Observations on the inflammatory endemic, incidental to strangers in the West Indies from temperate climates commonly called the yellow fever ... to which is added an appendix, containing abstracts of official reports upon West India fevers / [Nodes Dickinson].

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DICKINSON, N.

OBSERVATIONS

ON THE

INFAMMATORY ENDEMIC.

Observations

ON THE

INFLAMMATORY ENDEMIC,

INCIDENTAL TO

STRANGERS IN THE WEST INDIES

FROM TEMPERATE CLIMATES,

COMMONLY CALLED THE

YELLOW FEVER,

AS THIS DISEASE OCCURRED TO THE AUTHOR DURING A PUBLIC SERVICE OF TWENTY YEARS IN A

MAJORITY OF THE WEST-INDIA COLONIES,

WITH

NOTES AND ILLUSTRATIONS,

TO WHICH IS ADDED

AN APPENDIX,

CONTAINING ABSTRACTS OF OFFICIAL REPORTS UPON WEST INDIA FEVERS, ADDRESSED TO THE HEAD OF THE ARMY MEDICAL DEPARTMENT.

BY NODES DICKINSON,

OF THE COLLEGE OF SURGEONS; STAFF SURGEON TO H. M. FORCES; MEMBER OF THE MEDICAL AND CHIRURGICAL SOCIETY, &c.

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1819.

TO

SIR JAMES Mc. GRIGOR, Kt. C. T. S.

DIRECTOR GENERAL OF THE ARMY MEDICAL DEPARTMENT;

F. R. S. OF LONDON AND EDINBURGH;

OF THE COLLEGES OF PHYSICIANS OF LONDON AND EDINBURGH;

HONORARY MEMBER OF THE ROYAL COLLEGE OF SURGEONS, IRELAND;

PHYSICIAN EXTRAORDINARY TO THE PRINCE REGENT

AND DUKE OF YORK;

&c. &c. &c.

AS A TRIBUTE OF PERSONAL ESTEEM,

AND OF THE MOST UNFEIGNED RESPECT FOR THE ZEAL WITH WHICH HE HAS SO EMINENTLY ADVANCED THE INTERESTS OF MILITARY MEDICINE.

AND

UNDER HIS SANCTION,

TO THE

JUNIOR OFFICERS OF THE ARMY MEDICAL DEPARTMENT

DESTINED FOR WEST INDIA SERVICE;

THESE PAGES ARE RESPECTFULLY INSCRIBED BY

THE AUTHOR.

17, *Wigmore Street, Cavendish Square,*

1*st March,* 1819.

PREFACE.

That variety of opinion which is found in the numerous publications on the West-India Yellow Fever, has neither produced conviction to those engaged in the discussion, nor has the question been determined to the satisfaction of others, remote from the original source of evidence. Concerning the causes, the nature, the prevention, and the treatment of the Yellow Fever, the sentiments of professional men appear to have been as much divided, during the prevalency of that disease in 1816, as they were at any previous period, and the discrepancy continues to the present moment.

It may, however, be safely assumed that, although dissimilar opinions have been deduced from an observation of the same facts,

yet have the *facts* themselves been attentively observed and faithfully recorded.

Considerable advantage has, therefore, been derived from the communication of this diversity of sentiment; inasmuch as more satisfactory conclusions must be expected from the accumulated experience of several observers, although opponents in theory, than from the more limited research of a single inquirer.

The Yellow Fever has lately received the attention of many able men. Still, however, it does not appear to excite that general interest in this country, which, as a question very closely connected with the cause of humanity and medical science, it should seem to deserve.

Several circumstances have combined to arrest the ardor of research into the nature of this subject. Many devoted to the pursuit of medical science, have alleged, that an examination into the evidence adduced on

the nature and treatment of the Yellow Fever, can scarcely be undertaken with any satisfactory hope of beneficial result, from the heterogeneous character of the materials to be inspected. The discussion, it is truly added, has been conducted upon most occasions with a spirit of controversy, marked by personal allusions, conveyed in terms of such severe and virulent invective, as are surely unwise, if the main object be to arrive at truth, and have the effect of producing not only apathy, but disgust.

It has also been seriously objected, that the *discrepancies themselves* among the writings of those who have treated upon the Yellow Fever, present such a mass of contradictory opinion, instead of clear and decisive evidence, such unqualified assertion, in the place of scientific induction, as to make any further investigation an unwelcome, and almost a hopeless task. It has been thought too, that the consideration of Yellow Fever is of very declining importance in this coun-

try, from the comparative infrequency of its occurrence, since the peace has happily rendered it no longer necessary to equip a British force for West-India service: at the same time, the generally increasing confidence in the accuracy of those statements which set at defiance the possibility of introducing the Yellow Fever into these kingdoms, has still further diminished the weight it might otherwise possess.

It by no means follows that the subject itself should be abandoned, either as uninteresting or unimportant, even if we admit that these objections are partly well grounded. They will, it is hoped, be deemed inconclusive by the members of a liberal profession, who, from experience, are believed to extend their views beyond the immediate sphere of their personal activity, and *who* are known, not only to feel, but to exert a lively interest in whatever concerns the welfare of mankind, however remotely may be placed the object to whose happiness they are always solicitous

to contribute by the improved application of their art.

The subject will scarcely lose, therefore, its interest because it has sometimes been unadvisedly treated;—or, because there continue to exist the same doubts as have long existed;—or, because the victims of the Yellow Fever are not now sent in such numbers to meet its ravages as they once were;—or, because its introduction into these kingdoms is no longer a source of alarm.

It may be, surely, not irrationally argued on the contrary, that the existence of so much controversy is a direct proof of the necessity of further research; and, although the disease be comparatively infrequent, yet it still exists, and is still terrible to the new comer. Many of our countrymen are continually going out to the colonies, in their commercial pursuits. Many of them must be sent out to recruit the garrisons. If, therefore, it be ascertained that the Yellow Fever is a disease peculiar to strangers upon their arrival with-

in the tropics from temperate climates, and the too common consequence of their transmigration; it is surely of serious moment to clear up, as far as is possible, every doubtful point connected with its prevention and treatment. The consideration of the subject acquires additional importance, when it is borne in contemplation that at some distant possible period, a national contingency may again require in the West Indies the sudden presence of a British force.

Under the possible operation of these causes, the interest of this subject should seem to be as great at the present moment as at any previous period; while, it will probably be admitted, that so long as the Yellow Fever continues involved both in practical doubt and speculative controversy, that disease must be obviously classed among the opprobria of our art; and, therefore, its full investigation becomes the more important from its connexion with medical science.

It were deeply distressful, and would indeed

be unprofitable, to call to remembrance the numbers of British Youth that have fallen a sacrifice to our ignorance of the nature of the Yellow Fever. The essential character of this disease remains yet undecided, except in the estimate of individual opinions and prepossessions. Its causes are stated to be various and opposite: hence the most serious difference, occasionally, obtains with respect to its prevention and treatment. The evidence of facts is, nevertheless, abundant, clear, and decisive. The present Writer has witnessed the disease on a scale of lamentable extent. His opportunities of observation have been repeated. He endeavoured on every occasion to improve his experience by an assiduous attention to relieve by all the means within his ability the calamities of those committed to his care. He has, since his return to England, devoted a portion of his leisure to an attentive examination of the facts which have been communicated to the professional public by other labourers in the same field.

In forming his own conclusions upon the nature and causes of the Yellow Fever, he has therefore considered the inferences drawn by several of his predecessors, and of other highly respected authorities who have written upon the subject since his retirement from the public service.

He does not presume to advance any claim to the character of discovery : he fears that he has not been able, even, to contribute the charm of novelty. He has seen the Yellow Fever in the plenitude of its mortal career : and he now submits the result of a long experience, with a wish to be a useful, although a very humble auxiliary in the cause of truth, and thereby to contribute towards alleviating the sufferings of those, who may hereafter, be liable to an attack of this formidable disease.

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INTRODUCTION.

THE following pages are principally transcribed from official reports addressed to the Chief of the Army Medical Department in the West Indies.

A desire to ascertain whether the *Yellow* Fever was infectious when the writer witnessed its ravages on a scale of great extent;—a long experience of the Endemial Fevers which originate from febrific miasmata in certain West-India districts, at particular seasons;—the repeated observation of the Yellow Fever among *new comers* to the West-Indies from *temperate* climates, when the most minute investigation was unable to detect, either the agency of contagion or of febrific miasmata evolved from soil;—the consideration of these circumstances led to the opinion, that this disease should be distin-

guished from *Idiopathic* Fever, whether resulting from contagion, or from marsh effluvium.*

The manuscript copy of this tract was transmitted to England from the West Indies in 1813. The publication has, however, been delayed until the present period, from circumstances, with any account of which it would be impertinent to detain the reader ;— but it may be remarked, that as several able works upon Yellow Fever correctly appreciate the practice in the treatment of that disease, which the writer from personal experience recommends ; he was averse to obtrude his observations merely in confirmation of the superior efficacy of this practice, having no fact of importance to adduce *not previously known.*†

* The writer was first led to discriminate the Yellow Fever of strangers from the marsh endemic, by observing the great numbers who fell the victims of Yellow Fever in the year 1796, when all *but* new comers (at the same time and place), enjoyed complete exemption; and by having the opportunity, soon after, of contrasting the disease with the Marsh Remittent Fever. From this period to 1814, his attention was particularly directed to West-India Fevers. The present Tract is the result of observations, with which there appears to subsist a strict analogy in the opinions lately published by Dr. Veitch.*

* See a Letter to the Commissioners for Transports on Yellow Fever, by James Veitch, M. D. &c. Lond. 1818.

