often alternating with affection of the head.

The foundations of the above derangements being laid in the commencement of the disease, the structure advances to a given point, with different progress. Sometimes on the third, oftener on the fifth, and oftener still on the seventh, the action of the system becomes excited, the powers of life emerge, and crisis takes place; or fever being in some manner suspended, sufferings abate or cease, recovery goes on for a few days, when diseased action recurring suddenly, life is overwhelmed or brought into danger; or further, instead of termination or suspension of morbid action, the cause seeming to receive an accession of power, or a change of direction at the above periods, the vital energies become generally or locally oppressed, and death is the consequence.

Class II. IRRITATED MOTIONS. The primary action of the cause of fever is obscure; but, at a certain and early period, action, irritated, irregular and apparently increased, is so conspicuous in the vascular system, with unusual commotion of the moving powers, as to characterize a form of fever, which

deserves particular consideration from the multiplied variety of its appearances, and the numerous accidents which happen to life from its tumultuary disturbances.—The attack of this form of disease is usually sudden, the sense of cold or even horror is considerable, and frequently alternates, during the first hours, with sensations of burning heat; the headach is often intensely severe, particularly the pain of the forehead and temples,—it is frequently preceded by giddiness, vertigo and temporary loss of sight; the eye is often muddy, confused and red, staring and prominent, it sometimes seems to blink, or shun the light; the countenance is flushed, or rather overcast and grim, often agitated and confused; the tongue is generally foul, covered with a mealy or milk-white paste,—when moved it is sometimes tremulous; the thirst is great; the sensations at stomach unpleasant; nausea is not unusual, and even vomiting occurs sometimes, pains in the legs and joints are severe, pains shooting along the legs, shoulders and arms in repeated explosions, or with sensations of gnawing, and as it were tearing, are sometimes extremely distressing; a general soreness or tenderness of the touch is not uncommon, in all cases, however, different in its nature from the tenderness or pain of rheumatism; the uneasiness and anxiety are frequently great; agitation, tremors, startings, convulsive motions, stricture of the chest, irregular evacuations of the bowels, with gripings, severe pains and spasms, are occasional, but fluctuating symptoms; the skin

is usually hot and dry,—when the body is pressed closely, the heat often appears caustic and fiery, deep or concentrated,—it is unequal in different parts of the body; the pulse is usually quick and frequent; irritation and motion are increased, but force and energy are wanting,—the usual freedom of the stroke is confined; secretions are irregular, and generally impaired.

These symptoms, which appear in the first twenty-four hours of the disease, increase with some variety of progress to certain periods, at which time changes or terminations, sometimes favourable sometimes fatal, are observed to take place. The modes follow the ordinary rules in fever; in one case, the action of the vascular system becomes vigorous, the arterial pulsations expand and final termination is the consequence; in another, the irritated motions of the arteries abate, or cease, the course of the disease seems to be suspended, some portion of health returns,—in some instances imperceptibly established, in others suddenly deranged, by a recurrence of morbid action; in a third, the irritated or increased action subsides rapidly, while the vital energies being exhausted generally, or organs locally destroyed, death ensues with more or less variety of appearance. The different events are, in some measure, connected with certain days in the following manner. In the more concentrated forms, the irritated action often subsides on the third day, sometimes fatally, sometimes indeed with hopes of returning health, but with still greater sus-

picious of sudden and dangerous recurrence. In forms of somewhat less violence, the changes of the fifth have similar issue. The seventh is the great critical day of regular fevers of moderate violence; the terminations are oftener final, or changes more distinctly marked than on the others; at this period, the powers of life subside rapidly, emerge speedily, or a new train of action commences, in the progress of which the action of the vascular system is developed and health is finally established.

The appearances, in this fever of irritation, are, as they might be expected to be, very irregular; pains and spasms in different parts of the body are severe, the pulse is irritated, and sometimes excited to a high degree of action, the heat is ardent, caustic,—sometimes making an impression like actual fire, the thirst is great, the tongue dry—sometimes rough, foul and black; startings, tremors, convulsive twitchings are frequent; the breathing is often oppressed,—stricture and affection of the chest frequently alternate with delirium and affection of the head: Vomiting sometimes occurs,—prodigious in quantity and irrestrainable, accompanied with a small pulse and cold skin;—on some occasions, the same is the case with purging; the urine is suppressed,—sometimes it is bloody; the functions of the liver are also suffocated in some instances,—or there are appearances of deep jaundice: hæmorrhage from the nose, though not common, sometimes takes place; and gangrene or blacknesses, sometimes of con-

siderable extent, appear on the extremities, or other parts of the body.

Class III. LOCAL FEVER. The cause of fever generally affects the system extensively, but on some occasions the principal action seems to be excited upon distinct organs, or upon the functions of organs ;—the dysenteric and peripneumonic forms are the most common and the most formidable. In these forms, pains, spasms and marks of irritation are sometimes conspicuous ; sometimes, more particularly in the dysenteric form, the action of the arterial system is very little disturbed ; the course of the peripneumonic form is usually the most rapid, the dysenteric sometimes continues seven days or a fortnight, without very materially impairing the functions of the general system ; but it is common to both, that the causes, which change or repress the local disease, seldom fail to disorder the existing economy of the frame : Thus peripneumonic fever or affection of the chest is often changed to delirium or affection of the head ; dysentery changed, or suddenly repressed, is also followed by general fever, delirium, spasm, and convulsion.

The above are the more common forms and appearances of the fever, which prevailed among the British troops, in the different services on which the author was employed. It was remarked before, that the principal distinction of fever consists, in an assemblage or train of motions irritated to an unusual degree, or deficient in ordinary force and energy :—these are not however so pure and simple

in all cases as here described ; one character may be observed to prevail upon the whole, but it is more or less mixed on different occasions ;—the motions, for instance, seem irritated in one part of the body, and torpid in another at the same time, and the aspect of the general mode of action changes repeatedly during the continuance of the disease. In the commencement the motions are sometimes greatly irritated,—the fever, in common language, runs high ; at a certain period this irritation subsides, and a course of deficient energy or torpor ensues ; on the contrary, torpor and deficient energy are sometimes conspicuous in the early stage ; at a certain period the motions become irritated, the action is increased, the powers of the circulating system expand, and the energies of life are restored.

It is not pretended to determine the causes upon which the varieties of diseased action in fevers depend, but it will not be without use to notice the circumstances, with which certain modes are primarily connected, or from which they seem accidentally to change. In encampments, in cool and wet weather, under deficiency of clothing, tedious and irksome confinement, the dysenteric is often the most conspicuous form ;—this often ceases on removal to warm and dry lodging ; genuine fever then arises ;—in crowded barracks, in crowded ships, among subjects depressed in mind, inactive in body, the form of fever is usually a form of deficient energy,—of longer and shorter duration, and greater or less intensity according to a variety of accidents ; in

the most concentrated sources of contagion, as in crowded hospitals, the action of the cause is strong, sometimes representing, in its attack, a form of apoplexy, which, where the habit possesses little power of resistance, rapidly overwhelm life. Thus, upon those who live in confined air, and who do not exert themselves in body or mind, the cause of the disease seems to act by an operation of depression or suspension, and death takes place, often without much struggle or disturbance; in those, who, exposed to the same cause go abroad into the open air, and, more particularly, who are active in body and mind, the febrile motions are irritated, irregular, frequently increased in force, terminating in established re-action, or destroying the organization of parts by violence of effect. In crowded hospitals, where dirt, nastiness and bad air prevail, the relapses of the disease are frequent;—the forms indicate deficient energy in the general system, or local derangement from accidental weakness;—the events are often unfortunate:—under a free ventilation of air and the advantages of personal cleanliness, the action in relapse is irregular; pains, spasms and purging, come suddenly and suddenly cease; intermitting forms also occur often, but they do not observe the same regularity of period, as is usual with pure endemics.

SECT. II.

Description of the Concentrated Endemic of Tropical Climates, vulgarly called Yellow Fever; more particularly, the Fever of St. Domingo, as it appeared among British troops, in different districts of the Island, during the years 1796, 1797, and part of 1798.

THE fever of the West Indies, though arising from one general remote cause, shows difference of form, and, for the most part difference of action, in a stranger and native or old resident in the climate; and besides this general and marked difference in the fevers of strangers and natives, there are also differences among the individuals of the same class, depending upon original qualities of constitution, or arising from one or other of the numerous adventitious causes, to which men are individually exposed.

The cause of endemic, in the same manner as the cause of contagious fever, seems to manifest itself after two general modes of operation, viz. 1. by suspending, impeding or impairing the energy of the moving fibre; 2. by irritating or exciting to inordinate and irregular action. The same parts, or series of parts are affected by these different actions,—the modes often appear different in different parts of the system, at the same time, and changes of the general form occur at certain periods, during the continuance of the disease. Disease is described from obvious appearances, and, as appearances class themselves under certain forms, perspicuity and or-

der require that the endemic fever of the West Indies be described according to the following distinctions.

I. Into a form, where irritation, tumult and excitement of the vascular system are chiefly conspicuous in the early period ;—local derangement and disorder of important functions in the latter.

The above form of disease occurs most commonly in vigorous and athletic habits, and it often occurs, under the circumstances of preceeding desultory exertion, or transgressions of the rules of temperance. The invasion appears upon a general view to be, for the most part, sudden or instantaneous, but, upon accurate inquiry, languor, headach or some obscure deviation from health, will usually be found to have preceded the formal attack, by twelve hours—sometimes by a longer space. Headach, if not actually the first, is among the first symptoms of this, as of other fevers ; and the nature of the headach is different, in different subjects, sometimes it is almost insupportable,—confined more particularly to the forehead and temples, accompanied by sensations of tightness over the eyes, turgescence and starting ; sometimes the pain is more generally diffused, dull and obscure ; but it, for the most part, differs from the headach of ordinary causes, though the difference is not easily defined. Headach is almost always present in the commencement, in some degree or other ; it sometimes abates in the course of the first twelve hours, frequently in the first forty-eight, and almost always before the termina-

tion of the third day. During the feverity of the pain, the forehead is sometimes hot and burning, sometimes cold and clammy. It happens also, and not unfrequently, that together with, or instead of headach, the attack is ushered in by giddiness, vertigo, drowsiness, or stupor like deep intoxication: fits of apoplexy, hysteria or tetanus are observed sometimes, but they are upon the whole rare, and by no means characteristic of peculiarity. The stomach, one of the organs primarily and principally affected in the commencement of fever, is, for the most part, peculiarly affected in the early stage of this disease; vomiting is not common, but nausea, with a taste of copper in the mouth, is usual, as are anxiety, flatulence and other distresses, not easily described, as not referable to distinct heads. The sensations of listlessness, languor and aversion to motion, common in the commencement of fevers, are present here, but have not any peculiar qualities. When the invasion is sudden, the debility or loss of power is more complete. Alternate chills and flushings of heat are not unusual; in some cases they occur at intervals for the first twelve hours; the sensation is unpleasant, but the cold is seldom strong, or amounting to rigour; in others, chills are not perceivable, the sensation of heat prevailing from the beginning. Together with these, the eye and countenance are confused and agitated, the pulse disturbed, frequent, small, hesitating, or seemingly oppressed under the immediate attack.

The following appearances are noticed during the

first twelve hours, though with some difference of order and degree in different subjects. The eye and countenance express some marks of peculiarity, —known to actual observers, difficultly conveyed in description. The eye is sometimes watery, sad and desponding, sometimes agitated, red and disturbed, as if suffering from the smoke of green wood; the pupil sometimes appears to be preternaturally contracted, sometimes preternaturally dilated, but its appearances cannot be supposed to afford a criterion or distinguishing mark of the disease; the eyeballs are often much agitated, staring and protruded. The countenance is usually, but not always flushed; it is generally clouded, agitated, expressing a secret suffering of distress, not indicated by other external signs. The tongue is generally white, slimy and moist, sometimes apparently clean, or covered with so thin a covering of mucus, that the red surface below shines through it, forming a colour resembling that of lead, sometimes it is smooth, it is seldom dry and rough. Thirst is irregular and uncertain; where nausea prevails, it is seldom great, yet intense thirst and nausea sometimes meet together. The pains in the joints, limbs and back are often severe and distressing; they resemble pains in the cold stage of intermittents; the pains of the calves of the legs are sometimes acute, the muscles seeming to be in a certain state of spasmodic action. The pulse is usually frequent, small, confined, concentrated or deep, as opposed to expanding and open. It is sometimes agitated, vermicular, confus-

ed in an uncommon manner, almost always it is much disturbed. The heat, during the first twelve hours seldom appears great, if the skin be touched lightly, more closely pressed, the sensation of heat is caustic and pungent. The skin is usually dry ; if damp, it imparts the idea of a spasm existing on the surface, for perspiration, with expanding pulse and relief from sufferings, rarely takes place. If the skin be moist, the moisture is clammy, as in agonies,—different from the warm and fluid moisture, which follows a relaxation of extreme vessels. To estimate this properly is a matter of some importance in forming an opinion of prognostic. In those sweats, which terminate the paroxysms of the remitting fevers of natives or seasoned men, the pulsations of the arteries become full, expanding, and as it were rise to the surface, the perspiration is fluid, copious and general, with softness of the skin, and with the sensation as if a load of weight and distress were removed from the system, secretions, are, in some measure, restored, and the countenance becomes to a certain degree cheerful and serene. In the abatements which take place towards the close of the first twelve or twenty-four hours of this disease, the appearances are often flattering and sometimes so ambiguous, as to deceive an unexperienced practitioner ; but the following marks will, in some measure, help to note distinction ; the sweat is seldom copious and general ; it is, for the most part, confined to the upper parts of the body ; it is not usually fluid and free, but has something of clammi-

ness joined with it; the pulse does not expand; an impression of existing spasm or confinement,—of imperfect dilatation and feeble contraction of the artery, still remains. Yet in some instances, the changes are so material, the relief so evident, that it is only after much experience, that a person is brought to doubt of the presence of remission; indeed in people accustomed to climate, such abatements may safely be esteemed remissions and acted upon as such, in Europeans, newly arrived in warm latitudes, they require to be regarded in a favourable light with much caution.

About the termination of the first twelve hours, the tumult and agitation described above in some degree subside; the appearance of the eye, though not serene, is less wild and expresses a sensation of relief; the violence of the headach diminishes, or the nature of the pain changes; the countenance brightens; the patient, even the physician is often flattered with hopes of remission,—but they are fallacious hopes and seldom of long duration. In the course of a very few hours at farthest, the symptoms recur with aggravation, and with qualities in some respects differing from the preceding. The pulse, which, during the first twelve hours, was usually small, frequent, irregular or confused, becomes quick, hard, tense, more equal in time and force, but confined,—or without a free dilatation or energetic contraction of the artery. The heat of the body, particularly on the head and trunk, is burning, fiery and concentrated; if the skin be

touched lightly, it sometimes does not appear to be uncommonly great, pressed closely, it is often so intense, as to be endured with pain, communicating the sensation of actual fire, or of sharp instruments darting into the fingers. Thirst is irregular,—much connected with the state of the tongue and stomach; where there is nausea, with a moist and foul tongue, it is seldom great, at least, if there be a desire of drink, there is also an aversion to the act of swallowing;—where the mouth and tongue are dry, thirst is generally intense. The pain of the head, which had in some degree abated, recurs again, but it recurs with sensations differing from the former; marks of increased determination are now evident, the pulsation of the temporal, and particularly of the carotid arteries is sometimes so violent, as to cause the head and neighbouring parts to shake; there is also a sense of fullness, weight and heaviness through the whole head, sometimes with drowsiness and coma, but without the power of sleeping; the recollection is confused, and not under command, but that derangement of the reasoning faculty, properly called delirium, is a rare occurrence. The countenance is highly flushed, sometimes dark and cloudy; the eye is muddy and inflamed; the urine is scanty,—sometimes suppressed: the bowels are torpid,—difficultly moved by purgatives,—or moved by starts,—the evacuations, watery and in excess, do not afford relief; the skin is generally dry, and the heat is unequal,—great in the trunk, as formerly observed,—diminished, or deep seated on the extre-

mities. Sighing, deep breathing, anxiety, an undefinable fidgetting, or desire of constantly changing posture, without complaint of pain or specified object, are common attendants of this stage of the disease; and these undefinable uneasinesses may be regarded, as the surest signs of the existence of concentrated or yellow fever.

The duration of this state of general irritation is uncertain, sometimes not longer than twelve or twenty-four hours,—more commonly thirty-six or forty-eight. The increased action of the vascular system abates, sometimes suddenly, sometimes gradually; increased heat is not now perceived on the extremities, but it is still strong and ardent on the breast and at the pit of the stomach, especially on pressure; the pulse becomes slow, frequently regular, seemingly full, and to superficial observation like the pulse of a man in health. The tongue becomes clean and red on the edges, but still remain foul in the middle. The stomach suffers great distress; with a sensation of burning or internal heat, there is often a sense of weight and heaviness or oppression,—a sensation of something uncommon,—anxiety, hiccuppings obscure and interrupted, nausea or actual vomiting: the matter thrown up by vomiting is of a glutinous and ropy nature, but clear, and without admixture of bile; as the disease advances the quantity increases, and far exceeds in proportion the quantity of what may have been drank,—various darker coloured flashes float in it; the sighing and deep breathing still continue, but the gene-

ral fidgetting and hitherto ungovernable desire of change of posture abate ;—the distresses become local, more particularly confined to the stomach and epigastric regions. About the period at which the general irritation begins to subside, a dinginess, or light shade of yellow may, for the most part, be discerned about the neck and angles of the mouth, when the countenance is distorted or the patient smiles ;—yellowness does not as yet appear in the eyes.

The irritated state of fever having arrived at a certain acme or height, a period of subsiding commences, the progress of which is more or less rapid according to a variety of causes. In some it does not exceed twelve hours ; in others it extends to twenty-four, thirty-six or forty-eight. As during the irritated state of fever the general uneasiness and restlessness were extreme ; so from the commencement of the subsiding state, though local distresses continue or increase, a general torpor of body and indifference of mind are singularly conspicuous. The pulse abates in frequency and force, and gradually returns to a state, which, superficially observed, appears to be the pulse of health, being slow, regular, apparently soft and full ;—more closely attended to, deficient expansion,—imperfect dilatation and feeble contraction of the artery, may be discovered. This regularity of pulse does not often continue long, nor does the state described take place in all ; in some the pulse remains small and frequent throughout, though it almost always loses

the irregularity of motion which distinguished the early stage of the disease ; where it has subsided to the uniform tenor which obtains in a state of health, it does not often continue long without some change, it becomes hurried, irregular and disturbed, —even intermits and finally ceases. The animal heat falls, rapidly or gradually, from an ardent to a natural state, and at last retires from the surface and extremities. But besides diminution of heat, as judged of by examination of the surface of the body, the circumstances of the skin itself deserve remark. The skin appears to lose its natural sensibility, it becomes impervious, and seems, as if it were scarcely connected with the living system ; the colour, which from the commencement of the period of subsiding, had been gradually becoming more and more yellow, in the latter stages is often violet and livid,—in which case the pulse is usually small, deep and oppressed. The vomiting, which during the tumultuary and excited state of fever was seldom severe, becomes now copious and irrestrainable, but it is not bilious ; liquor or drink taken into the stomach, is rejected in a few minutes, ropy glutinous and intermixed with dark coloured flakes ; these increase in number as the disease advances ; the vomiting can seldom be effectually restrained or checked by the aid of the medical art, yet, unless in accidental instances, the retching or irritability of stomach is not remarkable ; for ordinarily, after a quantity of liquor has been rejected, the patient remains quiet and torpid till a fresh accumulation takes place.

The vomiting thus recurs at intervals, and, as the disease approaches to the latter period, the vomited liquor becomes black,—sometimes black as foot, oftener like muddy coffee, and sometimes of a faint brown, with a tinge of green. If the body be open at this time, the stools are black, and smooth like tar or molasses: but though vomiting be a frequent symptom, previous to the fatal termination, it is not a constant one; nor is the black colour, of what is thrown up, essential to the character of the disease. The eye and countenance recover their natural composure during the decline of the fever; but the veins of the eye become turgid, as if filled by a successful injection, and towards the latter stage, the expression is most affecting and melancholy. The yellowness, the foundations of which are often visible at the termination of the irritated state, increases rapidly for the most part,—in some cases, the colour is light as that of a lemon, oftener deep as an orange, the skin of an American savage,—sometimes dark, almost like mahogany. Delirium, as observed before, is a rare occurrence in the early stages of this form of fever, as the subsiding advances to the latter period, it makes its appearance not unfrequently; the ideas are ordinarily confused, with a certain degree of coma, but in some cases, the delirium is violent,—the patient so outrageous, as to require to be confined by force; where vomiting or purging cease, or are suppressed, affection of the head is a frequent consequence,—the fatal termination is then sudden. Besides the above symp-

oms, which are seldom wanting in the aggravated form of this disease, hæmorrhage from the nose, ooziings of blood from the ears, gums, and, in short, from the whole tract of the alimentary canal, from the mouth downwards, are observed on many occasions ;—in the latter stage also, large portions of the body sometimes become livid, more particularly the less elastic parts. Death is often preceded by hurry, commotion and convulsion ; sometimes life is arrested without apparent struggle or resistance.

The form of fever described above seems to be more strictly speaking the yellow fever of authors. Its course is short, and its termination is sometimes by the oppression of organs of primary importance, —the lungs or brain, more frequently, by the destruction or derangement of organs of secondary importance,—the liver or stomach,—events connected with irritated motions and irregular determinations. The duration of this disease does not often exceed four days ; according to the more usual course, there are twelve hours of a tumultuary state or forming fever, thirty-six, or forty-eight of ardency and excitement, twenty-four or thirty-six of subsiding. In this there is variety, but upon the whole the morning of the third is the more common period at which the subsiding state commences, the evening of the fourth or morning of the fifth, the most usual period at which the fatal event actually takes place ; yet various accidents, and particularly modes of treatment, irregularly accelerate or protract the course of the whole or of the different parts.

This form of fever is rapid in course among Europeans newly arrived in tropical latitudes ; but a disease of the same cast, of considerable variety of appearance and more protracted duration, is sometimes observed to take place among those long resident in hot climates, and more particularly among those, who during this residence, labour hard, undergo military fatigues, or use active exercises in the open air. It is necessary to remark, that there is not any thing very particular in the symptoms of the first attack of this form ; but the excitement of the vascular system during the course runs high,—that state of action called inflammatory becomes general and unequivocal ; the pulse is irritated, strong and vibrating ; the heat is great, but less ardent or caustic, and more equally diffused than in the former ; the pain of the head is severe, but the sensation is somewhat different here and in the other,—it is connected with a state of strong and violent action ; delirium sometimes runs high, with partial convulsion and great exertion of muscular strength ; the eye appears inflamed, but it is wild and agitated ; in short, there are marks of violent irritation, a great degree of increased action, with considerable indications of energy in the vascular system and moving powers. The duration is protracted generally to the seventh, sometimes to the ninth and even later. The termination, when favourable, is by sweat and regular crisis ; when fatal, by general failure of the powers of life, marked by venous paralyfis and oozings of blood from different parts ; or by destruc-

tion of particular organs, &c. frequently too, at an early stage, by sudden convulsion. Vomiting occurs sometimes; but yellowness and black vomiting, though occasionally observed, are by no means common.

II. Into a form of fever, where the action of the vascular system appears to be deficient or oppressed, the moving powers impaired in their energies, or rendered irregular in their motions.

This form of disease, as observed among Europeans newly arrived in the tropical regions, chiefly occurs among men who lead inactive and indolent lives, who are confined in the less pure air of crowded towns, crowded barracks, or crowded ships, who are under the impressions of ennui, chagrin and fear, or who are constitutionally deficient in energetic exertions of mind and body. According to the natural qualities of the constitution, the accidental circumstances of the individual or modification of cause, the disease seems to be at one time characterized by severe local pains, spasms or tremors, by general and undefinable uneasiness or fidgeting, at another time, by torpor, by indifference of mind and impaired sensibility of body. It is sometimes sudden in its attack, sometimes gradual in its approach. When it assumes the distinct febrile form, the leading circumstances of its history are the following.

It usually commences with giddiness, even to blindness, pain of the head, faintness, sickness, disagreeable sensations at stomach, weight and op-

pression,—even nausea and vomiting, pains of the limbs, knees and back, a sense of cold, sometimes continuing for hours, but seldom amounting to the degree called horror; the pulse, for the most part, is small, weak, and easily compressed, sometimes, but not always, frequent, irregular, hesitating, and tremulous or creeping, sometimes in appearance tense, or confined in volume, with an impression of obstruction; the animal heat, on the surface of the body, is seldom greater than natural,—the internal sensation far exceeds; the skin is usually dry; if damp, it is unpleasant to the touch; the feelings are uncomfortable; and the appearance of the eye and countenance indicates a desponding mind;—the countenance is usually dirty and lurid,—fallow like a sickly plant, or fading leaf; the eye sad, but seldom inflamed,—it is inanimate and sometimes glossy; the tongue is sometimes covered with a white mucous coat, sometimes so thin that the red colour shines through it,—sometimes of considerable thickness,—it is seldom brown, and it is oftener moist than dry,—sometimes it is pale and smooth and clean, the mouth abounding with a ropy saliva; the seat of the pain of the head is generally over the eyes,—almost always in the forehead or temples, in many cases so oppressive, as to occasion stupor like intoxication; strangury, or want of power over the urinary discharge is not uncommon.

The headach for the most part abates, or suffers change of form, at the expiration of the first twelve hours; and where tumult and irritation had been

conspicuous in the beginning, they generally diminish about this time, and partial sweat with temporary relief ensues; yet this abatement is neither constant nor of long duration, the sufferings and distresses recur in a few hours, particularly the pain of the head, the unnatural appearances of the eye increase, the countenance becomes more dingy and greasy, or flaccid, dry and withered; the pulse is sometimes more frequent than natural, generally small and confined, yet in many instances it does not perceptibly differ from the pulse of health, unless in want of energy and expansion; the thirst is seldom great, but the lips are usually dry, the mouth clammy, and the taste depraved; the tongue is for the most part covered with a white mucous paste,—generally moist; the sensations at stomach are unpleasant; nausea, anxiety, sighing and deep breathing are usual: The state of the skin, in this form of disease, deserves remark,—it is dry, withered, and thickens by a rapid progress, becoming impervious, or in a manner cut off from the free current of circulation: the face of things proceeds then very much in one tenor;—a torpor or impaired sensibility possessing the functions, the progress to destruction is silent and often unperceived.

The duration of this form and of the different parts of the form is uncertain: the marks of torpor, of impaired sensibility and withering are sometimes observable at the end of the first twelve hours, in which case, the disease often advances silently and insidiously to the third, fifth or seventh day, about

which periods, its character declares itself, so as not to be mistaken by observers of the least experience ; in the early part, the indisposition is sometimes so slight, that, unless in a certain witheredness of aspect, known to those only who observe minutely, it is difficult to say in what the disease consists. In the early period of subsiding, the pulse, to superficial observation, differs little from the pulse of a person in health ; or it differs chiefly, by imparting an idea of confinement,—of deficient force and expansion,—an idea relative rather than absolute. As the sinking state advances the sphere of circulation becomes contracted, the pulse gathers itself together, retires from the surface and extremities, intermits, and at last fails or ceases. The skin, which was not very hot at any time, becomes cool, dry, husky and of diminished sensibility, giving an idea of a dead hide rather than an idea of the skin of a living man ; yet, instead of being dry, it is sometimes cold, damp, and flaccid ; under this condition blisters do not rise, or if they do rise, they do not discharge, the surface becoming dry, dusky, livid or black. In the first form of this disease, the yellowness of the eye and skin was of the jaundiced kind, and sometimes intensely deep,—here it is different. The skin, in the present case, is generally flaccid and withered, like a leaf in autumn,—dusky and sometimes grey, or with a tinge of green,—in loose and inelastic parts, not unlike the appearance of the skin after a bruise, and in some instances black as in echymosis: the eye is seldom deeply yellow, but the

white has a certain marcid and lurid appearance. During this stage of subsiding, the insensibility,—the torpor and indifference to impressions, both in mind and body, are remarkable ; the patient is often sensible to the approach of death, but he meets it with a non chalance,—a seeming firmness resembling the higher degrees of philosophical fortitude. In the progress of this stage the tongue ordinarily becomes clean, though, when oozings of blood take place, it is frequently dry with a most offensive taste in the mouth ; thirst is considerable in such cases, and though there be no desire for nourishment, the patient often swallows, with a kind of indifference, whatever is offered to him. Of drinks, brandy and water, brisk spruce beer, and bottled porter, seem to be the most grateful,—wine is disagreeable. Nausea and uncomfortable sensations prevailed from the beginning, vomiting is now frequent, but without irritability or retching ; the vomitted matter is rarely bilious ; it is a pituitous or ropy liquor, with numerous darker coloured flakes,—sometimes clots of blood entangled in mucus, apparently portions of the inner coat of the stomach are brought up in gulplings ;—worms also sometimes escape by the mouth ; the body is generally open in the latter periods of this stage, the stools bloody and offensive ;—blood sometimes without mixture, discharges itself gradually by the anus, sometimes mixed with connected portions of mucus,—the inner coat of the alimentary canal, it passes off at intervals in large evacuations. In this form of disease there is often

a scanty discharge, and sometimes a suppression of urine; the pain and irritation, or the desire of making water is constant and distressing, but there are seldom, if ever, marks of distension;—in some instances, clots of blood entangled in mucus are discharged. Hæmorrhage from the nose occurs sometimes, but less frequently than in the preceding form; oozings of blood from the eyes and ears have been likewise observed,—from the whole surface of the alimentary canal they are common: sleep is wanting,—a comatose drowsiness sometimes takes place. In the latter period the veins of the eye become distended, as if injected, the aspect is horrible, and the intellect is considerably deranged, but the delirium is not often violent; the dusky hue is sometimes converted into a jaundiced yellowness, the pituitous and ropy vomiting into vomiting of matter like grounds of coffee, and life is terminated suddenly by convulsion, or more gradually by stagnation in the circulating mass.

The above is the mode in which this form of fever usually appeared in St. Domingo among British soldiers, but in some cases, appearances were different,—more varied and irregular: the pains of the head, back and limbs were severe, pains of the stomach and bowels excruciating, the body was co-ssive or obstinately resisted the most powerful purgatives,—sometimes it was the reverse,—the evacuations being frequent, the gripings sharp, and the tenesmus troublesome; the urine was sometimes suppressed; the anxiety great; the desire of con-

stant change of posture tormenting ; tremors, startings, agitations and racking pains in different parts of the body distressed the patient beyond measure. Sometimes about the third day, sometimes not till the fifth, these pains and distresses abated, the eye and countenance became serene and clear,—the countenance florid or of a beautiful bloom, the lips moist, and of a cherry red, the skin soft or covered with sweat,—in some instances the sweat had the singular smell of a fish-market :—Times of aggravation and relief were generally observable, but the abatements were seldom so distinct and regular as to deserve the name of remission ; delirium frequently made its appearance ; and though the course was less rapid than in the former, the event was frequently fatal.

III. Into a form, the prominent feature of which is an aspect of countenance dark and cloudy, as in scurvy :—the action of the vascular system is sometimes irritated and irregular,—generally oppressed and overwhelmed.

This form of disease appeared principally among those, who were removed from a more pure and cool, to a confined and immoderately hot air, whose habits were full, and who were restrained from the active use of their limbs : In this manner it was common under the removal of troops from post to post, or under the indulgences and rest which usually followed military excursions in St. Domingo.

The formal attack is sometimes preceded by heaviness and oppression, sometimes the attack, from

a state of high health, is sudden and instantaneous, the symptoms are common to the class of fevers.—Headach is among the first,—it is intensely severe, or heavy and oppressive, it is accompanied by giddiness, faintness, often by an undefinable uneasiness; a sense of cold is often of long continuance, but seldom amounts to horror; the pulse is usually frequent, small, oppressed and weak, or without energy of stroke; increase of heat is uncertain, and, where it is perceived, it is ordinarily of short duration; the skin is dry,—if moist, it is damp, unpleasant and greasy,—it is sometimes preternaturally cool; the countenance is livid and of a dusky hue, dark and overcast, as in scurvy; the eye is uncommonly clear and glossy, of a pearly white and vacant expression; the thirst is irregular,—seldom much increased; sighing and deep breathing are frequent,—a sense of stricture or inability of expanding the chest, without pain, is common; the general feelings are unsatisfactory, and pains of the loins and limbs are sometimes severe; soreness of the flesh is a frequent complaint; nausea is not unusual, and even vomiting sometimes takes place, but seldom in a material degree; the tongue is rarely such as is called foul, but it is often covered with tough saliva, and sometimes with a whitish paste,—it is seldom dry, sometimes it is clean, smooth and without the prominence of papillæ.

The progress of this mode is uniform, and by no means rapid;—the symptoms are liable to little fluctuation or change during the course; the pulse,

which appeared small and oppressed at the commencement, is subject to little variation till near the termination, when it gradually emerges or finally fails; the heat of the surface is seldom increased,—often it is apparently diminished, there are frequent complaints of internal heat and anguish about the præcordia; the breathing is oppressed, but without local pain; the headach is sometimes very distressing; the body is generally open,—the stools large,—not unfrequently bloody and dark; the urine is scanty,—sometimes suppressed; the countenance seems cold and livid, the skin of a violet or mahogany colour, the joints and tendinous parts tawny and marbled, the inelastic parts, sometimes absolutely black, as in echymosis blistered, places become suddenly dry, shrivelled and livid, the veins of the eye become red;—the general aspect is inanimate and unpleasant; hæmorrhage, black vomiting and purging of black matter are not unfrequent in the latter stage,—jaundiced yellowness is also observed on some occasions; the vomiting and purging sometimes cease, delirium takes their place, and convulsion follows speedily terminating existence; sometimes the approach of death is gradual, and life, silently contracting the sphere of its action, yields without a struggle. The favourable termination, indicated by a developement of the action of the vascular system, often declares itself on the seventh day;—when fatal life is sometimes dragged on to the twelfth or longer.

The above is the more common course of the flow

and inactive mode of this form of fever; in many instances, a mode uncommonly rapid and violent is observed; the external heat is considerable, but the sensation of internal heat is insufferable, the anxiety and distress, about the præcordia, inexpressible, delirium,—irregular and furious, sometimes takes place, the countenance is dark, agitated and oppressed, the eye white and singular in expression; the motions of the vascular system not easily described,—irregular, irritated, but confined, or the excitement combined with an idea of restraint; the functions of the lungs are oppressed or suffocated, the patient gasps for cool air, the tongue is swollen and incapable of proper utterance. In this state of hurry and confusion, a convulsion supervening, sometimes terminates life within twenty-four hours, but in general the course is protracted to the third, and sometimes to the fifth day. The symptoms then assume a more regular febrile form; a considerable degree of vascular irritation takes place, but it cannot properly be said, that there is a regular increased action, —there still existing an idea of restraint or obstruction; the secretions are much interrupted, the urine scanty, or suppressed, the body irregular,—purged or costive; the restlessness at times great, at times a torpor seems to prevail, nausea common, vomiting not unfrequent; delirium sometimes moderate, generally violent and furious, sleep rare,—when occurring, interrupted with wanderings and frightful apprehensions; sighing and deep breathing, anguish, a sense of internal heat, great thirst, startings

and spasmodic twitchings are often numbered among the symptoms of this disease.

At a certain period these marks of irritation subside ; a torpor commences, and the progress to dissolution is rapid ; the blood seems to stagnate at once, or an organ of importance becomes instantly suffocated and oppressed ; the irritability of the fibre is lost, as well as the sensibility of mind ;—irritating applications make little or no impression, and a consciousness of the approach of death gives no alarm ; the colour of the skin and countenance, dark and dusky from the commencement, becomes of a deeper shade, or like wood of mahogany ; upon the inelastic parts, the scrotum and belly is sometimes an appearance of blood effused in the cellular membrane, as in echymosis, the hands feet and knees are marbled and tawney ; hæmorrhage or oozings of blood, black vomiting and black purging with jaundiced yellowness, occur sometimes, but less frequently than in forms where the course has been more protracted.

The above is a history of the continued fever of the West Indies, as it usually appears among strangers, or as it sometimes, among natives, appears, and those long resident in the country, under causes of unusual power. The disease is fundamentally one, and the description given comprehends an outline of the more material forms. It is probable that individual cases will sometimes occur less pure and distinct than the forms here described, but though there may be some variety of combination or a dif-

ference of succession not specified, it is presumed the general features are correct;—the description is in fact an analysis of a great number of cases, noted down with care, in the presence of the sick.

IV: Into Fevers of Type.

The cause of endemic fever, continued, remitting or intermitting is one, but great variety is produced in the form and manner of action. The disease, in the more violent forms, is, or appears to be continued in some situations, in others, it is remitting and of regular type. In wet weather and on swampy grounds, the endemic of the country is usually remitting in form; and, under this form, exhibits appearances of jaundiced yellowness, of black vomiting, purgings of black matter, hæmorrhage from different parts of the body, petechiæ, lividness, &c. The tertian, or the compounds of the tertian chiefly prevail, but, in several instances, a paroxysm seems to continue for forty-eight hours without remission,—the third day is quiet, but fever re-appears on the fourth, from which period, the type is sometimes regular and distinct, with paroxysms on the alternate days, sometimes the powers of life are suffocated by the accession: hence the fourth, or the morning of the fifth, is often a fatal day in the fevers of strangers, whether continued or remitting. The symptoms of the paroxysms are of the same form and kind, as where the form is continued or without remission; they subside at a certain period, and at a certain period recommence, going on for a limited space of time, in this alternate action and cessation from action.—

The circumstances connected with these alternate states of morbid action and cessation from action, throw a great deal of light on the general operation of febrile causes.