† The notes, cited from many valuable authorities, have been

In describing what has been seen by numerous observers, from the earliest period of northern migrations to equatorial latitudes,[1] new FACTS of importance are indeed scarcely to be expected; yet, as much difference of *opinion* still obtains with regard to the nature and treatment of Yellow Fever, the subject continues to deserve attention.

This difference of opinion has chiefly arisen from the *opposite* conclusions, to which the contemplation of the *same* facts has directed various observers under peculiar prepossessions. Hence may be traced the discrepancy which has so often marked the conduct of West-India practitioners; and which continues to perplex the indications, both prophylactic and curative, for subduing a disease so long the subject of a virulent, unprofitable, and pernicious controversy.* The

lately subjoined, as affording important collateral testimony in evidence of FACTS, without reference to the particular OPINIONS occasionally deduced. The writer is sensible of the correctness of the facts he quotes. The practical rule derived from them by their several authors, he often values highly: he respects (with much deference) the *opinions* of others; but his experience directs him to feel safety in trusting to the accuracy of his own conclusions.

* See London Medical Repository, vol. iv. page 27; vol. vi. p. 186; vol. viii. p. 205: also, Edinb. Medical and Surgical Journal, Oct. 1817.

fever, for instance, which prevailed in the colonies in 1816, was considered by some physicians an imported and contagious disease. It was by others referred to the influence of marsh miasmata, or to certain similar effluvia;* while a correspondent remarks that it principally attacked those unassimilated to the climate;—that it was highly inflammatory, non-contagious, and manifestly different from the marsh remittent.[2] Perhaps distinctly different febrile affections occurred simultaneously in a mixed community, consisting of natives, of Europeans of long residence, and of strangers from temperate climates, each possessing peculiar susceptibilities to the endemic diseases of the country;[3] and perhaps a *contagious* fever might casually appear in the West-India Colonies

It is not intended to be implied that *novelty of opinion* is presented in these pages any more than *novelty of fact*. But the *difference* of opinion adverted to, has so variously governed practice, as to have alarmingly affected the lives of great numbers of mankind. It is therefore thought well to attempt the remedy of this evil by a concentration of facts, (regardless of such injurious discrepancies), derived from every accessible quarter that can be relied on for their fidelity.

* See Medico-chirurgical Transactions, vol. ii. page 189; vol. viii. part i. page 108, and vol. ix. part i. page 93.

as in other parts of the world; although, it should be added, the circumstances favorable to the generation of contagious fever, scarcely ever obtain in tropical countries.*

Such existing difference of opinion might alone have induced the writer to submit to the junior members of the profession, intended for West-India practice, the result of a long experience, had he not originally entertained the idea of so doing from the following occurrence.

Several cases of the inflammatory endemic —of the marsh remittent,—and of a topical

* The circumstances under which the subjects of Yellow Fever are placed, are the very reverse of those which so peculiarly favor the generation of contagious Fevers. As respects the army, among whose numbers the Yellow Fever has commonly appeared in the most formidable aspect of character, no want is experienced of the conveniences and comforts of life. A superabundance rather than a deficiency of nutriment is a principal source of ill. The situations in which they are placed are neither small, close, crowded, nor dirty. On the contrary, cleanliness and ventilation rank in the first class of military and medical regulations. But the intemperature of climate, the effects of which cannot be wholly removed, and stimulant diet, with strong liquors from which the subjects of Yellow Fever do not commonly choose to abstain; these are the baneful agents which, acting upon strong, youthful, and plethoric habits, sweep away Europeans newly arrived in the West Indies, with a celerity not to be surpassed by Typhus of any species which nosologists have classed in their arrangements.

affection, marked equally with the others by *yellowness* of the skin, occurred at the same time in the military hospital under the writer's superintendency.[4]

As these *distinct* febrile affections were each regarded as examples of the *Yellow Fever*, from the predominancy of a striking symptom, (which, upon this occasion led to an inquiry of the writer, by medical officers lately arrived in the West Indies, as to the identity of the diseases in hospital with the Yellow Fever of authors); the importance was suggested of distinguishing them by a more minute attention to their nature and cause: as notwithstanding their resemblance in certain particulars, they require a different consideration both for their prevention and cure.[5]

That a great degree of *permanent* heat must prevail in those parts of the West Indies where the elevation of the land is not considerable, is a necessary consequence of proximity to the line.[6]

An effect of this high temperature upon particular constitutions, unaccustomed to its impression, is seen in the excitement of yellow Fever.[7]

This disease has, however, been referred to two distinct and specific causes, rather than to *sudden change of climate.*

One of these causes is Marsh Miasmata, which was long regarded as the only genuine source of producing fever in this country.* At different periods, however, there has been added another cause of Yellow Fever.

Animal contagion has been considered as its source: not an endemic of the country, but imported from some other region.† Contagion supposed to be exalted into a peculiar degree of virulence by the climate, has thus been added to the deleterious exhalations from certain soils.[8]

To one or other of these two causes, the *Yellow* Fever of the West Indies has generally been ascribed.

* See LIND on Diseases in Hot Climates; HUNTER, Diseases of the Army in Jamaica; Mc LEAN, Fever at St. Domingo; LEMPRIERE, Diseases of Jamaica; JACKSON, History and Cure of Fever; BANCROFT, on Yellow Fever; DOUGHTY, on Ditto; DICKSON, on Do. Edinb. Med. and Surg. Journal; FERGUSSON, Do. Medico-Chirurgical Transactions.

† See CHISOLM on the malignant Pestilential Fever introduced into the West Indies from Boulam; also, SIR JOS. GILPIN'S Letter to Dr. Chisolm; SIR G. BLANE'S Letter to Baron Jacobi; HAYGARTH'S Address to the College of Physicians at Philadelphia on the Preventive of the American Pestilence; and PYM upon the Bulam Fever.

There is, however, a form of febrile affection occurring so frequently, and so extensively,—sometimes so violent in its symptoms, and so fatal in its results, as to excite surprise that it has not received attention proportionate to its importance.

This febrile affection is the effect of sudden change of climate, augmented by violent exercise and intemperance.[9]

It is this disease which the writer denominates the *Inflammatory Endemic of new comers to the West Indies from temperate climates.* Occurring less often, and in a comparatively slight degree, it has occasionally been called the "*Bilious Continued,*" or "*Sporadic Fever.*" In severe examples it has acquired the "name of *Yellow Fever*"—"*Malignant*"—"*Pestilential,*" *&c.*

The inflammatory endemic, or Yellow Fever here considered, is however dissimilar in its real character from Fever "*strictly so called;*" that is, the Idiopathic Fever of human contagion, or of febrific miasma, the product of particular soils. Nor can it be regarded as a topical phlegmasia, for the general affection of the system precedes the topical determi-

nations which are *liable* to take place to certain organs; particularly to the brain, stomach, and liver: but such topical determinations will not take place, if the general affection be subdued *in limine*, by decisive measures; or, topical determinations may occasionally occur to one organ, sometimes to another; and thus the *Yellow Fever* must not only be distinguished from contagious and Marsh Fever, but also from fever as understood by those who refer it to the morbid affection of an individual organ.*

An inflammatory diathesis is invariably a predisponent cause of Yellow Fever; a state of general excitement, the chief characteristic of the disease. Now these circumstances are not essential to Idiopathic Fever.[10] This marks a necessity for distinguishing these morbid affections in their simple forms: because it requires one consideration to prevent and to subdue inflammation, another to prevent and to cure simple fever. By carefully discriminating these diseases, therefore, in their simple forms, they will be better

* See Beddoes' Researches concerning Fever as connected with Inflammation.

understood when combined; where, for instance, inflammation shall be found to accompany the *Idiopathic* febrile paroxysm, whether the latter has arisen from the influence of marsh effluvia, or contagion, or from any other cause.

The treatment of Yellow Fever advised in these pages has, occasionally long since, and more generally of late, been resorted to with increased confidence, and with the most successful result. But as the Yellow Fever, when it has appeared extensively in consequence of numerous arrivals at the same time from temperate climates, has been commonly regarded as the Idiopathic Fever of marsh or contagion; and *not* as a general inflammatory affection, with powerful determinations to particular viscera, originating from sudden change of climate, which is the opinion of it here advanced:—so, the ground of the most judicious practice has not been measured with the degree of confidence which would be warranted by the recognition of a general principle. Hence may be traced another of the causes of that difference of opinion which has so long divided the writers, who have

treated upon West-India YELLOW FEVER—and which has so variously governed the conduct of the inexperienced practitioner.

"It has been submitted to the most opposite modes of treatment, as speculative opinions have dictated: and it remains, nevertheless, the opprobrium of our practice and our theories.

"In the midst of this perplexity, a man who has had no experience of his own, is totally at a loss which way to turn. There are great names on both sides of the question, but clear and decisive evidence on neither."*

To the Inflammatory Endemic, *new comers* are liable, in different degrees of severity, agreeably to particular circumstances of constitution and habits, until their systems become accommodated to the impression of the important change of climate they have undergone."

The disease being exclusively incidental to strangers from temperate regions, will be found to occur with a prevalency proportioned to their numbers:——sporadically when these are few, or epidemically, at least

* Jackson on the Yellow Fever.

in appearance, when many are introduced at the same time.[12]

Happening in a mild degree it may, with great propriety, be denominated a *seasoning*. The reduction of the system by the evacuations necessarily employed for its removal, is commonly preventive of a future attack.[13]

The causes which produce a severe affection in young plethoric strangers, seldom affect the older residents; or at most occasion a slight temporary excitation, which rest and abstinence remove.

Natives of the country and Africans are exempt from Yellow Fever while they continue in the torrid zone. But on their return from a long residence in temperate climates, their natural security is lost for a period, by an altered idiosyncrasy, effected by the change; they are then found to have acquired a *susceptibility* to the disease. In general, however, they are at all times less liable to violent seizures than Europeans, or North Americans.[14]

The probability of an attack, very much depends upon the degree of inflammatory diathesis possessed by the different classes of

strangers who become exposed. Thus, women and children, the aged and weakly, are less liable to the disease than the youthful and robust. It has likewise been observed, that the European French and Spaniards seldom suffer in equal proportion with the English and Dutch: the former are, perhaps, more temperate,—have undergone a less degree of change of climate, and are usually more cautious against exposure to heat, and violent exercise.[15]

Those who have possessed extensive opportunities of remark, must have received abundant evidence of these facts. They shew the leading circumstances, which influence the production or prevention—the mildness or severity—the good or bad management of this disease, from the primary effects of change of climate occasioning febrile excitement in the slightest degree, to the most violent attack of Yellow Fever; from a trifling head-ache, mild febricula, epistaxis or prickly heat;[16] to the less frequent but alarming seizure of phrenitis or apoplexy from a stroke of the sun.

These, although distinct from Idiopathic

Fever, have yet no very remote analogy to the *Inflammatory Endemic*. They are the effects of *sudden change* of climate, which powerfully excites the human system in a state of plethora or of excess of tone.

On experience of these facts, with others derived from a farther acquaintance with the disease, is founded the plan of prevention hereafter advised: these prophylactic measures will be proposed with confidence, from the writer having received full evidence of their efficiency on many occasions.

It has been already remarked, (page 3 note 1) that the Inflammatory Endemic must have existed whenever the susceptible subjects were brought within the influence of the tropical temperature. It must continue to appear under the operation of like causes, unless effectual means of prevention should be adopted.

The freedom of the West-India Islands, at different times, from Yellow Fever, has been ascribed to certain changes in the atmosphere, independently of the temperature; while the exemption of troops, *accustomed* to

the climate, has been attributed to the "clearing away woods, draining morasses, and erecting new barracks in more healthy situations."* [17]

This occasional immunity, agreeably to the writer's observation, should, however, have been referred to the absence of *susceptible* subjects: for whenever great numbers of strangers have recently arrived at the same time, the disease has usually appeared like an epidemic of awful extent; although the natives, negroes, and the other classes of the community, assimilated to the climate, continued healthy.

On such occurrence, the Inflammatory Endemic of new comers, has too often been confounded with the Fevers of marsh miasmata, or of human contagion: and the idea annexed to its nosological position under the name "*Typhus Icterodes*," has frequently governed its treatment to the destruction of thousands.

It has been remarked, that "in cities where *pestilential* distempers rage, those lately from the country are particularly apt to be attacked"—"the Fevers of warm climates, are

* Fordyce.

most apt to seize on those from cold latitudes. It often happens in the West-India Islands, that fevers are kept up for years, wholly in consequence of a new supply of fresh troops from Europe."*

This is perfectly conformable with the writer's observation.[18] "*Fresh troops from Europe*" present the *material*, upon which the permanently high temperature of the tropics is liable to induce inordinate febrile excitement; although the season should be favorable, and the particular situation healthful to those accustomed to the climate;—equally free from marsh exhalation, and from contagion, if the absence of contagion may be inferred by the *entire* exemption of all *but* new comers from the disease.[19]

It often happens, that the fevers of particular districts, attack *strangers* with *greater* severity than residents; more especially when the latter have already undergone the disease: there is, however, a broad distinction between the *comparative degrees* of susceptibility of *all* classes to the specific action of the causes of

* Wilson on Febrile Diseases, Vol. 1, Page 484, 2nd edition.

Idiopathic Fever; and the *entire* exemption of natives, and long residents from the inflammatory endemic, so long as they continue in the torrid zone.[20]

Independently of the Inflammatory Endemic, so exclusively incidental to new comers, the endemial fevers from marsh miasmata, often prevail in particular seasons and situations. The writer has likewise seen numerous instances of topical inflammation, accompanied by sympathetic fever and yellowness of the skin, receive the practical consideration, applied to the "*Malignant West-India Yellow Fever*," under one or other of the many names by which the Yellow Fever has been particularly specified.

Whether these febrile derangements have been considered in practice as one disease or as distinct affections, or whatever has been stated as their cause;—whether distinguished by some striking symptom, by predisposition of subject, or by the severity of the attack;—conformably with these, or with other contingencies, various terms have been employed to specify the *particular* nature of West-India

febrile affections, while they have yet retained the *general* appellation of YELLOW Fever, as distinctive of a common character.

Thus the "Putrid Bilious Fever" of Hillary,—"La Maladie de Siam," and "Fièvre Matelotte of the French:—"Vomito Prieto" of the Spaniards:—the "Pestilential Fever"—"Febris Ardens Biliosa" of Towne:—the "Malignant Fever" of Warren:"—"Typhus Icterodes" of Sauvage, Cullen, Wright, &c.:—the "Remittent Fever" of Lind, Hunter, M'Lean, and many others: the "Ardent Fever" of Gillespie:—the "Endemial Causus" of Moseley —the "Concentrated Endemic," of Jackson; with, perhaps, other denominations not at present within the writer's remembrance.

Whether the authors upon tropical diseases under the above mentioned, or other denominations, have intended to convey an idea of a *peculiar* morbid affection; a West-India Yellow Fever, *sui generis;* or whether these diseases have been considered as Idiopathic Fever modified by climate, does not always appear by their writings. But certain it is, the most *opposite* views have been taken as to the best method of treatment. Some authors

have prohibited the means which were highly extolled by others: and scarcely any two, in a great number, have accorded in their opinion upon a subject of peculiar interest to that part of mankind, whose lot it may become to visit the West Indies, from temperate regions.[21]

Notwithstanding this diversity of opinion, which has as diversely governed West-India practice, the writer cannot assent entirely to the following observation on the treatment of Yellow Fever; an observation which is rendered particularly important, from the authority referred to being still the frequent guide of the inexperienced practitioner within the tropics.

It has been stated by Dr. Geo. Fordyce, that "practitioners have been frightened, as spectators are, when violent torrents are carrying every thing along with them; and losing their presence of mind, some have employed evacuations by bleeding, some, active purgatives, some emetics, others mercury in large doses, so as to salivate; and some of them have thrown large quantities of cold water upon their patients."——"But all these, and other violent measures, seem to have en-

hanced the danger, and rendered the disease much more fatal, than it would have been if it had been left to go through its ordinary course."*

That which renders this observation less conclusive than were to be expected from so high an authority, is well expressed in his own words, "*the author never having been in a situation to observe, himself, the circumstances that could determine his opinion.*" From this admission alone might be inferred the risk of error, as liable to arise out of local inexperience; and it is a truth too well known, to what extent of mischief *mere opinions* have conducted their votaries, when thus unwarranted by the only legitimate authority, the test of personal experience, the evidence of facts.

Although the volume of nature should be fully opened to the view, yet does it not invariably court so attentive a perusal as to present, at all times, a successful barrier against the danger of bias from preconceived opinion. The prepossessions, therefore, of early education, have often continued to govern the conduct of the medical practitioner

* Fourth Dissert. on Fever.

upon his arrival within the tropics, even for a while in direct opposition to palpable facts; and thus, perhaps, more lives have been sacrificed to the mal-treatment of Yellow Fever by antimonials, cinchona, and wine, than ever fell by the sword, or by any other mean of destruction.

The *opposite* practices which have been adopted in the treatment of the same disease;—the variety of opinions respecting its character and cause; afford, it is thought, sufficient grounds to evince the expediency of every well-intended endeavour to confirm the rule which an accumulated experience has taught to be the most efficient towards its prevention and cure; and at the same time to give some promise of reconciling the "jarring opinions respecting the nature, and the contradictory practices adopted by Physicians in the cure of Yellow Fever."*

The writer's experience having led him to adopt the opinion, that a difference of great practical importance subsists between *Idiopathic Fever*, and the *Inflammatory Endemic*—

* Jackson.

he thinks it necessary to compare together certain features which tend to characterize these diseases: anticipating, however, such a comparison by a few remarks, which, if not intimately connected therewith, yet may receive admission here as opening the way to a better understanding of the subject more expressly under consideration.

It is well known to the profession, that Dr. Chisolm described the Fever which prevailed in Grenada, in 1793, as being highly contagious, and of imported origin.

Dr. Rush, with several other Physicians in America, wrote on Yellow Fever, as it appeared on that continent, where it has been ascribed to causes, concerning which there has subsisted much variety of opinion.

With respect to these diseases, otherwise than as derived from a perusal of the above-mentioned authorities, the writer has no evidence to guide him, and consequently no opinion that he can venture to advance. For he was not within the tropics when the Bulam Fever was stated to have been introduced: and the *Yellow Fever*, which he has *since* too often experienced,

has on no occasion been marked with the distinctive characteristics of an infectious disease.

If then the Yellow Fever, as observed to prevail at different times during the writer's public service, was invariably divested of the character of contagion; the further analogy it is found to possess to Idiopathic Fever, as considered by Pringle, Cullen, Cleghorn, Lind, Fordyce, Currie, or their numerous followers,—and as Idiopathic Fever appears to the most attentive observation,—will be seen by adverting to the comparison already proposed.[22]

In the opinion of these writers, debility in the powers of life, has been considered to form a first link in the febrile chain: the immediate consequence of the action of the remote cause.

"The remote causes are certain sedative powers applied to the nervous system, which diminishing the energy of the brain, thereby produce a debility in the whole of the functions, and particularly in the action of the extreme vessels."

The "DEBILITY" of *Cullen*, Fordyce de-

nominates "DEPRESSION OF STRENGTH;"* while *Currie*, regarding the debility "PECULIAR" in its kind, gave this farther illustration of these doctrines.