Corresponding with the first form of continued fever, the symptoms of the paroxysms of the remittent are violent, with great irritation and strong action of the vascular system, an ardent, pungent, and sometimes an excessively caustic heat, severe local pains, anxiety, restlessness, anguish at stomach, nausea, sickness, vomiting, hurried respiration, severe and distressing headach, pain of the eyes, delirium, &c. These sufferings abate at a certain period, but they do not often terminate by copious perspiration; they recur, subside and recur again at intervals, till a critical period arrives,—frequently the seventh day, when they cease finally, or signs appear of a fatal termination. During this course symptoms often arise, similar to the symptoms of the concentrated continued fevers; the skin becomes dry, dingy and withered, jaundiced yellowness makes its appearance in the eyes, black vomiting sometimes takes place, and in many instances, hæmorrhage, or exudations of blood from different parts of the body,—most frequently the tract of alimentary canal.

A mode of action is also discovered under remitting form, in some manner corresponding with the second form of continued fever. The pulse is frequent, small and low, easily compressed,—without energy and force, the skin cool, damp and greasy,

or dry, withered and dusky, the headach frequently severe, the countenance inanimate and depressed, restlessness is considerable, with anxiety at stomach and uncomfortable sensations;—sometimes the alimentary canal is principally affected;—there is thirst, a dry tongue, vomiting or purging returning at periods, but in no extraordinary degree of violence;—upon the whole, the indisposition seems slight,—the patient walks about, neither well, nor to common apprehension, materially ill. At a certain period, frequently on the fifth, sometimes on the seventh, the nature of the action changes or becomes more intense in degree; the head is affected with coma, sometimes with a muttering delirium, the pulse becomes weak and sunk, the action of the fibre is impaired,—in some manner suspended, a species of paralysis takes place,—the heat sinks below natural. This mode of action continues twelve, sometimes twenty-four hours; the powers gradually emerge, and are again oppressed by a similar suspension. Sometimes the animal heat is, in a manner, extinguished, the pulse totally suppressed,—a mode of action which ceases and returns at intervals, and is known to be less fatal than threatening, by certain sensations of ease and quiet,—the serene and cheerful eye and countenance which accompany it.

The remitting also appears, in many instances, under a mode of action corresponding with the third form of continued fever. A livid dinginess overspreads the countenance from the commencement of the disease, a general torpor marks the existence

of the paroxysm, the blood seems to stagnate in the extreme vessels, particularly under the nails, where a blackness like a blemish grows out in recovery ; important organs,—the lungs or brain, are often oppressed during this action of the febrile cause, and death is the consequence ; when this is not the case, the powers of life emerge, till the renewal of the action produces a similar suspension and frequently a fatal termination. This is the ordinary course in the more intense degrees, under the operation of powerful causes ; in more common circumstances, the commencement is slight, the type is regular, and remissions, though not terminated by copious perspirations or other evacuations, upon the whole distinct ; about the fifth or seventh, a change of action takes place ;—the powers of life are in a manner suspended, or a great degree of torpor, in all the animal actions, supervenes ; the circulation is heavy and oppressed, the countenance dusky and grim, dark like mahogany, often greasy, damp, and dirty ; general torpor and diminution of all the secretions mark the period of the paroxysm ; these oppressions vanish, in some degree, after twelve or twenty-four hours, and again return at a given period.—Such a form of disease is frequent in the more unhealthy situations of St. Domingo, in the summer and autumnal months, it occurs occasionally, in the more healthy, in the months of October and November.

The description of endemic fever, contained in the preceeding pages, is drawn from actual observa-

tions made in the hospitals of St. Domingo, during the years 1796, 1797, and some part of 1798. It is not probable, that the description will exactly correspond in every particular, with the description of endemic fever in the other islands of the West Indies at the same or different periods, though there be no cause to doubt that the fever of tropical regions is radically one disease. The author had an opportunity, in the years 1774, 1775, 1776 and 1777, of observing the fever of the Island of Jamaica; and it appears to be indisputably the same with that of St. Domingo, though often differing in general aspect and mode of action. In the fever of Jamaica, the sensibility of the fibre did not seem usually to be impaired, nor did it seem to be often impaired, even in the most aggravated degrees of the fever of America; in St. Domingo on the contrary, a species of torpor or a suspended irritability has been a leading and conspicuous feature. On what cause this depends is not known; but there is reason to believe that some general change in the constitution of seasons has taken place; for according to various informations, the fever of the other islands, and even the autumnal fever of North America, particularly the fever of Philadelphia, discovers at present signs of torpor, impaired irritability, or as it is usually called malignity, similar to what has been remarked in the description of the fever of St. Domingo.

The action of the cause of fever is one, but the human body consisting of different parts of various qualities, the mode is much varied. It seems, upon

the whole, to be principally exerted upon the moving fibre of the vascular system; and according to the portions or parts of the system affected, the symptoms or appearances are different. If the action of the febrile cause be principally exerted upon the arterial system, irritated and irregular motions, increase of heat and tumult in the circulation are the consequences, producing a combination of action, which constitutes the first form of fever: the second seems to arise from the cause of the disease being principally directed to the serous or colourless series of vessels; in the third, the venous system is more particularly affected. In the first the irritability is increased, or excited beyond the usual degree; in the two latter, the irritability is impaired, or torpor prevails. Under the circumstances mentioned the action of fever is general in the system, or in a series of parts, occupying every part of that system or series of parts nearly alike; in others it is in some measure local, or confined to organs, particularly the alimentary canal, the liver, the brain, and sometimes the lungs.

CHAPTER VI.

Dissection.

WANT of convenience or press of business prevented the author from pursuing a train of dissection, during the prevalence of contagious fever on the

continent and in Ireland; after arrival in St. Domingo, opportunities were favourable, and dissection of those who died of endemic fever was prosecuted with diligence, till the various ways, in which the disease occasions destruction, were supposed to be ascertained, so as to be capable of being arranged under general heads.

Appearances, upon dissection, are different according as the cause acts generally or locally, or according to the mode of the action. In the first form of fever, where the irritation is great, the re-action of the vascular system violent in the early stage, irregular determinations and destruction of organs are commonly the consequence:—the liver, the brain, and very frequently the inner surface of the stomach exhibit marks of derangement. The second form seldom terminates fatally, till the external appearances of the third are in some degrees present. When the third is rapid in its course, the spongy organs,—the liver and lungs are sometimes, as it were suffocated or oppressed,—the lungs are like a bag filled with grumous blood,—the liver and spleen distended with black blood, in such a manner that their coverings are sometimes ruptured. In the second, and in the more protracted cases of the third, the venous system is turgid, as if filled by injection.

The following are the more usual appearances, according to the changes produced upon the principal organs.

Head. The vessels of the head, in the first form are frequently full and distended with blood; in

some particular instances, marks of inflammation in the membranes, adhesions and sometimes cheesy exudations near the falx :—water was found in the ventricles on some occasions, but this was by no means a common occurrence—it seemed to be more frequent in diseases of type than in the violent continued fever ;—the distension and fulness through the whole volume of the brain was considerable. In the second form, particular marks of inflammation were seldom visible, but the venous system was uniformly and generally distended, as if filled by a successful injection ; yet upon the whole the general distension of the brain was less conspicuous than in the former :—the plexus choroides was often a clotted mass of blood.

Thorax. In the first form, the lungs do not often show much appearance of disease ; in the second, they are irregularly spotted,—the back parts particularly are black with stagnated blood ; in the third, they often appear, through the whole extent, like a sponge filled with black blood, but without any traces of actual inflammation.

Abdomen. In opening the abdomen, the omentum and its appendages generally appear of a faded, olive, grey and dusky colour ; the blood vessels are large and distended, as if from injection, but there are seldom signs of actual inflammation ; the exterior aspect of the stomach and intestines correspond in colour with that of the omentum, grey, dark and marcid ; the blood vessels are much—distended, but actual inflammation is rarely ap-

parent; the appearance of the inner surface is seldom uniform through the whole,—the veins are generally distended; but besides this, the inner surface of the stomach, in the first form particularly, often exhibits large spots, or circles of a bright red resembling actual inflammation, in the centre of which are frequently seen small points, like beginning gangrene; the villous coat is also loose,—in the act of separation, and actually separated in some places; in the second form, more frequently than in the others, the colour of the inner coat of the intestinal canal is like brick dust, the coat hanging loose and almost separated; sometimes this takes place uniformly through the whole tract, sometimes it is confined to particular places or a congeries of distended blood vessels, entangled in the mucous membrane, appear in clusters to bespangle the surface with bloody spots; the cavity is sometimes also lined or filled with black grumous blood. In the first form, or where black vomiting has taken place, liquor, resembling the grounds of coffee, is found in the cavity of the stomach; where the vomiting has not been black, the liquor found in the stomach is generally pituitous, viscid and with flakes of mucus, seemingly portions of the inner coat.

Liver. The appearances of the liver are various: where marks of re-action in the general system have been considerable, and where a local determination has taken place in extent and degree, the vessels of the liver bear marks of great distension; the blood-vessels and biliary ducts are then often preternatu-

rally enlarged,—full of fluid blood and black bile ; the colour is sometimes variegated like marble, with shades of red and yellow. In the third form, particularly when of rapid course, the liver appears sometimes uncommonly large, black and distended, as if suffocated with blood, the membranes are sometimes ruptured, or they give way in the act of handling the liver. In the first form, or where black vomiting has taken place, the gall bladder is more or less full of bile, often black and thick like tar or molasses ; the gall ducts are enlarged, and the bile is traced into the duodenum, tinging, with its sooty colour, the contents of the stomach and intestines.

Spleen. The spleen is sometimes distended, ready to burst,—or the membranes are actually ruptured ; sometimes it is more flaccid, or like a bag of grumous blood.

Bladder of urine. The bladder is often small and contracted, the sides of it dense and firm, as if long in a state of contraction : it seldom contains urine, or it contains it only in small quantity : on the internal surface are often found bloody spots, or clots of blood, entangled in the mucous membrane, circular and insulated, like the impression of the point of a bloody finger on a pale surface.

CHAPTER VII.

Characteristics of Endemic and Contagious Fever.

It is seldom difficult to decide upon the existence of fever, when present in proper form, but it is often difficult, if guided by existing symptoms only, to determine the source from which that fever has arisen. It was observed above, that the cause of fever proceeds from two general sources, viz. a vegetable-animal source in a state of decomposition and change; a living animal source, or rather a living human body, under derangement of ordinary or healthy action. From these sources proceed fevers of two kinds,—endemic and contagious. The causes of fever are thus fundamentally different, and minutely examined will be found to originate modes of action of a peculiar cast; yet the derangements are exteriorly so much alike, that the discriminating characters cannot be delivered, but with doubt and hesitation;—the result of the whole appearances will often determine the judgment, but symptoms separately considered lead to no certainty. It is presumed, that it appears evident from the historical detail of the preceding pages, that the action of the cause of endemic and of contagious fever has strong analogies. It is there observed, that the causes of endemic and of contagious fevers were equally connected, under certain conditions, with eruptions on the skin, ulcers of the extremities, diarrhœa, purg-

ging, dysentery or flux, fever of an intermitting or remitting form, of a form continued,—violent and rapid in course,—moderate and of ordinary duration, or slow, lurking and irregular,—ceasing and returning at intervals,—changing from general to local disease of various description, and from local disease to general and formal fever.

In looking over the descriptions of the preceding pages, an opinion will be probably formed, that the fever which prevailed among British troops on the Continent of Europe, at the Cove of Cork in Ireland, and during the passage to the West Indies, is not precisely the same, with that which committed such ravages in St. Domingo; yet if two cases of those diseases be examined as they actually appear, unconnected with collateral circumstances, it will not perhaps be an easy matter, to say in what the difference consists. The source from which the cause proceeds is known to be different; a fundamental and radical difference of action unquestionably does exist, but it is too subtle to be appreciated or defined: the differences perceived are such, as arise chiefly from greater or less force of cause, or from circumstances of subject; the general manner of attack, the course, changes and duration of endemic and contagious fevers have great similarity; both diseases seem to obey the same periods of change or termination; the periods of the endemic are indeed regularly tertian, or compounds of tertian; in the periods of the contagious fever there is more uncertainty, and, as far as the author has observed, less re-

gularity ; but the principle of this variety is so little known, that a rule of discrimination cannot be formed upon it with safety. Certain modes of action, or combinations of action prevail more frequently in the one disease than in the other ; but forms and modes more or less frequent do not constitute characteristic differences : thus affection of the stomach and biliary system,—vomiting and yellowness are less frequent in contagious than in endemic fever ; yet they do occur in the former, and sometimes to considerable extent : affection of the chest, alternating with delirium or affection of the head, appears to be more common in contagious than in endemic fever ; so likewise is a peculiar, maniacal derangement or lively delirium, occurring in the progress to recovery ; yet the frequency of these appearances does not furnish a characteristic mark. But though the obvious marks of febrile action are much alike, or the apparent differences are evidently influenced by a concurrence of accidental causes, yet effects prove most explicitly, that a radical and an important difference of mode actually does take place. The cause of endemic, as well as of contagious fever, interrupts the old or healthy, and gives rise to a new and morbid train of motions in the system ; but with this difference, that the cause of the endemic is lost in the first operation, the cause of the contagious fever impresses a figure of action upon the human body, originating a cause, which produces a similar figure of action, through an endless variety of subjects.

It is a matter of the first importance to discriminate between endemic and contagious fever; but as the knowledge of this cannot be attained from a comparison of the existing derangements or actual symptoms of the disease, collateral circumstances are required to furnish their aid; and though an examination of the first does not lead to satisfactory conclusions, an accurate history and an unprejudiced consideration of the latter will seldom fail to throw light upon the subject. Had the history of the rise and progress of the disease which has widely spread its ravages among British troops in Europe been duly attended to, the remedy, as is not difficult in discovery, would not, it is presumed, have been long neglected in application; or had the circumstances connected with the appearance and decline of the fever which has committed such destruction in the West Indies, and, on different occasions, at Philadelphia in North America, been accurately known and properly estimated, the ill grounded fears of propagation, which have alarmed, and which continue to alarm far and near, could not fail to cease. It is at all times a sacred duty of the physician to examine facts and opinions with the utmost rigour of investigation, and it is particularly necessary on the present occasion; for had truth been ascertained on the subject of the yellow fever at an early period, we should have probably been now saved the mortification of blushing at the pusillanimity of the human character, or of bewailing the selfishness and depravity of heart, which so conspicuously betrayed themselves, among

the inhabitants of Philadelphia, in the epidemic of 1793.

In forming an opinion of the existence or non-existence of contagion, it will be necessary, on all occasions, to bear in mind, that as the conclusion is a matter of much importance in society, it must not be admitted, so as to be acted upon, without the most rigid examination, and the concurrence of many corroborating testimonies. If various persons, brought into hospitals on account of accidents, become affected, in a certain course of time, with a fever not connected with their conditions, little doubt will remain that a contagion exists, or that the fever originates from that source; if the medical officers, nurses and attendants become generally affected with the fever prevailing in those hospitals, while a similar disease does not appear in neighbouring places, or only as traced to this source, the conclusion of contagion may be safely admitted; if clothes, bedding, even the persons of men, from this infected source, be removed to a distant place, a disease arising in this place, and extending itself to others, may be justly concluded as proceeding from contagion. Under the above circumstances the existence of contagion may be considered as positive; under the following it is presumptive, but not certain. If the form of fever, in a country where the character of the endemic is strongly marked, be irregular, fluctuating,—not exactly observing the periods of tertian, simple or compound, there are grounds to suspect a cause of contagion. This was particularly

the case on the continent in the campaign 1794. The scene of that campaign was laid in a country where intermitting fever is the reigning disease, yet genuine intermitting fever appeared very rarely, in such part of the British army as fell within the observation of the author. The disease was fluctuating in its form;—a febrile period of three, or of five days, was followed by a remission of uncertain duration,—followed in its turn, by a renewal of febrile motions, ceasing and recurring at intervals,—sometimes for a considerable length of time. The opinion of the existence of contagion, though not positive, will be strongly presumptive, where a certain form of disease, fever, flux or ulcers of the legs, appears in a society or isolated class of people, but does not extend without the circle, unless from immediate communication. This was the case on the continent and in Ireland; medical officers suffered,—military officers, living under the same general atmosphere, but little connected with the subjects specified, were strangers to sickness. When fever prevails epidemically, in a town, portion of a town, or district of country, and when nurses, physicians and attendants on the sick, or even occasional visitors in the districts become affected with similar disease, the existence of contagion is believed to be established; but this, in fact, is by no means the case; for the cause of disease generally diffused in the atmosphere of the district, infects those who enter its circle, without the necessity of communication with diseased bodies. The sphere of action of contagion appears

to be very confined,—general or epidemic disease cannot be easily supposed to result from it;—a direct communication, or near approach to the source being necessary; there are perhaps no instances well authenticated, where contagious fever has extended widely in a country; the other, on the contrary, occupies an extensive sphere of action, pervades a whole town, or district of country, and frequently travels in tracts, in a certain succession through streets and alleys, without the direct communication of the inhabitants. If persons sickening at this source, removed to a district where the disease does not exist, do not communicate to their attendants, a form of the malady under which they themselves labour, there cannot be just cause to suspect the existence of contagion; if the unpurified clothes and bedding of people who have been ill, or even who have died of this disease, be worn by healthy men with impunity, a direct proof is furnished that contagion does not exist. If the course of the disease, in rise, progress and decline, follow the laws of season which influence ordinary endemic, there can be little reason to suppose it contagious; for contagious fever, arising from direct communication or near approach to the contagious source, is little under the influence of season; on the contrary, it is usually more aggravated in winter, when the endemic ceases or declines.

The jarring opinions respecting the nature, and the contradictory practices adopted by physicians in the cure of the fever, which has been more than usually

fatal of late years in the islands of the West Indies, and which has committed great ravage in Philadelphia at different times, afford a melancholy proof of the small progress as yet made in medical science. Opinions are at direct variance on the subject; and as a knowledge of the truth is of great importance in society, the author will state in a few words what has been said by others, and what he believes to be true in fact.—The fever of 1793 is supposed, by one party, to have been imported into Philadelphia from a foreign country, and to have been propagated afterwards solely by contagion. The history of its rise and progress has an exterior show of credibility. The other party maintains the origin to be strictly domestic, but that the immediate source has been ordinarily artificial, viz. damaged cargoes of coffee, onions, &c. This party at one time supposed the disease to be virulently and generally contagious, it now supposes it to be so only conditionally and in a low degree.—Various proofs and testimonies are adduced in support of these contradictory opinions, which, publicly and privately are maintained by their respective partisans, with more zeal than discernment. The history of imported contagion has been disproved by formal affidavits and depositions; and the rules of quarantine, formed by these very supporters of the idea of contagion, seem to be a proof that they do not, in their own minds, believe that contagion is the cause of the disease. Had it been otherwise, they must have thought it equally necessary to have guarded against

importation in the months of January and February, as in August and September. The opinion of the others, viz. a domestic but artificial and isolated source, is a heterogeneous and unsatisfactory invention, by no means sufficient, without the medium of contagion, to explain the progress and extent of the fever, and by no means necessary to account for its production. The shores of the Delaware in their natural state, the accumulated filth and nuisances, of those parts of the city or suburbs, where the disease first appeared and chiefly prevailed, acted upon by the heat of a powerful sun, are capable of producing the cause of fevers of intermitting and remitting form, in a state of the highest concentration; in certain seasons of the year, and under certain conditions of the atmosphere, this disease may be, as it actually often is, epidemic, and, on some occasions, extremely fatal;—damaged coffee, and rotten onions are not required to lend their aid; but supposing that a febrile cause of the virulence described, had been diffused from these sources over the wide extended city of Philadelphia and its suburbs, the approach to these sources must have been fatal,—more certainly fatal than approach to the lake of Avernus.—The opinion of general contagion maintained at one time by this party is now abandoned, but a conditional or limited contagion is still believed to take place. This opinion it is presumed is erroneous; and the error is important, as it goes to confound the fundamental distinctions of nature. Where the cause of fever originates from a vegeto-

animal source in a state of decomposition, it is not observed that this cause is ordinarily reproduced, by its own operation on the system, and if not ordinarily, it may be presumed, it is not ever reproduced; the laws of nature do not fluctuate or change capriciously; nor will it appear, on an accurate inquiry, that there are grounds for this supposition in the fever of America. There are certain facts, admitted by all parties, which cannot well fail to convince such, as are willing to be convinced of truth, that the disease of 1793 and the subsequent years, was not contagious in its nature; that it was in reality, no other than the endemic of North America, epidemic from causes, some of which were visible, others more obscure and not in the ordinary course of things. In the first place, it is admitted by all, that the disease did not make its appearance till the latter end of July or beginning of August; that it declined in October, and ceased before the expiration of November; that it first made its appearance, in the streets and alleys near the banks of the river, or in suburbs similarly situated;—Kensington and Water-street suffered particularly from its ravages;—(Kensington is a most noisome place, and the lower streets of Philadelphia are singularly offensive in hot weather); that persons, immediately from the tropical climates, lived in the worst situations of the town with impunity; that Europeans, or strangers of the northern districts suffered from the disease in a more violent degree than the inhabitants; that nurses, physicians and visitors of the sick,

in the lower streets, seldom escaped from an attack ; that the nurses and physicians of the hospital at Bush-hill, or of persons sickening in Philadelphia, but transported to the country, were not affected by the disease ; that a certain description of people, butchers, painters, &c. whose occupations obliged them to spend the greater part of their time in a medium, which probably operates some change upon the qualities of the air, enjoyed a comparatively good state of health ; that the unpurified clothes of the sick, or of those who died, did not communicate contagion or disease to others.

The fever which has prevailed in the West Indies during the present war, and which still prevails, on every importation of European subjects, has been the occasion of alarm to the English nation, and of division of opinion among medical men, in the same manner as the fever of Philadelphia. A fever, said to be malignant and pestilential, prevailed in the Island of Grenada, in the year 1793. It appeared to be of a violence unusual in that island ; and was therefore supposed to depend on a foreign cause. This cause was sought for and discovered, without much search in the ship *Hankey*, lately arrived from *Boulama* on the coast of Africa. The fever was thus said to have been imported from Africa, and it has further been said to have extended, from the pestilential source of Grenada, to the other islands of the West Indies ; it has nearly annihilated British armies in those islands, and it has appalled the English nation in England itself. The disease,

in vague description, has a number of formidable attributes ; in the detailed histories of some cases annexed to the description, it appears to be the endemic of tropical climates, in some measure epidemic and uncommonly fatal among Europeans newly arrived in the warmer latitudes. If this be true, it is scarcely necessary to say, that it is not contagious, or that it was not imported by the *Hankey*. This remark arises from a perusal of the treatise published upon the subject ; the evidence of Mr. *Paiba*, lately laid before the public by Dr. Smith of New York, declares the reputed origin to be a fiction. But though the contagion of the yellow fever may be proved to be a fiction, the contagion of fear has so impressed the minds of men, that things are seen through a false medium, and common sense cannot obtain a hearing. This was strongly exemplified at New Providence in the year 1797.

The Island of New Providence requested some troops for its defence. Orders were accordingly given, that the 32d regiment be sent from St. Domingo for that purpose ; but as the strength of the 32d was less than the defence of the island required, it was judged fit to fill it up to a certain standard, by drafts from other regiments,—of men convalescent,—in an impaired, but still serviceable state of health. The subjects selected for this purpose were such as laboured under some degree of chronic purging, connected with disease of the viscera ; or who suffered, at intervals, attacks of intermitting fever. This regiment, so composed, sailed from the

Mole, early in March, and arrived at New Providence, after a tedious passage of eleven days. In the month of June a fever made its appearance in the island, and carried off a great number of the inhabitants, many of the soldiers of the 32d regiment, and several sailors belonging to vessels resorting to the port of Nassau. The Island of St. Domingo had suffered severely from sickness for some years past; and in common opinion it was esteemed a source of contagion. A fever which appeared at Nassau earlier in the season than usual, and with more than ordinary violence, was attributed, in the imagination of the inhabitants, to the above mentioned connexion, and the circumstances of rise and progress were so minutely detailed by people, who might be supposed to possess some capacity of judging, or of discriminating between truth and the appearance of truth, that it was impossible not to hesitate. It was perfectly well known, that contagion did not exist in the hospitals of St. Domingo; but it could not be said positively, what might, or might not have been produced, during embarkation, among men in an impaired state of health, confined in narrow space, and probably little attentive to cleanliness of person. The reports of the islanders, and of many visitors all tended to establish the existence of contagion; the evidence of Mr. Fergusson surgeon of the 67th regiment of foot, who accompanied the 32d regiment to its new quarters, and who remained some time in the island, on account of his health, places the matter in a different light, but in such a light, as maintains the

usual relations between the appearance and decline of fever in similar situations. The inhabitants of New Providence, in dread of the contagious fever of St. Domingo, and alarmed at the arrival of a number of men in an impaired state of health, ordered it so, that the sick were placed by themselves on an island, and forbid intercourse with the town. The complaints, at this time, were chronic purging and relapse of intermittent; the disease, which appeared in June, was the endemic of the island, epidemic and of unusual violence,—from which the inhabitants and other strangers suffered equally with the soldiers of the 32d regiment. The author had not the opportunity of inspecting the 32d regiment previous to embarkation, nor of examining facts relative to New Providence on the spot; but the report of the surgeon of the 67th regiment corresponds so well, with what has happened on other occasions, that he cannot withhold from it his assent.

But though ill founded fears of the pestilential yellow fever as it is called, have extended themselves to distant countries, and, in a manner paralyzed the vigour and appalled the courage of the English nation, little alarm or concern has been entertained of the fever, which prevailed, in the early period of the war, among the troops in England, Ireland and on the continent of Europe, though the mortality, among the soldiers, at certain periods, and in certain situations, was not perhaps inferior to that of the least healthy of the islands of the West Indies. This contagious fever, as said

before, is an artificial disease. It never ought to appear, and it seldom does appear, in armies well recruited, well organized and actively employed: it found its way into the British army, from corrupted sources of recruiting, it spread through it, from inattention to the signs of its existence, or the want of means to resist its power; and it prevailed so generally, that, at one period, a majority of the corps in Europe were contaminated. It was also observed before, that it is often difficult to distinguish endemic from contagious fever by the existing symptoms of the disease. The circumstances of climate, and the conditions of subject modify appearances in such a manner, that endemic fever, in crowded and unventilated apartments, has sometimes the aspect of fever of contagion; while contagious fever, occasionally exposed to pure air often intermits or remits like an endemic; though the periods of remission and accession are rarely regular. Contagious fever, it may be further observed, does not properly belong to the field, and is not found where a soldier shelters his head from the sun by the boughs of a tree; but it has often been found to travel in tents over a great extent of country, and to adhere to the equipage of a camp with great obstinacy. This was particularly the case on the continent, in the campaign of 1794.

CHAPTER VIII.

Prognosis, or Signs of Favourable and Fatal Terminations.

To be able to discern at a distance, the signs that indicate a favourable or fatal issue of fever, is at all times a matter of satisfaction, and frequently a matter of great utility. Danger, timeously foreseen, may often be averted; when events cannot be stopped in their course, the best arrangements may be made for meeting them. Danger, in fever, arises from two general sources; viz. 1st, from excess of irritated motions irregularly determined, occasioning local destructions, or derangement of organs; 2^d, from defect, or suspension of vital energies in particular organs, or in a series or system of parts: this effect seems to be produced in two manners,—viz. by exhaustion, in consequence of excess of increased action; by suspension from an inexplicable, but apparently primary mode of operation.

The signs, which indicate danger or safety, and foretel events, may be reduced to different classes.

The duration of fever is of considerable variety; of the term of which duration, as well as of the modes of termination, some opinion may be formed from the symptoms of the early stage. Where arterial action is materially increased, the signs of fever being distinct, open, and regular, the termination is generally on the seventh day, often favourable and final,

—by sensible evacuation, and a renewal of ordinary secretions. Where the irritated motions are in excess, in the general system, in particular organs, or in a series of parts, the course is usually more rapid, the duration seldom extending beyond the fifth day, frequently terminating on the third; the event, when favourable, is then for the most part marked by hæmorrhage or copious evacuation, though it must also be observed, that the irritated motions sometimes subside at a given period, and healthy action gradually and imperceptibly resumes its course,—liable however to be interrupted by a speedy recurrence of disease. Where the event proves fatal, the powers of life are sometimes suddenly overwhelmed by convulsion; sometimes the organization and functions of a vital organ are deranged, by action irregularly directed; and sometimes the irritable principle, being exhausted by an excessive general excitement, the energy of motion subsides, and the stream of life gradually stagnates. Where the irritated motions are irregular, transient, changing in form; or where they do not regularly and progressively advance to a given point, the period of crisis or change is less certain:—sometimes on the fifth, oftener on, or about the seventh, the nature of the symptoms change, a new course begins, and advances by a regular progress to a favourable or fatal issue: If from this period, the action of the vascular system developes, the event is usually favourable; if the energy of action diminishes, or the circulation seems to retire and withdraw itself from the surface and extremities, the danger is great,—

the event, for the most part, fatal. Where the cause of fever acts, by a depressing or suspending operation, the duration is uncertain; and no clear judgment can be formed of the event. Where the action of the cause is strong, producing stupor like apoplexy, or deep intoxication, life is often terminated in forty-eight hours,—sometimes in less. Where the action of the morbid cause is less powerful, producing only slight deviations in the motions of the vascular system, a change occurs, sometimes on the fifth, oftener perhaps on the seventh:—from the nature of the symptoms taking place at this period, an opinion may be formed of the duration and event. Where the action of the vascular system emerges gradually, from a state of torpor or suspension, to a distinct and regular form of fever, the period of termination seldom exceeds the seventh day; and the event may, for the most part, be expected to be favourable. Where the action subsides at an early period, or where a comatose disposition supervenes, the duration seldom exceeds seven days, without another change, or a fatal termination.

The *pulse*, separately considered, affords, for the most part, some indication of the probable duration and event of fever. Where the action of the artery is energetic, regular and strong, the termination is often on the seventh day,—the crisis distinct and final. Where the motions are irregular and irritated to excess, the changes or terminations are oftener on the third or fifth; if favourable, active hæmorrhages or copious evacuations commonly

mark the event ; if fatal, local destruction, general exhaustion, or paralysis usher in death ;—a cessation of febrile motions, at a given time, without signs of crisis,—is sometimes followed, at a short interval, by a recurrence of morbid action, speedily terminating existence ; or life sometimes ceases, though a formal morbid action, may not recur, from mere inability or want of power. A pulse small, irregular and irritated, not uniform in its periods of rise and fall, furnishes cause of suspicion ; the crisis is then uncertain, and seldom final ;—changes or imperfect crisis happen in such cases, and in such cases they happen most commonly on the fifth and seventh. At these periods the pulse emerges, the tide of circulation flows freely to the surface and extremities ; and after duration, equal with that of the preceding course, a favourable crisis takes place : But instead of the gradual developement described, the pulse, at this period, sometimes loses energy, retires or withdraws from the extremities and surface of the body, becomes torpid and fluggish, or small, contracted, frequent and irregular, intermits and finally fails ;—the space of time, in which this fatal progress finishes its course, varies from one day to seven. Intermitting pulse is commonly considered among the signs of approaching death ; yet intermission of pulse, sometimes furnishes an indication of a crisis or of a favourable change going on : it must however be remarked, that, under such intermissions, the pulsations usually possess energy and force, and are seldom of extraordinary frequency.

Besides intermission, suppression, or failure of pulse is sometimes observed among the accidents of fever; and, instead of being a sign of approaching death, sometimes only expresses the mode, in which the cause of fever operates during the paroxysm; at a certain period, this suspending cause is removed, the pulse re-appears, and, after a certain interval, it is again suppressed. In such cases, the eye and countenance are usually clear, the intellect unimpaired, the respiration calm and easy. Where the pulse is feeble, small and frequent in the commencement, the course is usually tedious, and the event uncertain;—under such conditions the termination is not decided and final;—a change takes place, at a certain period, and from the character of the symptoms which mark this change, an opinion of the event may be formed. Where the pulse is sluggish, torpid, differing little from that of health, unless in defect of energy and expansion, the period of termination is uncertain, and the event doubtful; it emerges or becomes febrile, subsides or fails, with the corresponding effects of similar action in other parts of the system; a pulse oppressed in the commencement, labouring and struggling, suggesting an idea of obstruction, terminates by re-action, expansion, evacuation and crisis; or the struggle subsiding, torpor and paralysis close the business of life.

An increased and expanding action of the arterial system is usually connected with a flushed, florid and blooming countenance; the irritated and confined,

with a grim and cloudy, sometimes a confused and cloudy aspect; the fluggish, small, equal and un-energetic, with a fallow paleness, a greasy, tawney, withered hue; the oppressed, the obstructed and fluggish, with a dingy lividness, and more or less of a mahogany colour.

The state of the eye and countenance, in the same manner, as the state of the pulse, is supposed to furnish indications of the event of the disease. A dry and withered aspect, unless in the commencement or actual invasion of fever, is unfavourable; it is particularly unfavourable, at a late period, and under certain degrees of weakness it is fatal; a countenance, greasy, clammy, dirty, dusky, livid, flaccid and olive coloured, or like a fading leaf, affords an unpromising sign; a countenance, in a manner swollen, torpid and inanimate, or livid, cold and of the colour of mahogany, without increased action of the vascular system, indicates a disease of force; and, for the most part, indicates that the termination will be speedily fatal; a countenance, livid and cloudy, with increased action of the arterial system, often accompanies some affection of the chest and attends a disease, the character of which, in common language, is said to be malignant; it prognosticates evil, or gives suspicion of danger; a serene and cheerful countenance, augurs well, in general; a florid and lively tint of colour is ambiguous; in many instances, the bloom of the cheeks is beautiful,—the colour of the lips like crimson, yet there is no safety.

An eye sad, desponding, watery, confused in its motions, or with heavy and loaded vessels in the commencement, indicates danger ; at a late period, an eye with large and swollen veins, a marcid yellow tinge of colour, an inanimate, torpid aspect, indicates, for the most part, a decided fatal event ; an eye of uncommon pearly whiteness, and of a vacant idiot look is often connected with a livid colour of the countenance, and furnishes an indication of mischief ;— an eye cheerful, serene, sparkling and animated augurs well ; but the eye is sometimes clear and lively, under the approach of a fatal event,—a crisis, in such case, has in fact taken place, but death is owing to a local destruction.

The tongue is usually regarded as furnishing an opinion of the actual state of fever ; it also furnishes some indication of the future event. The tongue is, for the most part, more or less foul : a covering of a milky or mealy paste,—cold and slimy, gives suspicion of latent danger,—of untoward and irregular symptoms of the spasmodic or convulsive kind, particularly, if united with a cloudy countenance ;—a tongue large, swollen, leaden coloured, or smooth, dry, stiff and languid in its motions, is also with justice reckoned among dangerous appearances ; a tongue, with a thin, rough covering, firmly adhering, marks a tedious disease, or in the event an imperfect crisis ; a tongue, clean, smooth and without papillæ or roughness, may be reckoned among the bad signs, or, among the signs of tedious disease, and uncertain issue. As fever advances the

tongue is frequently dry, sometimes covered with a thick, brown or cream coloured covering, which separating at the edges, towards a critical period, furnishes a favourable prognostic; the tongue is often rough, black and dry, sometimes dry, black and smooth, or parched, red and glossy in the late stages,—sometimes it is covered with a footy pellicle;—all which are indications of danger, but not to the extent commonly believed; a tongue clean and smooth, without other signs of crisis, gives suspicion of something unfavourable; while a clean, smooth tongue, with nausea or vomiting, and a cessation of the usual signs of fever, is a dangerous symptom: the motions of the tongue express the state of the energy of the moving powers; torpor and languor, or excess of mobility and tremors, have their respective indications;—the tongue, in some instances, instead of being thrust out, is drawn back, and sometimes the patient, as if conscious of want of power, lays hold of it in order to draw it out; such actions are commonly connected with depraved idea;—they are unfavourable signs, but they have not a direct indication.

The state of thirst, of appetite and of taste are much connected with the appearances of the tongue; and it is upon the whole favourable, when a correspondence is observed between them. When thirst is wanting, at the same time that the tongue is foul, and parched, or dry, parched and glossy, the sign is bad, as indicating a deficient sensibility, or approach to paralysis:—excess of thirst and loss

of taste are unfavourable ;—a certain peculiar nauseous taste gives notice of the approach of an exudation of blood from the tract of the alimentary canal.

Vomiting in fevers is of various kinds ; vomiting of bilious matter,—copious and effective, is by no means an accident of danger ; vomiting, of watery matters, or such as are called pituitous, is always suspicious, more particularly where exceeding, in great proportion, the quantity which has been drank, and where occurring at uncertain intervals, apparently in consequence of the stimulus of an extraordinary accumulation, rather than the increased irritability recurring at febrile periods, or, where accompanied with a cold and dry, or a clammy and greasy skin, a small and sluggish pulse. Vomiting, of matters differing little from the drink taken in, unless in the acquisition of a ropy consistence, or the intermixture of flakes of darker coloured mucus, furnishes an indication of the approach of danger,—as vomiting of matters black and muddy, or like the grounds of coffee, for the most part, indicates the near approach of death ;—from the light shades of vomiting of this colour and description, some few recover ;—from the more intense degrees,—the dark and foety, instances of recovery, if they do exist, are rare. Nausea, nearly connected with vomiting, points to a suspicious consequence ; a disagreeable sensation at stomach,—an unavailing desire to vomit indicates danger, more certainly in many circumstances, than actual effective vomiting ;—such a condition of stomach often marks the first days of

the concentrated endemic or yellow fever of tropical climates.

The indications of event, arising from evacuations downwards, have a near correspondence with those of vomiting mentioned above. Copious and effective bilious evacuations, more especially if in some degree periodical, furnish a favourable prognostic; large, watery stools, with a cool skin and small pulse indicate danger; small, watery, ineffective evacuations have nearly the same indication with an unavailing nausea; while evacuations of any description, with tension of the hypochondria and abdomen, give cause to suspect an unfavourable issue. Stools, black and smooth as tar, depend on a similar cause with black vomiting, and prognosticate a similar event, though an event, perhaps, less certainly fatal. Large, bloody, mucous evacuations, though unfavourable are not often fatal, particularly if effective, and accompanied with gripings and pain; gradual and constant oozings of blood indicate a paralysis of the veins of the alimentary canal, —a condition from which, some, though not many, recover.

Besides the indications of event, furnished by the nature and conditions of evacuations from the alimentary canal, the functions of the urinary organs deserve notice in forming a prognostic. Increased discharge of urine is a rare occurrence in fever, diminished secretion is common; a diminished, or almost suppressed secretion is frequent in fevers of a bad character; and, as depending on torpor or im-

paired action, the cause of nausea ; and ineffective evacuations of the alimentary canal, it may be considered as indicating a similar event : the secretion of urine is sometimes in a manner suppressed,—the bladder contains no fluid, but the desire of making water is constant and distressing ; blood is sometimes discharged in considerable quantity, accompanying a crisis ; sometimes blood oozes gradually,—similar to the oozings from the surface of the intestines,—it indicates a similar condition of things.

The evacuations of the alimentary canal,—the states and degrees of vomiting and purging, furnish the means, on many occasions, of judging of the issue of fevers ;—certain sensations referred to the stomach, independent of evacuation, deserve particular attention. Anxiety is often local and relates to the stomach alone ; anguish or pain of an unusual and undefinable nature, a sensation of internal heat or burning, a sense of weight or heaviness, a tenderness of the touch, and an idea of fulness belong to this class ; they are circumstances of much importance, and never present without danger ; in such cases the abdominal muscles labour more than ordinary in the business of respiration, and such labour indicates the existence of mischief ; obscure, interrupted hiccuppings are ordinarily dangerous ; hiccuppings open, strong and without tension or fulness, in the same manner as intermitting pulse, sometimes mark a crisis.

The state of respiration is intimately connected with fever. Contagious fever is often in a manner

peripneumonic,—the respiration is hurried, performed with pain and difficulty ; this affection frequently alternates with delirium, and implies a considerable degree of danger ; an inability of expanding the chest, without local pain, is not unfrequent in the most concentrated fevers of the West Indies, and it is always a dangerous symptom ;—in such cases the lungs are found, upon dissection, like a sponge filled with blood.

Delirium is a common symptom, in the fevers of all countries, and of all descriptions, and frequently furnishes important indications of final events. Delirium, appearing only at the regular periods of fever, does not give much real cause of alarm,—constant, or unremitting, it is always serious,—violent and outrageous, in early periods, it is often followed by accidents the consequence of its violence ;—violent and outrageous in the latter stages, convulsion, apoplexy or paralysis are frequently its consequences. Delirium, in consequence of the suppression of an evacuation, as purging, vomiting, or of the cessation of a local suffering, gives just cause of alarm ; low and muttering delirium, in the early stages, is suspicious,—low and muttering delirium, in the more advanced progress, particularly if accompanied with a heavy clouded eye, a fallow, greasy and dirty aspect, a small frequent or an intermitting pulse, furnishes a most unfavourable prognostic ;—a lively delirium, with a cheerful eye and expanding pulse, particularly after a state of depression and languor, augurs well ;—delirium, or lively derange-

ment of idea, at a late period of disease, affords a prognostic of safety.

There are various conditions of sensation, or of the action of the moving fibre, which demand particular attention in an estimate of events. Tremors, startings, and the various irregular motions, which often appear in fever, are undoubtedly dangerous; but perhaps less dangerous than alarming,—they do not often appear in the most concentrated states of disease:—a certain undescribable uneasiness, a fidgetting, or constant desire of change of posture, without apparent cause, is a worse omen; it is frequent,—and, in the early stage, in some measure characteristic of the continued fever of tropical countries; it terminates often in a species of paralysis, or a loss of the sensibilities of mind and body;—a calm and philosophical resignation, an absence of pain or suffering mark, for the most part, that the event is decided;—in consequence of preceding irritation, such expression of relief with a dry skin and dusky aspect foretels, with much certainty, a fatal event.

The signs of disease, which appear on the skin or surface of the body, are numerous, and some of them afford very accurate information of future events. A skin warm and soft, possessing sensibility without unusual tenderness, is a favourable circumstance; as on the contrary, a skin, dry, thick, impervious, or like a tanned hide, indicates great danger; blisters, which rise well and discharge freely, furnish proof, that the general ac-

tion of the cause of the disease is under the control of the medical art ; blistered parts, which become dry, black and shrivelled, dusky or brown, mark a dangerous state of morbid action. Active eruptions about the mouth and face are of two kinds. Where the eruption comes forth freely it marks a formation of type ; and it may be relied upon as furnishing an indication of safety ; where the eruption does not come forth freely, where it is feeble and languid, or where it seems to croud in hardened clusters, which blacken rather than form into yellow scabs, the danger is of no small import : Large blotches, or vesicles filled with yellow serum, appearing on the skin about the period of crisis, continuing to appear in succession through a certain progress of convalescence, seem to be connected with a secret danger : this sign would not have been considered as deserving notice, had not six or seven persons in St. Domingo, in whom the appearance was observed, relapsed suddenly and died unexpectedly. Petechiæ appear frequently in fever, endemic as well as contagious ; they are ordinarily considered as indicating great danger, and a disease of great malignity ; they are not however uniformly fatal ;—they seem to originate in a loss of tone of the venous system, or obstruction to the current of circulation ; gangrene or black spots are frequent ; sometimes blackness, to great extent, has appeared on the extremities ; it has seemed, on some occasions, to mark a crisis, though it is, for the most part, an unfavourable appearance.

The above are some of the signs connected with danger or safety in fevers. They are such only as have arisen from the author's own observation; and they are not considered as absolute and positive in their respective indications. To form an accurate opinion of events, requires an estimate of various circumstances, often so different in their natures, that a great part of the science of prognostic will always depend upon the discernment of the individual observers; yet it will not be deemed improper, in this place, to have laid down a general outline.

The contagious fever, which has prevailed in the British army during the present war, did not appear to be a disease of much inherent mortality. Where the sick were scattered about in pure air, and attended with common care, the mortality did not perhaps exceed one, in one hundred; where they were crowded together in hospitals, or in ill ventilated apartments, the ravages were dreadful,—equal, on some occasions, to three out of five; the mortality was uniformly greater among old men, and men of large size, than among the young, the middle aged, and men of ordinary or small stature;—it seemed also to be greater, where the cause proceeded from a virulent and concentrated source, than from sources more diffused: hence among the attendants in filthy and crowded hospitals, the powers of life often sunk down without struggle or resistance;—under purer air, the symptoms were frequently more violent and alarming, but the mortality was in no degree equal.

The contagious fever, prevailing in the British

army, was not inherently a disease of great mortality ; the endemic fever of St. Domingo, from its own nature, committed great destruction ; of European subjects newly arrived, scarcely one in three attained established health ; in some situations, and among a certain class of subjects, the loss was greater than even this.

The marks of approaching destruction are chiefly conspicuous in the appearances of the skin and countenance, and in the sufferings of the alimentary canal ; an unavailing nausea, a rosy and flakey vomiting, internal heat, anguish, fidgetting and change of posture, a dry, fallow, olive skin, a pulse inelastic and sluggish, furnish certain prognostic of approaching mischief ; an undescribable uneasiness in the commencement, torpor and absence of suffering in the more advanced progress, foretel, more certainly than any other signs, the nature of the event.

CHAPTER IX.

Critical Days.

THE doctrine of critical days, however severely ridiculed by a certain class of writers, is in this disease, founded on established laws, and, according to the principles laid down by the author, in a treatise on the fevers of Jamaica, capable of satisfactory explanation. The tertian period, simple or compound, in

periodic fever, the septenary revolution in flow and continued fever, are capable of explaining all difficulties. In the contagious, as well as in the endemic fever under view, the laws of the critical days are regular and undeviating, though the crisis be not always perfect or complete. In the most concentrated forms, the fever sometimes terminates by distinct crisis on the third; sometimes the febrile symptoms subside at this period, but instead of recovery, marks of destruction,—local or general, discover themselves, and the fatal termination is protracted to the evening of the fourth, or morning of the fifth day; the fifth also becomes, on some occasions, the day of fatal termination, by the accession of a new paroxysm; it is likewise observed in several instances, that the symptoms of fever continue violent during the first forty-eight hours,—the third is a day of calm, or remission, on the fourth, a paroxysm recurs,—of violence, sometimes terminating existence; sometimes, from this period, the type becomes regular tertian, by which means the future crisis happens on an even day, calculating from the commencement of the indisposition, on an odd day, calculating from the distinct formation of type. In fevers of a certain degree of force, or of a certain form of action, the fifth becomes a day of crisis,—favourable and final; sometimes a day of subsiding, leading to a fatal termination, or a day of a change, at which commences a new train of action. The seventh is the most remarkable for the favourable termination of fevers,—distinct and regular in form; at this period also changes occur,—

action of a new train begins, and proceeds in its course to a given point. If these changes be considered as commencements of a new train of action, which has its defined period of continuance, the doctrine of critical days becomes established upon a regular and systematic foundation; on any other calculation, it will be found contradictory and confused.

It is not unnecessary to observe, that periods are upon the whole more regular in endemic than in contagious fever; and that crisis is consequently more distinct and more easily discerned. In contagious fever periodical revolution exists, but it is less uniform in its exterior form; the exacerbations and abatements are numerous, and apparently fluctuate; in many instances, where the motions are low and languid, the intervals of abatement are little perceptible, and the general course of the disease is tedious.

CHAPTER X.

Of the Proximate Cause,—the immediate or direct Action of the Cause of Fever.

THE proximate cause of fever, a subject, on which volumes have been written, is yet unexplained. A multitude of unfounded fancies have been offered to the world as theories; or partial and secondary actions have been considered as primary and fundamental modes of derangement, explaining the secret

of the operation. It is thus, that the cause of fever has been thought to consist in certain changed conditions of fluids, not demonstrated, nor capable of being demonstrated to the senses; or in certain deviations from ordinary and healthy actions, obvious indeed to the senses, but partial in the system, or secondary in connexion. The first class is now abandoned; the second furnishes the explanations still offered concerning the operation of the cause of fever. Among these increase of heat, increased action of the heart and arteries, spasm or constriction of extreme vessels, debility or impaired energy of the moving powers have borne conspicuous parts. Increase of heat, conjoined often with increased or rather disturbed action of the vascular system, is a common, but not a constant indication of the existence of fever; spasm, constriction, or an altered condition and an altered capacity of capillaries, is obvious in the commencement and during the continuance of disease; in the same manner debility, want of power, deficient alacrity in motion, make early and prominent features: these conditions do exist, but the precise mode by which they are produced is not perhaps within the reach of comprehension, as the chain of operation, by which they become essential to fever, is not easily understood.

The human body, consisting of parts irritable and less irritable, moveable and less moveable, is so formed as to be called into action, in its moveable parts, by the application of certain powers; to this action

so excited, a state of rest, or cessation from action necessarily succeeds ; and in this alternate action and cessation from action, consist the life and health of the individual. Air, composed of a certain proportion of parts, seems to be the cause which supports, at least which principally regulates the action of the moving fibre, so necessary to the continuance of life ; —when the conditions of the air are altered, the effects are visible ; under the pure air of cool and hilly countries, the action of the fibre is energetic, and motion is performed with pleasure and alacrity ; under hot and impure air, the action of the fibre is languid, and motion is performed with pain and unwillingness ; excess on either part is unfriendly to life ; in vital air an animal dies from exhaustion,—in consequence of excessive excitement ; in mephitic air, life stagnates,—perhaps from want of stimulation. But, as the life of an animal has been observed to consist in action and cessation from action, so health is observed to consist in this action and rest being uniform, regular and alternate. Causes which disturb this regular process,—a process, under which seems to be generated the matter of life, produce a state of things denominated disease :—among these are principally ranked the causes of fever.

The intimate nature of the remote cause of fever is obscure,—not less obscure, perhaps, than the nature of the matter of electricity. It is subtle, but still it is a matter capable of concentration and of diffusion. Its force and concentration are measured by effects, but nothing is known of modification or

form. It enters the human body, but the channels by which it enters are not known with certainty; it probably undergoes changes, between the period of entrance and the period of obvious action, but they are not perceived distinctly. Its effects, upon the living system, are visible; but, in its own substance, it has not yet been submitted to the human eye; the causes, by which it is concentrated, by which it is diffused and even dispersed, are numerous and obvious; and the laws, which regulate its motions, may often be traced. It seems to accumulate within the system by a regular, but unknown process; in a certain state of accumulation, it seems to explode, in a manner similar to the explosions of electricity. An accurate idea of the changes which it undergoes, from the period of entering the system, till action becomes obvious, cannot well be formed; it cannot even be known precisely, whether the open and declared action of the cause be owing to a change produced upon the matter of the cause itself, by a regular process; or to an approximation of the system to act, at certain periods, in correspondence with causes disposed to disturb the ordinary health. The process is here obscure; but this fact is certain, that at particular periods more than at others, an aptitude of collision arises, or that a form of febrile action manifests itself more frequently about the fourteenth day, after communication with an infected source, than at any other. It is hence probable, that revolutions in the frame, unknown to the most careful observers, have an in-

fluence in determining the collision of febrile action at certain times more than at others; and the opinion gains confirmation, from the circumstance, that these events take place chiefly at septenary periods,—at a seventh, fourteenth, twenty-first, &c. from the time of exposure to the source of infection. This infers a longer space between exposure to the cause and consequent action of the cause than is usually allowed by writers, but the author speaks from his own observations,—made upon numerous bodies of men,—upon healthy men placed as attendants in infected hospitals, and upon healthy soldiers sent to the concentrated sources of endemic fever. Among such, fever scarcely ever appeared before the seventh day, commonly not before the fourteenth; and, in numerous instances, not till the expiration of six weeks or even two months, though the cause of disease, during this time, was ordinarily in great activity.

A consideration of the causes which retard, or prevent the operation of the febrile cause, as well as of those which facilitate, accelerate and call it prematurely into action, may serve to throw some light upon this subject. The former class themselves, chiefly under causes which diminish or prevent an accumulation of irritability of habit; among which may be ranked an abstemious and vegetable diet, copious dilution of watery beverage, evacuations, natural or artificial, active and animating exercises,—continued to fatigue, and often repeated, causes which make strong impressions on the mind, as enterprising, severe

and dangerous military services, journeys and frequent changes of place, the interesting and impressive occurrences during sieges, even the anxious suspense or depression of captivity, to which may be added habitual or sottiſh intemperance. The cauſes which accelerate, or call into action, are of courſe the oppoſite of the preceeding; viz. full and pampered living, irregularities and occaſional debauch, torpor and indolence of mind, inactivity of body; and, above all, reſt and eaſe after fatigues and exertions, indulgence in eating and drinking, after a courſe of abſtinence and a life of ſobriety;—upon a ſimilar principle, a change of circumſtances frequently brings forth into action the cauſe of diſeaſe, lurking in the habit. In this manner, men in perfect health, embarked at the Mole St. Nicholas, in the months of June and July 1796, ſickened in ſuch numbers before arrival at Port-au-Prince,—a paſſage of four or five days, as if they had been ſtruck by a blaſt of peſtilence; men likewiſe, removed from known ſources of diſeaſe to pure air, ſuffered proportionably during the firſt eight or ten days after removal, more frequent attacks of fever than thoſe who remained at the ſource of infection,—a fact proved on numerous occaſions, by the removal of bodies of men from the plains to the mountains, and by the occaſional change of cantonments. Thus, cauſes, which affect the exiſting balances of the ſyſtem, ſeem to ſtrike upon a ſpring, which ſuddenly unfolds the febrile operation.

It has been ſaid above, that the fundamental ope-

ration of life consists in the alternate motion and rest of the organic fibre ; causes which disturb and interrupt this necessary process occasion disease,—and finally death. The first operation of the cause of fever evidently disturbs the alternate and regular tenor of the action and rest of the irritable or moving parts of the body ; but the mode, by which it produces this effect, is a secret long sought after, and not yet discovered. There are writers who pretend that the cause of fever is a directly stimulating power ; others,—and the more numerous class, pretend that it is directly sedative. If stimulating,—as it must be supposed to be of a nature similar to other stimulating powers, the effects must be necessarily expected to appear on the application of the cause, and to cease when that cause is removed ; but this is not the case ; persons approach the most concentrated sources of disease,—disagreeably affected perhaps by noisome and offensive exhalations, but not immediately affected by an attack of formal fever ; a time intervenes, different on different occasions, but generally such as proves that a febrile action is not the effect of an immediate impression ; nor when this new or changed action does take place is it uniformly increased ; on the contrary, it is often diminished in energy and force in the commencement,—recovering its natural, or even an increased degree of energy, as the force of the cause diminishes. On the other hand, if the cause of fever be a power directly sedative, the operations of life must be supposed to become languid in an uniform tenor, to

stagnate and finally to cease ; yet the signs of action, —in parts or in the general system, as they are frequently irritated in an unusual degree, so they are sometimes excited to an uncommon exertion. This is not explicable on the supposition of a sedative operation ; nor on this supposition can the various changes of action, which are often observed to take place in the course of the disease, be easily understood. But though it be not difficult to say what the primary operation of the cause of fever is not,—to say precisely what it is exceeds the bounds of our knowledge. The signs of febrile action are of great variety ; obvious appearances are often contradictory, yet there is little doubt but that the primary mode is one, the varieties depending upon force and modification of cause, or accident of subject.

The human body is formed to be acted upon by external causes : life is supported by the application of appropriate ones—it is endangered by the opposite : the product of faulty combinations of matters, —animal and vegetable, and the secretions from deranged action of the living system, seem to possess an irritating quality,—a quality, in consequence of which, when in a certain state, or when at a certain point of fitness, a train of unnatural motions are excited, disturbing, interrupting, or in a manner suspending the alternate and uniform action and rest of the irritable and moving parts of the body, but not disturbing the action of every part, or of every series of parts, in the same proportion. When the chief force of the cause is exerted upon parts of locomo-

tion, tremors, startings and various agitations prevail; when upon the heart and arteries, the motions become irritated, and the current of circulation is disturbed; when upon the veins and colourless vessels, parts less capable of expressing action, the motions seem torpid and languid, the circulation is slow, and the current finally stagnates; when locally on organs or parts of the body, the appearances are more complex. Sore legs, inflamed eyes, diarrhoea and peripneumony are frequent forms of the local action of fever. When these are repressed, by a new action excited in the part, general fever, or other local affections frequently arise. The cause which directs this action of fever to organs or series of parts deserves notice; it seems to be no other than the condition of irritability in parts,—in other words, than the diminished power of resisting causes which disturb the ordinary and healthy operations of the system,—in many cases accidental, or arising from customs and habit. In this manner, and in consequence of this accumulated irritability, from preceding habits of action, the locomotive powers, the heart and arteries are principally acted upon by the cause of fever, among the labouring and active classes of men, the veins and colourless vessels, among the sedentary and indolent, the alimentary canal and its connections, among the pampered and luxurious. In the first case, action appears to be increased, and the fever in consequence is named inflammatory; in the second, there is little active effort, the usual train of move-

ment is disturbed or impeded, and the fever is denominated flow, nervous or putrid ; in the third, the whole parts of the organ are involved, and the mode of action is more complex, but the form of fever, resulting from it, is usually denominated bilious.

Under those circumstances, causes, which alter this figure of locally diseased action, give rise to commotion in the general system, or in a series of parts, till such time as another diseased action is produced in a remote part, or upon an excretory organ. The changes effected on this action, by accident or artificial means, are often rapid ; and commonly effected through channels of communication not very obvious to the senses : The manner of the whole is indeed obscure ; and it is not pretended that the operation is explained, by what is here said. It however appears, from the most general view of things, that the febrile cause is a cause of irritation, disturbing, but not increasing in a natural manner, the action of the moving fibre,—on the contrary interrupting, impeding, and as it were suspending the operation essential to health and life ; by which means, the expression of its effects principally consists in debility and impaired energy.

CHAPTER XI.

Cure of Fever.

MEDICAL science has in general advanced ; some parts of it have made considerable progress, but the

cure of fever appears to be stationary, if not retrograde. Books have been written upon the subject without number ; infallible methods fill the pages of authors, and important discoveries are communicated in every new publication ; yet men die as in the days of ignorance. The cure of fever, it must be acknowledged, is difficult, and capable of little perfection, in the state of progress at which the disease is usually submitted to the care of physicians. But though difficult, it might be presumed, that something could not well fail to be discovered, from the unwearied research of writers : the subject has filled volumes, yet it does not appear that a general principle is attained ; the result consequently is a mass of contradictions,—a collection of opinions—not always candidly and ingenuously represented. The author of this outline has felt the inconvenience, and now ventures to suggest some hints which he hopes may in time lead to a remedy : the laws of health are uniform and regular,—even disease obeys a rule ; if the precise form of diseased action could be ascertained, the method of cure might be laid down upon a sure foundation ; this unfortunately is not the case, but even the knowledge of a principle, by which this action may be inverted is of value. It implies, it must be confessed, an experiment apparently at random, but, under certain conditions, an experiment of safety.

According to the manner, in which the author has long viewed this subject, the plan of cure divides itself into two parts ; viz. into the cure of a fever

forming,—and into the cure of a fever formed. In the first, art is capable of doing every thing; and it consequently ought not to leave any thing to nature; in the second, a form of things has taken place, or a chain of operation is established, which can seldom be broken forcibly, consistent with safety to life, art can do little; and the little which can be done requires caution and judgment; for to act and not to do harm, under such a condition of things, is not ordinarily a matter of indifference.

The cause of fever, whatever it may be, or whatever may be the direct mode of its operation, visibly and indisputably changes natural and healthy action,—generally or locally, into action diseased and unnatural. To invert this operation,—to originate a new train of motions, analogous to those of health, is the fundamental principle of cure: And this much is certain, that if the object be undertaken at the proper period, the plan judiciously laid and followed up with vigour, the end seldom fails of being attained. Decided practices, of whatever description, succeed; and the complete and perfect recovery of health is often the effect of directly opposite means; on the contrary, if the early period of disease be past, so that the organization of parts is injured, or deeply impressed with a figure of unnatural action, the conduct of the cure is a matter of great nicety, and requires great caution; the indications fluctuate and vary according to circumstances;—symptoms, or modes of action, which threaten danger to life, will then be watched and

warded off, but termination, or decided cure must be left to the periods of change ; for though crisis, by judicious exertion sometimes actually is, and often is capable of being rendered more complete than it otherwise would be, it is doubtful to what extent it can be accelerated. These periods of change are important to the physician ; and in fever, completely formed or advanced in course, must principally regulate his conduct.

SECT. I.

Cure of Contagious Fever.

THE method of cure employed by the author in this disease, though probably not the best, was in general sufficient to conduct matters to a fortunate issue, if adopted in the early stage, and executed with vigour and perseverance. Where the patient was seen in the course of the first day, the views were directed to effect a change of existing circumstances ; and to excite, by suitable means, a new train of action. In the accomplishment of this object, a vomit of emetic tartar, so managed as to prove severe in operation, was singularly successful. Evacuations by stool were frequently the consequence of this practice ; while sweat, or a free perspiration often resulted from warm bathing, or from fomenting the extremities and trunk of the body, with flannels wrung out of hot water. When the tide of circulation was, by these means, turned to the surface, James's powder, in repeated doses,

sometimes with, and sometimes without any addition of calomel, warm diluent and aromatic drinks, blisters to the nape of the neck, back or temples were employed to support this state of things,—and generally with complete effect. If the above process was adopted under the forming state of fever, or within twelve hours from the commencement, and followed up in all its parts, the progress was either cut short abruptly, or the threatened violence so much mitigated, that accidents seldom occurred. The state of diseased action being changed by the management here mentioned, a continuance of similar management becomes necessary during a certain length of time, to prevent a recurrence of the evil habit. A succession of blisters will often be proper; the drinks are required to be diffusible and gently stimulating; the air, cool and pure, to be admitted freely; the body to be washed, or bathed frequently in warm water, and afterwards washed completely in water from the sea or the river; the linen and bedding to be changed often; and travelling in boats, carts or carriages to be employed on every possible occasion.—This last is of essential benefit; but it appears oftener by accident than design among the means of the healing art.—Bark, will also be useful in many cases, in maintaining the restored healthy action.

If the disease be formed,—the first days of it actually past, the hopes of cutting short its progress, by the above, or any other process known to the

author, are uncertain, and the attempt is not, perhaps, altogether safe. The chief business then consists, in obviating fatal tendencies as they arise, leaving the time of the termination to the periodical laws of the habit. The views in such case are various, and change frequently in the course of the disease. But though the indications be often fluctuating and uncertain, this general one prevails,—to encourage and promote a determination to the surface and extremities of the body. To accomplish this object, no general plan or remedy answers better than doses of James's powder, often repeated, sometimes with additions of camphire, opium and even calomel; warm fomentations to the extremities, the admission of pure air, the frequent use of clean linen, frequent ablution with water, from the sea, with water, to which vinegar or spirits are added, rendered more effectual by exercise or gestation, compose the means. But if important organs,—the brain, the liver or lungs suffer, from the irregular action of the cause of the disease, more particularly than other parts, the local application of blisters, sometimes preceded by bleeding, and aided by bathing or fomentations, is chiefly trusted to: blistering, if well conducted, affords more benefit in such cases than any other remedy, but various accessories are necessary to ensure the operation.—If marks of congestion appear in the head or epigastric region, calomel with James's powder is a remedy of great value.

In those forms of fever, where the motions of the

vascular system are highly excited, where the action is actually increased,—general and copious fluid perspiration,—the destruction or injury of an organ, exhausted, repressed, weakened or suspended action occur, in a defined,—and generally at a short period. In the first case, intermission or cure is effected; in the second, the general fever is converted into a local disease, the event of which is precarious; in the third, the energies are generally impaired, and the most vigorous exertions are required to save life. It is a matter of the first importance, in the cure of fever, to inquire minutely into the state and condition of things; for on a knowledge of this depends the success of our undertakings. If from a state of activity and excitement, torpor and suspension of action supervene suddenly, evacuations,—bleeding, vomiting, purging and blistering are indicated;—in such cases, the means, whatever they are, require to be prosecuted with a determined boldness; on the contrary, if after a state of high excitement, the increased action gradually subsides, the irritability or vital energy seems to be exhausted rather than suspended, and more caution and management are requisite in directing the means of relief; for instead of the decided, and seemingly violent measures, which are often proper in the one case, a gradual supply of nourishment, light and gently stimulating, frequent change of linen and bedding, the admission of pure air, washing the body with cold water, and, above all, gestation and travelling are essential in the other. Wine, brandy and opium

stimulate the system to increased action; they are numbered among the artificial means of supporting existence, but the effects are fleeting, and the management is a matter of great nicety. As soon as a fever is completely formed, a train of diseased action is established in the habit, which can seldom be broken abruptly with safety to life. Under such conditions, the above powers, applied in excess, stimulate to increased,—often to inordinate action, an action, which sometimes subsides, before an object be attained, by neglect in supplying the material of stimulation, or which sometimes destroys the irritable quality of the fibre, by excessive and continued exertion. In either case no benefit arises from stimulating; destruction, on the contrary is accelerated by the misapplication of means. In regulating the application of stimulating powers, under the formed, or in the advanced stages of fever, discernment and caution are requisite: the first impression must be narrowly observed, the impression carefully supported, but not unduly excited; the final event will then, in a great measure, depend on the changes of periodical movement. The author, thinks it proper to observe, that, in many instances, he has carried the plan of stimulating to a great length; he has reason to believe, that by this means a patient was sometimes rescued from death; but he must also acknowledge, that the mark has sometimes been exceeded; action has been excited at a period, or under circumstances of disease, where harm might be done, and when no object could be gained by

excitement;—the processes of nature were thus disturbed, and the artificial cure became abortive, from an attempt ill timed, or badly conducted. The increase of action, excited by the above mentioned artificial means,—wine, brandy and opium, is not barely transitory, it is followed by increase of languor, in proportion to the degree of the preceding excitement; the energy and increase of force which follow the admission of free air, the washing of the body with cold water, or travelling in boats, carts or carriages are permanent and progressive. The contrast of these different modes of operation is often brought under view, in times of military service; and the author has had numerous opportunities of observing the effects, not only in individual instances, but among collective bodies of men. In hospitals, wine, brandy and opium excited action to a certain extent; and life was supported, under a stupid intoxication, for a length of time, but without progress of recovery; under the actual operation of washing with cold water, and still more, under the act of travelling a few miles in a cart or carriage, in the open air, men, who could only be said to exist, have immediately become cheerful and animated, and walked briskly on limbs, that a short time before they had not the power of moving. Changes, so considerable, will scarcely be credited by those who have not seen them; but those who have seen them are numerous, and though the condition of the fact might often escape notice, the existence of the thing cannot but be known.

It was noticed above, that fever may generally be cut short, or changed to simple form, if attacked with vigour in the commencement; the view may then be prosecuted with boldness, for at that period, life is seldom ticklish; if fever be formed, or diseased action be completely established, the effect of this vigorous plan is uncertain, and the attempt is not without risk;—the cure then, in a great measure, hinges on a periodical change in the habit. If fever be advanced in progress,—the subject emaciated and exhausted, suffering pain, or labouring under an established evacuation, as dysentery or diarrhoea, decided measures are dangerous, as the sudden changes effected by them are often fatal. The rashness of the author, on some occasions, gives him authority to speak to others. The extreme filth and dirtiness of soldiers brought to hospitals in the late periods of fever, in states of great emaciation, or worn out with fever in dysenteric form, prompt the use of the warm bath. The impression will not be soon obliterated, that four soldiers of the above description were put into the warm bath, in which they remained from ten to fifteen minutes;—taken out they were rubbed dry and laid in a clean blanket; they expressed a sensation of comfort, as if in heaven,—a release from all pain, and a relish for some food; they fell asleep,—and two of them never awoke. It is proper to be remarked, that the above men were in a state of the most extreme emaciation from dysenteric fever, and that their condition afforded no prospect of recovery; but the fatal event was certainly accelerat-

ed by the change consequent to the warm bathing,—perhaps by removing the stimulus of pain, necessary in such cases to the support of life. To have washed the body with a sponge, to have rubbed it with flannel, and gently moved it through pure air, with frequent change of clothing, bouillon and moderately stimulating diet, would probably have protracted existence for some days ;—warm bathing cut it short prematurely.

SECT. II.

Cure of Endemic Fever.

THIS, though the most important, is the least satisfactory part of the subject. The concentrated endemic or yellow fever has been uniformly fatal to Europeans since the discovery of the West Indies ; and it will continue to be fatal till the basis of colonial arrangement be changed ; it has been constantly fatal to troops in times of war, and during the present war, it has been regarded with the horrors of a pestilence. The opinions of medical men are divided on its nature and method of cure : Individuals boast success ; but the public has not as yet felt the benefit of a discovery. In the early part of the century the anti-phlogistic practice of Sydenham, or the diluting practice of Boerhaave prevailed in the West Indies, as well as in Europe : It still prevails among the French, but it, in some measure, yielded, among the English, upwards of

thirty years since, to a plan of evacuation, suggested by ideas of abounding bile : this has also given way to the fashion of the times,—the application of stimulating powers. A fever appeared at Philadelphia in the year 1793,—of uncommon violence : evacuations by the lancet, and evacuations by the bowels were combined in a bold manner, and carried to great length in execution. The fever of Grenada, was also about the same time, attacked by the powers of mercury, on the idea of salivation. The opinions of men fluctuate in these uncertainties ; and the intemperate zeal of parties, which still prevails in America and the West Indies, it is to be feared, will not much facilitate the progress of science and truth. The author of this outline is of no party ;—he gives to the public, the result of his own observations only.

The cure of the endemic fever of the West Indies consists of two parts,—the cure of a forming, and the cure of a formed disease. The first requires a speedy, bold and decided execution ; it is attempted upon the plan of changing forcibly the existing state of things ; the other requires caution and management,—means, under different conditions, seemingly opposite, and not referable to one general principle.

In the commencement of fever, whether the disease declares itself by the symptoms of a paroxysm violent and in form, or only by headach and general uneasiness, the author has been in the habit, particularly in times of sickness, and in subjects lately arrived from Europe, to order blood to be drawn from

the arm to the amount of twenty ounces or upwards. This, followed by a dose of physic,—salts and emetic tartar, or calomel and James's powder, is frequently sufficient to remove the complaint; but as it is improper to leave any thing to the chance of events, where certainty can be attained, such additional means ought always to be employed, as leave little doubt of ensuring the accomplishment of the object. The object is here a complete change of the existing state of things; and this will be effected with more certainty, if the blood be drawn from a large orifice, and permitted to flow till the pains remit, and the tide of the circulation be disturbed in its course; a quantity less than twenty ounces will seldom answer the end,—less than thirty ounces will not answer it in many cases; bathing or fomenting the lower extremities in warm water, during the operation, may be employed to contribute its aid; pouring cold water upon the head and upper parts of the body is also particularly useful at this time in exciting a new train of movement; a blister of large size on the neck and between the shoulders, gives additional security to the operation, and calomel with James's powder is, upon the whole, the best form of remedy for promoting the necessary evacuations, by the bowels and skin, essential to health; copious dilution, with drinks of tea or aromatic herbs is of some importance. If these means be employed under the proper circumstances,—viz. within the first six hours from the attack, and prosecuted with vigour and judgment, the disease will almost always

be cut short in its course, or changed to the form of an intermittent:—so far the physician proceeds upon a principle,—the mode of cure is one in all forms; at later periods the views are dark, uncertain, and fluctuate according to relative circumstances.

When the fever has passed into the second day, the figure of action is in some measure established; so that the view of cutting short the progress abruptly, or even of effecting a change to an intermitting or remitting form is less certain: the plan of cure then requires a modification, both according to the period and the form of the diseased action which has taken place.

In the first form, distinguished by excitement of the vascular system, the management of evacuation is a matter of much nicety. If the pain of the head be severe, with sensations of fulness and tension; the pulsation of the carotid and temporal arteries violent, with eyes red and turgid, the pulse tense, confined, labouring, and as it were obstructed; the heat ardent and concentrated, with burning sensations and anguish at stomach, the foundations of mischief are laid, and destruction, unless speedily averted, may be expected to be the consequence. The success of changing the state of things is now uncertain; but the danger is such, as to demand a bold and vigorous attempt. In the morning of the second day, or before the exacerbation of that day has reached its highest point, the accomplishment of the object is of fair promise; after that period, it will seldom be attempted to good purpose. It is an useful prelimi-

nary to begin with cutting off the hair, and shaving the head, to place the feet in warm water, and to allow blood to flow from the arm,—not as measured by ounces, but till the headach be removed, and the existing state of the circulation actually changed; cold water, or rather water artificially cooled, by the solution of salts, being then poured upon the head, and upper parts of the body, the head washed, perhaps, with Cayenne vinegar, and a large blister applied to the back part of the neck and between the shoulders, the patient laid in bed, supplied plentifully with drink, cool, refreshing, and gently stimulating, or warm, aromatic and diffusible, there is good reason to expect the commencement of a new and favourable train of movement; the operation of James's powder, to which calomel, in moderate doses, may often be added with advantage, will be found useful in promoting this view, and in supporting it when begun. If the change alluded to takes place, and advances progressively, intermission, at least remission may be expected in a short time; but if the end be not attained, or there appear no decided indications of it in less than three hours, the bleeding must be repeated, with new affusions of cold water, and the adoption of the bold measure of moving the patient in a cart, carriage, or spring-waggon, through the pure air, sheltered, by boughs of trees, in the best manner possible, from the direct rays of the sun. This is a practice, which has seldom been employed by professional authority; but it is a practice, when tried by accident, far exceeding all others in its be-

nefits. There are various means, which irritate and stimulate; but the affusion of cold water, and gestation in pure air are the only, or the principal ones, which give permanent energy to the healthy action of the human system: frictions, and, perhaps in preference to others, frictions with mercurial ointment, to the epigastric regions particularly, may be employed to contribute their aid. If some local injury hath not already taken place, our views, if the means be well executed, will seldom be disappointed.

It is probable, the counsel here given will be deemed by many the counsel of a rash man,—a man regardless of the life of others; the truth is, a regard,—and an ardent regard for human life, dictates the advice; the means recommended, under the circumstances described, are not dangerous; the conscience of the author does not accuse him of acting rashly; it has often reproached him with the opposite,—with suffering men to perish, through half measures and want of decision.