"The remote cause of fever itself may perhaps be considered as a poison, acting directly on the sensorium commune. When this poison is concentrated very much, and highly malignant, or where the system is much debilitated, the powers of life are sometimes oppressed, and extinguished in the first stage of the disease."†

Of the truth or fallacy of these opinions and views of fever, the writer has, in this place, nothing to observe; intending only to compare the Inflammatory Endemic with Idiopathic Fever, in some of the most obvious circumstances of their history.

This leads him to remark, that no such appearance of oppression or debility in the vital powers as presents itself at the commencement of simple Idiopathic Fever, takes place in the attack of the disease more expressly treated of here; the state of the system so

* Fordyce, First Dissert. page 35.

† Medical Reports, 4to. edit. p. 237.

peculiarly susceptible to it, has already been noticed as being directly the reverse.[23]

If therefore a diminished energy of the powers of life, constitute the first link of febrile action,—the evidence of difference which obtains between the Inflammatory Endemic and Idiopathic Fever receives additional weight. For the earliest symptoms of the former, consist in an increased excitement of the sanguiferous system: not as an accident, or irregularity arising in the course of the disease, but as an essential part of the attack, which well-conducted evacuations can *alone* control.[24]

The Inflammatory Endemic, which, in its mildest form, has been regarded as a "sporadic febricula" of ephemeral duration, has, under a severer aspect, when attended with yellowness of the skin, black vomiting, &c., been considered an infectious Epidemic, or a malignant Typhus.

The writer must therefore mention the mischief which he has known to result from regarding debility as the cause of this disease, when upon such consideration the most

powerful excitants have been employed, occasioning very serious harm.

If our acquaintance with disease in its history and symptoms was so far accurate, as to direct us to its prevention and treatment, it would, perhaps, be of no great moment, whether we should or should not be able to include it under any of the existing schemes of nosological arrangement. But if a disease is liable to be treated conformably with the idea inculcated by the place it occupies in such a nosology; and if the Inflammatory Endemic, under the common denomination of YELLOW Fever, has been occasionally classed with Idiopathic Fever,—its nosological station, as influencing practice, becomes a point of vital importance; for then the disease, with which it can be most safely associated, is *Synocha*, implying GENERAL INFLAMMATION. If this should be the station awarded to it, it must be obvious upon what erroneous principles the practice has been conducted, when applied to the disease as arranged among the TYPHOID species. But even considering the Inflammatory En-

demic as the Synocha of nosologists, still difficulties arise in endeavouring to preserve this view of the subject without considerable reserve: the supervention of exhaustion to previously increased excitement, which is liable to occur in the Inflammatory Endemic, being in no respects analogous to the change of *Synocha* into *Typhus*, so as to constitute *Synochus*, conformably with the opinion of certain writers.[25]

The change which is liable to happen in the progress of a severe attack of the Yellow Fever from inflammation to debility, is in direct ratio with the degree of previous excitement; and should rather be deemed to arise from neglect, mismanagement, or sometimes indeed the uncontrollable effect of an intensely severe disease, than as forming an essential and necessary part of the affection, originating from the early predominancy of the symptoms of Typhus.

Thus, a state of exhaustion with derangement of organization, sometimes succeeds to the violent excitement, should nothing adequate be done to subdue it at the commencement. This exhaustion is, indeed, in great

measure determined by the severity of the action of the hurtful powers, together with the peculiar condition of the living system upon which they operate. If the vital movements in health are naturally strong, and the system full of blood, the agency of the morbid cause will be proportionably great.

This change which is liable to take place in the course of the disease, is in the near relation of cause and effect; the effect proportioned to its exciting cause, and consequently not occurring, if the previous inordinate excitement be removed by judicious treatment at an early period. As, on some other occasions, the removal of inflammation prevents gangrene.

The writer feels every confidence that this survey of the subject will be found correct in practice: the endeavour therefore to mark a distinction between the Inflammatory Endemic, and the fevers derived from contagion, or marsh miasmata, acquires importance. It tends to place the inexperienced practitioner so upon his guard, that he will be aware of such a violent affection, incidental, almost exclusively, to new comers; the mortal character

of which, where it has been misunderstood, has been too narrowly defined, when regarded only as "a rare and sporadic disease;" for the writer has known it on many occasions extremely destructive to British youth, under the name of Yellow Fever, either denominated bilious, putrid, malignant, or pestilential—at times when, had it been controlled by decisive measures of depletion at its first commencement, it would have been found of easy management.[26]

Without this precaution, the inexperienced practitioner in West-India diseases must be very liable to err. He may look in vain for yellowness of the skin to mark the criterion of his enemy; he may perceive the surface variously tinged, from the pale colour of a lime, to the deep tint of a ripe orange, in an affection comparatively, unimportant.

He may dread, in fearful anticipation, the debility which is indeed liable to supervene upon a severe attack; but, mistaking its real cause, he may be afraid of converting a violent Synocha into Typhus; and, in this erroneous view, not dare to arrest the rapid advancement of inflammation at the outset, the

origin of every after ill, unless he feels a full assurance that, upon *its* previous violence, the ultimate condition of exhaustion with organic destruction must depend.

That which the present writer has often experienced, leads him to an opinion, that it is not irrelevant to pursue this subject.

It has been observed, "As in sultry climates diseases run their course rapidly; and the change from a state of increased excitement to that of debility, in the fevers of such climates, is often very sudden; evacuations, although they seem necessary at their commencement, often prove fatal by increasing the subsequent debility."*

"The degree of excitement which warrants blood-letting in the cold and temperate climates, and in the country, does not warrant it in sultry climates and large cities; because in the latter cases, we in general dread more the diminution than the excess of excitement."†

The author of these remarks, it seems evident, did not bring within the view he occa-

* Wilson on Febrile Diseases, vol. i. p. 308.

† *Ibid.* p. 635.

sionally takes of West-India Fevers, a disease strictly resembling a pure Synocha in its first stage; such as is the Inflammatory Endemic; or its mention would rather have been associated with the following observation from the same pen:

"Violent excitement is itself a highly debilitating cause, and often debilitates more than a well-timed blood-letting, which relieves it."*[27]

The following remarks bear forcibly upon this point of discussion, and create a wish that their learned author had possessed the opportunities of ascertaining facts by the evidence of his own experience, rather than have been obliged to depend upon the "*relations and cross examinations*" of others; since he thought it advisable to bring the consideration of West-India Fevers within the field of his labours, and to direct their treatment.

"When there is no great hardness of the pulse, and often when there is no great fulness and strength of it, but only frequency and obstruction, the hot fit is frequently pro-

* Wilson on Febrile Diseases, vol. i. page 635.

longed, even so as to leave no other mark of an intermittent to distinguish it from a continued fever, except the exacerbations not taking place in the evening.

" When this happens in hot climates, the disease is the most formidable which is incident to mankind. It has frequently been called the plague, and by several other names indicating the most fatal disease."*

Dr. Fordyce concludes his description of this disease, by observing the fatality of the black vomit. He remarks, " At other times the skin assumes a dark brown colour, which has given it the denomination of Yellow Fever."†

" The Yellow Fever, as the author has described it, seems as if it were a continued fever. There is one circumstance, however, which has convinced Dr. Fordyce that it is a semi-tertian. There is an agreement of all those who have had, or have seen, or have treated the disease, in the following observations. It happens often, that a patient apparently becomes greatly relieved, and ap-

* Fordyce, Fourth Dissert. p. 61.

† *Ibid.* p. 74.

pears in a state as if he were recovering, when all at once a fresh attack takes place, and carries him off."

"These fevers arise sometimes from putrefaction, sometimes from cold, sometimes from infection."*

Dr. Fordyce, next alluding to the conduct of practitioners, after noticing the remedies employed by them, already recurred to [page 19], proceeds to remark that "it would hardly ever be prudent to take away blood, and a large evacuation by purging is very detrimental, instead of being useful in this disease: it is imprudent to exhibit mercury in these most violent fevers."

"The author (he continues,) can say nothing from his own experience, but should be disposed, at the moment of the attack of such a disease, to employ as great a dose of tartarized antimony, as the patient could bear without producing nausea."†

These observations on the nature and treatment of West-India-Yellow Fever, proceeding from a guide, whom the writer of these pages

* Fordyce, Fourth Dissert. p. 69. † *Ibid.* p. 81.

is much disposed to follow, when directed by the author's own experience, are of the first importance.[28] They evince the necessity for distinguishing between the Inflammatory Endemic, so exclusively incidental to new comers from temperate latitudes, and the Remittent and Intermittent Fevers derived from Marsh Miasmata. These are experienced in the West Indies by the native inhabitants, the Africans, Europeans of long residence, and strangers, with little personal distinction, in certain situations and seasons which favour the evolution of their peculiar cause.[29]

The Imflammatory Endemic is not marked by the stages which characterize a paroxysm of Idiopathic Fever. The symptoms of the first stage, have no existence in it.[30] Many of those appearances which form the second stage, are amongst the primary symptoms of this disease: from the commencement of which, there is always increased velocity of the circulation, accompanied, in severe and neglected cases, by topical determinations to important organs.

In Idiopathic Fever, analogous appearances have been denominated the symptoms

of " re-action"—" salutary, and calculated to repel the disease"—" the *Vis Medicatrix Naturæ.*" In the Endemic of new comers to hot climates, the phenomena of the first stage exhibit the signs of a less or greater degree of a morbidly increased excitement.

The appearances of re-action succeeding to a stage of depression of strength in Idiopathic Fever, possess a natural tendency to decline on the coming out of a universal cutaneous moisture: while other concomitant symptoms carry off, or, at least, accompany the cessation of the paroxysm, " the repetitions of which, modified in a great variety of ways, constitute Idiopathic Fever."

But in the Inflammatory Endemic, on the contrary, the symptoms so much resembling those which form the second stage of Idiopathic Fever, constitute the disease at its attack in all its relative degrees of violence: and they must be promptly subdued by decisive measures, otherwise the change to debility, of which mention has been made in the foregoing remarks, will supervene

most probably, to the speedy destruction of the patient.