So far we act upon principle, but if the disease be advanced to the evening of the second, or morning of the third day, the original object is no longer in view: signs then arise, which indicate an approaching remission, or which give reason to suspect that the foundations of injury or destruction are laid in organs, or in a series of parts;—to mark those conditions precisely in description is difficult, but the end is important. In the first place, if heat be equally diffused through the different parts of the body, and partake of the nature of warmth, rather than of that

ardent and caustic pungency, which communicates a disagreeable sensation to the hand; if the skin seem thin and sensible, the pulse considerably more frequent than natural, energetic in its contraction, free, or not obstructed, regular in time and force, advancing progressively to an acme; in other words, if what is termed re-action of the arterial system be completely established, with a diminution of anguish and internal heat, there is reason to expect that a remission will take place; in which case, the decided steps recommended above are not only unnecessary, but dangerous. If, on the other hand, heat be unequal,—moderate on the extremities and surface lightly touched,—ardent and caustic, about the præcordia, or on deep pressure; the skin dry, thick and of diminished sensibility; the sensations of anguish and internal heat distressing, with nausea and glutinous vomitings; the pulse irregular in time and force, communicating an idea of obstruction or obstacle, swelling languidly, falling or contracting without energy, the foundations of injury in organs, most commonly in the organs of the viscera of the abdomen are laid, or the exhaustion and loss of power of a series of parts approaches, in which case the plan of evacuation recommended above has no place. The radical cure of fever consists in changing diseased motions,—in exciting re-action, and in encouraging determination to the surface of the body; but the powers of medicine cannot, at this period, undertake a cure on that principle, with safety or effect. Congestions are local, and evacuations, from the seat of

these congestions, afford the best, perhaps the only hopes of relief. The viscera of the abdomen, the biliary and mesenteric systems, are, in a manner overcharged,—their functions suffocated and oppressed. It appears on the inspection of dead bodies, that, under a certain condition of things, the cure can only be attempted by copious and effective evacuation from the alimentary canal.—Calomel has been supposed to answer this purpose best; and it is evident, that the purgative ought to be small in bulk and powerful in effect:—the cathartic extract is probably a good addition. But though the main indication consists in brisk and active purging, by remedies that possess, or have added to them a stimulating ingredient; frictions to the abdomen, particularly frictions of mercurial ointment, ought not to be neglected;—they are of service, perhaps by the action of simple friction, as well as by the qualities of mercury, stimulating to exertion the torpid vessels of the surface; washing with cold water is always refreshing, and, after the sensibility of the skin is in some measure restored, it is of considerable benefit; but the great and important remedy, and the only one perhaps, by which the effects of purgatives can be rendered extensive, is agitation in pure air,—even rapid motion in a carriage or spring-waggon:—The benefits of accidental trial decree it to be a remedy of common resort.

The cure of fever, of whatever form, proceeds upon one principle in the forming state of the disease; in the advanced progress relative circumstances

are wholly, or chiefly to be regarded. In the first form of fever, the action of the vascular system is always irritated,—often preternaturally increased; and, in consequence of this increased action, crisis is frequently effected by sweat or some other evacuation; in the second form, this rarely occurs; and as effective salutary evacuations seldom then take place, the cure becomes necessarily a work of art. In the second, and even third day of this second form, the symptoms are usually so moderate in appearance, as not to occasion alarm; yet destruction is proceeding with a steady and even rapid pace. In this period, when the skin is dry, dusky, and as it were withered, the lips dry and the tongue little changed from its natural aspect, the sensations of fidgeting and uneasiness undescribable, the pulse sluggish and without energy of contraction,—little disordered in time, but minutely observed, giving an impression of obstacle or confinement, secretions impaired, the excretions of urine and stool suspended, blood may be drawn with safety; and it ought to be drawn in quantity, till a change of the existing state of circulation be effected. The aid of the means mentioned above, bathing, fomenting or washing with warm and cold water alternately, blisters to the neck and back, frictions, doses of James's powder, with or without calomel occasionally repeated, copious dilution, with grateful and gently stimulating drinks, and, in a more especial manner, travelling in a carriage or spring-waggon, exposed to the air, is required to begin the salutary move-

ment, and to support it when begun. But if a favourable change,—a developement of the vascular system do not manifest itself, in three hours at farthest after the above measures have been employed, the repetition of the bleeding, bathing and travelling is indispensable ;—an object has been placed in view, and till the accomplishment of the object be attained, there can be no remission of endeavour. Common opinion will perhaps fly with horror from the practice here recommended, in what is vulgarly called the sinking state of fever ; but experience has proved it to be safe,—safer than when fever runs high : re-action is then begun, and and where re-action is begun and established evacuation is often dangerous, for it interrupts a course of things, pointing to a salutary object.

But if the fever be advanced to the evening of the third, or beginning of the fourth day ;—in short to that period, earlier or later, at which the fibre loses irritability or active motion, known by defect of animation of countenance, by veins in the eye large and red,—as if injected, by a dusky and olive colour, a skin dry, thick, and like a dead hide, a pulse without energy and force, little, disturbed in time, nausea, or pituitous and flaky vomitings, offensive taste in the mouth,—the forerunner of oozeings of blood from the alimentary canal, the danger is extreme ; yet in such cases, the powers of life have sometimes extricated themselves ; and the following means appear to have been the best helps ; viz. bleeding to a certain extent, purging by brisk

and stimulating purgatives,—calomel, burnt alum, and washing the body frequently, with cold salt water, with vinegar, with brandy or with spirits of wine and camphire, frictions with mercurial ointment, and above all, the act of moving in a carriage, through pure air.—The author is aware that the mention of bleeding in the above condition of things will revolt the greater number of medical practitioners ; but experience has proved that bleeding may be performed, under such circumstances without destroying life ; and appearances, after death, seem to suggest that it is an appropriate remedy. The venous system is turgid in an extraordinary degree, and common sense concludes, that the first step, towards removing the congestion, is by direct evacuation.

Conditions sometimes arise, under the second form of fever, which require attention in practice. Instead of torpor and sluggish motion, dry and withered skin, as mentioned above, it is found that spasms in different parts of the body,—most frequently in the bowels, with obstinate costiveness or irregular purging, tremors, startings and other signs of increased mobility, on some occasions, constitute the leading feature of the disease. If the general sensibility be not impaired, bathings and opiates mitigate the pains ; the local application of blisters frequently removes them ; the fever then assumes a distinct and regular form, and requires a mode of treatment corresponding to its form. If the principal symptom be dysenteric, rhubarb with

calomel is a good purgative ; and frequent repetitions of it are necessary : opiates and astringents are by no means safe ; suppression of evacuation is sometimes the consequence, and fatal coma the consequence of the suppression. If remission takes place, but if the remission be suspected to be deceitful, by a certain glistening of the eye, difficult to be described, by a countenance serene, but with a tint of colour of vermilion bloom, lips and gums of a similar description, a clean tongue, a moist and soft skin with a swelling, but unenergetic pulse, accompanied sometimes with a smell like that of fresh fish, the most probable means of benefit reside in frequent ablutions with cold water, in travelling in carriages or in spring-waggon ; and in free evacuations, procured, in the most effectual manner, by calomel or other active purgative.

The method of cure, in the third form of fever, is subject to less change than in the others ; the principle continues nearly one throughout : the blood seems to stagnate, or to move slowly in the veins ; and the first view is evidently directed to accelerate its motion. This is attempted to be accomplished, and perhaps only can be accomplished, by bleeding. The blood in this form of disease is often of a colour unusually dark, and flows slowly,—sometimes flows only from pressure along the vein, notwithstanding that the orifice may be a large one. After it has flowed for some time in this sluggish manner, the motion becomes accelerated, and the colour often changes to a florid red. The quantity of blood to

be taken away, in the early part of this disease, is not so much to be measured by ounces as by effects, —by a complete relief from the load of oppression: thirty ounces sometimes will not accomplish this; and the author knows, that a greater quantity may be taken away at one time, without destroying, or even endangering life; yet in certain conditions, where the balance of things was so ticklish, that there was a chance of great changes being followed by untoward accident, he preferred small bleedings every hour or every two hours, till the evidence of reaction or increased motion was established. When motion is restored, and the functions resume their ordinary and healthy course, the affusion of cold water upon the body, two or three different times in the day, exposure to the pure air, and moving about in a carriage or spring-waggon, are of the most conspicuous use in supporting a continuance of these renewed operations.

Such are the principles, which directed the cure of the different forms of the continued fevers of tropical countries: the cure of fevers of type next deserves consideration:

Fevers of type may be divided into regular and mild, insidious and malignant. These forms appear to be much under the influence of climate, constitution of season, season of the year and situation of place. In spring, summer and the earlier part of autumn, under rains or frequent showers, in an open, champaign and cultivated country, or on the first ridge of mountain, the form is usually regular, and

the symptoms are ordinarily mild ; in the latter part of October, in the month of November, and sometimes in December, or in the neighbourhood of offensive swamps and foul ravines, at most seasons, the form is often insidious and malignant.

In the cure of the mild and regular intermittent there is not much room for remark. The progress of the disease may generally be cut short by Peruvian bark ; but a certain condition of things is requisite to the successful operation of that remedy. This condition appears to consist in laxity or mobility of fibre, unconnected with local congestion, a condition attained with considerable certainty by the evacuations of bleeding, vomiting, by means of emetic tartar, purging, by catharics of brisk and extensive operation ; and, in many cases, by the local application of blisters. During the late American war, even in the southern and more unhealthy provinces of that extensive country, Peruvian bark, properly administered, seldom failed of cutting short the course of the disease ; the same effect was not obtained with certainty, from the same means in the remitting fever of Jamaica ; but the exhibition of bark, notwithstanding was even there, generally attended with benefit : in the Island of St. Domingo on the contrary, its benefits were very uncertain, as the circumstances, which ensure its success, were not perhaps in general sufficiently regarded : the solution of arsenic was infinitely more effectual ; and nothing occurred to furnish suspicion that the use of arsenic is unsafe.

It was remarked above, that in certain seasons, in certain situations and in certain periods of the year, the character of the endemic is insidious and malignant. The disease, under those circumstances, often begins regularly as a single tertian; and two, or sometimes three revolutions pass over without giving alarm to ordinary observers; but at one or other of the above periods, a paroxysm commences with coma, stupor and suspension of functions, threatening immediate destruction; or, as often happens the energy of action becomes less and less distinct in every succeeding paroxysm, the skin becomes dry, or damp and greasy, the powers of life are overwhelmed, the pulse contracts itself or becomes apparently weaker and weaker, under the use of bark, wine and the strongest stimulants of the *materia medica*.

At a period of season or in a situation of place where a disease of the character, above described, prevails, it will be a safe rule with the practitioner to trust little to ordinary appearances; the signs of danger are not always easily read; and it is better to act harshly, if by such means life can be made safe, than by feeble and temporizing measures to permit the silent progress of destruction. It may be considered as truth, if there be truth in the science of medicine, that the progress of fever can be cut short, by no other means, than by new motions forcibly excited and duly supported. The preliminary of this process consists in evacuation;—forcible stimulation originates it, and tonic powers, conge-

niel to healthy action, support it.—In the first place, bleeding is of indispensable use; without it, on many occasions, other evacuations, vomiting or purging, are of uncertain benefit, stimulating powers irritate, but do not increase action; and tonic powers, if they have any effect, increase the obstinacy of disease. The quantity of blood to be taken away must, as in other cases, be measured by effects; if the skin be obstinately dry, with stupor, pain and confusion of the head, the pulse small, confined, and obstructed, little benefit can be expected from an evacuation of less than thirty ounces. When the effect in view, marked by relaxation of the skin and expansion of the pulse, has been obtained from bleeding, the evacuations of vomiting and purging may be entered upon without risk of danger, and, for the most part, with promise of benefit; vomits of emetic tartar, and purgatives with calomel, have the preference; blisters then also operate with effect, and large blisters, on the neck and between the shoulders, conduce materially to safety. By such means, properly followed up, perfect intermission will in general be procured, and when intermission, in consequence of such management, has been completely established, Peruvian bark may, for the most part, be trusted to for the effect of preventing recurrence of disease.

It is often observed, particularly in the latter months of the year, that remissions become less distinct, that the pulse contracts itself, or in common language sinks, under the free use of bark, wine

and stimulants: In this case, the lancet is indispensable, and its benefits are unquestionable;—regular paroxysms and remissions are the consequence: remissions, as remarked, become sometimes gradually less distinct, under stimulative powers; but the paroxysm of the fifth day likewise commences, in many cases, by a sudden suspension of the vital energies, suppression of pulse, and stupor not unlike apoplexy. When this accident actually takes place, it is proper and necessary to employ evacuation; the loss of thirty ounces of blood, with other accessory means, then often restores, in the manner of a charm, the tide of circulation, and originates a new and better form of things. Common practice revolts from the idea; but experience has proved unequivocally, that it is by the use of the lancet only, that life, under the circumstances described, can be expected to be saved.

SECT. II.

Remarks on Remedies Employed in the Cure of Fever.

BLEEDING has been long employed in the cure of the fevers of tropical countries, particularly in the fevers of strangers; but the practice has at all times had enemies as well as advocates, in the islands of the West Indies. Opinions and fashions rule the world; and the opinions of the medical world have, in all ages, been fluctuating and contradictory. It is thus that the real value of bleeding,—employed too often without a principle in view, or rejected

from a whim, does not appear as yet to be fixed upon a sure foundation. The author does not know the precise conditions which indicate the use of the lancet, or the extent to which the practice of bleeding is carried in other islands; but he knows, that bleeding had no credit in the Island of St. Domingo in the year 1796. The prejudices of the greater number were strong against it; and though former experience had furnished to him sufficient proof, that it is not only safe, but necessary, as preparatory at least, in the cure of fever, yet trials were here made with caution: the effects, or ravages of the disease were looked for in the dead body; and effects were usually found, which pointed out unequivocally, the propriety,—even the necessity of the practice. A great majority of British practitioners deprecate the use of the lancet; and they deprecate it under an idea, that the loss of blood debilitates, or accelerates a failure of the vital powers. The details of the preceding pages will perhaps convince those, who are willing to be convinced of truth, that the opinion is erroneous and assumed; or, if in any degree connected with observation, that it arises, from not discriminating accurately between the effects of a remedy, and a quality of the natural course of a disease. Bleeding is chiefly employed, by English, and even by French practitioners, at times of high excitement, or increased action of the arterial system; that is, under the conditions which immediately precede salutary remission, or dangerous ex-

haustion;—a natural effect is thus often attributed to a cause of accident.

It is a matter of much consequence, to define precisely those circumstances which regulate the employment of bleeding in the cure of fever. If employed to sufficient extent in the first hours of attack, as at the commencement of the vertigo and headach, or before the pulse has assumed a confirmed habit of deranged action, the disease will, for the most part, be instantly removed, or, where not removed entirely, so broken and disturbed as to assume an intermitting or remitting form. It is scarcely necessary to repeat, that this effect will be more certain,—perhaps can only be ensured, by a judicious management of the accessory means detailed above. But though the benefits of bleeding be of decided effect in the commencement of continued, and even of great power, in the commencement of the paroxysms of periodical fevers; yet where the appearances of a continued, or even of a periodical fever advance by regular progress to a state of reaction, which usually precedes crisis or remission, bleeding is improper,—perhaps dangerous in a high degree. Instead of facilitating or rendering the crisis more effectual, it seems often to accelerate collapse or general loss of energy. On the contrary, if the pulse be small, contracted, confined, obstructed,—even imperceptible, with a dry, withered and impervious skin, or a skin greasy, damp, and clammy, a countenance livid, respiration heavy and oppressed, without local pain,—a condition superven-

ing suddenly, or arising under the use of stimulating powers, the loss of thirty ounces of blood, or more, has often been unexpectedly followed by a development of the action of the vascular system:—even petechiæ, vibices and lividnesses have disappeared in consequence of it, the pulse emerging and a copious fluid perspiration ensuing. It must however be remarked, that where these fortunate events took place in consequence of bleeding, stimulating means of great power always made a part of the process.

Bleeding is a remedy of great value in certain conditions of the fevers of tropical countries; but it is also in many cases a remedy, not only unnecessary, but improper,—and even dangerous. Where the disease is of a distinct intermitting or remitting form, where the paroxysms are regular in all their parts, and terminate by copious perspirations, with softness, warmth and sensibility of skin, bleeding is unnecessary; it is improper, where the skin, bathed in fluid perspiration, seems to be of increased sensibility; where the pulse lax and weak, is easily disturbed by changes of posture; and where fainting occurs from an increase of mobility, rather than from torpor.

Bleeding is necessary,—often indispensable in endemic fevers,—according to common opinion it is destructive in fevers of contagion. It is not so in fact: whatever the original cause may be, the effects of a remedy appear to be similar under similar states or circumstances of disease; and experience has often proved, that benefit follows copious bleed-

ing, in the oppressive headachs, stupor and suspended action of contagious fever, equally the same as in fevers of the other class.

Emetics, are employed, by some practitioners, in the fevers of the West Indies on every occasion, by others, they are condemned without qualification. In a plethoric, and particularly in a state of system torpid from plethora, with a dry, thick and impervious skin, emetics are not only improper, but dangerous; in remitting, and more especially in intermitting fevers, they are on the contrary useful, seeming to facilitate in a particular manner, the successful operation of bark; in tedious and lingering intermittents, or in slow convalescence, their good effects are often eminent; in ardent and continued fevers, they cannot be given without probable and material injury, unless preceded by loss of blood, even to great extent.—In fevers of contagion, the exhibition of emetics is generally safe, and often beneficial, without preceding evacuation; judiciously managed emetics sometimes cut short the course,—for the most part they contribute materially to render the form of the disease mild and regular.

Purgatives of various kinds are employed in the cure of fevers, and purgatives are thought by English practitioners to be peculiarly adapted to the cure of the fevers of hot climates. The idea seems to have originated in an opinion of abounding bile; an appearance which certainly obtains among men, who oppress the functions of the alimentary canal with strong drink and gross aliment. Purgatives

are numerous ;—it will be proper to mention a few of the principal.

A pill of five or six grains of calomel, carried off by a solution of bitter purging salts, was a favourite practice in Jamaica, upwards of twenty years ago ; and in the ordinary disease of the country, among seasoned subjects, it appeared to have advantages : a solution of the same salts, with a portion of emetic tartar, given in small and frequently repeated doses, was also employed very commonly ; and, where the fibre is tense and possesses sensibility, it is safe and of extensive effect ; it is upon the whole a good form ; and, with additions according to circumstances, may be so managed as to answer complex indications. Julap and calomel has lately obtained great praise ; it is a form of purgative of frequent use with the surgeons of the army, in times of service ; and in intermitting, or in remitting fever, with a tendency to congestion in the viscera of the abdomen, its benefits are evident.—Calomel with James's powder, aided by plentiful dilution of warm and diffusible drinks, which stimulate the minuter vessels, seems, upon the whole, to be the most extensive and best evacuant.

It is often observed, particularly in the concentrated forms of this disease, that the sensibility of the alimentary canal is materially impaired, its action, in some degree, suspended ;—the most powerful purgatives do not act, or they act by starts,—the stools, though sometimes large, are watery and ineffectual,—a sensation of defective power of eva-

cuation still exists,—sometimes with a considerable degree of tension. The stimulating forms of purgatives are perhaps the best adapted to this case; but complete relief seldom arrives till a natural period of crisis, or till the sensibility of the fibre has been restored by copious bleeding, bathing, and motion in the open air.

In intermitting and in remitting fever, the repetition of purgatives seems to render the paroxysms and remissions more regular and distinct; but purgatives have little effect in cutting short the course of the disease: in ardent and continued fevers, with much vascular excitement and a dry skin, as well as in continued fevers, with a dry, withered skin, and sluggish action of the vascular system, the good effects of the practice of purging have appeared to the author in a very questionable shape. The bowels, it has been observed, are often torpid, and resist with obstinacy powerful doses of drastic purgatives; when they do obey, the evacuations are commonly at irregular periods,—or by starts,—large and watery, but without effective relief; the external heat perhaps subsides, but the skin becomes, in proportion to the extent of the evacuation, dry, withered and impervious; no remission is obtained; on the contrary, the unfortunate event appears to be accelerated, under the conditions defined, by the use of purgatives. The circumstances, which regulate the use of purgatives in the cure of endemic fevers, demand a similar consideration in the cure of fevers arising from contagion.

Bathing. Warm bathing is a remedy of common use in the fevers of the West Indies, both with English and French practitioners; but it is a remedy, neither serviceable nor safe in full and plethoric habits; bleeding then is indispensable, either as preceding, or as employed at the time of the immersion: to determine the proper time of remaining in the bath is of essential consequence, for it is not uniformly one; it must be regulated by circumstances;—a given effect,—a change of the existing state of things, is the object of the bathing, the means of accomplishing which, ought not to be intermitted till the effect be attained;—any portion of time less than an hour, will seldom be sufficient to make a proper impression on the system.—Nearly allied to warm bathing, are warm fomentations to the trunk and extremities; these are more manageable, can be continued longer without fatigue or inconvenience, and, upon the whole, are not less beneficial.

Cold Bathing, has been frequently employed in the fevers of hot climates, but it has not always been employed in a proper manner, or under proper circumstances. Cold bathing is, in most cases, followed by agreeable sensations, and a temporary relief; but its effects are not permanent or extensive, perhaps not safe in full habits, or under the torpor of plethora. In such circumstances, it has not been found to do good in yellow fever; and employed frequently under such circumstances, it has been considered, by many, as a remedy of little

value : the author however is confident to maintain, that where the sensibility of the fibre has been restored by previous bleeding, and other suitable processes, no remedy in the circle of medical assistances produces such beneficial and permanent good effects,—travelling perhaps excepted. Its good effects are eminent, when employed under proper circumstances in the endemic fever of tropical countries ; in the contagious fevers of ships and hospitals, cold bathing and washing with cold water, exceed in benefit, all the resources of the medical art. But cold bathing like all other remedies requires a certain condition of things, to ensure the success of the application ; and it generally happens, that where the condition is disregarded, a fault is charged to the remedy, which in reality belongs to the judgment of the prescriber.

Gestation and travelling in carts, carriages, or waggons, would probably never have been viewed in the light of a remedy, under the actual existence of fever, had not military service often produced the necessity of trial, and repeated trials evinced the beneficial effects of the practice. It must indeed be acknowledged, that instances of such trials have not been numerous in St. Domingo ; they have however been sufficient to show, that motion in pure air is capable of effecting the same favourable changes here, as in Europe or in North America. On various occasions, under the inconveniencies of a scorching sun, of clouds of dust, and of a jolting cart, on bad roads ; the anguish at

stomach, the inexpressible anxiety and fidgeting, so distressing in the fevers of the West Indies, have suddenly disappeared; suspended secretions have been restored, and the marks of remission have become evident and distinct. In contagious fever, the advantages of moving through pure air are so decided and unequivocal, that it is unnecessary to dwell upon the subject.

Blisters are frequently, perhaps too indiscriminately employed by English practitioners in the fevers of the West Indies; they are resorted to by the French, when other resources are exhausted. In considering this subject, it is necessary to examine the state of things minutely, so that fixed rules may, if possible, be discovered to direct the proper times and circumstances of application. In this manner, where there are severe local pains, with a sensible, warm and glowing skin, the good effects of blisters are obvious and acknowledged; on the contrary, where the blood vessels are turgid, the action of the arterial system oppressed, the pulse small and confined, the skin withered, torpid, thick and dry, or damp, greasy and cold, the good effects are equivocal; in such cases blisters do not rise at all, or they rise imperfectly, and the blistered parts become speedily dry, dusky and livid. Blisters, without preceding evacuation,—and that to the extent of restoring sensibility to the fibre, are seldom useful; instead of allaying pain and removing spasm, they seem to irritate and increase constriction; on the contrary, when the action of the vascular system

has become free,—with restored sensibility, their good effects are considerable in correcting irregular determinations; they often restrain vomiting, sometimes remove hiccuping, applied to the epigastric regions; they generally relieve the severe and acute pains of the head, applied to the temples or nape of the neck.

The remedies mentioned above are supposed to act upon the disease, by producing in some degree a general effect upon the system; a few will now be noticed, the operation of which is more particularly directed to symptoms or local derangements. Vomiting, or a constant desire to vomit is one of the most distressing and untoward symptoms, in the fevers of tropical climates. The means of restraining it are, in no degree, certain; dependence has been placed on blisters; but blisters have not good effects under an existing torpor and impaired sensibility; anodynes calm irritation, but they do not remove a fixed disease; and they are of no value in a certain state of progress to disorganization. The appearances of the coats of the stomach and intestines, after death, suggest the trial of remedies on the principle of local application. The veins of the inner coats of the stomach are generally turgid, as if injected; while the villous coat is thick, spongy and loose generally, or in irregular patches,—sometimes actually separated, the veins being every where distended, as in atonic inflammation. Under a presumption of this condition, or of an approach to it, a solution of white vitriol in camphorated ju-

lap was tried on many occasions ; and it frequently restrained the vomiting, in an unexpected manner. It appeared further, when given at an early period, to be of service in preventing the above state of things from taking place. Solutions of sugar of lead had similar effects, in several instances ; burnt alum, Cayenne pepper, &c. appeared likewise to be of benefit ; æther frequently gave temporary respite ; brandy and water, or brisk spruce beer were among the kinds of drink best relished by the patient ;—wine was nauseous to a degree.

SECT. III.

Remarks on Different Methods of Cure.

THE author does not intend to enter into a detail of the practices of others, in the cure of fevers ; but he thinks it will not be superfluous to state the general outlines, as far as he has been able to perceive them with any tolerable accuracy.

In contagious fever bleeding has been religiously avoided ; but the experience of the author warrants him to say, that it not only, is not a fatal practice, but that under many circumstances, it is an useful one. Emetics, in the commencement, have general reputation ; and their beneficial effects are well established : purgatives seemed to be only of secondary consideration, with most practitioners : the principal view appeared to consist in stimulating, even from an early period, and often without preceding evacuation. Dover's powder, James's powder, with

opium in great and frequent doses, camphire, cordial confections, blisters, bark, and an unmeasured quantity of wine, were the principal remedies, as far as the author had an opportunity of observing: the use of cold water,—of washing or bathing, was little known; the accumulation of filth was often prodigious; and from want of discipline, among the orderly attendants in the hospitals, what was probably well ordered, was seldom well administered. It is not necessary to add any further remarks;—the practice on the continent is not given as an example of imitation.

The more general method of cure, in the endemic fever of tropical climates, hinges upon procuring remission by means of purgatives; the known virtues of bark are supposed sufficient to complete the rest. Salts with emetic tartar, julap with calomel, or calomel with antimonial powder are the more common forms, by which this object is attempted to be accomplished. In fevers fundamentally of type, the purpose will often be effected; but in fevers so concentrated, that the dawnings of remission are scarcely perceptible, the expectations of success are uncertain. If the fibre retains sensibility, or if it has recovered sensibility, in consequence of bleeding, the benefits of purging are often evident; if torpor prevails, the effects appear to be hurtful. The second part of this method of cure, consists in stimulating by wine, opium, camphire and blisters; or in preventing recurrence by large and often repeated doses of bark. The view is good, but it is

a view so much relative to the condition of existing circumstances, as to require accurate discernment in application: this perhaps has often been deficient; for the mortality of the more violent forms of fever, under this mode of treatment, is found to be uncommonly great.

A fever appeared, at Philadelphia, in the year 1793, 1794, and 1797,—of great force and unusual mortality; in the cure of which, a combination of evacuations,—bleeding and purging to great extent, obtained general credit, among the more enlightened and industrious practitioners of that city. The view is wholly directed to depletion; and the quantity of blood which has been taken away, on many occasions, by the physicians of Philadelphia, without destroying, or even endangering life, appears enormous; furnishing a fact, which cannot fail to confound those who have asserted, that bleeding is improper in the violent fevers of hot climates, even that the loss of a few ounces of blood is almost a certain cause of destruction. The principle of cure, among the physicians of Philadelphia, hinges, as observed, wholly on depletion. The author of this outline employs their chief remedy; but he employs it with a different view, and with different management. At Philadelphia sixteen ounces is reckoned a large bleeding; but bleeding to this extent is often repeated, and accompanied with strong mercurial purges, all tending to diminish the supposed, or real increased action. Here bleeding is directed to the amount of thirty ounces, or up-

wards ; in short to such extent, that an impression be at once made upon the system ; after which, such powers are recommended, as stimulate to a train of action, congenial to the action of health. The principle is different, in as much as there is a difference between interfering and leaving a business in the middle, or in interfering and conducting it forcibly to an issue.

A new method of treating fevers has arisen, within these three or four years, in the West Indies, which has greatly amused the medical world. Calomel alone, or with the addition of different purgatives, has been long employed as an evacuant, in the cure of recent fever, particularly of the remitting kind, and often with superior advantage ; but the discovery of its virtues as a general remedy, and on the grounds of salivation, is as far as the author knows, due to Dr. Chisholm. Dr. Chisholm in general terms, positively asserts the success of calomel in the cure of fever ; the detail of his testimonies does not warrant a conclusion so favourable ; for the proportion of mortality, in the detachment of Royal Artillery, upon whom this practice is supposed to have been first tried, has perhaps scarcely ever been exceeded in a tropical climate. In St. Domingo calomel has had numerous trials, in every form of the disease ; and though vague observation speaks in its favour, accurate experience leaves its good effects in doubt. The general result seems to be the following. In fever of an intermitting or remitting type, where the skin is soft, warm and

fenfible, the action of the vafcular fyftem free and unconfined; in fhort, where the difeafe is mild, the mouth is often affected at an early period; and as the mouth becomes affected, the violence of the febrile fympoms, in moft cafes, abates; on the contrary, where the difeafe is continued and ardent, or flow and creeping, with diminifhed fenfibility of the fkin and impaired energy of the vafcular fyftem, enormous quantities of calomel, either produce no vifible effect, or the gums become fpongy and livid, but no falivation enfues:—the event is then unfortunate, or life emerges in a gradual manner. Further, it is a common obfervation, that where falivation actually takes place in continued fevers, it feldom fhows itfelf till the violence of the fympoms has evidently abated: hence a fuggeltion arifes, that the appearance of falivation is only an indication of the departure of difeafe:—no proof exifts, that the operation of the mercury is the caufe of this departure. Such are the remarks which occurred in reviewing different modes of treatment in the hofpitals of St. Domingo; to which it will not be fuperfluous to add an experiment made at the Mole, in Auguft 1796 by Mr. Lind, furgeon to Jamaica. Out of fifteen cafes of fever, which were put under the care of Mr. Lind on the firft day of the difeafe, and treated with the utmoft attention, five died; in three of whom falivation actually took place; five recovered; in whom no falivation took place, in the other five; who alfo recovered, falivation was evidently eftablifhed, but, as is ufual, not

till the violence of the symptoms had begun to abate. Out of four, who were put under his care on the second day of the disease, no one died, but one only was affected by the mercury. One brought to the hospital on the third day of the illness, died; mercury was employed, but no salivation took place; one, on the fourth, likewise died, without marks of salivation; one on the fifth,—the salivation was established, but the disease proved fatal. In none of the above cases were less than ten drachms, and in most not less than two ounces of strong mercurial ointment rubbed into the legs and thighs, with the employment of all other means, which seemed calculated to promote the expected effect. The success of this experiment, and it was fairly made, by a man on whose accuracy dependence may be placed, does not encourage a prosecution of the plan of attempting to cure fever by exciting salivation, or by affecting the system with mercury; yet though others must have met with similar disappointment, there are as yet no signs of the practice being discontinued. The operation of mercury involves a mystery; and the management of it does not require the exercise of thought and reflexion; for there does not appear to be any other rule to direct, than that of giving mercury inwardly, or applying it outwardly, to all men, in all conditions, till the effect of salivation is produced. The effects of this remedy are known in numerous instances to have brought life into danger; and the uncertainty of the operation of calomel, (fix grains,

at one time occasioning a complete salivation, sixteen hundred at another not producing this supposed salutary effect), seems staking the life of man upon the hazard of an accident, over which there is little controul.

It would not be proper to dismiss this subject without noticing another fashionable remedy,—essence of spruce. This remedy has acquired credit in the navy, and probably not altogether without foundation. It often is found to act as a purgative,—to promote secretions by the skin; and on such grounds, given in the forming state of fever, or in fevers of an inferior degree of violence, benefit may reasonably be expected from it; but it has no claim to a specific virtue in the cure of the yellow fever.

The practice of French physicians, in the cure of yellow fever, has been ostentatiously contrasted with the practice of the English, and its superior success has been loudly boasted by many. The sole view of the French is directed to dilution,—in expectation of a coction of humours. The French bleed,—in small quantity for the most part; but they repeat the operation frequently; they avoid purgatives, till they suppose the humours to be in a certain state of coction, but they employ glysters of decoctions of herbs, at very short intervals, drench the patient with nauseous ptisans, with lemonades, and sometimes with beverage of cream of tartar; the warm bath is usually employed several times in the course of the day; poultices of cooling herbs are applied to the stomach and epigastric regions, in cases of

pain and internal heat : camphorated julap, with a little nitre, Hoffman's anodyne liquor, with a few drops of laudanum, blisters to the legs and thighs, when things become desperate, comprehend the routine of French practice,—a routine, known to every nurse, and apparently employed by the nurse, with the same discernment as by the physician. The French do not usually venture upon large bleedings at a time ; and it is difficult to make them comprehend the effects of stimulating after evacuation, or of decidedly cutting short the course of a disease by active practice. Upon the whole, the progress of fever is less rapid under the management of French, than under the common management of English practitioners ; recovery is also more slow, but relapse is less frequent. The author cannot speak positively of the difference of mortality ; it is much less than might be expected from the directly opposite methods of treatment ; for in most of the towns on the sea-coast, two-thirds at least, of any given number of European soldiers, will be found to perish before the expiration of the year, whether treated by French or English physicians.

The above are the principal methods of treatment employed by practitioners, in the cure of the fevers of the West Indies. They all appear to proceed on the supposition of the knowledge of a proximate cause,—debility, increased action, bile, lentor or some other arbitrary suggestion of fancy. Such practice is literally at random, sometimes innocent, but never capable of bringing an object distinctly

and specifically under view ; for whether we dilute, deplete, purge off abounding bile, or stimulate the nervous energies to higher action, we proceed to a certain point, at which we remain bewildered. An event may perhaps take place, but we have no controul over it ;—we know not with certainty what we seek ; we consequently interfere, and leave the business in the middle. If we proceed on the idea of changing the existing state of things, we proceed upon a certainty. We know, or ought to know when this can be accomplished ; and we know, under what conditions, the aids of the medical art can originate new forms of action, or restore the healthy operations of the system. The object will too often be beyond the reach of attainment, but even to know the limits of our power is satisfactory.

CHAPTER XII.

Consequences of Fever.

THE preceding pages present an outline of the history and cure of fever,—endemic and contagious : it is there remarked, that those diseases attended to in the commencement, and treated with vigour upon a sound principle, while in the act of forming, are much under the controul of the medical art ;—neglected, treated upon a wrong principle, or upon a sound principle feebly executed, they run the natu-

ral course, often prove fatal, or lose the febrile form in derangement of an important organ. The propensity of the human body to obey laws of periodical movement, more particularly in tropical climates, is known to the most superficial observation. In conformity to these laws, the febrile form of disease is found to cease,—to subside, or to change at given periods; but the actions of health are not in consequence always uniformly restored. Few instances of fever occur, where every part of the body suffers alike during the vigour of the disease; and as one part is more affected than another, in consequence of more general or accidental causes, the natural action of those parts, being thus more deranged, is more difficultly restored at the periods of critical movement; in other words, a local affection remains after the formal fever has abated, the final removal of which is tedious and uncertain. There are few parts of the system exempt from these irregular affections, though the alimentary canal and liver suffer particularly,—and in a multitude of ways. But in order to give some idea of the derangements produced by the local action of fever,—endemic or contagious, it will be proper to describe, in a cursory manner, the ravages which appear upon dissection after death:—on this foundation only, it is possible to build a rational plan of cure.—The most of the appearances here described are common effects of fever in general; but the following observations were chiefly made upon subjects, who had suffered from the endemic of St. Domingo.

SECT. I.

Appearances on Dissection.

THE *Brain* appears upon dissection to be more or less affected in the majority of subjects, who die in the acute state of disease, or under the actual influence of fever; the membranes, as noticed above, are then inflamed, or the blood vessels, turgid to an extraordinary degree, give an appearance of commencing gangrene, rather than that of inflammation, properly so called; water is sometimes found in the ventricles, with evident effusion in the interstices; but this is an effect,—not general,—not even frequent. In chronic states of illness, consequent to fevers, the functions of the brain are often impaired, but the traces of existing derangement are not always visible: yet in some cases, the vessels are found to contain little or no red blood, the ventricles and all the interstices are full of water, and the whole substance appears pale, and as it were macerated.—In the above state of things, the prominent features of disease, previous to death, consisted in a pale and lifeless aspect, in a state of pulse uncommonly slow,—perhaps under forty, power of motion diminished in an extraordinary degree, but without actual palsy.

The *Lungs*, in many instances of subjects who die of fever in the acute stage, appear to be suffocated or oppressed, resembling a sponge filled with black grumous blood; they appear also in some cases to

be irregularly inflamed, and in not a few to be spotted in the back parts, the blood stagnating from position. Such appearances occur frequently; but chronic disease, and death from derangement of this organ in consequence of fever, is rare among Europeans in the West Indies. In some instances adhesions are formed between the membrane of the lungs and pleura;—even collections of matter are found frequently under the sternum; but this is seldom a solitary appearance, or to be reckoned as a cause of death; it is usually connected with something similar in other parts, being in fact a mark of a general disposition in the habit, to form abscesses in the cellular membrane.

The *Liver* suffers materially during the actual existence of fever, and is often much deranged by its consequences. It thus happens not unfrequently, that abscesses being formed in the liver, and adhesion taking place between its coverings and those of the diaphragm, the diaphragm becomes affected, at last eroded, and the matter finds passage through the lungs, giving an appearance of pulmonary consumption; in other cases, the abscesses formed, in a similar manner, in the substance of the liver, has appeared to discharge itself through the biliary ducts into the alimentary canal; or the inflammation being vigorous in the external coats and skirts of this organ, adhesion is formed with the colon, duodenum and neighbouring part;—erosion takes place, and the matter escapes into the tract of the intestines;—these adhesions and erosions are often of great ex-

tent : it is further observed that the liver appears found externally on some occasions, the application of the knife only discovering an internal abscess, which had not found exit at the period of death. To the above may be added, the very common occurrences of changed organization and enlarged dimensions, in consequence of which the functions are impaired or abolished.

Alimentary Canal. The stomach and small intestines suffer, as noticed before, in the actual state of fever, and often show derangement, the effect of the immediate disease, which has obviously a share in occasioning death ; even in those subjects who die of chronic dysentery, the inner coats of the stomach and small intestines often appears loose, or in the act of separating, the mucus is red like brick dust, and in great abundance ; but though this be the case frequently, the seat of the chronic disease is principally confined to the tract of the colon and rectum. The structure of the coats of those parts is changed ; they are thickened in substance ; the veins are large and distended ; the general colour is grey, dusky, olive,—in some parts livid, or tending to gangrene ; the capacity is diminished in one place, enlarged in another : the inner coats are ulcerated in various manners and degrees, the ulcerations are ordinarily of the size of the nail of a human finger, sometimes larger, sometimes smaller ; they are of different degrees of depth, sometimes nearly superficial, sometimes penetrating to the outer coat ; the ulcerated

surface is sometimes unequal, interspersed with whitish granulations, sometimes covered with thick and real matter, sometimes foul, with bloody ichor or sanies, sometimes covered with dirty grumous blood, and livid to a considerable extent around. The colour of the omentum, mesentery and mesocolon is grey, dusky and olive; the veins are distended, as if injected, or as if the blood had stagnated previous to death:—numerous glands red, inflamed or lived, of the size of a common pea, but of an oval figure, are scattered in many instances on the surface, particularly near the connexion with the intestine.

The above are the more remarkable traces of the changed forms of the fevers of the West Indies, as they consume slowly by obstructions or changed organization, ending in abscess or ulceration of important organs; but it must be remarked further in this place, that the course of fever appears, on many occasions, to be suspended;—hopes are entertained of a speedy return of health, when unexpected relapse speedily terminates existence. In such cases, effusion or gangrene in vital or important organs are the chief appearances observed after death:—effusions happen frequently in the brain, gangrene in the coats of the alimentary canal.

The above is a summary of the ravages of the endemic fever of the West Indies, as it terminates life speedily by sudden relapse, or consumes it gradual-

ly by tedious obstruction, abscess and ulceration of the viscera. It is a fact worthy of remark, and well deserving attention, that of all the Europeans who fall victims to the diseases of tropical climates, two-thirds, under ordinary circumstances, yield to the effects rather than to the direct influence of the acute malady ; that is, to obstruction or changed organization of one or other of the viscera, terminating in abscess ; or to changed structure of some part of the alimentary canal, terminating in ulceration, known by the name of chronic dysentery. A few pages will be allotted to the consideration of these different accidents, too often proceeding from neglects, or indecision in the commencement of the disease.

SECT. II.

Relapse in Febrile Form.

DISEASES of the febrile form show a disposition to recur at certain periods, in all countries ; in tropical countries, these recurrences are frequent, and often serious in their consequences. The periods most remarkable for such recurrence are the septenary, more particularly the fourteenth day, sometimes the seventh or eighth, the twentieth or twenty-first. But besides this, certain aspects of the moon have a singular connection with the return of fevers. In the second and in the last quarters, the attacks of fever at Savannah la Mar in Jamaica, in the years

1775, 1776, and 1777, appeared to exceed in an extraordinary proportion the attacks of the other periods; but the greater number of these attacks were confined to the four days preceding the new or full. This was determined at Savannah la Mar by an evidence little liable to error. The subject has not been much attended to in St. Domingo; and the connexion alluded to, it must be confessed, was by no means obvious among British soldiers. In Jamaica it appeared more remarkable among the soldiers of a company of the 60th regiment, who were seasoned men, and seldom exposed to strong causes of disease, than among the inhabitants of the town or country, whose habits and manners of life were less regular. It was observed in Jamaica, that where causes of fever were strong, or where disease was in some measure epidemic, the connexion was less clearly marked. In this manner, the law, perhaps, actually prevailed less certainly in St. Domingo than in Jamaica; for the causes of disease were strong in that island, and the accessory causes among the soldiers numerous. But independent of this, the connection seems in reality to be less powerful in some districts within the tropics than in others. It is uncommonly strong on the coasts of Guiana;—at Demarara the inhabitants calculate the relapses of fever by the almanack,—and they seldom err. This fact is furnished by Dr. Pinckard, physician on the staff,—a man acute in observing, and faithful in reporting what he observes.

It is necessary, in delivering rules for the preven-

tion of relapse, to have regard to the state in which the disease has left the patient ; for if fever has ceased completely, without leaving traces of diseased viscera, the rules are few and simple ;—they consist in forbearing rather than in acting. Among the various forbearances, necessary in a state of convalescence, abstinence from wine and animal food constitutes a principal hinge. The maxim of recruiting strength after disease, by good living, is deeply ingrafted in the mind of an Englishman ; and rules of regimen, however essential to ensure recovery, are executed with difficulty among British soldiers. It is thus that the French, with few other aids than abstinence, recover more perfectly, though in appearance less rapidly than the English ;—and when recovered they are more completely assimilated to climate. The rule of regular allowances of wine, in a most injudicious manner, introduced into British hospitals, is productive of much mischief. It occasions an indiscriminate use of an article hurtful in twenty cases, where it is useful in one ; while withholding, when improper, what a soldier deems a right, as a bounty of government, occasions murmurs, discontent and importunities, which medical men have not always the fortitude to resist. Abstinence, is thus a principal part in fortunate recovery, and it demands a scrupulous attention ; but there are other matters which contribute to the same end, and which cannot be neglected with safety. Among these, regularity in the functions of the alimentary canal is of much importance ; costiveness

and its opposite are equally to be guarded against ;—rhubarb, with additions according to circumstances, forms the basis of a remedy calculated to answer both purposes. Exercise in pure air is necessary to preserve health ; it is necessary to a certain extent to restore and confirm strength ; after exercise, washing or bathing in cold water, and after washing, frictions are of benefit ; change of air and change of objects ; amusements which divert and interest the mind deserve particular regard :—on this ground it is found serviceable to move convalescents to advanced posts, where they readily forget that they are valetudinary.—Together with the above attentions, it will be proper to administer an increased quantity of bark, previous to the periods at which relapse is known most usually to occur.

The means mentioned above, will generally be found sufficient to guard against relapse, where the disease has terminated completely in health ; but it happens frequently, particularly where the endemic possesses a character of malignity, that the course and form of the fever are suspended, without crisis, or recovery of healthy action ; in which case, much discernment and exertion are required to prevent suddenly fatal effects. Under the circumstances of a suspension of open morbid action, a state of deceitful tranquillity presents itself, which demands to be carefully watched ; the danger is strongly painted in the countenance, but the description of it is not easily conveyed in words ; the aspect is clouded and grim, the eye is embarrassed, and the sensations are

uncomfortable, without reference to specific cause. In this suspicious state of things, a paroxysm suddenly supervenes, extinguishing life speedily, or severely deranging an important organ :—the usual terminations are coma or oppression of the brain, suffocation of the lungs, gangrene of membranes, particularly of the membrane which lines the cavity of the abdomen, and covers the intestinal canal.

This temporary suspension of the action of the febrile cause, called imperfect crisis, offers a curious phenomenon in the history of fevers. The action of the cause seems to be interrupted in its ordinary train of proceeding ; the force seems to accumulate during the suspension, and at a given point, an explosion takes place, carrying destruction to organs, from the general or accidental circumstances of the principle of life, least disposed to resist injury. In diseases of type, the relapse or renewal of morbid action is sudden and generally violent ; in continued fever, effects are similar, but less rapid.

The mode of operation of the general cause, which produces the phenomena of fever, seems to receive some illustration from the circumstances attending the apparent interruption of morbid action. It is presumed that the original cause of fever is an irritating power ; for the first action is evidently an irritation, generally exerted upon the moving fibre of the vascular system ; the regular alternate action of contraction and relaxation is thus disturbed or suspended ; and the effect, being an interruption of the vital energies, the operation appears to be seda-

tive : this interrupted action, further appears, with different degrees of effect, in the different portions of the system at the same time ; and when removed, by natural or artificial means from one place, disturbance arises suddenly in another : Hence, when this cause of irritation acts strongly, so as to produce a complete suspension of the natural alternate contraction and relaxation of the fibre, in a certain series of vessels, effusion is the consequence,—followed by compression and death ; if on a different series of vessels, gangrene ensues more directly ; if the suspension be not complete, if it do not comprehend the entire series of vessels, or if it be partially removed, inflammation is perhaps the first step of the operation. This action seems moreover to be chiefly exerted on the extreme vessels, at the points where they are formed to become a series of secreting or absorbing organs : a function is thus suspended or destroyed,—and the body dies in parts.

If a patient be observed with a lowering aspect,—the course of disease interrupted without signs of returning health, the utmost vigilance is required to guard against the accidents likely to ensue. It is a principal object in this case to fortify or guard the brain, lungs and important organs against injury or destruction, at the time of the expected explosion ; and it appears that local weaknesses, produced artificially upon external or less important parts, are not without effect in answering this end. It is in this manner perhaps, that large blisters to the neck and back give promise of security to the head and chest.

Where blisters are applied with this view, it is requisite that the discharge from them be kept up, till all symptoms of danger are past. Warm bathing, fomentations to the extremities, long continued, washing with cold water, or cold bathing, frictions, exercise in the open air, with amusements to the mind, promise benefit :—wine and brandy, even to intoxication, have appeared on some occasions to avert impending destruction ; or to produce salutary motions in the system, when under the above perilous circumstances.

SECT. III.

Diseased Viscera.

IT is a well known observation, that diseases of the febrile form have a marked tendency to abate or to cease at certain periods ; it is further known, that these diseases either cease in perfect health, with the recovery of all the functions ; or that impediment and derangement remaining in an important organ, the foundations of local maladies are laid, which prove tedious in cure, or in the event terminate existence : these local affections are various as the viscera of the human body ; but they are found more frequently among the viscera contained in the cavity of the abdomen, than in other parts.

Fever, even in its more pure and genuine form, is seldom known to act on every organ, or on every part of the body with equal force. From circumstances, peculiar to the constitution of the patient,

to the qualities of the climate, to the season of the year or local situation, variously modifying the cause or action of the cause, one part of the frame suffers in a greater degree than others. At the time of crisis, or expiration of the febrile period, such parts as have been more deranged than others in the preceding course of the disease, recover their energies slowly and imperfectly. Fever, it is observed, has periods of termination; in febrile habits there are also periods of relapse; and it often happens, that relapse occurs before the parts, in a more particular manner deranged by the preceding disease, have recovered the natural state of health and activity: Hence these deranged or weakened parts having a diminished power of resisting injury, suffer, according to a known law of an animal body, in a more aggravated degree than others. The cause of fever is further of a given power; and when its operation becomes declared, it is generally observed, that, if any one part or organ suffers in an undue degree, the functions of the others are less disturbed, than if such irregular or local action had not taken place: Whence it happens, that fever of relapse, in a habit where certain parts or organs of the body have lost their original energy, seldom runs high;—the general force of the disease diminishes every succeeding paroxysm, the derangement of the weakened part increases, and the febrile form is at last lost in local disease. This history occurs daily in endemic as well as in contagious fever:—distinct and regular fever subsides, or ceases; obstruction and abscess are

formed in the liver or other organ : This is frequent ; but changed structure, with ulceration in the alimentary canal, giving the appearance of dysentery, is still a more common effect :—further, these local affections being cured, or suppressed, fever or general disease not unfrequently resumes its course.

Diseases of the viscera require to be considered in history and in cure, as of two stages, or of two degrees of progress, viz. a stage of obstruction, with impaired function ; a stage of inflammation and suppuration, with functions abolished. The original foundations of visceral disease seem, for the most part, to consist in distension, or in certain degrees of effusion, arising during the continuance of active fever. Congestions and thickening of parts, tending to diminish or obstruct the capacity of vessels, are natural consequences of effusion. By this obstructed or diminished capacity of vessels, a change in structure is effected, so that the functions and offices of parts are impaired to a certain extent. Such obstructions or changed structure of organs are often in a manner stationary, the actions of life going on for a length of time, with different degrees of impediment ; at other times, they proceed rapidly to other gradations,—to inflammation, suppuration and erosion.

The viscera of the abdomen are the more common subjects of the changed forms of fevers ; and of these, the liver and alimentary canal are the principal : the spleen is frequently diseased, but it undergoes great changes without occasioning much

alteration in the apparent state of health. It happens ordinarily in diseases of the abdominal viscera, resulting from fever, that one part suffers more than others; but from continuity of coverings, and sympathy of offices, the effects are widely extended. It is an essential object to examine minutely, and to learn precisely the seat of the disease, the stage, progress and the extent of the connexions; but it is difficult to give minute instruction on this head: the materials, in possession of the author, are neither sufficiently copious nor exact, to furnish a detailed history of the diseases of the abdominal viscera; nor does the design of the present work admit of it. The ravages of the disease in the principal organs have been briefly noticed; from these some opinion may be formed of the mode by which death is occasioned. This point being fixed, the history of the first stages, the complications and the precise condition of things, must be learned, from accurate observation in the living subject.

The first derangements of an organ of importance to the functions of health and continuance of life, demand attention. Congestions and obstructions degenerate, by neglect or bad management, into inflammations, suppurations and erosion. From suppuration and erosion recovery is uncertain; from congestion or obstruction less is to be feared, if proper plans of cure be timeously adopted, and prosecuted with perseverance and judgment. In diseases of the viscera, even in a state of congestion or ob-

struction, it is evident that change of structure has taken place :—to alter this changed structure, or to remove parts diseased, is a previous step to the formation of such as are found. It is proved in experience that mercury, from what mode of operation is not the question to be determined at present, possesses, more generally and more permanently than any other known remedy, the power of altering the condition of action in the extreme vessels of the circulating system. In consequence of such change of action, the derangements in secreting organs are often removed ; whence mercury becomes a general and important instrument in the hands of a physician, in the early stages of the disease under view. But though mercury be a remedy of signal benefit under the above conditions, it requires a very cautious and circumspect management. It requires to be slowly and gradually introduced into the system ; for the foundations of change and renewal of structure depend upon a gradual, uniform and extensive action upon diseased parts ; action violent, irregular and partial deranges general health, but does not ordinarily affect the seat of the disease.

If matters have been well conducted, so that the diseased parts are changed, removed or absorbed in consequence of a new action excited in the extreme vessels of the organ, the next operation,—the repair of lost parts, depends upon the processes of nutrition. Diet under this head demands consideration. The doctrine of repairing strength and loss of substance, by rich diet and a portion of good liquor,

here presents itself with great triumph ; but, in the opinion of the author, rich diet is directly contrary to the end proposed. The business of cure in the above derangements depends essentially upon activity of absorption ; and a very small knowledge of the laws of the animal economy may serve to inform us, that this operation is necessarily impeded, and disturbed by the use of wine and grosser aliments. But besides the inconvenience of full living, in obstructions in remote parts of the body, the bad effects are immediate and direct, where the disease is seated in the alimentary canal, or in the mesentery and mesocolon intimately connected with it : Whey, rice, barley, sago and things of similar quality, with juices of balsamic herbs, compose the only allowable nutriment. Mercury, as has been observed, furnishes the medicine ; milk and vegetables afford the diet. Other means, as frequent washing with cold water, frictions local or general, chalybeates, gentle exercises in pure air, on horseback or in carriages, may be so managed as to assist the main view in a very material manner, more particularly to establish and confirm the advantages gained. For it is a truth, never to depart from view, that whatever is begun by medicine, requires to be supported by a strict observance of regimen, and by habits of exercise in pure air,—exercise in pure air being that alone, which is capable of imparting permanent tone and activity to the powers of life.

In the first stage of the disease, the prospect of

success, under good management, is a favourable one; in the second, or when inflammation is in progress to suppuration, it is very doubtful. But it is still a previous step, to obtain precise information of the actual state and condition of things. In the inflammatory or suppurating state, evacuation by the lancet has seldom been tried in extent. Bleeding indeed may sometimes be proper, as preparatory to other means; but the inflammations, from previous and tedious congestions, lie too much without the ordinary channels of circulation, to be materially affected by general evacuation. Mercury, the chief remedy in the early stage or period of congestion, is of very doubtful effect here. Blisters applied as near as possible to the seat of affection, often afford temporary relief,—converted into issues they contribute materially to promote a cure. Cicuta, judiciously and boldly managed, promises advantages; but the trials made of this remedy in St. Domingo have been too few, or too little exact, to enable the author to speak positively. The prospect of cure is certainly a dark one, in cases of abscess and erosion; yet great ravages have sometimes been repaired in process of time, by management and strict attention to regimen.—A diet, entirely milk and vegetable, gestation, or such gentle exercises in pure air, as the enfeebled frame can bear without immediate injury, are chiefly to be relied upon.

SECT. IV.

Ulceration of the Intestines, or Dysentery.

CHANGED structure, inflammation, erosion or ulceration of the inner surface of the alimentary canal, accompanied with a changed condition of the customary evacuations, both in time and quality, is a common consequence of contagious fever, and, in a still more remarkable manner, a consequence of the endemic fever of the West Indies. The alimentary canal, particularly among luxurious nations, is known to suffer more severely than other parts, during the continuance of fever; and as it suffers so remarkably during disease, its functions are seldom restored in proportion with those of other parts, at the period when relapse occurs. When fever occurs under this condition, the alimentary canal suffers conspicuously,—purging in short becomes a leading feature of the disease:—a period of crisis or abatement arrives, but some derangement of the bowels still remains; at another interval, relapse recurs; the febrile symptoms are faint, the dysentric symptoms prevail, or in a manner absorb the whole, giving an appearance of common flux.

The complaint under view may be considered as a consequence, or a changed form of fever,—a termination of fever in local disease. The evacuations in the commencement are often large and watery,

slimy, sometimes bloody; the gripings are severe, and the returns are often in some measure periodical, the properties of the fever not being as yet entirely lost. These appearances change gradually, the evacuations become more frequent, but less copious and effective; the mucus becomes darker coloured, and is often mixed with dark blood;—the disease in short fixes more immediately upon the colon and rectum. In this case the vessels of the coats of the intestines are distended, the secretions are altered, the mucus is increased in quantity, changed in quality, and often mixed with blood; the coats of the intestines become thickened and changed in structure, the surface exhibiting a series of distended blood vessels, extending to the mesocolon and continuous membranes. Circumscribed inflammations next take place, terminating in suppuration and erosion: from these eroded surfaces, matter is discharged by stool; and sometimes matter is absorbed into the system, irritating and inflaming the glands of the mesentery and mesocolon in an extraordinary manner. The appearances of the evacuations are various; sometimes they chiefly consist of mucus, changed in quality and mixed with blood; sometimes they are thin, fetid and dark, like bloody or dirty water; sometimes they are green or yellow; sometimes white, as if real pus; sometimes bloody sanies or ichor; and in many cases grumous fetid blood. Where there is a strong gangrenous disposition in the system, the event is speedily decided, but more frequently life

is slowly and gradually consumed, under the most extreme degrees of emaciation.

The examination of the tract of the alimentary canal, in persons who have died of chronic dysentery, points out clearly, that little benefit is to be expected from general remedies:—local disease,—congestion and ulceration,—is the leading feature; local applications consequently offer themselves as the obvious remedy. Doctor Borland, surgeon to the forces in St. Domingo, has prosecuted this idea with much industry, and by means of local applications has conducted several apparently desperate cases to a fortunate issue. The applications chiefly employed are solutions of sugar of lead, white vitriol, alum, and, on some occasions, corrosive sublimate; to which may be added, as circumstances indicate, tincture of myrrh, bark, decoctions of camomile and of cicuta. The mode of managing these injections is the following: ten grains of sugar of lead, sometimes fifteen, dissolved in three or four ounces of water, sometimes with, sometimes without opium, are thrown up four or five times a day, or oftener:—the quantity thrown up is small, in order that it may be retained with more certainty, so as to remain for some time applied to the diseased parts. Previous to this application it will often be necessary to wash out the lower intestines, by a large glyster of warm water. The relief from this application is usually great; but it is almost unnecessary to say, that it is only where the disease is seated in the rectum or colon that permanent bene-

fit is expected from it ; and it may be observed further, that if the coats of the intestines be much diseased or fundamentally changed in structure, such means may procure a respite, but cannot of themselves effect a cure.

In this, as in every other disease, it is necessary to examine the actual state of things minutely ; for according to information on this head, the means of cure require to be modified.—In the commencement of the malady, or period, at which the fever begins to assume the dysenteric form, it is often proper, where the gripings are severe, the abdomen tense, the pulse small, hard, and the skin dry, to take away some blood ;—the quantity to be regulated by circumstances. After this evacuation has been performed to sufficient extent, a brisk, sometimes a severe purging medicine,—rhubarb with calomel, even julap with calomel, or calomel followed by the bitter purging salts, serves, on many occasions, to put matters in a proper train. The operation of a brisk purgative, by unloading and emptying the over distended vessels of the intestines, gives an opportunity of afterwards exciting these vessels to proper and healthy action, by a judicious management of tonic remedies. Among these tonics may be ranked white vitriol, alum, powder of angustura bark, powder of camomile flowers, semirouba, &c. But it must always be remembered, that where tonic or astringent remedies are employed in dysentery or diarrhœa, the attentions must likewise be directed to the opening of the surface of the body, by sudorifics,—among which

Dover's and James's powders hold the first rank. Warm fomentations to the abdomen, are sometimes of benefit; washing, after every evacuation, with cold water is refreshing, and even produces permanent good;—tonic applications, in glyster, likewise have place in the present circumstances.

If the complaint be advanced in progress, or arrived at a state of erosion, it becomes an essential object to ascertain as near as possible, by examination of the stools and other circumstances, the nature and extent of the internal ulcers. Where the tenesmus is distressing, and the pains severe, with sensations of heat and irritation, injections of sugar of lead with opium, produce signal relief. There are cases, where alum or white vitriol appear to have advantages; but it is not an easy matter to define them with precision. Where the discharges of mucus are abundant, without evident marks of extensive ulceration, alum appears to be well adapted. In ichorous and sanious discharges, solutions of corrosive sublimate were employed with benefit:—tincture of myrrh, bark, even solutions of blue vitriol, might be useful in others:—fomentations, or glysters of decoctions of camomile flowers or cicuta, deserve trial.

Local applications, by glyster, undoubtedly make an important addition to the cure of dysentery or intestinal ulceration; but many other helps are required to establish the recovery of health. Warm and cold bathing, employed alternately, are capable of producing a great deal of good; they alleviate pain, afford comfort, and facilitate the operation of

other remedies. Washing or bathing, for a length of time after the operation of stool, is perfectly safe, and has effects more extensively beneficial than is imagined. Negroes, reduced to the last stages of dysentery, often sit in a running stream, or in a tub of cold water for an hour together ; they find benefit from it ; it has been tried and has been found to afford similar benefit to Europeans, in untractable states of the disease. Such remedies are useful helps ; but the mass of congestion and changed organization, which often takes place in the coats of the alimentary canal, in the mesentery and mesocolon, if, in reality, under the controul of medicine, can only perhaps be expected to yield to mercury, skilfully introduced into the system. But though local applications may amend, and even in some degree cure local ulcerations ; and a judicious and persevering course of medicine remove the deeper foundations of disease, yet health can only be established, and confirmed by abstinence, and a scrupulous attention to regimen. Whey, rice, barley water, the juice of herbs and vegetables are alone admissible in diet. It is almost superfluous to say, that the irritations of rich and stimulating food are hurtful. It is obvious to common sense, and too often proved by experience, that wine and grosser aliments aggravate the disease by direct effect.

CHAPTER XIII.

Original local Modes of Action of the Cause of Fever.

THE disease, described in the preceding pages, manifests the operation of a febrile cause, in evident febrile form; a few words are now added to explain operations of the same cause, under different and more circumscribed appearances. The frequent connexions of diarrhœa and dysentery with fever, the changes and alternations, which these forms of disease commonly undergo, cannot well fail to suggest to a reflecting mind, that the original cause is one. This opinion has occurred to many writers; and the author was convinced of the truth of it, from his own observation, in the late American war; but the opinion of a similar connexion, between fever and sores on the legs, or eruptions on the skin, did not present itself till the present war, and was not proved to conviction till the year 1797. The existence of the fact cannot now be doubted, and, by means of it, may perhaps be explained something of importance in the chain of the operation of febrile causes. It seems thus, that this cause, whatever its nature may be, raises general and febrile commotion at one time; at another it attaches itself to parts, impedes their healthy action or destroys their functions. This opinion is well explained by the following fact. Five persons, strangers in the climate, ac-

accompanied the author to the hospital of the foreign troops, at Croix des Bouquets in the month of November 1796. In less than three weeks, three of them were attacked with fever; they were bled largely and purged freely; the disease was cut short at the time; but, no preventative means having been used, it recurred at the expiration of a fortnight in all; evacuations were again employed, but the disease was now only changed to intermittent,—mild indeed in form, and soon terminating;—another of the five was attacked in the absence of the author,—treated feebly, and died on the fourth day. The fifth experienced diarrhœa; and the author was troubled for near six weeks, with a succession of pimples or blotches on the legs, some of which inflamed considerably with great pain, and continued a fortnight before they showed a disposition to heal. In local derangements,—diarrhœa and sore legs, seems to be exerted the operation of the cause of fever upon Africans, after arrival in the West Indies: these rarely experience formal fever; but they rarely escape one or other of the above indispositions.

SECT. I.

Diarrhœa or Dysentery.

THIS form of complaint, whether depending upon a cause of fever endemic or contagious, is often a forerunner of great sickness; in other cases, it appears in common seasons in certain districts of country,

and sometimes it appears among subjects under certain accidental conditions of situation. When depending upon the cause of endemic fever, among strangers, it appears most frequently in districts where the endemic is strong, in spring and the beginning of summer,—under showers or moderate rains: Among seasoned subjects or natives of the country, it is frequent in autumn or the beginning of winter: it is common in the hilly situations of tropical countries in the seasons of rain; and seems there to be nearly allied with intermittent. When it depends upon the cause of contagious fever, it appears frequently in the field, while men lie upon wet ground or wet straw, where they are distressed in spirit, confined and cramped in their views. But though the above conditions seem, for the most part, to modify the operation of the cause of fever to a dysenteric form; yet this form sometimes prevails epidemically, where such causes do not obviously exist.

It is not necessary to enter, at present, into a detailed description of this form of disease; but it is necessary that it be distinguished, from the form mentioned before as a consequence of fever, or a form of relapse. This disease sometimes begins in a mild manner, and advances gradually to a certain point; the evacuations are large, watery, sometimes feculent, or bilious, with moderate gripings, and with little diminution in the appetite; sometimes the gripings are severe, with stools frequent, small and ineffective,—the appetite impaired,—

the thirst increased,—the skin dry, or clammy and greasy,—the bowels irritable to drinks or food, with faintness, failure of strength and rapid loss of flesh; sometimes the evacuations are mucous and bloody, with faintness, rapid sinking of strength and severe gripings;—sometimes they are bloody and fetid, the patient melting down without pain, or without much appearance of fever.

This disease, mild or more violent at the attack, is not ordinarily dangerous, if judiciously treated in the commencement; but if allowed to go on without interruption, or if treated in an improper manner, foundations of derangements are soon laid, which destroy life with much certainty.—In regard to treatment, it is often advisable to take away blood; and after bleeding, it is proper to purge briskly, or rather severely,—an emetic is often of benefit, followed by a strong dose of rhubarb and calomel, or julap and calomel, the bowels during the operation being well washed out by watery liquors; Dover's powder, or James's powder, with a certain proportion of laudanum, and the occasional use of tonics, white vitriol, alum, angustura bark, colombo and powder of camomile will often complete a cure; but the alternate use of evacuants, sudorifics and tonics is required at intervals, to prevent relapse. Local congestion takes place in the present case to a certain extent; to remove this congestion, local evacuation is the direct and obvious remedy; after which, a strong power, capable of exciting the weakened action of parts to usual

energy, is necessary. This mode of cure is illustrated, by the example of ophthalmia : where the vessels of the eye retain irritability, and some energy of action, copious bleeding alone often removes the complaint ; but where the irritability is diminished, or the parts have lost their power, bleeding is not effectual, unless followed by a tonic and stimulating application.

In the article of diet, abstinence from wine and animal food demands to be rigidly observed :—bouillon is allowable ; but the chief part of diet ought to consist of rice, barley or sago rendered palatable by aromatics and spices ;—it is in a state of hunger, that the vessels of the alimentary canal best recover their activity ;—what fills and loads is therefore improper and hurtful ; and it is difficult to say on what foundation, port wine is so strongly recommended ; a glass of spirits in gruel, seemed in general more acceptable. Besides diet, exercises are of great consequence in removing and preventing the return of diarrhœa : whether on foot or on horseback, the exercise ought not to be intermitted till perspiration has been excited, and supported for a certain time. Wearing of flannel will often be of benefit, in preventing the tendency to relapse ; washing, or bathing the abdomen and neighbouring parts in cold water, gives relief from tenesmus, gripings and uneasy sensations : it is the greatest luxury, which the art possesses, and not the least beneficial remedy,—but its benefits are known only to a few, the generality of

men being perversely bent against the employment of it.

SECT. II.

Cutaneous Eruption,—and Ulcers of the Legs.

ERUPTIONS on the skin, blotches, a species of itch, sores and ulcers on the legs, stand, by a curious connexion, in the link of operation from a cause of fever. Diarrhœa is frequently a forerunner of fever,—endemic or contagious, sometimes intermixed with it, or alternating; blotches, and sores of the legs frequently precede diarrhœa, intermix with diarrhœa or fever, alternate, occupy certain situations of country, or appear principally under certain condition of subject. In the dry, rocky, and hilly districts of country in tropical climates, or on mountains near the sea, sore legs are a general and perplexing malady with European soldiers; they are intimately connected with intermitting fevers and diarrhœa; in wet weather, or in the rainy season, intermittents and diarrhœa are frequent; in dry weather, sore legs are more common; sore legs also appear frequently among classes of men, moved to a new climate, who seem little susceptible of febrile irritation, from the application of a febrile cause. Such are Africans, and persons who live temperately and soberly—(in common language poorly), or who have experienced frequent changes of climate, and, under these changes, led a life of activity. Blotches on the skin, and sore legs frequently appear in crowded barracks, in ships or hospitals; they depend evidently upon a

cause of febrile contagion ; but the precise state or degree of contagion, which originates this form, is difficult to be marked : the appearance however usually shows itself in an early stage of contagion,—in a contagion generated among a set of men, rather than imported from a concentrated source.

The present design does not admit of entering minutely into the history of sore legs, as the subject has only been introduced to establish its connexion in the chain of operation of febrile causes. Sore legs, more particularly in tropical climates, are usually observed to originate in pimples or blotches, which discharge a fluid, sometimes thin and acrid, sometimes thick and yellow, or white like well conditioned matter. These blotches sometimes dry up, or heal very speedily ; but the healing is soon followed by others in different parts of the limbs ; they thus break out and heal, and heal and break out in regular succession ; sometimes instead of healing, a red circle spreads around, with sharp and stinging pain. By care and good management, even these are frequently healed or prevented from degenerating ; by neglect or improper treatment they spread rapidly, affect the membranes which cover the bones, and even affect the bones themselves with caries. The discharges, from these rapidly degenerating ulcers, often consist of a glairy, dark coloured jelly, sometimes of a dark grumous fetid blood, the parts breaking down with an astonishing rapidity,—life, in such cases, is soon destroyed,—it is even seldom saved by removing the limb, without uncom-

mon attention, and sound views in the management of diet.

The author enters into no detail of cure. Where the complaint has been of long standing, and has become in a manner, stationary, such local applications, as change the state and condition of the parts, are necessary ; but while this is done, what is due to the improvement of the general habit, and to security against accidents, likely to arise from the suppression of local disease, must be carefully held in view. Among local applications, poultices of certain herbs and vegetables common in the West Indies, of acid and astringent fruits, the applications of powders of roots and drugs, as rhubarb and bark, of escharotics, as burnt alum, red precipitate, blue vitriol, caustic alkali, &c, are frequently resorted to, and generally with benefit to a certain extent. But it must be remembered, that whatever favourable changes be induced upon a diseased surface, these changes must be cautiously regarded, till evidence appears, that the general health is secure :—healing, or improvement in the appearance of an ulcer is often followed by an attack of fever, and, for the most part, fever of the most dangerous and malignant kind. Full diet of animal food, with a large allowance of wine, is often prescribed in the putrid, and rapidly spreading ulcers of the West Indies. Animal food and wine, in the opinion of the author,—and the opinion is founded upon experience, may be considered as singularly hurtful. The suitable diet here consists, or ought to consist, entirely of vege-

table matters, cooling fruits and diluting drinks; beverage of cream of tartar, or good spruce beer, are recommended in preference to others. In way of medicine, brisk and even severe purging, with calomel and julap or rhubarb, is proper at certain intervals; bleeding, general or local, on many occasions; washing with cold water; exposure to cool and free air; and, as far as can be accomplished, a gentle degree of exercise or motion.—Doctor Borland, surgeon to the Forces, acting on this principle, has been singularly fortunate in his treatment of ulcers, sore legs, and their consequences, in districts of St. Domingo, where great calamity has been suffered from those afflictions, under different management.

CHAPTER XIV.

Prevention.

THE general prevention of disease depends little upon rules delivered by medical men, either in civil or military life; the curing of disease, as it were by anticipation, depends much upon the surgeon of a regiment;—to explain, in a few words, the principles, by which the conduct of those intrusted with this important charge ought to be regulated, will not be a superfluous undertaking.

The cause of fever, as is well known, is a matter, the intimate properties of which we have not yet

discovered, and which in all probability we never will discover ; for they are not obvious to the senses. But though the matter itself be imperceptible to our view, we often trace the effect of its operations ; and we know, in many cases, to appreciate the relative conditions of the body, which favour or retard its action. It is observed, that this cause does not ordinarily produce disease upon immediate application, or immediate reception into the animal system, —a space of time intervenes,—of different duration, indeed, according to circumstances, but always of such duration as to prove, that some unknown process or modification takes place, before a disease of form appears. The conditions of the human body change and fluctuate constantly :—material alterations occur daily, and still more remarkable alterations occur at regular, but more distant periods. Of these periods, the septenary,—the seventh, the fourteenth and twenty-first days are principally distinguished : hence it is observed, that certain aptitudes of collision, between the relative state of the body and the state of the morbid cause, are produced at these periods more readily than at others. In those aptitudes, or movements of the frame corresponding with the action of the cause, consists that form of things called disease ;—what destroys the correspondence, breaks the chain of operation ; what prevents, or impedes the progress of these correspondencies, from proceeding in the ordinary train, retards the expected appearance of the effect. That laws of this nature do prevail, is illustrated by

the consideration of the difference of period, at which persons, exposed to the same causes, manifest the operation of these causes;—a difference, which seems to arise, at one time, from natural quality of constitution; at another from foreign and arbitrary accidents. Of these arbitrary causes, some appear to hasten, others to retard, perhaps to prevent altogether the collision of the morbid operation. It is thus observed, that if the cause of fever exists in the habit, but exists only in latent form, sudden and desultory exertions, rest after fatigue, or indolence after activity, debauch after temperance, excess amidst customary regularity; and a variety of other causes, which seem to produce effect by disturbing the existing balances of the system, call forth the operation of the latent cause. These causes act, if it may be allowed to guess at the reasons of things, by permitting an undue accumulation of the principle of irritability; or by suddenly touching a spring, which calls, to unnatural action, that irritability unduly accumulated. On the other hand, the operation of the cause of fever is retarded, perhapswarded off altogether, by a regular succession of military enterprises, as by the exertions of an active campaign; by a series of manly and animating exercises, carried to the point of impressing the actions of the system; by service during sieges; and, in many cases, by impressions during captivity; in short, by causes which maintain a strong hold on the mind and body, and thus resist the derangements of other causes. An accumulation of the

principle of irritability seems to result from sumptuous and full living, thereby disposing to fever; the opposite is the effect of abstinence, and the consequences correspond. Climate also has its effects, as have modes of clothing; and perhaps, all the causes which disturb the healthy operations of animal life, or, which strengthen and confirm these operations, are reducible to very simple principles of action.