The appearances which afford hopes of a remission to those who are unprepared by experience, and which have often led to the exhibition of the cinchona, in the view of preventing a recurrence of the febrile stage, invariably tend to the fatal termination of the disease. There is no such thing as a renewal of febrile paroxysm, of remissions and exacerbations, in the Inflammatory Endemic, which it may be repeated is often exemplary of the most dreadful West-India Yellow Fever.[31]

The symptoms may be variously aggravated by neglect, or by peculiar management in the first stage; but having advanced to the period of that insidious semblance of remission, noticed page 32, there is an end of what has been termed febrile action, from exhaustion of the powers of life;—the ensuing partial calm is full of danger, and it is debility with organic derangement which supervenes.

Thus, with respect to the symptoms. In regard to the treatment, the first indication

of Cullen applies to the Inflammatory Endemic, in great part. To moderate reaction, in the view of Cullen in the treatment of Idiopathic Fever, is, in this disease, to reduce inflammation.

The subsequent change in the course of the disease arising, not from "a poison introduced into the system, inducing debility," but from the previous excitement and violent exertions of its own powers, renders the cautions given, as to the employment of evacuant and sedative means, unnecessary; nay even hurtful, if the disease be understood, however proper in the treatment of Idiopathic Fever; while it may be repeated, that the means of diminishing the severity of the attack at its commencement, are those which will be found preventive when judiciously premised.

Having thus considered the difference which subsists in certain circumstances related with the symptoms and treatment of Idiopathic Fever and the Inflammatory Endemic, it remains to call the reader's attention, for a moment, to the exciting causes.

"All the advantage which arises from the knowledge of the causes of fever, is the prevention of the disease."*—"The disease continues, although the cause be no longer applied; neither is it increased, diminished, or altered, by the further application of its cause."—The independence which Idiopathic Fever is stated to possess of its cause, when once excited, also impresses an opinion of the necessity to distinguish that disease from the Inflammatory Endemic: the causes of which the writer considers to be excitants, operating upon particular constitutions, inducing increased sensation, irritability and sanguineous action, liable to terminate in debility, especially should the cause continue to be applied.

Moreover, as the *means* of diminishing these effects, in their absolute occurrence, are precisely the same, *in kind*, with those which are calculated for their prevention, it is manifest, that a knowledge of the causes of the disease must be deemed of peculiar advantage towards regulating the treatment; for, having excited the attack, the continuance of their

* Fordyce.

application materially influences its progress.

The writer will conclude the general view of this subject, which he has thus imperfectly sketched, by a few other remarks.

An attack of Marsh Fever, so reduces the tone of the northern constitution in hot climates, that it usually manifests itself to be a preventive of the Inflammatory Endemic; but the converse does not obtain.

The Marsh Fever is liable to recur as frequently as its deleterious source is sufficiently approached. It is succeeded by a tedious period of convalescency—is most readily excited in those constitutions least susceptible to the Inflammatory Endemic; namely, in those whose vigour is impaired by long residence in sultry climates, or by previous disease; also, in those who labour under the debility which is the consequence either of inanition or excess;[32] while, on the contrary, the new comer is more especially liable to an attack of the Inflammatory Endemic, during the stimulant action of alcohol on the system. The latter disease attacks but one quality of subject, and in any situation within

the climate, (with the necessary exception of great elevations,) a second attack is rare; relapse almost impossible; recovery rapid and generally perfect; and death, the early and too frequent consequence of neglecting the efficient means. It is a disease which may be prevented and successfully treated in its incipient stage, but can never be left, without imminent risk, to pursue its natural course.[33]

The Remittent and Intermitting Fevers of the West Indies, are very similar in most circumstances which regard their history and treatment, to the same class of diseases in temperate regions.

When the constitution has not been much reduced by the continued influence of climate, or affected by the marsh effluvium in a state of peculiar concentration or repeated operation; when likewise a removal from the local source of the disease has been early effected; these fevers will be successfully treated upon the general plan recommended by the authors already cited.

Such fevers, however, occasionally run a severer course, and are subject to irregu-

arities and accidents in their progress, which render them particularly difficult of management, and produce not unfrequently permanent derangements of the constitution. These are generally attributable to the super-addition of local inflammation to the idiopathic febrile action.

When the attack remains unconnected with topical inflammation, or when this has been subdued, so that the marsh remittent assumes its simple character; in these cases a change of climate, even slight changes of situation, have appeared of miraculous efficacy, after every other means had failed.

Except in so far as the writer considers it to be of advantage to the inexperienced in West-India practice, to have drawn the foregoing comparison between diseases which he conceives to have been often confounded with each other; on the subject of Idiopathic Marsh or Contagious Fever, he does not intend to advance an opinion here.

The Inflammatory Endemic, is a disease in which there is, from the beginning, a state of universal excitement, with direct tendency

to general inflammation, soon accompanied by the actual inflammation of some or other of the viscera in consequence of determinations of blood. All the mischief subsequently arises from a want of moderating the first excitement. If this be sufficiently subdued, there is nothing to fear from consequent debility. The patient will recover, and with the advantage of a system prepared for the climate in future.

The writer here rejects all occult causes; the introduction of a debilitating poison, whether miasmata or fomites. These occasion morbid changes in the system, of a character distinct from inflammation; although it frequently happens that inflammation arises in their progress, and will consequently demand for its removal adequate measures of depletion; such however are wholly inadmissible in the treatment of simple Idiopathic Fever, when occurring to constitutions enfeebled by long residence in sultry climates, if these become exposed to the influence of marsh miasmata, or to such other morbid state of atmosphere as shall be found equivalent to the production of the disease.[34]

It may, perhaps, be objected to this view of the subject, that the comparison made with the intention to shew the distinction which obtains between Idiopathic Marsh Fever and the Endemic of new comers from temperate climates to the West Indies, is insufficient, being made between diseases which, although in reality alike, are yet so variously modified by climate, as to render the attempt to establish any real difference altogether inadmissible—more especially, as the tropical disease has been chiefly compared with the Idiopathic Fever of European writers, rather than with the accounts given of it by practitioners in the West Indies.

But wherever, in the preceding pages, or in the annexed notes, European authorities have been adverted to, it has been to that part of their writings in which they have extended their views to the Yellow Fever of hot climates. It must also be borne in remembrance, that most of the writers on West-India diseases have taken their ideas from the schools, and from the practice of physicians in Europe; while many authors on West-India Fevers have merely copied European authorities in

defence of their particular method of treatment.

Some, indeed, who paid but a short visit to a single colony, have written upon Yellow Fever, without having possessed the opportunity to see it: and others, of yet more fertile genius, have described the same disease, although they never lived out of a temperate climate, and who, consequently, could have no other information upon the subject than what was afforded them by their reading, illustrated by the power of imagination.

It is, however, equally certain, that many practitioners, well qualified in every respect, have written upon West-India diseases; and more expressly upon the Yellow Fever. With several of these authorities, the writer coincides in many points of practice. As such, he has availed himself of the collateral aid afforded him, of late, through the medium of their works; by adducing, in various citations, the testimony of their experience in evidence of facts. These citations, interwoven with his own remarks, will be found in the Notes and Illustrations annexed to each division of the subject under considera-

tion ;—their importance, he trusts, will be sufficient to offer an adequate apology for their number and extent.

" To establish just views of the cause and of the means of cure in this most afflicting disease, the store of materials is to my mind ample ; but it is the arrangement and application of these facts, in the actual presence of this fever, and under the hand of experience, that is wanted to avert the recurrence of those errors, so strikingly exemplified in 1793, and which unfortunately still pervade medical practice. It is to obviate these direful errors from taking hold of the rising profession, that I anxiously aim at ; for I have neither the vanity nor the presumption to imagine, that I shall be able to make any impression on those who have made up their minds to the indispensable necessity of quarantine laws, to secure Great Britain from the importation of Yellow Fever. Thus viewing the matter, and while I disavow all pretensions to discovery, I hope I shall never appear insensible to those distinctions that have been earned by the talents of those who have gone before us, as nothing

can be more unpleasing in the eye of candour, than ascribing to the present period, what is due to those who have preceded us in the treatment of this most dangerous disease; and where the practitioner, from the nature of his duties and situation, may often be regarded as having been placed on a species of forlorn hope."*

* Veitch on Yellow Fever, 1818.

NOTES

AND

ILLUSTRATIONS.

[1] "THE observations of Drs. Hillary, Warren, Hume, Blane, and of Dr. Jackson especially, abundantly prove it (the Yellow Fever, or Tropical Continued Fever) to have been no stranger in the country long before it was looked upon as a new and contagious disease: and from their testimony it is evident, that it is this disease, in a greater or less degree, to which Europeans ever have been subject, at particular periods, on their first arrival in tropical climates." *Practical Obs. on the Diseases of the Army in Jamaica, by Wm. Lempriere.*

"It has been contended, that Yellow Fever is a modern disease, and utterly unknown to Europe, except when imported from America: to obviate this imputation, the American practitioners cite Hippocrates to prove its existence in the earliest periods of medical knowledge; Baglivi and Lancisi as evidence of its occurrence at Rome; and Cleghorn, to shew that it is indigenous in the Island of Minorca." *Med. and Phys. Journ.* vol. xx. p. 28, note.

"This (the Yellow) Fever, I maintain, has always been known in the West Indies, where the climate encountered susceptible constitutions." *Veitch on Yellow Fever,* 1818.

[2] The following is an Extract from a Letter, which the Writer has lately received from a Gentleman of extensive practice in the Island of Grenada.*

January, 1818.

"The Yellow Fever of 1816 attacked *new comers* almost exclusively. A few instances occurred among those who had been three or four years in the country, but they were all of them young men of robust and full habits. Negroes and coloured persons made *no* part of the number attacked.