In the way of prevention, little depends upon the surgeon of a regiment in Europe; for few surgeons presume to interfere in the discipline and economy of troops. It is however an important part of medical duty, to attend minutely to the history and conditions of recruits; not only to ascertain, that they do not actually suffer from disease; but that they have not had connexion with sources of contagion. Convalescent men from hospitals demand a similar attention; these ought perhaps in no instance, where contagious disease exists in the hospitals of an army, be allowed to mix with their comrades, till after a purification of three weeks. Neglects on this head, have often produced desolating mischiefs in armies. Eruptions on the skin, blotches, or a species of itch, sores on the legs, and slighter forms of diarrhœa, require particular notice: under these aspects, contagion has often crept into a corps; and even, under such aspect, it has often diffused itself widely among troops.

The sphere of a surgeon's authority extends wider, when on service in the West Indies; but still

the higher arrangements, for the preservation of health, do not depend upon the controul of medical men. Such means however as are in their power, ought to be diligently and promptly employed; for the climate of the West Indies does not allow of temporizing. It will, for the most part, be proper to take away some blood from an European, immediately upon his arrival in a tropical climate; and it is still more proper to purge briskly, perhaps severely once a fortnight or oftener. Calomel and julap, or calomel with cathartic extract, seem to be better than the gentle laxatives, which merely open the body. It is observed that persons subject to diarrhœa, from slight causes, generally escape serious attacks of fever. This seems to point out the propriety of opening the body, freely by purgatives; as the knowledge of the fact, that ulcers of the legs and fever do not often exist in the same subject, seems to indicate, that to open issues, might be a means of preserving health; but this perhaps is a trial that cannot be well made in an army of soldiers. It is thus a general and a proper rule, to bleed an European on his arrival in the West Indies, and to purge him severely, at least once a fortnight, for the first six months; but on other occasions, when persons have committed excess, or undergone extraordinary exertion, the same means are essentially necessary; they are moreover in a manner indispensable, when after military service in the field, of the continuance of a few days or of months, the soldiers are brought to a state of rest. Sicknes is then an almost

never failing consequence ; unless prevented by copious evacuations,—bleeding, purging and abstinence.

CHAPTER XV.

Convalescence.

CONVALESCENCE requires great aids from the military officer ; it also demands the constant attention of the surgeon : it is usually slow,—or it is uncertain in contagious fevers in Europe, equally as in endemic fevers in the West Indies. The usual periods of relapse are known, and means of prevention ought of course to be used previous to these periods. Bark is chiefly trusted to ; but in order to be effectual, bark must be given in large quantity, and given at distant intervals ;—the daily use of it is less proper, for it then makes less impression. The bowels require attention : tincture of rhubarb and aloes is a good form of purgative ; others, with the addition of warm aromatic tinctures may sometimes be preferable. The management of diet is a most essential consideration :—the food ought to be light and digestible, savoury but not rich ;—the appetite ought never to be satiated, even with the most innocent aliment : one glass of Madeira wine, in the twenty-four hours, is ordinarily as much as can be useful to a convalescent ;—and here it may be remarked, that the consumption of wine in hospitals is not simply

prodigal;—it has been destructive to an incalculable extent. Exercise is allowed by general consent to be useful in the recovery of health; but many will probably object to the practice of returning men to duty, in the early period of convalescence. The practice is notwithstanding a good one. There are few people of experience who have not observed, that a convalescent gains more in one day, by the simple act of washing, making clean, and preparing for service, than by swallowing bark and drinking Madeira, for three weeks in an hospital. It has been a custom with the author, and he cannot help recommending it to others, to dismiss men from hospitals, as soon as there is evidence that the disease has completely ceased; unless where strength is much impaired. It must be acknowledged, that men dismissed under such conditions relapse not unfrequently; but the relapses are commonly lighter than the original disease, and for the most part easily overcome; while the strength, in such cases, suffers so little, that the subject is ordinarily fit for duty, as soon as actual disease is gone. Relapse occurs when men are soon dismissed; it occurs not less frequently perhaps, when the patient remains in hospital under the idea of gaining strength; and it is then, for the most part, of a more serious kind. Under the one mode of management, a regiment loses little duty from the soldier, and military habits are not forgotten; under the other, four or five months will frequently be the period of confinement, and the soldier will then return to duty, slothful and

enervated,—little better than a recruit. There are various other matters, which belong to the convalescence of troops, but which do not lie within the controul of a medical man: the powers of medical men in armies are limited, but there is culpability, when they neglect what they can command. It is in their power, as it is their duty, to examine twice a-day every man, who has been in an hospital under fever,—for a fortnight at least after dismissal;—for, as by this means, an impending relapse will often be foreseen, it may, in the same manner, be often prevented, by timely assistance.

PART II.

AN
EXPLANATION

OF THE

PRINCIPLES OF MILITARY DISCIPLINE, MILITARY ECO-
NOMY; AND A SCHEME OF MEDICAL ARRANGE-
MENT FOR ARMIES.

EXPLANATION

OF THE

PRINCIPLES OF MILITARY DISCIPLINE, AND
THEORY AND PRACTICE OF MEDICAL ARRANGEMENTS
FOR THE ARMY

ADVERTISEMENT.

It is very probable, some will be of opinion, that the following tract enters into a province, which does not altogether belong to the author. The chief view here is directed to improvement of the moral virtues of the man,—to infuse a principle of heroism into the mind, as the surest bond of good conduct in the face of an enemy. The idea may appear visionary and enthusiastic; but, if an experience of upwards of twenty years can enable an ordinary person to form an opinion; a man without virtue never yet proved, upon fair trial, a good foldier. Such a man, indeed, often commits slaughter on the day of route; but he is usually the first to run in the hour of danger. But as the preserving, and the restoring of lost health, is the object and design of this work; and, as health, is intimately connected with the improvement of the active powers of body, and with the improvement of the heroic qualities of mind, the bounds of a medical subject, it is presumed, are not transgressed in the following sketch. General principles are investigated; the grounds on which they stand are exposed; but no opinion is recommended, so as to be acted upon, which does not carry with it truth,—even to demonstration.

PART II.

PRINCIPLES OF MILITARY DISCIPLINE.

CHAPTER I.

An Explanation of the Principles of Military Discipline.

THE discipline of soldiers, to whom is intrusted the defence of the rights and liberties of nations, is an object of great importance ; but it is an object, ordinarily neither well conceived in theory, nor diligently executed in practice. It is indeed an object of difficult attainment ; for it involves a multitude of concerns, commanding an intimate acquaintance with the intellectual and active powers of man. Disciplined troops are placed upon the pinnacle of human perfection ;—they are supposed to possess minds virtuous and heroic, bodies vigorous and capable of enduring hardships and fatigue ;—selected, arranged and formed, according to systematic rule, into an organized and consistent whole,—into a machine animated with one soul, and moving with one body. The subject thus naturally divides itself into different branches ; viz. into a choice of subjects ; into an improvement of the active powers of the body individually ; and into an arrangement of these originally heterogeneous materials, into a machine organized in its parts, and capable of acting in concert, so as to produce an united effect, in which no portion of the power is lost, or irregularly applied.

This is the object of military discipline, the execution of it belongs to the military officer. The business of health is in the province of the physician. This however is an object little brilliant, and ostensibly of small consideration; though the hinge upon which the execution of the other essentially depends. To establish principles, according to which the health of soldiers may be preserved, and the powers of exertion improved, is the purpose of this tract:—military suggestions do not belong to it; and are not hazarded, unless when inseparably connected with the subject of pursuit,—the improvement of the health, virtue and vigour of the man.

The purpose of war is double,—Defence or Conquest; the character of its instruments, of course, is of different estimation. A soldier, who volunteers the defence of the rights and liberties of his country, necessarily possesses a spirit of virtue and independence, a generous love of mankind, and attachment to his native soil. The mind is here under a commanding impression,—an impression, that freedom is an unalienable inheritance,—received from fathers it must descend to sons, pure and unimpaired. The sentiment, cherished, swells to an enthusiasm of valour; and a soldier of this description is an object of the highest veneration in a nation: on the contrary, a soldier formed for the trade of war, whether by a King of Prussia, or the Republic of France, is an object of dread and aversion; the least criminal sentiment, that can be supposed to influence his conduct, is avarice,—the hope of plunder,—or the love of adventure.

Among nations, celebrated for judgment and spirit in defence of their country, the Spartans, Swifs and Hollanders hold the first place. The Macedonians under Alexander, and the Romans, till riches and luxury corrupted their minds, and enfeebled their bodies, were conquerors in the ancient world. Ambition and a love of glory, seemed here to predominate over avarice. Of modern conquests and modern conquerors, avarice, or a speculation on the chances of advantage, has been the leading motive ; and as avarice is of all passions, which influence the actions of man, the most base and degrading, the military character has lost much of the generous heroism of ancient times.

Philip, King of Macedon, as he was the first prince, of whom there is authentic record, who, can be considered as a systematic politician, so he was the first, who planned and executed a comprehensive system of military discipline. The semi-barbarous subjects of Philip, were qualified, by nature, for the business of war ; their minds were easily impressed with the enthusiasm and glory of conquest ; their bodies were powerful ; and their tactic, from sound principle and long practice, became so exact, that if ever soldiers could be deemed invincible, they were the aged soldiers of Alexander.

The Roman nation was not eminent for invention, but it was attentive to improvement in military tactic ; and it incorporated, into its code of discipline, whatever appeared capable of advancing the art of war. The Roman was a nation of sol-

diers by trade : ambition, or the glory of conquest was the motive which seems principally to have influenced its conduct,—a motive which operated, for a long series of years, in a tenor uniformly progressive. But the Romans having overrun the world, and plundered the wealthy, became rich in the common language of mankind, poor in reality, as dependent ; being rich, they became luxurious and sensual ; being sensual, they became effeminate, enervated and cowardly ; the acquisitions of their ancestors, were intrusted to the defence of mercenaries ; the authority of the nation became contemptible, for the ancient virtue was supplanted by sensuality and vice. The history of the Romans gives a striking picture of the causes of revolution in the moral world,—revolutions, which as necessarily follow a certain progress and combination of things, as the decay of a plant follows full growth and maturity. There is a point in human affairs beyond which prosperity cannot advance ; and, it is not in the nature of things, that prosperity remain long stationary. Industry,—oftener rapine accumulates wealth ; wealth begets sensuality ; the powers of the animal, individually and collectively, are absorbed in the gratifications of sense ; vigour of mind and body decays ; the fabric of the man, and the system of moral arrangement equally fall to pieces ; the materials remain, but the form changes ; a new train of action commences and proceeds in a progressive course, until the accumulation of similar causes produces a similar effect. It is thus that the

figurative expression of the Scripture "riches make "unto themselves wings and fly away," is founded upon accurate observation of events, and deep knowledge of the principles of things.

Ambition, and glory of conquest have been leading motives of action, with the generality of warriors; and as might be naturally supposed, the views of leaders of armies, have been generally directed to infuse similar sentiments into the soldiery. Ambition and glory of conquest,—(vices in the eye of reason, yet as aiming at superiority over other men), call forth the nobler qualities of the human character; and on this ground, soldiers have been usually, not only the bravest, but the best,—the most honourable, and often the most virtuous of the race. A soldier under this view possesses mind and sentiment,—and commands respect; but a soldier, formed upon the model of the great King of Prussia, seems to be degraded to the lowest point of human degradation—to animated matter, with simple locomotive power. The authority of the King of Prussia, and the success of the Prussian arms have made strong impression on the mind of modern Europe, in the business of war, or rather, in the business of preparing men for war; but positive opinions appear, in this case, to have been too hastily formed from relative conditions. The King of Prussia is allowed to have been a master in his profession:—he possessed knowledge in arranging the order of a battle, superior to those who opposed him; perhaps superior to any general of his time; but the assumption of the princi-

ple, which directed his views in the art of discipline, does not entitle him to the same praise ; it is evidently erroneous. It goes to extinguish the active qualities of the human mind—the motives which lead men to excellence ; it may repress vice, but it inspires no sentiment of virtue ; nor does it encourage that bond of sympathy, by which men are held together, in the hour of danger. A foldier, formed upon this principle, will kill and plunder, rather than be killed or plundered ; or advance, while causes behind seem stronger than causes before ; fear is the impulse ; and, while the principle of action is the same in two contending armies, the general, who estimates appearances, will, for the most part, know events, before trials are made. A line of Prussian foldiers, of great weight and solidity, from the bulk of body and the manner of arrangement, necessarily imposes upon troops, acted upon by appearances ; but, if the business come to be decided by actual force of arms ; ardour of courage, energy of mind and activity of limbs—will not fail to overturn a heavy machine, the strength of which consists chiefly in the mechanical arrangement of its parts, and which, when deranged, possesses but a feeble power of rectifying itself.

The troops of the King of Prussia were troops of a commanding appearance—and their enemies were ordinarily of a description to be operated upon by appearances. Had they been opposed to Swedes or Swiss in the days of their glory, or to the Highlanders of Scotland, before they were taught to mea-

sure their paces by the swinging of a pendulum, the merits of the Prussian tactic would have been brought to an experiment, which might have been allowed to determine its value. Indeed, the small success of the Prussian arms, on the Rhine, gives room to believe, that Frederick the Third, owed his victories more to his plan of battle, than to the improvement of his discipline ; in support of which opinion, his successor found and acknowledged, that his regular battalions were unable to stand before the impetuous attacks, of the half formed soldiers of the French republic.

CHOICE OF SOLDIERS.

The poor, the pastoral and semi-barbarous nations seem, at all periods, to have been the conquerors of the rich, the commercial, the manufacturing, the polished and refined. With this fact in view, the rulers of nations ought to select their soldiers, from among that part of the community, which most resembles this description. The peasantry of a country, particularly the shepherds and the hunters, are exposed, in their daily occupations, to vicissitudes of weather, and familiar with the situations and hardships, which fall to the lot of soldiers in times of war ; but further, the shepherd, hunter, and even the agriculturist, in countries where farming has not become a monopoly of the few, possess virtue of morals, sentiments of religion, a respect for the honour of their nation, temperance in manner of living, and the foundations of good health. On the

contrary, manufacturers and artisans, men little familiar with vicissitudes of weather, unaccustomed to exertion, to hardship, to fatigue, seldom temperate or healthy, helpless and dependent on imaginary comforts, are ill calculated for the business of war; but if ill calculated on this ground, they are less eligible on account of moral qualities. It is not necessary, in this place, to inquire by what process manual occupations cramp the faculties, and, as it were, lock up the resources of the mind, necessary even to the common soldier;—the fact is certain, and it is also certain, that high sentiments of religion, of honour, of love of country, of respect for good name and reputation among fellow-citizens, do not flourish among men who live by the labour of the day,—who carry about with themselves the implements of their art—their means of subsistence, and who are not excluded from society and employment by flightier blemishes of character. It is thus that artisans, little fit for the purposes of war from defects of body, or from inexperience of a condition of things similar to war, are perhaps hazardously intrusted as soldiers, to defend rights and liberties against invading powers, from the principle which predominates in their minds, and regulates their actions. The amount of hire is the object of the mass of manufacturers, even of agricultural day-labourers; and, in attainment of this object, the means, as in the other concerns of mankind, are of inferior consideration. The farmer, even the peasant, who possesses a cottage of his own, acquires an attach-

ment to a fixture, which engages him to defence upon principle :—a labouring manufacturer is a man of no place,—or rather of every place ; he is, in a manner, an insulated being, who can scarcely consider himself, or who rarely is considered as a part of the community,—an instrument of luxury, or a drudge of toil.—The attachment of such men to a community, of which they do not form a part, or even to a country, to which they owe little but their birth, cannot, in the nature of things, be supposed to be strong: they do not appear to be safe materials in a state, at any time ; in times of threatening commotions, a reasoning animal could scarcely expect, that they should be intrusted with the use of arms, for the defence of national independence. It is presumed that statesmen see things in clearer light, and extend their views farther than ordinary men ; but if permanence be more desirable than a brilliant but transient splendour, rulers would do well to organize the body politic of a nation, upon such foundations, that every perfect part, that is every man who marries and begets children, be a constituent in the fabric : thus from the prince to the cottager, the machine would be animated and alive ; while every member, being equally interested in maintaining the existing state of things, the movement would be regular, and duration would be protracted to a distant period : under monopolies and exclusions, the natural order of things is disturbed :—undue accumulations take place in some parts,—deprivation in others ; the circulation, irritated in one or

gan, stagnates in another ; or is temporarily stimulated to quicker motion, by a succession of expedients. One law seems to influence man individually, and his various associations. The parts, irritated by the accession of matters, which do not properly belong to them swell out beyond their capacity, and, by a necessary consequence, burst, or subside, with loss of energies. This happens in the natural body ; it happens daily in the body politic,—in the inferior arrangements of society ; and it has uniformly happened to nations at more distant periods, from a more general operation of the same causes.

The virtue of the mind and the health of the body, in the opinion of the author, are the qualities to be first and essentially regarded, in the choice of a soldier : the activity of the powers of the body, he considers as of great importance ; but the exterior figure of the man, valued in the present day higher than any other attribute, he is disposed to rank in a very inferior place. In this particular, the opinion of military men is in direct contradiction to their experience. A man of six feet is more valued, on account of his size only, than a man of five feet eight ; yet there is not an officer of service, who does not know, that grenadiers, or men of bulky bodies, are the first to fail on a march ; and medical men know that they die in hospitals, in a greater proportion than others. The King of Prussia, or rather the father of the great King of Prussia, seems to have been the first in Europe, who selected his

soldiers by the bulk of the carcass, and who prosecuted the idea systematically. If war be converted into a business of appearances, generals having mutually predetermined to advance or retreat, on a demonstration of lines or columns of troops, of a certain solidity and extent in certain positions, fighting battles for pastime, as they play a game at chess, the rule may be good ; but the soldiers of a nation, which knows nothing of this trade of war, may be chosen by a better mark ;—by active and vigorous limbs, by a firm and determined aspect of countenance. The middle sized men, where matters come to be decided by exertion, are uniformly the best ; and there is little doubt, but that any given number of ordinary light infantry, matched against a like number of grenadiers, though unable perhaps to withstand the weighty shock of the bayonet, would harass and annoy them by their superior activity, in such a manner as to demolish them in the end. The bulk of carcass has an imposing appearance, upon minds prepossessed with fear ; but it is of no actual advantage against fire-arms ; while fear can have no operation upon a man, who enters the army from a generous motive, and who is formed to the business of his profession, upon a sound principle of discipline.

MEANS OF IMPROVING THE MORAL QUALITIES OF A SOLDIER, AND OF INSPIRING THE MIND WITH SENTIMENTS OF HONOUR AND HEROISM.

It is only in modern times, that attention to the

mind of a soldier has lost its place, in the system of military discipline. The King of Prussia, who appears only to have regarded the exterior of the man, commands opinions on this subject, with an overbearing authority. No question is now made respecting the virtue, the morals or religion of a soldier. In soldiers recruited from jails, work-houses, or from the corrupted materials of manufacturing towns, the habits of vice are thought to be too deeply rooted to admit of removal, and it is seldom that an attempt is made. To endeavour to inspire with sentiments of honour, religion and virtue, the heterogeneous mass of men, enrolled on the list of armies in times of war, will be esteemed ridiculous ; it certainly will be difficult, but it is not impossible. The mind of man, even absorbed in vice, is capable of being roused by strong stimulation, and when roused, of being directed to a laudable pursuit. The mind in reality is easily impressed ; six months, employed in inspiring a passion of heroism, and in directing operations under that passion, will produce a more steady train of action in the day of battle, than could be accomplished, by drilling or operating externally upon the motions of the limbs, in a space of six years ;—and with this advantage, that actions proceeding from the internal impulse of mind, will be full and effective ; constrained actions, learned under the fear of the rod, can never be complete and vigorous ; and they necessarily become irregular and incorrect, when the cause which produced them is withdrawn. It is

therefore the first step in discipline, that the relaxed and dissolute recruit be formed to act, from the impulse of a virtuous mind ; and there is abundant experience to prove, that the object, though difficult, is not without the reach of attainment.

In the first place, there is nothing perhaps which will more effectually stimulate the mind of soldiers to acts of heroism, or more certainly confirm them in habits of virtue and good conduct, than an intimate bond of union with their comrades, from early acquaintance or relationship, strengthened by a knowledge and respect for the characters of their officers, in their native abodes. On this principle, corps formed in counties or districts, officered by men of character belonging to the district, and on no account admitting of mixture, give promise of great advantage to military service. Men under such conditions will be cautious of committing offences, which degrade them in the eyes of the comrades of their early days ; they will even be emulous to undertake acts of enterprise, the fame of which may travel to the place of their birth. It seems to be in some manner on this ground, that the 42d regiment first gained, and that it continues to maintain a distinguished reputation in the field, and a never failing testimony of good conduct in civil life. The late 71st regiment, formed of similar materials with the 42d, and acting on a similar principle, performed an act of heroism at Stono-Ferry, during the American war, which is not eclipsed by the conduct of the three hundred Spartans, who fought at the Straits of

Thermopylæ. A party of fifty-six men and five officers, was ordered out to reconnoitre the enemy, supposed to be advancing in great force; it fell in with a column of more than two thousand, attacked it, and checked its progress: the officers fell, the non-commissioned officers fell, and seven men only remained unwounded. The officer commanding, at the time of receiving his wound, desired the few who remained to retire to a redoubt in the rear; but they peremptorily refused to leave the ground on which their officers and comrades lay; and they actually did not leave it, till the arrival of a reinforcement determined the enemy to retreat. This fact proves clearly the advantages of a connexion of friendship and respect, subsisting between officers and men,—a habit, which can not be so well secured by any other means, as by the companionship and acquaintance of early youth. This will, in some measure, be ensured by a proper execution of the plan of regiments of counties, a plan extremely practicable, and chargeable with no inconveniencies, but the presumption that it might give rise to jealousies and quarrels;—it, with more probability, will only produce a contention to excel in the field of battle. Officers and soldiers would, by this means, become parts of the same machine; animated with one soul, they would move with one body, and their movements would be from the internal impulse of a heroic mind. The county, which sent them forth, would participate in their honour, would receive those who offend, for punishment in a work-house, (for the

man who deserves corporal punishment, must be considered as incapable of bearing arms), and provide an asylum of honour and security, for those who have deserved well. Officers and soldiers, companions in arms, mutually esteeming and esteemed, —not dreading or despising each other, would stand on the pinnacle of human perfection, would be soldiers in reality, and the dearest treasure of a nation.

Man is a reasoning animal; but the actions of man are not the result of reason. A passion, a sentiment or instinct originates human actions; and it is the business of education or discipline, to plant and cherish such as are honourable and good. An idea of honour and generosity calls a soldier to the field; and the culture of this, as a ruling passion, is the principal object of military concern. Music has in all ages produced wonderful effects upon the minds of men; but the effects of music are much regulated by associations formed in early life. A Highlander of Scotland feels an enthusiasm of valour in the martial music of his ancestors; the little distracting sensibilities and cares of self, are absorbed in the warlike sound of the bagpipe; the mind is rivetted to its object, and Highlanders, under such impression, are perhaps not to be resisted by any thing in human form. Most nations, or classes of men have more or less of a distinct national music, capable of seizing the sympathies of the mind, and of fixing the views upon one object. This however is a simple melody, which expresses a sentiment, and

impresses a passion. It is rarely found in the laboured compositions of learned men; and little impression appears to be made upon the mind of a soldier by the complex harmony of parts, which may please the ear of judges, but which conveys no sentiment to the heart of an ordinary man. The music of armies, if it labours more to display the skill, of the master, than to create and cherish martial sentiments in the minds of the soldiery, fails of its object: but, if formed on a good plan, and properly directed, it is a most powerful instrument in the hands of a general, to rouse men to deeds of glory. Its expressions however must be simple, congenial to the natural feelings of the people,—and they require to be often repeated. This effect of music will be much assisted, by the recital of heroic songs, that bear one expression; by recounting and dwelling upon the life of an eminent warrior, so as to imbibe his sentiments and soul, more particularly on the life of the modest Bayard,—*sans Peur et sans Reproche*,—the mirror of military men.

The author is aware, that much of what he has said in the preceding pages, will be considered as the ravings of a visionary; but he is convinced, from what he has seen of military service, that the soldier, in whose mind sentiments of virtue and honour do not predominate, is not simply unfit for his profession in times of war;—it is from want of opportunity only, if he prove not dangerous to the state. But while this is his opinion of the importance of the qualities of virtue and honour to the soldier, he is

further convinced, that it is less difficult to inspire a mind, (that is not completely abandoned,) with heroic sentiments, in such force and form as to regulate future conduct, than to train the limbs to regular movements by fear of the rod.

The principle of the King of Prussia seems to be directed to the end, of banishing passion and sentiment from the mind of a foldier,—of reducing him to mere animated matter. Others, on the contrary, do not attempt to banish passion or sentiment from the mind, but not conceiving ordinary men, capable of such sentiments of dignity and pride of character, as can originate and regulate action, endeavour to implant the passion of vanity,—attachments to ornaments of dress and external appearances. The view is less odious than the former, but it is less honourable to the character of a foldier than it ought to be, and not effectual in its end. Vanity is a fleeting and capricious passion, of an infinity of modifications, and not capable, as pride or honour, of being equally or permanently impressed upon a body of men. Action therefore springing from this source, will be uncertain in duration, disjointed in operation and little under controul: hence it is often observed, that vanity stimulates men to enter the field of battle precipitately, but that it does not preserve them from leaving it abruptly: this belongs exclusively to pride and dignity of mind.

But if the conduct of the dignified foldier, be different from that of the vain or mechanical, in the field

of battle, the contrast is no less striking on the bed of sickness. The soldier, whose motives of conduct have originated in the nobler qualities of the mind, proud in the consciousness of having acted well, appears on the bed of sickness a venerable and an interesting object; the soldier, whose leading motive has been vanity, and whose gratifications and pleasures forsake him with his health, appears forlorn and desponding; the profligate is an object of disgust; the mechanical soldier, indifferent in himself, is an object of indifference to others; he often seems to possess the resignation of a philosopher; but it is the apathy of a brute.—It is the duty of medical men, in all conditions, to use endeavours to alluage the bodily pains and sufferings of the afflicted;—to be able to administer ease and comfort, to a virtuous and heroic soldier, affords the sublimest pleasure that the mind of man is capable of enjoying.

THE MEANS OF IMPROVING THE ACTIVE POWERS OF THE BODY, AND OF PRESERVING HEALTH BY HABITS OF EXERCISE.

This is so professedly a part of military concern, according to the idea of perfecting the machine in uniform and effective movement, that it is somewhat surprising, that a plan, formed upon scientific principles, and directed solely to this end, has not as yet been adopted, and acted upon systematically, by the warlike nations of Europe. For, though soldiers daily spend large portions of time under arms, the object, as far as the author has seen, is

more directed to restrain and repress, than to call forth and improve the exertions of the limbs. Yet in actual war occasions often occur, where the exertions of the limbs—the rapidity of motions alone, decide the fate of a battle; and in all the minor operations of war, individual activity and address are of great consequence. The Romans,—but the Romans did not understand the improved system of fighting battles by appearances, were most diligent and persevering in improving the exertions of the limbs, by a series of athletic exercises, by running, by wrestling, by swimming, by unremittingly practising the use of arms of various descriptions, and by habits of marching with encumbrances, exceeding those of actual war. In this manner, military service became a pastime; and the Romans, though they probably underwent fatigues not inferior to those of modern armies, appear to have seldom complained of hardships.—But this is more strictly a military subject,—the business here more directly concerns the preservation of health.

It is a fact of common observation, that habits of exercise, or employment in the open air, contribute most essentially to the preservation of health; that under indolence and rest, the health languishes, and the vigour decays. It was a maxim with the Romans, and experience entitled them to form a maxim upon the subject, that habits of daily exercises, such as in this luxurious and effeminate age would be deemed excess of toil, con-

tributed more to the preservation of health, than all the rules of their physicians. The nature of things do not change capriciously, and if the maxim was true with ancients, it will not prove false with moderns : It has consequently appeared to the author, incontrovertibly well founded, in an experience of twenty years and upwards, under various conditions of military service. It was uniformly observed, that troops were healthy during the activity of a campaign, that diseases multiplied in quarters or in stationary encampments ; further, that men marched through unhealthy districts for months with impunity, that the residence in one place, for a fortnight, was followed by the appearance of disease. It thus appears, that there is something in activity of mind, and in exertion of body, which renders the frame less liable to the impressions of morbid causes,—which even perhaps removes those causes when actually received.

It is customary to hear dismal accounts, of the hardships and fatigues of armies ; but there is cause to believe, that the sufferings are oftener imaginary than real. The author served in the American war,—he also accompanied the army, in the retreat through Holland ;—the sufferings were said to be unparalleled, and there was certainly often great misery ; but there was not any thing in the service itself, which deserved the name of hardship, to a man qualified in mind and body to be a soldier. It is proved in the experience of every day, that

the health of man does not suffer from uniform hard labour; the powers of the constitution are perhaps worn out sooner, and old age accelerated, but health during the time is not impaired; on the contrary it remains complete and uninterrupted. It is by habits of exercise only, in times of peace, that the body of man is formed to bear the toils of war with alacrity; and it does not appear, that the space of eight hours a-day, spent in a succession of such exercises and amusements, as engage the mind and excite an emulation to excel, is an over-proportion of time allotted to a purpose so essential. It must be remembered, that it is endurance of toil—not force of momentary exertion, which determines the value of a soldier; and it is known, that the habit of endurance is only acquired, by long continued custom.

ARRANGEMENT OF TROOPS.

The arrangement or classing of troops, according to the prevailing plan of discipline, is entirely directed by the semblance of exterior form. The combination of rapid motion and united action, is the object in view in forming men for war, or the shock of battle; and it is generally known, that men, who exteriorly resemble each other in figure, often differ widely, not only in the principle which acts upon the mind, but in the natural exertions of limbs, which, under the operation of strong causes, are apt to forget artificial restraints. If there exists an instance, where a corps has advanced to battle,

to the distance of twenty yards from the enemy, measuring its paces by the swinging of a pendulum, and after having lost two thirds of its numbers in this position, has retreated, by word of command, in precisely the same order in which it advanced; the mechanical discipline must be allowed to have attained great perfection. Men might then be said to be trained, to withstand the effects of fire-arms; they would still perhaps give way to the shock of the bayonet. The calculations of the King of Prussia, seem to have been made upon fire-arms only; the effect of the bayonet can not so well be reduced to mechanical rule, and had experiment been made, his conclusions would perhaps have very often been overturned. It is certain, that the habit of mechanical drilling, long continued, very much blunts the sensibilities of the human mind, but it cannot extinguish them; and while it blunts the sensibilities, which originate sentiment or passion, it implants no principle which produces those animated efforts, which, in all ages, and under all conditions, have mocked the calculations of mechanical generals. It will therefore, perhaps be a more effective manner of arranging men for the shock of battle, to estimate the qualities of mind and the exertions of limbs, as tried and proved in the various contentions of athletic exercises. Arranged, as much as possible, according to these correspondences, a bond of union would arise, cemented in the foundations, and not to be dissolved by ordinary causes. In this manner, the conduct of raw and undisciplined

Highlanders only can be explained. The mind in union, the limbs possessing a correspondence of exertion, from customs and habits in their native mountains, they are impetuous and united in the charge; but what would less be expected, they have also proved a shield to an army under route.

CHAPTER II.

Military Economy.

THE preceding pages contain some remarks on the principles of discipline, a science, which belongs more particularly to military men; the following contain some remarks on economy, as connected with health, a subject more immediately under the observation of the surgeons of armies.—The diet, dress, care of person, the attentions necessary in embarkations, with the manner of conducting active service, particularly in tropical climates, are the principal objects in this inquiry.

DIET.

The present is a subject of material importance to an army; but it is a subject so circumstanced, that the voice of experience and reason despairs, to prevail over the rooted prejudices of depraved appetite. It is a common opinion in most countries of Europe,—it is a maxim in some, that man per-

forms labour and undergoes fatigue, only in proportion to the quantity of food he consumes. If the opinion regards the exerted labour of a few hours, it may not perhaps be altogether without foundation ; if it regards continued labour or military service, nothing is more remote from truth. The *Athletæ* of Greece were highly fed ; they acquired muscular power, but they were bad soldiers. The Arabs are abstemious to a proverb ; they seldom suffer from acute disease, and they support fatigues to astonishment. The chief support of the Russian consists of bread and cucumber ; no nation bears military toils better, or acts more obstinately in the field of battle. The Highlanders of Scotland live poorly in their native country, at all times ; they lived still more poorly, when their military character was higher, perhaps than it is even now : the toils, they underwent, on oatmeal and water, under Viscount Dundee, appear incredible to luxurious and pampered nations. General history thus bears testimony to the advantages of abstinence over full living, in supporting labour and fatigue, similar to the fatigues of war. The same truth is proved expressly, in the example of individuals. Powel, the famous walker, and others, who have performed similar journeys on foot, all found it convenient to diminish the quantity, and change the quality of diet to the most light and digestible, while under exertion. Tea, with bread and butter, appears to have been the most acceptable ; and it was suffi-

cient, in point of nourishment, for a long continuance of toil. An egg boiled hard, or an onion with a morsel of bread, and half a glassful of brandy, will be found better, upon a march or journey, than a full meal of rich food, with a proportion of wine or malt liquor. The experience alluded to sufficiently justifies the rule, that while the diet of soldiers be, at all times, under what is esteemed full living, it ought to be reduced, by at least one third, in times of hard service or long continued exertion ; and, at such times, the principal repast ought to be delayed till evening, or till the service of the day be over, and the tumult of the blood, arising from exertion, subsided. On such occasions, soups or ragouts are the proper form of food. Vegetables ought always to be largely mixed, with the diet of a soldier. Milk, tea, coffee or bouillon, are necessary for breakfast.

It thus appears, from the experience of the mass of temperate nations, and from the experience of the temperate individuals of luxurious nations ; that abstemious, sober, even poor living, better agrees with the body, under the performance of fatigues, similar to military fatigues, than full meals of animal food. The fact stated, is indisputable in authority, and those, who are acquainted with the laws and powers of the human constitution cannot fail to know, that it is uniformly true in principle. Full and pampered living, is well known to increase the bulk and volume of

the muscle, and perhaps, under this regimen, the sudden exertions of actual strength may be rendered more powerful; but as it is proved in experience, that the endurance of fatigues is not well supported under habits of full living; so it is agreeable to reason, that the increased irritability, necessarily resulting from such practice, destroys the foundations, on which endurance depends.

Water, is the drink intended, by the Author of Nature, for both man and beast. It is capable, under some conditions, of being improved, but it oftener is adulterated. The Romans furnished their soldiers with an allowance of vinegar, for the purpose of being mixed with water, when water was hot, flat or less pure. The practice is an example for imitation. Vinegar, diluted with water in a certain proportion, furnishes an agreeable beverage in hot weather; and it has the further advantage of restraining the quickened circulation of the blood, and repressing the dissipation, occasioned by continuance of exercise, or long continued marching. A strong infusion of tea has still more extraordinary effects,—removing lassitude and invigorating the frame, worn out by long watching and long travelling, in a degree superior to any thing known. Wine, unless extremely diluted, is a hurtful beverage, under the actual performance of service; and malt liquor leaves a drowsiness and torpor on all the animal functions. Rum and water, or grog, has effects not less hurtful than malt liquor, in the hours of

exertion ; and the bounty of nations, which grants to soldiers daily allowances of rum, under the idea of enabling them to support fatigues, while it is mistaken in principle, as it regards effect, has pernicious consequences upon morals, by necessarily inducing a habit, which converts an old soldier into a sot. But though grog, or rum and water, be generally a hurtful or dangerous beverage, yet a very small quantity of spirits undiluted, taken at proper intervals, is found in experience to be useful in sustaining the body under fatigue ; and the reason may be explained, consistently with the laws of the human constitution.

DRESS.

Uniformity of dress is a rule fundamentally regarded in forming an army ; but the gay coup d'oeil of a parade, occupies, in general, too much of the attention. Convenience and utility are here the chief objects in view ; though accessories as can add to the martial figure of the man, are also of some consideration. It is presumed a soldier would find himself conveniently dressed, and prepared for the service of the field in the following manner : A round hat, with a deep and strong crown, capable of resisting the stroke of a sabre, and of such a form as to remain on the head without trouble ;—the ornament is a matter of fancy. A coat and waistcoat of the uniform cloth of the nation—the coat, without facings, or with facings, which do not require to be cleaned by means of pipe clay,—the form in

all respects easy, or large, and, in a particular manner, full over the chest,—capable of being buttoned to the bottom of the trunk,—the skirts not reaching lower than the middle of the thigh. The pantaloons, which as they are more simple than breeches and leggins, are therefore better suited for the dress of a soldier, ought to be large and easy, of good cloth, and rendered durable, by having the inner seams covered with leather; the advantages of half boots, of good manufacture, with strong soles, are obvious for marching in bad roads,—light shoes may be more convenient, on some occasions. With the addition of two pairs of flannel socks, two pairs of drawers, two shirts,—coarse linen, flannel or cotton, a razor and soap, combs, a brush for shoes, a sponge for washing the body, and a towel for drying it, the soldier will find himself sufficiently equipped for a campaign; and further, if he be furnished with a cloak or great coat, to which there is a hood, and two pockets, by way of havresack, for the necessaries, he would move light on the march, be little encumbered in action, and be capable of resisting weather, from the month of April to the month of November. In tropical climates, the hat may be formed of lighter materials, the cloth of the uniform may be thinner, with pantaloons of dowlas or fustian, in place of broad cloth;—the cloak is particularly necessary; and the habiliment ought to be so arranged, as to be easily laid aside under heat, or readily resumed when the winds blow sharply.