"The fever was continued in its form, and of most rapid progress; never lasting longer than five days, and seldom so long. Death or recovery was always looked for on the 5th day.

"The leading symptoms were severe head-ach, giddiness, inflamed and watery eye; tongue, at first white, gradually furred, and finally of a dark brown. Constant thirst; hot, dry skin. Pain throughout the body; commencing in the back, and extending down the thighs to the calves of the legs. Pain and sickness at the stomach, with constant retching, and great oppression at the præcordia. The pulse full, strong, and hard. Urine high coloured. No stools without medicine.

"The skin sometimes became yellow, but not until the decline of the fever; and even then, it was more of a dusky brown hue than strictly yellow, not at all like the yellowness from the suffusion of bile.

"The head, when opened, shewed signs of inflammation. The stomach was always inflamed. The liver, generally, a mass of disease. The inside of the stomach contained a

* Mr. J. F. Romney.

fluid like coffee grounds. Small pustules, containing purulent matter, were observed in the stomach; likewise abrasions of the inner coat.

" Bleeding, early and largely;—purging;—cold applications to the whole body, which was always kept uncovered and exposed to the air;—cold drinks, blisters to the head and pit of the stomach were the remedies employed.

" When these means were *early* resorted to, the patient almost always recovered.

" The exciting cause of the fever seemed to be, exposure to the sun, and the free use of ardent spirits, with sudden changes of temperature. Those who suffered most were sailors, who were all day long with their bodies immersed in water to the middle, and the head exposed to the rays of the sun, sometimes without a hat.

" All the young men who were employed in taking an account of lumber or goods landed, were attacked: I mean those who were new comers, or who had been but a few years in the climate. There were no relapses; no second attacks.

" Since the fever of 1816, during the first months of 1817, we had an immense fall of rain; and the consequence has been, that for the last two or three months we have had Remittent and Intermittent Fevers, which attack all classes of subjects."

[3] " It may not be considered irrelevant to remark, that the events of the last year (1816) in the West Indies, in regard to Yellow Fever, bear a close analogy to those of 1793: the political changes consequent to the peace of 1815, as in the instance of the new war in 1793, had the effect of intoducing an increased number of northern stran-

gers into the colonies: the coincidence of a similar aggravation of the intensity of the Endemic cause, has produced a similar result. Of the sufferers on the late occasion, the new garrisons of the French islands appear to have formed a large proportion. France having been deprived of the last of her West-India Colonies in 1809, the troops in her garrisons, after their restoration at the peace, were necessarily strangers to the climate."

Edin. Med. and Surg. Journ. Oct. 1817.

[4] Yellowness of the skin is sometimes of serious, and at others, of trifling import. It is merely an incidental symptom;—only to be recognized as a prominent feature, from the visible change of appearance it occasions. The nature of the disease is in no respect determined by this symptom *alone*, which occurs in morbid affections that are essentially different; while it is often absent in this disorder which it is intended to characterize. Indeed it will seldom appear, if an appropriate treatment be employed with promptitude and decision. An exclusive regard to similarity of symptoms, without a correspondent attention to the particular states of the system in which they arise, has been a continual source of error to the inexperienced practitioner.

The writer has also seen several cases in which there occurred a vomiting and purging of tar-like matter, in hepatic derangements, unimportant and unattended by much febrile excitation;

he has also seen the discharges from the stomach, inky, fuliginous, grumous like coffee-grounds; or containing dark membranous-like shreds, in gastric affections, of a purely topical character—in apoplexy from a stroke of the sun—in injuries of the brain from external violence—in the example of inordinate intoxication, and in certain states of puerperal disease. These symptoms are not, therefore, pathognomic, or peculiar to *Yellow* Fever.

[5] "A similarity in the *aspects* of the concomitant pyrexiæ does not establish a sameness in kind, neither does the existence of a sameness in the incidental symptoms."—*Armstrong, Practical Illustrations of Typhus, &c.*

[6] The writer thinks it proper to remark, that the observations in this tract, on the temperature of the atmosphere in the West Indies, have been derived from registers that were kept for several years in different situations, both upon the sea-coast, and at various altitudes—in regard to the thermometrical heat of the body, this was ascertained during the progress of disease, as well as in the states of health of different subjects under a diversity of circumstances.

By examination of a table drawn up from a daily register, it is shewn that the greatest range of temperature has not exceeded six degrees, on Fahrenheit's thermometer, in the different years

or different seasons of the same year; while the greatest difference observed, at any time within the twenty-four hours, has seldom been more than fourteen degrees;—the thermometer, upon these occasions, being exposed in the shade to a northern aspect in a large room, through which there passed a current of air.

The medium height, thus observed, in the neighbourhood of the coast, and about seven hundred feet above the level of the sea, has been from 82° to 84°. The greatest elevation, about 96°, and the lowest 72°. Exposed to the direct impression of solar radiation, the mercury in the thermometer has risen to one hundred and forty degrees.

It need scarcely to be remarked, that the temperature diminishes in a ratio with altitude—but it is liable to vary from other circumstances of locality.

This permanency and equability of a high degree of atmospheric temperature, in situations nearly on a level with the sea, presents the condition of climate productive of the *change* which the European constitution undergoes on its arrival in the West Indies.

[7] "It is well known, that Europeans, during the first months after their arrival under the scorching sky of the tropics, are exposed to the greatest danger."—"We were fortunate enough to pass the time when an European, recently landed, runs the greatest danger, in the extremely

hot, but very dry climate of Cumana, a city celebrated for its salubrity."—*Humboldt's Travels.*

" It has been ascertained from tables and records for the last twenty years, that in Philadelphia the Yellow Fever does not prevail when the months of June and July do not exceed 70° Fahr.; but that, in *every* summer since 1793, whenever the average heat of those months has exceeded 70°, then the fever has raged; and that it has been most mortal in those years in which the thermometer has indicated the greatest altitude."

London Medical Repository, vol. ix. p. 80.

[8] As analogous to, if not identified with marsh effluvium, may be included what has been termed " an Epidemic Constitution of the Atmosphere" —also, " the Extrication in excess of an unappropriated vegetable Principle."

" 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."

Jackson's Outline of the History and Cure of Fever.

" By malaria, as never belonging to open marshes, I mean to express something that is more decidedly than miasmata the product of under-ground moisture, which can only be sublimed, so as to produce its specific effects, by long-continued solar heat; a more subtle miasma in fact, of which the surface gives no warning."

Medico-Chirurgical Trans. vol. 8, Part I. p. 139.

Dr. Bancroft remarks of the Yellow Fever, that it "is well known to result from the action of those exhalations commonly denominated Marsh Miasmata, though often extricated from soils and situations which are not marshy," ——"and existing in a variety of unsuspected places."

Sequel to an Essay on the Yellow Fever, 1817.

[9] *Sudden change of climate*, violent exercise, and intemperance operating upon particular constitutions, and here regarded adequate to the production of *Yellow* Fever, have been commonly considered unequal to this alleged effect;—unless, as they might be found to increase the baneful influence of marsh effluvium, or animal contagion, in the manner of predisponent causes.

Idiopathic Fever, these causes, assuredly, will not produce. But they occasion a violent excitement of the system, which, under the denomination of Yellow Fever, has been too often found the formidable enemy of the unseasoned European constitution, without the aid of marsh miasmata or contagion.

"Violent exercise, excessive drinking, and every species of intemperance, (says LIND) *dispose* the constitution to the attacks of the epidemic diseases of hot climates; but then they are no other than *predisposing* causes."

Lind, it is evident, only brought within his consideration, "*a malignant Fever* (as he expresses it) *of the remitting or intermitting kind, the ge-*

nuine produce of heat and moisture——and upon such consideration was founded his rule concerning prevention, which regarded "*blood-letting to have no such effect*"——as well as the mode of treatment which directs "*antimonials to bring the fever to a remission, that the bark may be administered without delay.*"

Hence the necessity of distinguishing the inflammatory Endemic from simple Idiopathic Fever. For antimonials and bark are most prejudicial in the treatment of the former, while blood-letting is found the best prophylactic; and, in the *early* stage, a sovereign means of cure. LIND, nevertheless, observes upon a "*Fever*" which could not be referred to *Marsh Miasmata* for its cause,——that "*drunkenness, or any debauch, will often give a fever, which, in less than forty-eight hours, terminates in the death of the patient.*"

Such disease, the writer has no doubt, was the YELLOW FEVER of NEW COMERS; and, if liable to happen to an individual, might equally occur to any number if similarly predisposed and subjected to the same exciting causes.

On the exclusive origin of Yellow Fever from Marsh Miasmata, Dr. Fergusson has remarked:

"This subject is not without difficulties; for it is certain that for years together, these supposed fomites of fever are

comparatively harmless; and that at other times new comers suffer the worst attacks in places where it is difficult even to imagine the existence of any thing like Marsh Miasmata." ——" I am far from presuming to deny (though I believe the contrary, for the reasons given in my answer to the queries upon the regalia) that there may be such a fever as that from pure excitement; for soldiers and others have been attacked and died of Yellow Fever before they landed in the West Indies, or could be exposed to the influence of land miasmata in any shape."

Medico-Chirurgical Transactions, vol. viii. p. 1.

Dr. Wade observes, " During his residence in Bengal, fevers were often epidemical, but never exhibited any appearance, to his faculties, which could excite a suspicion of contagion."——" He considers the action of miasmata, or marsh effluvia, as *less doubtful* than that of contagion." ——" But, the elevation of spirits on landing after so long a voyage, the emancipation from restraint, and every possible excess in the gratification of their desire for strong liquors, &c. are the *principal causes* of the diseases of seamen at Bengal."