CARE OF THE BODY.

Experience has proved it true on numerous occasions, and knowledge of the laws and economy of an animal body declare it to be true on all, that the proper resource of health consists in innate vigour of constitution, fortified and rendered superior to the impressions of the causes of disease, by habits of exercise and fatigue, under exposure to vicissitudes of weather ; yet it is not denied, but that attire, judiciously managed, may contribute materially to this purpose. On this ground, shirts of woollen or flannel have been suggested as an article of necessary utility, for troops in the field. Flannel affords an agreeable and pleasant warmth. It is useful in guarding valetudinarians against colds, rheumatisms and diseases of the breast ; but the idea of a valetudinary frame does not belong to a soldier, while accessory means of preserving health, are not properly intrusted to the discretionary use of men, too often slothful and careless of themselves. It is necessary, that the clothing of troops be arranged upon one principle, and that individuals have no option of choice, or means of change. Flannel, is, perhaps upon the whole, a better material for the shirts of soldiers, in times of service in Europe than linen ; and if determined to be more proper, it ought to be employed to the total exclusion of the other ; in tropical countries, there is no proof from experience of its benefit, while sensation and reasoning incline us to believe, that there is probable harm, from the

accumulated degree of heat, or the exhausting perspiration, which necessarily results from the use of it. But though flannel appears to be less proper than linen or cotton, for the shirts of soldiers, in tropical countries; it has farther often been connected with a serious evil, in Europe. The contagious fever, which produced an unexampled mortality in the early period of the present war, though not originating from flannel clothing, was, in a very material degree, concentrated and propagated by means of it. It is not pretended, that this arose from the fault of the clothing, but clothing of this sort more easily covered the defects of the economy, on which the propagation of the contagion so materially depended. It is presumed, that a soldier would not suffer from the inclemencies of weather, dressed in the manner mentioned above; so with more confidence would he be preserved secure from contagion, if submitted every morning to the following discipline. If stripped naked and washed clean in cold water,—the sea or a running stream, rubbed dry with a coarse towel, and, under rubbing, exposed to the pure air,—combed, the clothes, in the mean time, being shaken and exposed to the wind: if exercised in walking, in running, in jumping, and wrestling or fencing, for two hours before being permitted to retire to breakfast, the body would be effectually purified from any lurking seeds of disease; it would even be so fortified by those invigorating habits, as to become little susceptible, on any occasion, to morbid impressions. Numer-

ous advantages, besides health and cleanliness, might be derived from this custom. The strength and vigour of the limbs would be improved, the correspondence of exertion might be measured and known, so as to be converted to useful purposes in war; the beauty of the military form, which consists in elastic sinews, a complexion imbrowned by toil in the field, and perfect cleanliness of person, would captivate the eye; and while clean, healthy, and active in body, the mind could not fail to acquire some portion of similar qualities.

MEANS OF PREVENTING THE INTRODUCTION OF DISEASES
OF CONTAGION INTO REGIMENTS OR TRANSPORT SHIPS.

Regiments often suffer severely from the incautious manner of incorporating recruits, raised in manufacturing towns, or received from jails or work-houses, where contagious diseases prevail. Under such circumstances, the most scrupulous exactness is necessary, and wherever suspicion exists, though no actual disease may appear, the recruit ought to undergo a most rigid quarantine. It will be proper in the first place, that he be stripped naked, the clothes being destroyed or purified, that the hair be cut short, the head and body completely washed, that he be clothed anew, and not permitted to join his comrades, for three weeks or a month. Convalescents from infected hospitals, deserters, parties, who have been guard over infected hospitals or prisons, ought in all cases to undergo purification, be-

fore they be admitted into the barracks of the regiment.

But, besides the alterations necessary to prevent the introduction of contagious disease into regiments, particular care is required to prevent a similar introduction on board of transport ships, when troops embark for foreign service. It will then be proper that a scrutiny be made, previous to embarkation, by an officer of the medical staff, of the health of every individual corps. Simple inspection is not sufficient; the history of the preceding period must be known, and every testimony ought to be scrupulously examined, as the medical officer must hold himself responsible for the consequences. Health has been so often sacrificed to ignorance, to inattention and neglect, that it is presumed a rule will be formed to prevent in future, as much as possible, the commission of similar errors.

When the means of embarkation are known, and the sound separated from those actually sick or suspicious, attention is required in arranging the mode. Those actually sick or suspicious, being separated from their more healthy comrades, must be disposed of in ships allotted to the purpose; and as they arrive on board, it will be proper that they be stripped naked, washed clean, laid in clean bedding, or clothed entirely anew. It is customary to embark troops by grand embarkations;—it will be more convenient to embark them in small parties, that they may be arranged in their places, in an orderly manner, on arrival; for hurry and confusion are ne-

ver failing consequences, when a croud of men is thrown suddenly on board of ships.

The clothing of soldiers is generally more injured, during the period of embarkation, than under other conditions. A dress for the voyage, varied according to the season of the year or the destination of the service, would, on this account, be both economical and convenient. A jacket and trowsers of canvas, with a foraging cap, will be found sufficient in summer, or in voyages to a southern latitude; the addition of a jacket of coarse cloth, will make it suitable for any destination in European seas. A round hat, with a watch coat, for those who are on duty, during the night, or under rain, renders the equipment complete.

The accommodation of troops, on board of transports, has met with a great deal of attention during the present war; yet sickness and mortality have been unexampled. The vessels, it must be acknowledged, are in themselves generally good; but the seeds of contagion,—the legacy of predecessors, are often found so obstinately attached to the timber, or so insinuated into the seams of the lining, as to elude the ordinary means of purification. When a ship is taken up for the transport of troops, it will be necessary to learn the preceding, as well as to ascertain the actual health of the crew, so that soldiers be not inconsiderately embarked in vessels, where the seeds of disease exist. The means of purifying vessels need not be repeated here; nor is it necessary to say any thing in recommendation of

hammocks, in preference to platforms with flock matrafles, as the advantages are fully conceived, and the practice very commonly adopted : but it will not be superfluous to offer a few remarks, on division of accommodation and arrangement of the inferior parts of economy.

In the first place, it will be proper to cut off a part of the ship, (in preference to others the space between the foremast and the head), by a partition of canvas, which part will be again divided, or separated longitudinally, by painted canvas, nailed firmly to the decks ;—the one division allotted to the accommodation of the married people, the other reserved for an hospital,—provided with cradles, a stove, scuttles, port-holes and a hatchway of its own, so that the sick, and those who are well, be not under the necessity of having communication or intercourse with each other : further, an armoire or pantry, in some convenient part of the ship, with divisions for the different messes, is an accommodation of no great expence, and of most evident utility ; an offal tub, for every two messes, is likewise a necessary provision, in time of dinner, as without something of this sort, the decks will be strewn with crumbs of bread, fat of pork, bones and other nuisances. A stove, capable of being carried round the ship, to dry the decks when wet, and to dissipate stagnating air from parts, less in the current of ventilation from the wind sails, is necessary to every transport,—to which may be added a large bathing tub and a washing trough. If soldiers were equipped

after the manner suggested in this tract, few encumbrances would appear between the decks of a transport ship; but as this is not the case, and probably never will be the case, it will be proper to lodge in the hold, or other secure place, all the superfluous baggage, particularly the baggage of women, which, by attracting exhalation, and encouraging an accumulation of dirt, becomes an instrument in preparing the contagion of disease. A foldier, on board of ship, requires no more than one complete change of apparel; and it deserves to be known, that the addition of an handful of oatmeal, to a tub of salt water, will enable him to wash his linen or flannel in a comfortable manner, as often as he pleases. If embarked in a healthy ship, shifted twice a-week, and washed all over with salt water every morning, there will be no cause to apprehend the appearance of contagion: under such discipline, the progress of it will be checked,—perhaps the existence of it might be destroyed.

The persons of foldiers being washed daily, the clothes purified, by beating and exposure to the wind, according to an uniform and systematic plan, the bedding and other encumbrances removed from between decks; the scraping, cleaning, and sweetening of the ship, with vinegar or other means, performed according to rule; the air of the parts, less perfectly ventilated, put in circulation, by means of strong heat, or explosions of gunpowder; the breakfast prepared and served out; the parade dismissed, and the several duties of the day appointed; a series

of exercises and amusements, such as the nature of circumstances will best permit, is next to be instituted, for those who are unemployed. Fencing and cudgelling are easily performed on board of ship; and they are well adapted to call forth and improve the military qualities of a soldier. Dancing exhilarates the spirits, and by exhilarating the spirits, independent of its good effects by exercising the limbs, it conduces to health: a bagpipe or fiddle will therefore be an useful instrument on board of a transport. It is of importance to guard against the apathy and indolence of mind, which insensibly creep upon soldiers during a passage at sea. In this view the singing of warlike songs, and the recital of martial achievements may be so managed as to produce considerable effects: nor are the duties of religion of inferior importance; for whatever may be common opinion, it has ever appeared to the author, that a soldier respected himself more, and consequently was a better soldier, the day on which he had publicly presented himself before the Deity, than at other periods.

ACTIVE SERVICE.

When a soldier is formed, according to the plan of the preceding pages, with a mind strong in virtue, a body hardy in toil, content with simple fare, and depending wholly upon himself, the service of a campaign becomes pastime: fatigue and inconvenience are not then known; for as fatigue and inconvenience are relative to conditions, the

degree of fatigue, which overpowers a luxurious enemy, will not be felt by the soldiers of a hardy nation. The capability of enduring fatigue will thus, in most cases, triumph over force and numbers, though actual courage, if it came to the shock of battle, were equal. A soldier presents himself as a man of qualities superior to the citizen; but he does not deserve the name of soldier, till he as much excels in self-denial, as he is supposed to excel in courage. Every man, even every officer has the power of carrying with himself every thing that is necessary for real use;—baggage horses, and baggage waggons, ought not perhaps to be known in an army. Such encumbrances have often cramped the operations of war; and supposed comforts, are frequent causes of great miseries. The nature of man in reality wants little; and the man who bounds his desires, by the real wants of his nature, seldom meets with a hardship, or finds cause to murmur; he always depends upon himself, and, with a preparation of ten minutes, will find himself, ready at any time, to change his encampment, or to meet his enemy. The luxury of modern times, has rendered war a very complex and heavy operation. A city seems to rise upon the plain, and the defence of it necessarily occupies a considerable share of the care of the general:—Such defence, in fact, often employs that assistance which, in the field, might have secured the fortune of the day. Numerous encumbrances appear on the march, but beef and bread are the

only things essential, and the only things which demand attention. Camp equipage is not simply a superfluity ;—the most pernicious contagions are often found in tents ; and tents, once infected, can only be purified by being reduced to ashes. A soldier clothed in the manner pointed out, washed every morning in cold water, exposed to the air naked, and actively employed during the day, will not suffer from cold or rain, in point of health ; on the contrary, he will be secure from contagious fever, from colds or rheumatisms ; while the encumbrances of the troops, will not prevent the general from changing his positions frequently, without trouble or inconvenience ;—by this means health will be preserved, and the mind kept active and alert.

Military service differs in some respects in Europe and in tropical climates. Few persons pretend to deny, that exercise, even military service, in a moderate degree, conduces, in Europe, to the preservation of health ; in the West Indies, exercise, unless in the mornings, is believed, by most people, to be hurtful ; military service, in common opinion, cannot be supported. The fact has appeared otherwise, in the experience of the author ; and, as the matter is of great importance in the management of troops, it will be proper to state the conditions, under which it has so appeared.

From the best information that could be obtained of military service, in the Windward Islands, the troops were healthy, while they were regularly

and actively employed ; they sickened in prodigious numbers, when the campaign was ended ; they also suffered from desultory exertions. The rule is general ; it was exemplified, in many instances, among the troops connected with St. Domingo. The detachment, which first took possession of the island, was actively employed for some months, and it remained healthy ; the business being accomplished, or the service become stationary, sickness appeared and made great progress. A transport ship was taken by the enemy, in the year 1796, and carried in to Cape François : the captive soldiers were employed in daily hard labour,—in the loading and unloading of vessels, &c. the ration of diet was one pound and a half of bread, a bad salt herring and a very small quantity of rum, given at two different times. The term of captivity was from six to seven months, and when the exchange was effected, in the beginning of the year 1797, the contrast with the troops in garrison at the Mole made a forcible impression ; instead of languid motion of the limbs, a fallow countenance, a heavy and lifeless eye, common to the soldiers at British posts ; the motions of the limbs were active and energetic, the countenance clear and animated, the eye lively and sparkling ; in short, the prisoners seemed to be men in possession of full health ; they experienced little sickness in their captivity, and very inconsiderable loss ; for it is but justice to observe, that, when sick, they were uniformly treated with the same tenderness as the soldiers of

the Republic. They became sickly in a short time after return,—probably from the ease and full ration of British regimen. The post of Irois, in the district of the Grande Anse, is one of the most unhealthy situations in St. Domingo. It was besieged in the month of August 1796; and previous to the commencement of the siege, the garrison had suffered from sickness. During the actual continuance of siege, sickness was in some measure suspended; but it returned with such violence, after the enemy retired, that few escaped, who came within the atmosphere of the place. The fatigues, experienced during the siege of Irois, were, in common opinion, esteemed the cause of the sickness; the rest after fatigue, seems to be the cause in reality. A company was formed at Port-au-Prince, from the 66th and 69th regiments, for ready and active service. While actually employed, the superior degree of healthiness was striking and obvious to all connected with it. The Honourable Lieutenant Colonel Stewart, who commands the 67th regiment, (who seems to have penetrated deeper than common, into the principles of discipline, as directed to the culture of the mind, as well to the care of the body,) gave proofs at the Mole, as far as his limited means permitted, of the benefits of active and enterprising service, in the preservation of health. The light company of his regiment, was frequently employed in small excursions; during this time it remained healthy, while the other part of the regiment, confined to

the duty of the garrison, experienced great sickness and considerable mortality. It thus appears, from authority which may strictly be deemed military, that exercise, even the fatigues of a campaign, may be sustained without injury to health, during the continuance of service, whether of one week or of three months. Sickness occurs at the termination of the service; but that sickness, there is reason to believe, may be warded off, if the principle of its cause be understood: that principle appears to consist, in an excess of irritability,—accumulated by rest, augmented by full living,—while the effect of rest and indulgence in producing disease generally bears proportion to the preceding habit of exertion and abstinence. Military experience confirms not only the safety, but the benefits of habitual exercises, and of active service in the preservation of health; the examples of individuals, more clearly demonstrate the value of its effects. A man, who lives well, eats turtle and drinks Madeira, who moves out only in the mornings or evenings, on horseback or under an umbrella, and drags his limbs as if they did not belong to him, will, if fed on vegetable diet, or the lightest sorts of animal food,—and that in small quantity, with beverage of pure water or lemonade, become regardless of the sun, and walk or ride at any time of the day, without experiencing headach, from excessive heat, or a weariness of limbs, from a long journey.

The benefits of the capability of sustaining fatigues being obvious in war, the safety and practi-

cability of it ascertained to be not incompatible with the health of Europeans, in tropical climates, a plan ought to be formed, capable of cultivating the habit, in such manner, that it become engrafted upon nature. The mode of accomplishing this object depends much upon the conditions of the country. If the country be in a state of peace, the arrangements may be made in complete and systematic form, while the execution will not meet with interruption; but if at war, or if partly possessed by an enemy, the arrangement will be imperfect, and the execution is liable to be disturbed. In this case, positions, chosen in the most important passes of the mountains, stored with the provisions of war, capable of being defended by a small number of men, or of affording occasional covering to a large body, come to be considered as fixed points in a cordon, for maintaining the security of which the services of the troops are employed. In patrolling this boundary, either for the protection of the friendly district, or in hunting the woods for subsistence, (for troops may be taught, and they ought to be taught to support themselves in a tropical country, by their musket and the culture of the ground), the character of the mind will become bold, adventurous and ready in danger, the body healthy, vigorous,—even in a manner, insensible to the impression of the causes of disease;—the soldier will thus be formed to the purposes of his station. This improvement of the health of body and vigour of mind, by habits of

exercise, particularly hunting, is a physical fact;—it belongs to the commanders of armies, to direct it to a military object.

The choice of encampment, cantonment or military post, is a most important object in tropical climates; for inattention, on this head alone, often defeats plans, in other respects judiciously formed. The sea-coasts are less healthful, in most parts of the world, than the interior. This is particularly exemplified in hot countries; and, in the islands of the West Indies, the air of the sea-coasts is often, in a manner, pestiferous, while the air of the interior is not less salubrious, than that of many countries in Europe. On the coasts of the sea, the form of disease is fever,—often of the most concentrated kind; on the first mountains, it is often fever, but it is mild, remitting, intermitting; sometimes it is diarrhœa, sometimes ulcer of the legs; in advancing into the interior, the shades become still milder; and, upon the central ridge of extensive islands, sickness, in any form, is seldom known. This fact has been clearly proved, in the Island of St. Domingo: it deserves to be attended to, in the distribution of military forces, in others.

The above rule is a general one. Circumstances may, and sometimes do arise, which render interior situations different from what is here described; but it will not, even in such cases, be found that the principles of things change. Swamps and lakes are often seen in the interior parts of countries; and the neighbourhood of swamps and lakes is usually

unhealthy. Such situations are consequently avoided in cantoning of troops, or in fixing of military posts; for though strong positions by nature, they become weak in effect, by the destruction of health which ensues. It is from strong causes only, that the occupying of unhealthy positions can be defended; when indispensable, in forming a connected chain of defence, to cover the neighbourhood, with plants which require much nourishment, and, above all, with lofty trees of rapid growth,—seems to be the best means of remedying the evil. Instead therefore, of cutting down timber, on the banks of rivers, or on the borders of swamps, lofty and spreading trees ought to be permitted to remain,—even planted, if they do not exist naturally. On this principle, a range of spreading and lofty trees, planted on the banks of the Delaware, for some distance above and below Philadelphia, and upon all the offensive places, bids fairer to prevent the rise and progress of the yellow fever, than shutting the ports to strangers. There are many instances in history of similar remedies.

It is a common rule, in occupying posts or cantonments, to avoid the actual seat of swamp; but heights, in the neighbourhood of swamps, are frequently chosen for the purpose. The rule is mistaken. It is a truth, verified on too many occasions, that a height at the distance of a quarter of a mile, or even more from a swamp, and exposed to the atmosphere of that swamp, is less healthful than the level margin of the swamp itself. Further, such grounds, as are

cleared of their woods, are commonly preferred for the encampment of troops. The practice is founded in error,—on an imaginary idea of a pure and free-circulating air. It is evident that grounds, newly stripped of their woods, partake, in some measure, of the nature of swamp; and as vegetable production does not exist in such case, the unappropriated cause of vegetation, abounding in excess, extends around, and infects the atmosphere to a certain extent, with something unfriendly to the health of man. But, besides these grounds which are newly cleared of woods, other situations, where the soil is bare and barren, or covered with shrubs and stunted plants, do not appear to be healthy, though even rocky and dry. The air of a well clothed country is salubrious; nor is it mere coolness, which renders the shade of a tree agreeable; an enlivening principle is communicated to the surrounding atmosphere, from the foliage.

CHAPTER III.

Scheme of Medical Arrangement for Armies.

AN attempt has been made to investigate a principle, upon which the military qualities of a soldier may be improved, and the health preserved; a few pages will now be allotted, to point out a mode of arrangement, by which speedy and effective assistance may be ensured in the event of disease. The first and essential object,—the prompt application

of effectual means, is connected with a secondary object, the sum of expence required to provide, and support the effective establishment alluded to.—The prompt application of means is secured, by the establishment of hospitals, for corps or regiments; but that these establishments be effective and complete, the plan of arrangement must be formed upon a broad and scientific basis.

The medical officers of an army consist, according to the plan of arrangement proposed, of one surgeon,—of one or of two assistant surgeons for each regiment, according to the strength of the corps, or the nature of the service, on which the corps may be employed; of an inspector, for each island, district or division of troops, under a major-general; and of a superintendant, or inspector-general, for an army, under a commander in chief. The above is a sufficient provision of medical officers, for the ordinary business of an army; but, where twenty or thirty thousand men enter upon a campaign, in which actions of magnitude may be expected to occur, an extra appointment of surgeons for the field, as also, the establishment of an hospital, in a secure place, for men badly wounded, or labouring under chronic disorders, will further be necessary. Two surgeons for the field,—expert and active; two surgeons for the hospital,—experienced and skilful; with one physician, and the requisite number of assistants, will be sufficient extra assistance for an army of the strength specified.

But though it be presumed, that the above pro-

vision of medical officers will be found sufficient in number, and well adapted in arrangement, to the exigencies of an army in peace or war; yet unless there be fitness for the office in all parts,—in the higher as well as lower ranks, confusion and embarrassment will occur daily; the health of the soldier will be neglected, and life will be sacrificed to mismanagement. If the health of an army be an object of real concern to a nation; or if a nation believes the art of healing to be any thing more than a name, the arrangement of the medical department will occupy a considerable portion of its care. Instead of the vague examinations and inadequate proofs of qualification, upon which young men are appointed to the office of surgeon in armies, tests of correct morals, of actual knowledge, and, more particularly of the capacity of improving in knowledge, ought to be produced openly and publicly, before an office of such importance be bestowed. These qualifications, perhaps, can only be obtained, and the degrees of knowledge and capacity ascertained, under the establishment of a medical school.

A school, established in a convenient part of a kingdom, for the purpose of instructing youth, destined for the medical service of the army, promises great advantages to a nation. But it will be required that candidates or pupils, for this instruction give proofs, before admission, of being generally and liberally educated, and of having previously studied the rudiments of their profession in an university. Being admitted pupils of the medical school, they will re-

ceive the subsistence of assistant-surgeon, during the space of one year,—the term of probation: it will further be proper, that there be a period fixed for admission, so that the progress in improvement may be fairly estimated. At the expiration of the year, a college of physicians and surgeons being summoned to examine, and to form an opinion of the progress, the actual degree of knowledge, and capacity of improvement, among individuals, a scale will be formed of the order, in which promotions will be conferred, when opportunities occur. A physician and surgeon, men acquainted with military service,—scientific,—capable of instructing, and not devoted to the pursuit of gain, being appointed to conduct the business of this school, to allot to each pupil one or more patients, to superintend the management, and to arrange matters, in such a manner, that the judgment and discernment of the pupil appear daily in his written notes, materials will be afforded by which, at the time of examination, the college will be enabled to form an opinion of talent, or capacity of future attainment in knowledge. Those, who, upon this examination, discover no marks of genius, must be remanded to civil life; for as it is an undeviating rule, that promotion be invariably bestowed upon diligence, and length of service; so it must be a previous rule, not to commission, as surgeons, any others, than such as possess the requisite talent of prosecuting improvement. In this manner, surgeons of the army, being well qualified in their profession, and respectable in their private character, would maintain in estimation, the con-

sequence which is due to the office of preserving, and of restoring the health of men. A remark here forces itself into notice, that the medical department is inferior in esteem, to the other departments of armies,—even to that of issuing provisions, or of keeping accounts; yet it is in reality, of the first importance; but to conduct it properly requires talent,—a genius to connect and arrange jarring and discordant occurrences, and a comprehensive philanthropy, to embrace all the concerns of the miserable and afflicted.

According to the plan proposed in this place, the health of an army will be principally committed to the care of surgeons of regiments. The advantages of ensuring more prompt assistance in disease, and of maintaining the customary discipline of the corps, are secured by this means: they are obvious in benefit; but an objection will perhaps be started,—the scheme is not practicable, in an army employed upon service. The opinion is assumed from appearances. Circumstances will arise, on many occasions, in the course of an active campaign, which command a removal of the sick and other encumbrances to some distance from the army, but medical officers are provided for this contingency, while the waggons, required for transport, and the houses, necessary for accommodation, are as easily procured on the footing of regimental, as of general hospitals. But there is no room for suppositions, where positive facts exist. The plan proposed has been practised in actual war,—in dif-

ferent and in sickly climates. In the regiment, in which the author served during the late war in America, there was often a great, even sometimes a prodigious degree of sickness; for service led the corps to districts singularly unhealthful; yet it had seldom any thing to do with general hospitals; and, the miseries of sickness, measured with the miseries of general hospitals, were of small account. From the 20th of January 1795, to the beginning of April, the third regiment of foot, or Buff, carried along with it a considerable list of sick.—The miseries, notwithstanding the requisite preparation for this measure was not made, bore no comparison, with the miseries of general hospitals. In St. Domingo, the foreign and colonial sick were latterly, entirely under the care of the respective surgeons, in regimental hospitals. The officers and surgeons, were prejudiced against the measure, and, as might be supposed, entered into the execution of it, with no great cordiality. Movement, detachment, even some share of field duty, took place in the course of the season; yet the embarrassments were not numerous, and the sick soldier never suffered. The British sick, at Port-au-Prince, were brought under the same management. Change of cantonment, detachment, some small excursions of service happened during this period; there was no material embarrassment, and sick soldiers, never, perhaps in any situation, enjoyed greater comfort, than in regimental hospitals at this place. The scheme thus appears to be practicable;—it must, in the next place, be shown to be beneficial.

When such an establishment is formed, for the sick of a regiment, as secures every advantage of accommodation which sick men require ; and which leaves no cause or opportunity of removal to general hospitals, the surgeon finds himself engaged to act decidedly in the commencement, in the prospect of cutting short his future toil. The remark is not gracious, but it is too often verified, that men act remissly, when there exists a remedy to cover their neglects. Such a remedy are general hospitals to the negligencies of regimental surgeons. In this manner, it has been too common not to receive fevers at general hospitals till confirmed, advanced in progress, sometimes till near the period of fatal termination : the mortality then appears great, and the management of the hospital is blamed, where there is no just cause of blame. The advantage of early attention, in its effect upon disease, is evident in every country ; and it is particularly conspicuous in tropical climates ; the utility of such arrangement, as ensures this attention on the part of the surgeon, is obvious, and does not require a formal demonstration ; while the other benefits, connected with the plan of treating the sick of an army regimentally, are not of small importance. In regimental hospitals, a sick man is treated attentively by a comrade, often from the habit of previous friendship, but always to a certain extent, from fear of neglect being represented to men who have the means of ready punishment. In general hospitals, the attendants,

too often composed of subjects profligate and drunken, have little connexion of friendship or previous acquaintance with the sick man, and no adequate fear of punishment for offences of neglect. The patient suffers, the medical officer is distressed; but has not the means of rectifying what is wrong. This is a fault, not inherent in the constitution of general hospitals, but it arises in the management, and is seen daily in experience: hence, attention to sick will be uniformly better secured, in regimental than in general hospitals; disease is also cured more speedily, and military habits are better preserved. In regimental hospitals well conducted, acute diseases rarely exceed a fortnight in duration; from general hospitals, few are found to return to their respective corps, in less than three months. In regimental hospitals, among companions in arms, the military spirit is not suffered to languish, while a disposition to skulk or malingering, should it exist, will not long remain undiscovered, or be permitted to impose on the surgeon. In general hospitals, sloth soon lays hold of a sick person, and destroys his energies. In three or four months, though bodily health may be restored, the mind often becomes torpid; so that a man, from an hospital, is often less of a soldier, than when he was first recruited.

If the health and lives of soldiers and expenditure of public money, be thrown into opposite scales, no mind will hesitate for a moment, on which side the balance ought to preponderate; but it will also be

allowed to be a matter of some consequence, to secure every advantage on the one part with the least possible encroachment on the other. This is obtained by the establishment of regimental hospitals. The expence is here small and limited ; it is in fact confined to a supply of medicines, at stated periods of the year, with a requisite provision of hospital furniture. The expence of general hospitals, formed, as has been too often the case, without fixed principles of order and economy, knows no bounds. Profusion is perhaps a mark of neglected duty in all departments ;—it is conspicuously, and even dangerously, so in the medical. An undue allowance of beef, bread and wine, for hospitals, is not simply so much wasted ; it is applied to a pernicious purpose,—to destroy the health of the patient, often to intoxicate the attendant. This can less happen in regimental hospitals, because the means are limited, though perfectly sufficient for real wants. The pay of a soldier while at home, the ration on foreign service, with a small addition, or weekly stoppage from the subsistence, will be found equal to furnish every comfort, in the way of diet or nourishment, which a sick man can require. This is no supposition : It is a fact proved repeatedly by the author in the course of his official service.

In furnishing the supply of medicines for an army, or for a detachment of an army, it will be proper that a rule be observed by which every thing necessary be provided, without loading the medicine chest with the encumbrance of articles of little use.

This can only be effected by a board of the surgeons of the different corps upon service forming a joint requisition of things judged suitable, subject to the correction of the immediate head of the department, who is supposed to be intimately acquainted with all the conditions of the duty, and who must hold himself responsible that no wants exist, and that no superfluous demands be granted. While the medicines for an army are ordered by persons who have no knowledge of military service, who have no knowledge of the diseases of the country in which the troops serve, or who have no knowledge of the principles upon which the surgeons of the army act, much will be ordered that is unnecessary, while many things will be wanting, or furnished in small quantity, which require to be supplied liberally. The same will be the rule with hospital furniture:—useless furniture often rots in store, while things necessary are not to be found for the exigent service of the day,—inconveniences which could not have place, if the supplies were uniformly ordered by the person charged with the acting responsibility of the department.

APPENDIX.

APPENDIX.

*Refutation of Dr Currie's Strictures on the Outline,
in as far as relates to the application of Cold Wa-
ter to the Surface.*

Dr Currie observes, at page 195 of the second volume of the 4th edition of the Medical Reports, that
“ in 1798, a year after the first edition of this publi-
“ cation, (viz. Medical Reports,) Dr Jackson gave
“ to the world his Outline of the History and Cure of
“ Fevers. In the interval between this and his for-
“ mer work, (viz. Treatise on the Fevers of Jamai-
“ ca,) his experience of the remedy in question had
“ extended, and his stile and mode of reasoning had
“ undergone a remarkable alteration. I do not pro-
“ fess always to understand the full import of the new
“ phraseology of Dr Jackson, which is in a consider-
“ able degree founded on opinions peculiar to himself ;

“ *nor do I, after a diligent comparison of his precept*
“ *with his practice, perceive clearly the principles*
“ *which regulated him in the use of this powerful*
“ *remedy. I can, however, clearly see, that there is*
“ *little or nothing in common between us in this re-*
“ *spect.*” It is not necessary to detain the reader with any length of reply to the several points of objection stated in this paragraph. 1st, I admit that my stile and manner of writing underwent some change in the interval between 1794 and 1798 ; but, while I admit this, I believe at the same time, that those who take the trouble to examine the works alluded to with attention, will not fail to perceive, that the base of the principle and practice is the same in both, though more fully developed and prosecuted farther in the latter than in the former publication. 2dly, I do not pretend to say that Dr Currie may not have had difficulty in perceiving the principle which *regulates* me in the application of cold water to the surface ; but I still think, that, if my practice be carefully considered it will always be found to be directed by a principle, and even by a consistent one. None of the journalists who reviewed the outline, discovered, as far as I recollect, that my practice was at variance with my principle : It was even observed by some, that the view therein given *was bold, but consistent* *. 3dly, Dr Currie, like other authors, considers his own views and opinions

* British Critic, 1799.

to be right ; mine, as differing from his, he necessarily concludes to be wrong. He has stated explicitly on this occasion, that his views and mine have *little or nothing in common*. He must consequently be supposed to hold the presence of increased heat to be the condition which regulates the application of cold water to the surface, the subtraction of heat, the effect which commands the cure of the disease. Impression on sensation, to which he so frequently alludes in the course of his work, has great analogy with the opinion which I hold, and have uniformly maintained ; and, as he professes to have nothing in common with me in opinion, I am of course induced to consider this allusion to impression on sensation, which necessarily brings in its consequences some change in the form of action independently of temperature, as an interpolation in the text. He must either adhere to his principle, viz. increased heat and its subtraction ; or, abandoning it, he must subscribe to susceptibility of impression, and action of a new form, in consequence of impression solely : he cannot be indulged with both, for such latitude is not comprised in the law of nature.

I have stated, in a cursory manner, the leading condition which guides the author of the Medical Reports and myself in the affusion of cold water on the surface of the febrile subject : I shall next proceed to notice his more specific objections to the mode of practice which I adopted in my Outline. He judges it by the rule which he has himself formed. I do

not subscribe to the truth of the position or principle according to which he decides ; but I satisfy myself for the present, to be judged by the application which may be made of his own experience, or of the authorities which he adduces in the reports, and which, as such, he admits to be authentic and true. In the *first* place, he observes, that “ *instead of employing the cold bathing in the first stages, when the strength is nearly entire, and the febrile heat at the height, Dr Jackson premises copious bleedings and other evacnants, by which both must have been previously reduced.*” I have some difficulty in fixing the meaning of this paragraph. It is ambiguously expressed, insinuating, though not stating expressly, that I do not employ cold affusion in the early stages of fever ; or, that I employ it only after copious bleedings and other forms of evacuation. In the way in which the sentence is put, I understand the meaning to apply to the general rule of my practice ; but I cannot perceive through what deduction the inference has been obtained ; for the general rule of the Outline or the detail of cases therein mentioned do not seem to warrant it. But, as I am sensible that I have not been sufficiently explicit on many points in that publication, I shall now mention in a few words the sum of my customary proceedings. In the *first* place, then, the affusion of cold water was made in the early stage of fever, generally before the patient was conveyed to his ward, or accommodated in his bed. This is known to many persons who acted with me when I held a public station in the service

of the country. This was my customary practice, and the fact may be proved by many still living. But, while I say this, I am also to observe that, if the fit condition be present at an advanced period of the disease, I do not withhold the remedy because the disease is advanced ; I however apply it with diminished expectation of decisive success. I mentioned just now, that the basis of my expectations of success consists in susceptibility of impression in the subject of the experiment. If that exist in the case when first presented, I apply the remedy without loss of time ; if it do not appear to exist, I endeavour to produce it artificially. This then being my ground, I have to observe further, that I rarely bleed where the symptoms are moderate, and where the disease is of a mild character ; for instance in the simple continued, or in simple remitting fever, whether in a temperate or a tropical climate ; or, in the infectious fever of ordinary violence, such, for example, as usually occurs among soldiers quartered in crowded barracks, in crowded and ill ventilated private apartments, in transport ships, or other places where the air is stagnated and impure from the undue accumulation of inhabitants. The condition favourable for the salutary action of the remedy is then usually present, and it is then obvious that previous preparation is superfluous ; or, if preparation be then attempted by means of copious evacuation, it is not certain that it may not be dangerous or hurtful. On the other hand, where the heat is deficient, the skin dirty, damp, greasy, and flaccid, or withered and tor-

pid, the preparation is effected by introducing the patient into the air of a warm apartment, by immersing him in a warm bath, by cleansing the skin perfectly by means of soap and warm water, by scrubbing it with brushes, and rubbing it with hot towels ; and again, when an undue share of morbid action manifests itself in the first passages, accompanied with a slimy, foul tongue, nausea, and flatulence,—a condition not uncommon where the patient has been confined in the foul air of a crowded barrack, the 'tween decks of a transport ship, or the crowded ward of an infected hospital,—an emetic is usually directed to precede the cold affusion as preparative ; whilst purgatives, which operate strongly and extensively, are ordinarily premised where there are marks of congestion and fulness in the abdominal system. And, *lastly*, where the disease is of a violent character and concentrated force, wherever that may be, but more especially in tropical climates,—for instance, where the movement is rapid, the action strong, the course precipitously tending to the destruction of an organ ; or, where the movement is impeded, the action in a manner suspended, the surface of the body constricted, or internal organs suffocated by a stagnating mass of blood, the preparation is made principally by means of bleeding, the blood being allowed to flow till the violent action abate, or till the sluggish course be animated ; for in either case the system regains its susceptibility, and the affusion of cold water on the surface then produces its most fortunate effect. That this principle

has long been in my view, may, I think, be collected from my publications of 1791 and 1798. In the first, I recommend bleeding as preparatory only in some cases ; I even forbid it in others : in the second, I do not enjoin bleeding in the common infectious fever, and do not admit of it unless where the disease is complicated with local inflammation. In proof of this, I observe that, of some hundred cases in the buff which were submitted to the affusion or aspersion of cold water in 1794, not ten were prepared by bleeding : on the contrary, there was not one in ten, in which bleeding was omitted among those fevers in St Domingo which were presented to me at an early period of their course. This is the fact ; and to this cause I ascribe the success of the effect ; for it was generally observed to bear proportion to the care and judgment with which the bleeding was conducted and the extent to which it was carried. From what I have now said, and which I must consider as in some degree proved by the details to be found in my different publications on fevers, it is pretty evident that I do not indiscriminately employ evacuation, particularly bleeding, as preparatory of the affusion of cold water. I consult my judgment in the case ; and, though I do not maintain that I never err, and never employ it where I might omit it, I may add, at the same time, that the Medical Reports themselves furnish proof, that occasions do exist when it may be employed, not only without injury, but apparently with great benefit. Dr Currie informs us, at page 117 of the second vo-

lume of the Reports, that Mr Wilson, surgeon of his majesty's ship *Hussar*, pursued a mode of practice which, as far as I can discover, is very similar to that which I recommend in the more violent forms of tropical fever. The success of Mr Wilson's practice was highly distinguished. Dr Currie refers to the *Medicina Nautica* of Dr Trotter as his authority. I subjoin the paragraph, as extracted from the Medical Reports: "*Mr Wilson's practice was to bleed very early, generally in an hour after the accession of the hot stage. He then gave a solution of emetic tartar. The cold affusion was always administered in cases of delirium, which it immediately removed, inducing tranquillity and sleep; of eighty-three cases, Mr Wilson did not lose one.*" This event took place in summer in 1795, at Halifax in *Nova Scotia*. The sick were disposed in tents on shore, and were there attended by Mr Wilson himself. The success was perfect; and whatever the nature of the disease may have been, the fact of the success proves incontestibly that bleeding is not a destructive practice in fever; on the contrary, it gives ground to believe that it is often a beneficial one, preparatory to the affusion of cold water on the surface. This record, then, of Mr Wilson's practice, I am disposed to consider as evidence of the safety and advantage of the mode of preparation which I institute, previously to cold affusion in diseases of a violent or complicated character; and I am inclined to think that my mode of proceeding in this case will strike the reader with force, as the similar proceeding of Mr Wilson,

which was so successful, is admitted to be authentic by the author of the Medical Reports.

I have thus noticed, and I hope completely removed, the first specific stricture made by the author of the Medical Reports, on my method of preparing the subject previously to the affusion of cold water on the surface. I now proceed to submit the second to the consideration of the reader, and I trust I shall do it away equally to his satisfaction.—

*“ Instead of considering the heat of the patient as
“ the principal circumstance to be regarded in regulating the use of this remedy, he (Dr Jackson)
“ appears to have neglected all consideration of temperature in applying it, except in so far as temperature is connected with sensation ; and he has not
“ given us a single thermometrical observation in the
“ whole details of his practice, either in regard to
“ the water employed, the previous heat of the patient, or the change produced by the affusion.”—*

There still appears to be some ambiguity in this paragraph, as well as in that last noticed. If it mean simply that I used no other means of judging of the heat of the patient, except the sensation communicated to my own hand in examining the state of the body, the fact is true ; and I believe the reader will not consider the omission to be of great importance, when he learns that Mr Nagle, of his Majesty's ship *Ganges*, and Dr Gomez of the Portuguese fleet, two of the most brilliant authorities referred to in the Medical Reports, attained a sufficient precision for the application of cold affusion without the help of a thermo-

meter, as well as myself: On the contrary, if it mean that I neglect the consideration of heat as a matter of no importance, I find myself obliged to give a statement and further explanation of the fact; for, if such be the supposition, it is not altogether correct. In the *first* place then, I declare explicitly that I do not regard the mere increased heat, or high temperature of the patient as the principal, the sole, or indispensable circumstance which solicits a trial of the cold affusion, which warrants its safety and insures its success; yet I admit, and all my publications abound with proofs, that I consider the equal distribution and superficial diffusion of heat as materially connected with that condition of subject, which is ordinarily favourable to the successful action of this remedy. That this is my opinion may be inferred from a consideration of the nature of the means, which I adopt in preparing the subject of my experiment where the superficial heat is deficient, or where it is unequally distributed. For instance, I introduce him, when cold and torpid, into an apartment where the air is of a high temperature: I pour warm water upon his surface or immerse him in a warm bath: I scrub his skin with brushes armed with soap; and, having thus rendered the whole body perfectly clean, and increased its susceptibility in consequence of the operations connected with purification and warmth; I affuse the cold water with expectations of increased effect from the circumstances of the condition thus artificially produced. The sphere of the remedy is

by this means extended : its action is rendered sure, its effect certain and complete. When the reasons are explained, which will be done fully in another place, the practice, it is presumed, will be regarded as an improvement of no inferior importance in the management of this remedy. But though it must appear, from what I have now said, that I do not overlook all consideration of temperature in applying cold water to the surface, I must again repeat that I do not consider increased temperature as principal, sole, indispensable, and sure ; for my own experience, and even the experience of the author of the Medical Reports * sufficiently testifies that an increased degree of heat sometimes manifests itself in a febrile subject, without comprehending that precise condition of body which is essential to the successful action of the remedy. My own observation supplies numerous instances ; and authority, adduced and admitted to be authentic, by the author of the Medical Reports, confirms the fact, that the application of cold water to the surface may, and actually does, produce good effect where no increase of heat is discoverable by the hand of a person in health ; nay, even where sensation of great cold is manifest. This sense of cold arises from a modification in the action of the febrile cause which we cannot pretend to explain. It is more

* Medical Reports, Vol. I. Chap. 8.

common in malignant epidemics than in other forms; and it seems to have been a leading symptom in the fever which prevailed at Breslau in the year 1737; of which De Hahn gives some account, and from which the Medical Reports furnish me with some extracts which relate directly to the point in question. Cold water was applied in this case by means of sponges. This was done when the surface was withered and flaccid, or covered with an ice-cold sweat: the effect was salutary, viz. animation and fulness of the surface, or dissipation of the icy-coldness under racking pains. De Hahn's own case may be supposed to have been the most minutely attended to; I shall therefore transcribe part of it, as descriptive of his situation, and of the effects produced. It is as follows: "*Those continued ablutions, by which I*
"*had been refreshed hitherto, were not neglected on*
"*that very day on which I was thought to be dying;*
"*for although I was cold all over, bathed in cold*
"*sweat in such a manner as if I had been laid in*
"*melted ice, the ablutions were notwithstanding per-*
"*formed upon me, my most dear spouse executing the*
"*office of washing off this death-like moisture. And*
"*I solemnly aver that I never failed to experience*
"*refreshment, at least for a short time. When the*
"*pores of the skin were cleared by the means stated,*
"*a free perspiration or moderate sweat was the*
"*consequence; in so much that the constrictions of*
"*the surface seemed to be more readily and effectually*
"*relieved by abstersion with the sponge, than*

" *by the power of any internal remedy* *." Med. Rep. vol. i. p. 82. The account here given of the effect, according to Dr Currie's observation, *corresponds with the experience at present*. If this be so, the presence of increased heat is not the primary and absolute condition which sanctions the safety of the cold affusion and ensures its success ; for here, there was icy coldness on the skin, and yet sponging the body with cold water did good. I agree indeed with the author of the Medical Reports that a cold surface does not present the most favourable condition for the application of cold water, and I accordingly institute a process of preparation to obviate that condition ; but I maintain, and I believe the reader will assent to my opinion, that if cold water can be applied to an ice-cold surface, not merely without injury, but with benefit, this author's principle is overturned, and the stricture on my practice in the paragraph under consideration is consequently done away.

* Juges illæ ablutiones hucusque recreatus fueram, eo ipso die qua mori videbar, non negligebantur ; licet enim totus algidus algido sudore perfunderer, non secus ac liquifacta glacie immersus, frigida tamen abluebar, maritum servitura charissima conjuge lethales madores, ocius deluente. Saneteque testor, nunquam non refici ad breve temporis momentum languentes marcidæ cutis fibras me persensisse. Succedebat, repurgatis hac ope poris, perspiratio liberior, ac sudor modestus: videbanturque cutis obturacula promptius spongia remota, quam pharmaci interni virtute, reserari.

In answer to the other part of the paragraph, viz. *“that no thermometrical observation concerning the heat of the patient, is recorded in my work published in 1798, and no notice made therein respecting the temperature of the water employed for affusion,”* a very short remark will be sufficient. The Medical Reports themselves furnish sufficient proof that every requisite practical precision may be attained without measuring the heat of the body by an instrument. This is a point which cannot be denied; and to this I add, that the reader cannot be at a loss to collect, from the circumstances connected with my history of fevers, in what climate, or in what season, this remedy is employed. When he has attained this point of information, his conclusion respecting the common temperature of water is not likely to be very erroneous. I may however now remark, and the substance of it may be collected from one or other of my publications, though not so fully and explicitly expressed perhaps as it ought to be, that the water was directed to be as cool as it could be obtained in tropical climates; that is, drawn from the deep sea, the spring or reservoir, early in the morning, placed in the shade during the day, and sometimes cooled artificially by dissolving salt in it. In higher latitudes, viz. in Europe, it was employed at the common temperature of the place and season; only with this difference, that in summer it was affused suddenly, and in large quantity, by means of buckets; in winter, more gradually,

and in small quantity, often by sponges or gentler aspersions.

The next paragraph, viz. "*That the previous or subsequent dryness or moisture of the skin forms no part of his observation; and even the very remarkable, and almost uniform effect of this remedy on the pulse, is entirely unnoticed,*" is perhaps not very correctly stated. The points alluded to, though not indifferent among the things to be considered by the physician, though in fact not overlooked by me when I form a plan of cure, and not ordinarily omitted when I detail a case for the information of the public, are not, I confess, points of the first importance in my estimation. The cold water, for instance, is applied with a fortunate result, provided other circumstances are favourable, sometimes where the skin is dry and withered, sometimes where it is greasy and damp; and further, sometimes where the pulse is strong, frequent, and hard; sometimes where it is weak, little accelerated in movement, lax and compressible in manner. It is probable that, from a knowledge of this fact, I may seem to have less regarded the condition of the skin and the state of the pulse in applying cold water to the surface, than the author of the Medical Reports does himself, or thinks necessary to be done by others; but when I admit this, I must at the same time remark, that where I employ affusion, without preparing the previous condition of susceptibility, I generally employ it at the period of exacerbation, consequently when the skin, according to the ordinary course of things, is dry as well as hot. But, while what I

now state with regard to the condition of the skin, is usually in my view when I employ the remedy in question. I must also add that my principle does not positively forbid aspersion, ablution by the sponge, even affusion by means of buckets, where the superficial heat is lower than that of ordinary health, and where the skin is withered or greasy, damp and clammy even where it is moist and open, such as in common language is termed relaxed,—not such, it must be remembered, as obtains in critical perspiration terminating the paroxysm of a periodic fever, or making the solution of one of continued form:—it would there be preposterous, and unnecessary, if not dangerous. The case of De Hahn, mentioned above, may serve to give an illustration of what I mean; and I refer to it for explanation as it stands on record in the Medical Reports. Ablution by means of the sponge was there employed when the surface was covered with an ice-cold sweat; the action of the skin was apparently restored by it to a form more healthy and energetic; and as the experiment was made on the person of De Hahn himself, we must allow *his* testimony to be good evidence of the fact. The effect of the affusion, as I observed above, is beneficial when applied under very different conditions of pulse; but I now add, that the remedy was managed differently, according as the pulse was high or low, strong or weak. Where it was high, strong and irritated, the affusion was made by means of buckets, the water applied in quantity; where it was smooth, soft, and easily compressed,

for instance in cases of great mobility and diminished power, the water was applied by sponges in ablu-
tion, and sometimes by aspersion.

The points which I have now noticed, are the more specific strictures applied by the author of the Medical Reports to my Outline of 1798. The facts recorded in the Reports, which Dr Currie admits to be authentic, and to which I have referred, seem to me, not only to do away these very strictures, but to undermine the basis of the principle through which they were formed.

The next paragraph in the Reports which relates to my Outline is the following, and it requires only a short explanation on my part. “ *Nor have I the*
“ *satisfaction of agreeing with Dr Jackson on the*
“ *manner in which the sensibility of the patient ought*
“ *to influence us in the use of the cold affusion. He*
“ *requires a state of high excitement or sensibility of*
“ *the surface in the application of the remedy, and*
“ *considers its benefits are wholly dependent on this*
“ *previous condition; whereas an extreme sensibility*
“ *to the impression of cold, (which according to my*
“ *experience often attends great sensibility of surface*
“ *in fevers) deterred me from employing it, when the*
“ *actual heat of the patient indicated its use.*” It is probable that I have not expressed myself clearly on this head, for it is evident that Dr Currie has not apprehended my meaning rightly. The condition which I require for the application of the cold water, and which I endeavour to create if it do not already exist, consists in susceptibility of impression

combined with the capacity of producing effective action. It is attained in one case by superficial stimulations, particularly by processes similar to those practised in the Russian bath; in another by subtractions, particularly by copious bleeding, the evacuation made suddenly, but conducted with caution and minute attention through all the steps of its progress. The susceptible condition, according to my interpretation of the word, is different from that extreme sensibility to the impression of cold to which this author alludes, at page 49th of the first volume of the Reports. I confess that I have not often, if ever, seen a disease exactly resembling that which is there described; but I have often seen fevers, particularly infectious fevers, where the skin was so tender of the touch that the patient shrunk when I approached him for the purpose of feeling his pulse, and probably called out when I pressed his arm closely with the view of ascertaining the condition and quantity of heat in the deep seated parts. This condition occurred frequently on the continent, in the winters of 1794 and 1795, among the soldiers of the buff or 3d regiment of foot. The skin was here painful and tender, as if it had been bruised; yet affusion, or ablution with cold water, was of singular value in this, as well as the other forms of fever which appeared in that corps. I do not presume to speak positively on a subject of which I have had no direct experience; but I am inclined to think that if the existing condition of the skin, in cases similar to that noticed by Dr Currie, were ar-

tificially changed by immersion in a warm bath of high temperature, and by frictions with warm and penetrating oils, the affusion of cold water, particularly with the addition of salt, might be expected to be of high service, if not decisive of abrupt cure.

Dr Currie concludes his examination of my work of 1798, with this remark: "*It would not become me (Dr Currie,) to pronounce judgment on the very important differences between Dr Jackson and myself; this must be left to future observers. But, from the experience which I have detailed, I cannot be surprised at the imperfect success of the remedy in his hands, or that other practitioners in the West Indies, who had adopted it on the same or similar principles, should have afterwards abandoned it.*" I willingly submit the case between the author of the Medical Reports and myself to be decided by the experience of such future practitioners as shall observe with attention, and judge without prepossession. I have no farther interest in the decision than that the public may see the truth, and adopt the rule of practice which is most useful and effective of good. I may, however, observe in this place, that my opinions have been judged, and my practice condemned, without full evidence of trial. Dr Currie has drawn his inferences from what he saw himself; and his sphere of observation was comparatively a narrow one. Had his situation presented him with examples of fever in its more concentrated and difficult forms, he would, I believe, have expressed himself less confidently than he has don

concerning the power of the cold affusion employed in the manner which he recommends; and I also believe, that had he been where I have been, and seen diseases under all the forms in which I have seen them, he would have withheld those strictures on my publication of 1798, which I have now examined, and, as it appears to myself, completely set aside by induction from his own authorities. When I speak in this manner of Dr Currie's opinions, I do not mean to insinuate that his testimonies in favour of cold affusion are exaggerated or misrepresented; for I am well assured, from my own experience, that the affusion of cold water is capable of cutting short the course of a mild or simple fever, without preparation of condition, when applied as he directs it to be applied, whether in Europe or in the West Indies; but while I admit this, I am also convinced, from no less certain evidence, that it is liable to fail in the more violent and concentrated, unless the proper condition of fitness in the subject be prepared artificially previously to its application;—it is then only that the affusion can be regarded as sovereign. To prepare this condition, where it does not already exist, forms the basis of my practical rule; the just execution of it is considered as the circumstance which gives full effect to the after-process. That this was my opinion in the year 1798, may, I believe, be concluded from what is stated in my Outline, at page 226 *. The language of that paragraph is not

* Vide, page 226.

equivocal ; it does not imply that the application of the remedy was indiscriminate, and it does not acknowledge an imperfect success from its application, where the condition of the subject was fit and proper, whether belonging to the disease in its own form, or obtained by preparation through art.

The insinuation, that the "*success of cold affusion was imperfect in my hands*," is a point in the above paragraph, which, however irksome the notice of it may be, I cannot pass in silence. I confess I am not able to trace the channel through which the author of the Medical Reports attained his conclusion respecting it ; for it does not appear, by my own confession, in any of the works which I have published on the subject of fever ; and, if judged to be a necessary consequence of the rule of practice which I recommend, Dr Currie's own experience, or that of his correspondents, will not, I believe, furnish such evidence as will be thought sufficient to bear him out in his assertion. He seems to consider it as an error that I premise bleeding, or other evacuation, previously to the application of cold water to the surface. My publications on fever shew plainly that I do not employ bleeding indiscriminately ; and the practice of Mr Wilson, quoted above, and admitted to be authentic by Dr Currie himself, shews clearly that it may be employed in some forms of febrile disease, not only without injury, but apparently with benefit. It is objected, that I do not consider the heat of the patient's body as the principal circumstance to be regarded in regu-

lating the use of the cold affusion. I am ready to admit that I consider heat only as a secondary circumstance, though by no means an indifferent one, in directing my judgment in this respect; and I further add, that I am not deterred from applying the remedy when the temperature is low, provided other circumstances be favourable for its safe and successful action. The instance of De Hahn stands in proof, that ablution with cold water may be salutary, even where the surface of the body is preternaturally cold. 3d/y, It is insinuated that the practice cannot be precise without the thermometrical observation. I am of a different way of thinking, and I refer to Mr Nagle and Dr Gomez, two of Dr Currie's most respected authorities, in proof of my opinion. From what I have now mentioned, the reader, I presume, will have no difficulty in admitting that the strictures, pronounced against my rule of practice by the author of the Medical Reports, are not supported by the experience detailed in these reports; and therefore that he has not considerably referred to it. I have only to add, that, if I had not believed in the success of what I did, over the success of common practice, I could not have had the assurance to lay it before the public with commendation; but that the reader may form his own opinion on this subject from official facts, I shall state the proportion between deaths and recoveries in fever among persons who were committed to my care in the different countries where I have served or exercised my profession. In the *first*

place, the mortality in the fever of Jamaica, between the month of March 1774, and the beginning of January 1778, in a company of soldiers of the 1st battalion of the 60th regiment, quartered at Savanna la Mar where I resided, did not exceed one in fifteen. I do not possess detailed returns of what I now state ; indeed, regular returns of hospital casualty were not then made by me ; but I have been able to collect, from notes or memorandums that are still among my papers, that one in fifteen was nearly the proportion. This, I confess, is a low mortality from fever in a tropical climate ; but I must observe, in accounting for it, that the disease was ordinarily mild in its nature, and that the persons alluded to were seen in the first hours of indisposition ; so that a favourable opportunity was thereby given of effecting an abrupt cure. That this was the principal cause of the favourable return, may be concluded from what happened to sailors, or such of the civil inhabitants as came under my care during my residence at this place. The mortality among such was not less than one in five ; for the disease was often completely formed before it was presented to me ; and, when that was the case, it often proceeded in its course to a regular critical termination in spite of all my efforts to arrest its progress. A loss of one in three was considered as a favourable return from the military hospitals of St Domingo in the years 1796 and 1797. In a time of general sickness and great mortality, I assumed the office of regimental surgeon for the 56th regiment, which

was stationed at the Mole, Cape St Nicholas, in the year 1796. I continued in the exercise of that office for the space of six weeks; and, during that time, the proportion of deaths, among fair cases of fever, that is, such as were presented to me within six hours from the attack, did not exceed one in twenty. This is official; and I can venture to say, though no official return was made of the fact, that the result was equally favourable among those individuals who were submitted to my care at the commencement of the disease, in subsequent periods, during my continuance in that island. The proportion of deaths among febrile patients in the Buffs was still smaller than what is now stated. During a period of eighteen months at the commencement of the late war, two hundred and fifty febrile patients were dismissed as cured from the lists of sick of that corps, exclusively of those who were sent to general hospitals in various stages of convalescence, where the means of accommodation were deficient, or where waggon were not allowed for transport in the event of the army changing its ground or position; of these, only two died; consequently, the mortality did not exceed one in one hundred and twenty-five. This is certainly low; but it is to be taken into the account that I was surgeon of the regiment; as such, I saw the disease at its commencement; nay, I even in a manner domesticated with the sick, administered the medicines with my own hand, and superintended every important act of discipline, which concerned those

who were seriously ill. Farther, I acted as physician and head of the hospital at the army depot for the whole of the year 1801. The mortality among febrile patients, while the depot remained at Chatham, stands as one in thirty-two; at the Isle of Wight, where an epidemic of great malignity prevailed, where none but dangerous cases were admitted into the hospital list, and where the miseries of the hospital and barracks opposed great obstacles to the recovery of health, it stands as one in twenty-three *. This is official, and the proportion of deaths is not high comparatively; for we find that mortality in the house of recovery at Liverpool during a space of four years, according to Dr Currie's own report, amounted to one in ten and a half †. Such is the comparative statement of mortality from fever. I leave the reader to form his own opinion of the fact and its inferences.

In reply to the concluding sentence of the paragraph transcribed above, viz. "*That others who had adopted the practice on the same or similar principles (with me), had afterwards abandoned it,*" I have little to remark. I do not myself know any one who employed cold bathing according to my principle, and who afterwards abandoned it. Dr Currie instances his friend Dr Ord of Demarara; but the reference is not a fortunate one, for Dr Ord says expressly that he had misapprehended Dr Currie's meaning, "*not conceiving the principle on which*

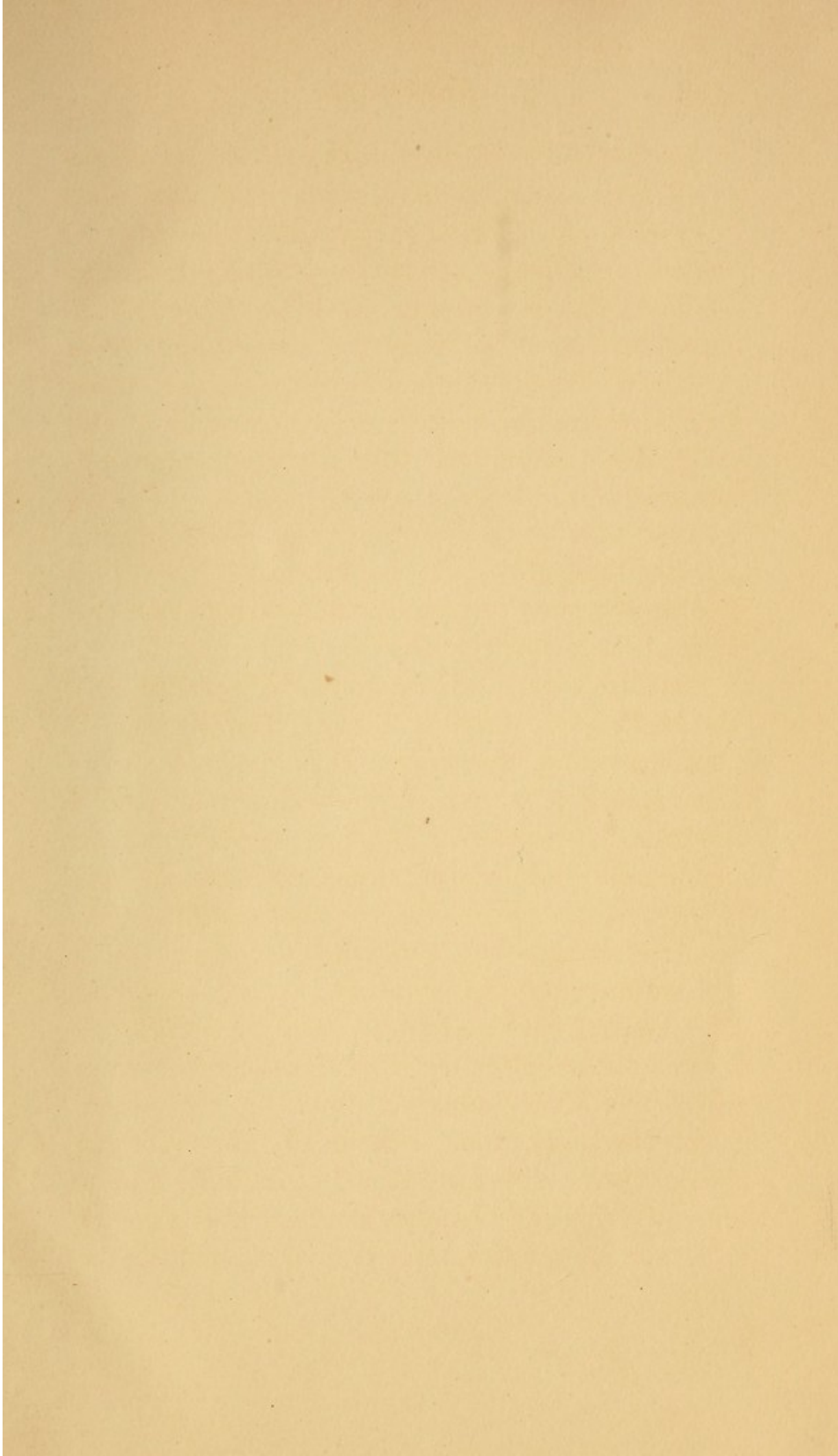
* Constitution of the Medical Department of the British Army, by the Author.

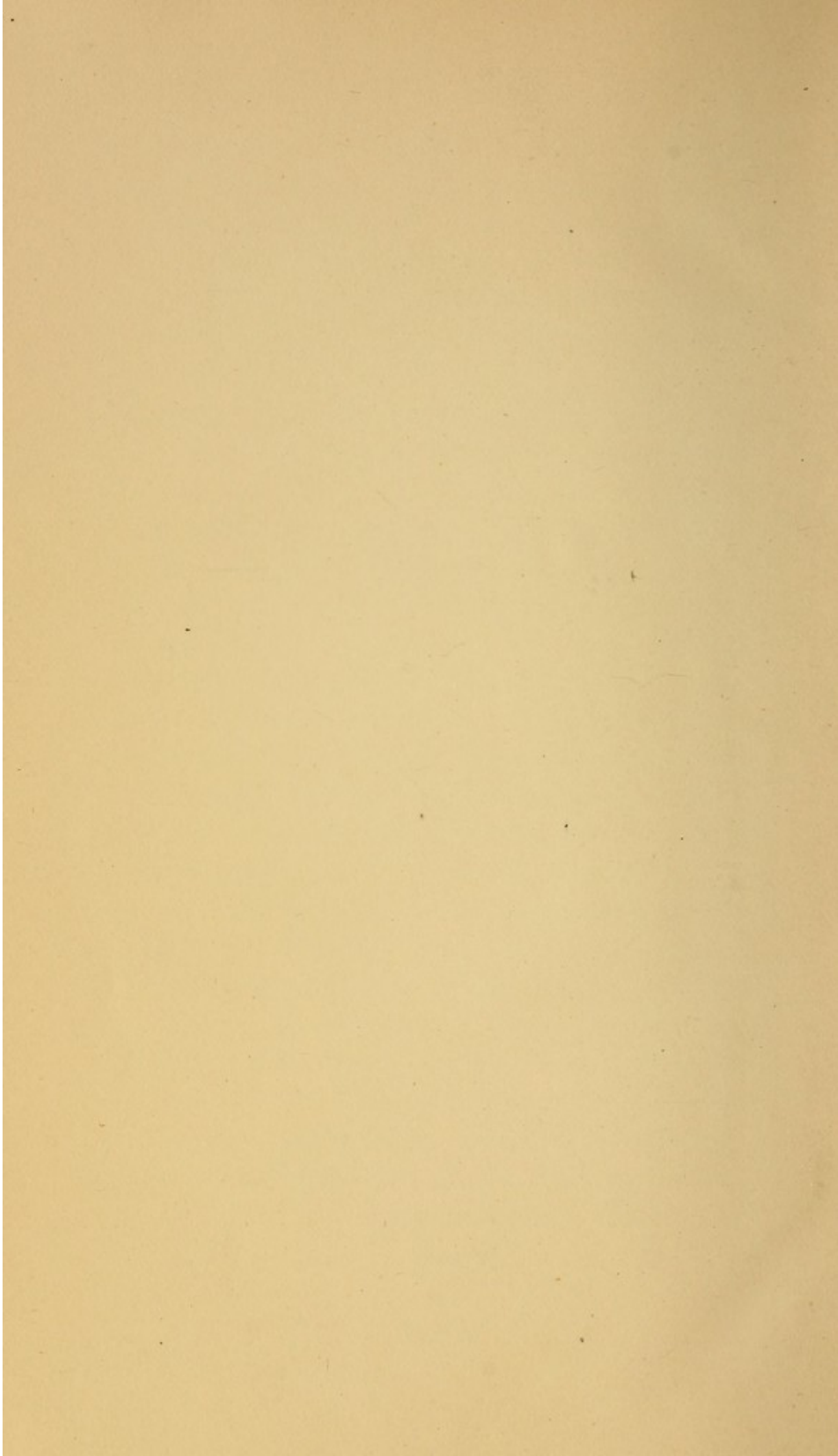
† Medical Reports, Vol. I. p. 367.

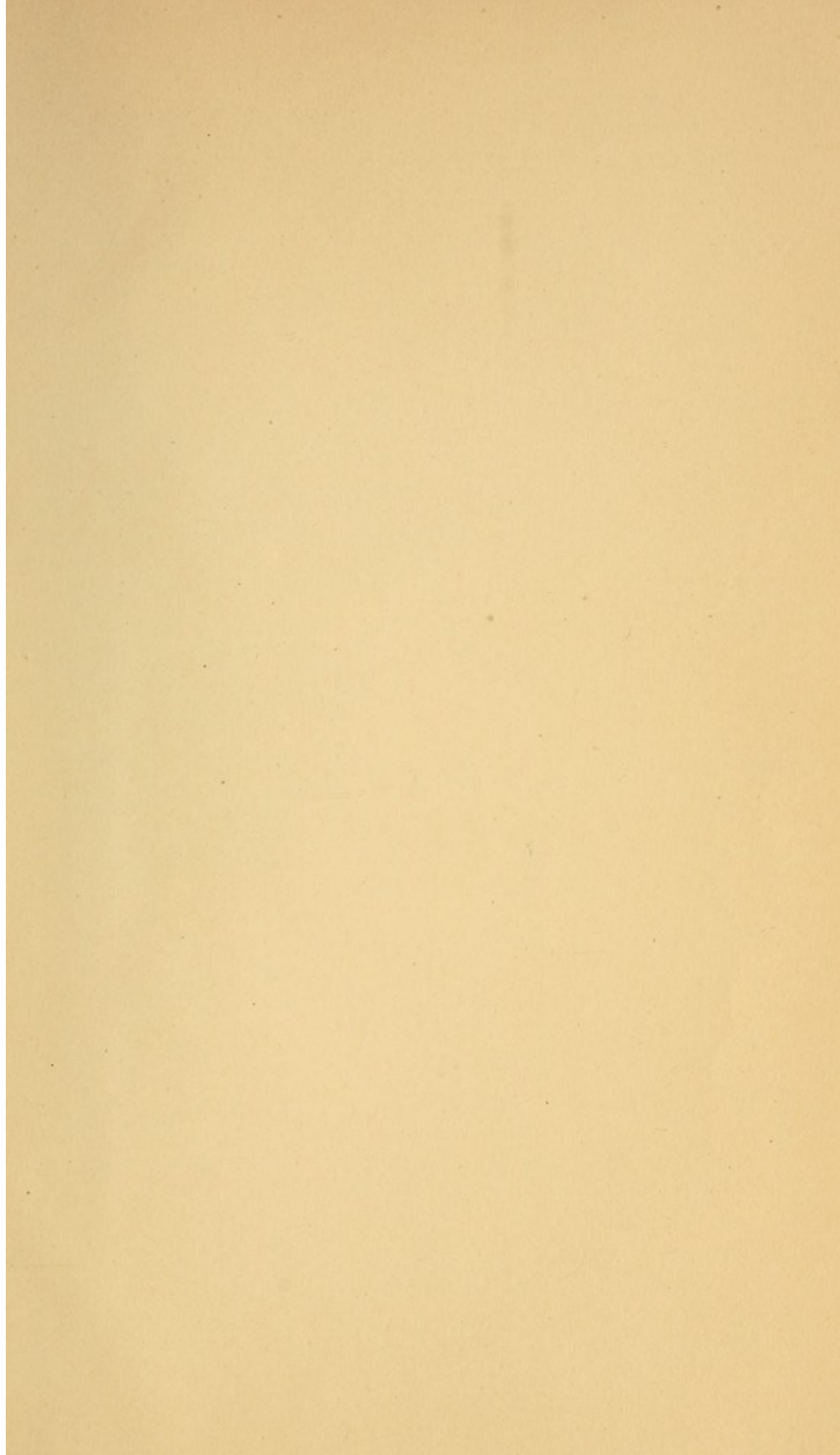
*“ Dr Currie used it, was to procure the solution of
“ a febrile paroxysm, but to assist with other tonics
“ in restoring strength to the constitution after the
“ febrile catenation had been removed ”* If this be Dr Ord's view in applying cold water to the surface, I may safely venture to say that he did not derive it from me. The reader is fully aware from what has been said repeatedly in the preceding pages of this work, that I employ the affusion of cold water while the disease is in the vigour of its course, not when it has remitted or ceased : but it would be superfluous to prosecute the subject farther, for it is of no real importance to any one to know whence Dr Ord derived his rule of practice.

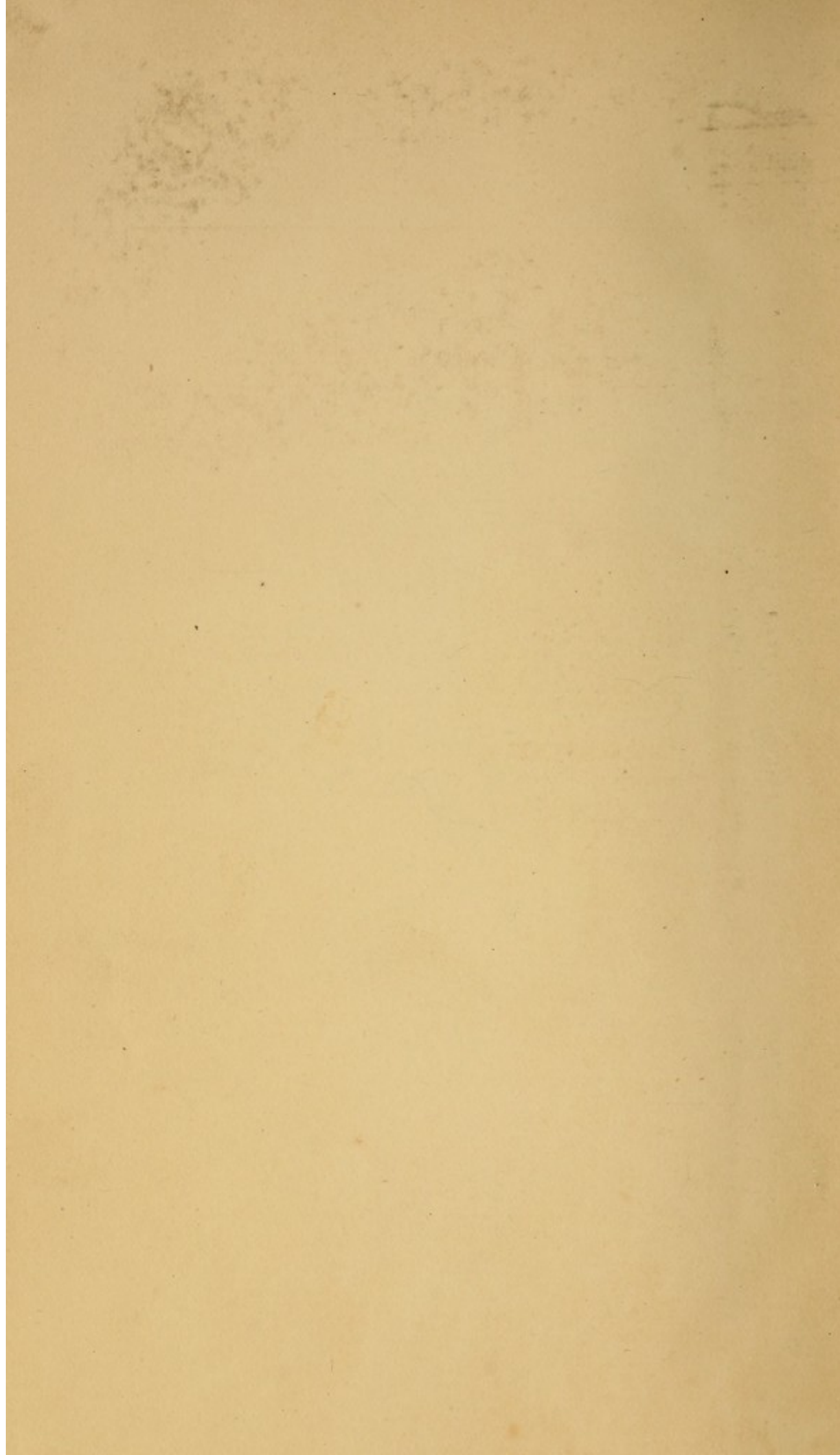
Such are Dr Currie's strictures on my Outline of the History and Cure of Fever. The work, as I observed before, was written in a foreign country ; consequently it was written under disadvantages. I hold the facts to be faithful : I am sensible that the manner in which they are presented is not the most alluring ; and I should not be chagrined if the Outline were not praised ; I am called upon to vindicate it from the imputation of leading others into error. This I trust I have now done ; and I am particularly obliged to the author of the Medical Reports for supplying me with authorities from his own stores, which have assisted me so materially in establishing my positions. It is more than I could have expected ; and, from the manner in which it is attained, it cannot fail to make impression on the mind of the reader.

FINIS.









B.P.L. Bindery.

MAY 27 1879

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days, who will collect
including Sundays and
borrower's household
returned at this Hall.

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defaced, are expected to
lay in the delivery of book.

***No claim can be est
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