Duncan's Commentaries, vol. xviii. p. 200, 1794.

" The Endemic Remittent, though the most general, is not the only form of Yellow Fever; and the most dreadful mortality has ensued from that disease, when it was impossible even to suspect the agency of miasmata in any shape. In fact, all the young, the sanguineous, and robust, were its victims, and could not be saved from its attack, as long as they continued to possess European vigour, and until they had been relaxed by the climate, and entirely lost the rigidity of muscular fibre, which they had brought from their own country."

Medico-Chirurgical Transactions, vol. ii. p. 193.

[10] "Typhus undoubtedly sometimes begins and terminates without topical inflammation; and as inflammation may occur in one or more parts, without ever producing an infectious distemper, with the true characteristics of Typhus, it is evident, that inflammation is not its inseparable and essential constituent."

Practical Illustrations of Typhus and other febrile Diseases, by J. Armstrong, M. D. 1816.

[11] In four or five weeks, the stranger removes from a climate in which the atmospheric temperature at the time of his departure is, perhaps, under 30° to 90° of Fahrenheit, in the shade; and 130°, when exposed to the direct action of the sun. To this change, however, the constitution becomes accustomed within a period of very limited extent; perhaps in eighteen months or two years; but this may be different under a variety of circumstances.

"The disease, I have no hesitation in stating, arose at the period in question (1793), from the inordinate stimulation of climate, acting on pre-disposition founded in the accumulated sensibility of a northern region, united with the high health of our army and navy."

Veitch on the Yellow Fever, 1818.

"The great mortality (in 1793) was the inevitable effect of an unusual accumulation of unassimilated Europeans in an augmented military and naval force, and in merchant ships collected into convoy masses, in consequence of the recently declared war."

Edinburgh Medical and Surgical Journal, Oct. 1817.

"In June, July, and August, the continued (Yellow) Fever prevailed again among the seamen and other new comers; few Europeans who had arrived but lately, escaped an attack of this disease, and the mortality became dreadful."——"The disease continued until the autumnal rains set in, when it abated, and was rarely to be seen during the cooler months."

Lempriere—Diseases in Jamaica.

The Inflammatory Endemic is the consequence of *sudden* change; not of the *long* continued influence of high atmospheric temperature. The reason why strangers, on their arrival in the East, suffer less from the same disease than new comers to the West, is in great part accounted for from the protracted period of the voyage—as explained by Dr. Johnson in the Essay on the Influence of Tropical Climates, pp. 103 and 459. A material difference has also been observed among West-India arrivals, as they had left Europe or North America in a cool season, or during the summer months.

"The well-known and pretty general exemption from active fevers, of those arriving in the East Indies after a long voyage, is strongly corroborative of the constitution having undergone, during the passage, some change, tending to effectually preclude the ravages of fevers of high excitement."—*Veitch on Yellow Fever*, 1818.

Hence, the advantage of sending troops to a medium climate, which, by habituating the con-

stitution, will prove prophylactic by diminishing the *first impression* of change: also, of repairing, upon arrival within the tropics, to elevated stations in the country. Such precautions, however, will afford no protection against the agency of Marsh Miasmata, which will continue to evince its febrific influence whenever it is approached.

The *elevation* which offers security against the Inflammatory Endemic to the *newly arrived* European, if so considerable as to effect a great degree of *change* of climate from diminution of temperature, must keep him in the constant danger of sustaining an attack whenever suddenly called upon to visit the torrid coast. The soldiers of tropical stations should be gradually inured. See Mr. Doughty's statement* respecting the 55th regiment, upon removal from their head-quarters in the mountains to Spanish Town.

"The whites and people of colour, who inhabit the elevated interior of Mexico, especially the muleteers and recruits, suffer more from Yellow Fever than strangers who arrive by sea, probably from experiencing a more sudden change of temperature."

Humboldt's Political View of New Spain, vol. ii.

"The facility of being seasoned seems to be in the inverse ratio of the difference that exists between the mean

* Doughty's Observations on Yellow Fever.

temperature of the torrid zone, and that of the country in which the traveller, or planter, who changes his climate, is born; because the irritability of the organs, and their vital action, are powerfully modified by the influence of the atmospheric heat."—*Humboldt's Travels.*

[12] "It is now (says Dr. Fergusson) several years since the highest degree of Remittent or Yellow Fever has prevailed epidemically in the West Indies."—"The French strangers from Europe suffered more severely in Guadaloupe, than I had ever known any importation of similar numbers do in British colonies. In no one instance was an attack of true Yellow Fever seen amongst the British troops there." —*Medico-Chirurgical Trans.* vol. viii. p. 1, 1817. Vide *Journal de Médecine.*

[13] Sir James M'Grigor remarks, "In the desert of Kossier, the whole of the sick did not exceed thirty: yet the heat was intense, the regular duty severe, and there was much duty of fatigue."—"The camp was situated on a dry, hot, sandy desert."—"One circumstance," he adds, "appears to deserve notice; the little water that could be procured was *strongly* impregnated with vitriolated magnesia; and no one escaped a diarrhœa, which, perhaps, had a salutary effect."—*Edin. Med. and Surg. Journ.* vol. i.

"Diarrhœa, or habitual purging, sores or ulcers on the legs, seem often to be preventive of Fever in the West Indies."——*Sketches of the History and Cure of Febrile Diseases,* chap. i. p. 13. By Robert Jackson, M.D.

"An attack of dysentery, remittent, or intermittent Fever will as effectually secure the patient from Yellow

Fever, as if he had suffered from that disease; and by the same means, that of lowering the system."

Veitch on Yellow Fever, 1818.

" He who has escaped from one serious attack, is completely disqualified for a second in this climate (West Indies) until he can find the means of restoring the inflammatory diathesis, by a course of the unnaturally high gross living to which Englishmen are so prone."

Fergusson—Med. Chir. Trans. vol. viii. p. 124.

[14] " The restoration of vigour, and of susceptibility by returning to Europe, or even going to sea in the West Indies, will, on exposure to the causes, reproduce the disease."———" and a residence in such climates will render the white creole, and black, liable to Yellow Fever." See *Veitch on Yellow Fever*, 1818.

Humboldt relates the death of a young negro at Cumana as a proof of it " sometimes happening, that men born under the torrid zone, after having dwelt in temperate climates, feel the pernicious effects of the heat of the tropics. The negro was a young man, eighteen years of age, very robust, and born on the Coast of Guinea: an abode of some years on the high plain of Castile, had given his organization that kind of irritability, which renders the climate of the torrid zone so dangerous to the inhabitants of the countries of the North."——*Humboldt's Travels.*

[15] " The prevailing mortality among new comers is a good deal to be attributed to their own misconduct. Coming out in convoys, they arrive in numbers; they meet at taverns; and, allured by scenes of novelty, they walk the streets, and enter too readily into the customs of the seasoned inhabitants."—*Dancer, Jamaica Practice Physic.*

Dr. M'Lean remarks of the French in St. Domingo, "they continued on their arrival to pursue a moderate, cautious, and sober plan of life. The English, on the contrary, were in every respect the reverse of the French. They land, and friend meeting friend, rush to the feast."—"They run about the streets, careless whither, and expose themselves at once to the sun's most powerful influence."

Dis. St. Domingo.

[16] The prickly heat (Lichen Tropicus). The painful eruption, so called, has been considered to indicate good health; and it has on that account been thought necessary to guard against its retrocession. It is, however, excited originally, and subsequently maintained, by the stimulus of high atmospheric heat, with certain internal irritations; and it is to be safely removed by avoiding its producing causes:—by temperate living, mild aperient medicine, bleeding, and cold bathing, guarding as much as possible against the immediate re-application of intense heat, which will reproduce it in increased degree.

The opinion of its salutary tendency has been chiefly taken from its accompanying a copious perspiration, with which, in the event of an attack of acute disease, it disappears as a *consequence*, and not the *cause* of such disease.

The prickly heat occurs most severely in those parts which are warmly covered: it consists of an eruption of small red pimples, accompanied

by a sensation of tingling, which arises to the most intolerable itching and pricking, as the perspiration begins and continues to flow. When the surface is cool, and the cutaneous discharge moderately excited, the eruption will sometimes disappear; but the slightest causes of excitation reproduce it in a moment. If, for instance, any liquid be taken into the stomach which determines to the skin, as a draught of cold water, of warm tea, or other tepid diluent, the prickly heat will come out upon the surface, and occasion, in some states of constitution, a degree of painful irritation not to be described.

[17] Certainly—the existence of a most fatal remittent, has ceased with the annihilation of its obvious cause, a noxious marsh.

The fevers, however, arising from this source only shew themselves at particular seasons, which favour the production and subsequent evolution of febrific effluvia—a certain condition of soil, with (or without) vegetable decomposition, effected under the united influence of heat and moisture. If the swamp be completely drained or overflowed, its deleterious agency will cease; until an accession of moisture on the one hand, or the result of evaporation by the action of the sun, combined with absorption by the soil, on

the other; restore such district to its former character of marsh.

We become exempt from the attack of the Inflammatory Endemic, by the change in constitution and habit acquired by residence, by previous disease, or by any means which are equally calculated to lower the system. Dr. Dancer observes, "The Yellow Fever prevails most in situations remote from marshes, which generate remittents, not Yellow Fever," and these remittents attack all classes of subjects.

18 "The inquirer after truth, left in a state of indecision between the vapour of Dr. Miller and the animal contagion of Dr. Blane, looks forward to that period when correct registers of the weather shall have fully determined the state of the atmosphere for a series of years, in those places where Typhus Icteroides (Yellow Fever) occurs, both during the prevalence of that disease, and in its absence."—"There is no instance of the Yellow Fever appearing, except when the temperature of the atmosphere rose to the 80th degree of Fahr., or of its surviving when the heat declined below that point."—— "The Yellow Fever exists *only* in tropical heats, and the plague in a temperature between the heat of summer and cold of winter."—*Med. and Phys. Jour.* vol. xx. p. 27.

Dr. Dickson cites in his remarks on the causes of the Yellow Fever, the following: "While we were all ill, and dying in the Alligator, in English Harbour, shortly after our arrival in the West Indies, the Emerald, which had been two or three years in the climate, remained near us

healthy, though under precisely the same circumstances of duty and exposure. The Emerald was succeeded in her situation by the Carysfort, fresh from Europe; which ship, in a few weeks, buried almost all hands."

Almost every arrival from Europe, or from North America, has furnished examples of Yellow Fever, when every other individual in the community has remained in perfect health; whether natives, long residents, or even *new comers* to the climate if *not predisposed* to inflammatory disease.

19 "It exhibits a deviation, not a little singular, to find a Fever described as contagious, and generated in the West Indies, from which the natives are exempted, but which proves very generally fatal to recently arrived Europeans.—*Veitch on Yellow Fever*, 1818.

"I never could observe that one person was affected by, or received this (Yellow) Fever from another who had it."

"It does not appear, from the most accurate observations of the variations of the weather, or any difference of the seasons, which I have been able to make for several years past, that the Yellow Fever is in any way caused, or much influenced by them——the poor unthinking sailors too frequently became a prey to this fatal disease."—*Hillary.*

Dr. Poissonniere says: "The most frequent and fatal Fevers which attack Europeans newly arrived at St. Domingo, are either the true causus, in a violent degree,

or another distemper, which is still the causus, but in a less dangerous form.—The air of St. Domingo is extremely healthy to the natives, and to such Europeans as have been seasoned to the climate."

"With regard to the cause of Yellow Fever, it differs from the bilious remittent in this—that the air of woods and marshes is not necessary to produce it; for it most commonly arose from intemperance, or too much exercise in the heat of the sun."—*Blane, Diseases of Seamen.*

"The fact admitted by *all parties,* that the Yellow Fever never has been observed to make its first appearance in the most marshy and unwholesome situations, where it is acknowledged by every one, that the remote or efficient cause of bilious or remittent fever is most abundant, are satisfactory proofs that it is not derived from the same cause, and baffle all pretensions to an explanation on the principle of an epidemic or pestilential constitution of the atmosphere."—*Med. and Phys. Journal.* vol. vii.

[20] Natives of the West Indies, are not susceptible of the Inflammatory Endemic; neither are those who have become *accustomed* to the climate;—nor such as have already sustained an attack of disease, by which the phlogistic diathesis is so much reduced as to render them *acclimitès,* and thus to confer immunity. Until, however, the constitutions of strangers are thus seasoned by *length* of residence, or *more immediately* reduced to the tropical standard of health by an attack of disease, and by the evacuant means employed for its cure, they will be found

liable in degrees relatively to the Inflammatory Predisposition. The prophylaxis is established upon the knowledge of these facts.

Nothing more clearly points out the real character of the Inflammatory Endemic, or Yellow Fever of youthful new comers, than its selection of subject. The effluvium from paludal soils, is liable to affect all those who approach the sphere of its action; and the diseases from specific contagion, attack all classes indiscriminately—Natives, Africans, Europeans, &c. Dr. James Clark, in his account of the Yellow Fever in Dominica, remarks a fact concerning that disease, which equally applies to the Inflammatory Endemic—namely, "that those who recovered were never attacked a second time."—The same has also been stated, by Sir James Fellowes, of the Pestilential Fever of Spain, "having never been known to attack a person a second time in that country"—in proof of which he quotes the authority of Arejula, who remarks, "the Yellow Fever of Andalusia only attacks persons once in their lives." This circumstance has likewise received the attention of Dr. Pym, who says, "having had the advantage of seeing this disease, not only in the West Indies, but in Europe, I have had the good fortune to ascertain peculiarities belonging to it, which were unknown before,

particularly that of its attacking the human frame but once."

This peculiarity, it appears, was however noticed on several previous occasions, and particularly by Dr. Lining, who, in his description of the American Yellow Fever, written in 1753, observes, "it is a great happiness that our constitutions undergo such alterations in the Small-pox, Measles and Yellow Fever, as for ever afterwards secure us from a second attack of those diseases."

The *coincidence* between the Inflammatory Endemic, and the Contagious Fever of *these* authors, *upon this point*, is *curious*—as stated to arise from a *different* cause.—In the Contagious Fever of Spain and Gibraltar, it should seem to have been considered strictly analogous to the example that generally results from the action of specific contagions—as Small-pox, Measles, Hooping-Cough, &c.; but upon this subject, the writer can only speak from his perusal of the authorities mentioned above, not having had the opportunity to witness any case of *contagious* Fever, during his residence in the West Indies.

The Inflammatory Endemic, however, of which he has had much experience, only attacks *once*, from the same cause which affords exemption to the native and long resident in the climate;

namely, from the reduction of that state of the system which was a necessary predisponent to the *first* invasion. If, by a return to a temperate climate, full living, &c., the same subject re-acquires the Inflammatory Diathesis, which he originally possessed, he will again become liable, for such a diathesis constitutes the idiosyncrasy requisite to the production of the disease: where this is wanting, there is complete immunity, and liability commensurate with its degree. Hence second attacks may *possibly* occur, but they are very rare.

[21] "A most illiberal controversy was carried on by the Practitioners of Jamaica, relative to the best mode of practice in the Yellow Fever. The object of this dispute did not seem to be the discovery of truth. They universally ranged themselves under two banners; the one maintained the particular efficacy of mercury in all cases: the other, with equal ardour, maintained the superior efficacy of blood-letting, and other antiphlogistic remedies."—*M'Lean on Diseases of St. Domingo*, p. 112.

We have been directed to bleed in the Yellow Fever, "*usque ad animi deliquium*,"——and have been informed, "there never was an instance of recovery, when blood-letting had been employed."——"The lancet was not only unnecessary, but dangerous in the extreme."——"Not one of those bled recovered, although they were the most robust among 500 men."

To what can be attributed this opposi-

tion of sentiment? Has the same disease, or have different morbid affections, under the common name of Yellow Fever, been thus variously considered and treated? Or, have these opposite opinions and results been derived from the same disease having been seen and managed with success, or otherwise, at its different periods? For, be it always remembered, that the means of safety, in the first stage of Yellow Fever, are absolute destruction in the second stage.

[22] That the Inflammatory Endemic, or Yellow Fever, cannot be brought within the view taken of Idiopathic Fever by those who refer it to topical inflammation, has been noticed at the 9th page. If the combination of inflammation with simple fever, has received of late, from accurate observation, the attention due to so formidable a concomitant, there is some reason to think that we have too frequently lost sight of the "*peculiar debility*," and the "*depression of strength*," which often characterizes the invasion of simple Idiopathic Fever, whether the product of marsh miasmata, or of contagion; more especially when the attacks are sustained by debilitated subjects, manifesting in their character diminution of vital energy and action.

[23] The increased action of the sanguiferous system, with which every attack of the Inflammatory Endemic commences, and in which it consists, is very opposite to the *peculiar* debility which often distinguishes the early effects of the application of marsh effluvium, &c. to the body.

[24] The writer is well aware, from experience, that cases of Marsh Fever do occur, in which the increased action of the heart requires to be restrained by blood-letting, and other evacuations, before any attempt can be made to overcome the *peculiar* febrile state by which the disease appears to be more especially supported and continued.

In such cases, however, he has been taught, from observation, the necessity of caution in the employment of depletory measures, which, in an attack of the Inflammatory Endemic, would be misplaced, to say the least of it. That which constitutes the latter disease is the approach to general inflammation from the commencement; while, in Idiopathic Fever, the general affection is very different, although there may arise, in the second stage, local determinations and topical inflammation, which are not however essential to the disease.

Under the denomination of Yellow Fever, the

lancet has done as much mischief in particular cases of Marsh Remittent at Prince Rupert's Dominica, Trinidad, St. Lucie, &c. as the cinchona, wine, and a variety of stimulants have produced in the sudden attacks of a severe Inflammatory Endemic occurring to plethoric new comers situated on Monk's Hill Antigua, Dorsetshire Hill St. Vincent, Brimstone Hill St. Kitt's, or Richmond Hill Grenada; where the author has repeatedly observed the Inflammatory Endemic in every variety of degree, from the slightest Ephemera to the most formidable Yellow Fever. But these stations he may here take occasion to remark, are so free from miasmata as to have been frequently resorted to, with deserved confidence, to rid the constitution of the fevers induced by a previous residence in the vicinity of swampy soils.

[25] When the symptoms of Typhus predominate, the fever has been termed Typhus; when the inflammatory symptoms are the most remarkable, and present throughout the greater part of the complaint, it has been named Synocha."——" These are in fact no other than varieties of the Synochus."——" These varieties of continued fever so run into each other, the difference seeming often to depend on adventitious circumstances, that they are properly considered as one complaint, wonderfully varied indeed, but between the varieties of which, no well marked line can be drawn."—*Wilson on Febrile Diseases*, vol. i. p. 59, 2d edit.

[26] The writer considers the Inflammatory Endemic to require a very different treatment from simple marsh fever, particularly when the latter attacks debilitated subjects and is unaccompanied by local inflammation. Dr. Bancroft, however, observes: "The fevers which sometimes originate from intoxication, and other excesses, from taking cold, or from fatiguing exertions of body, or strong agitations of mind, are, in these hot seasons, liable to be accompanied with the same severe and fatal symptoms which occur in the terrible fever that occasionally attacks a great part of the population of certain towns situated in warm latitudes; and from this resemblance, the term Yellow Fever has been equally applied to fevers, which are strictly sporadic, and comparatively rare, and to fevers truly epidemic." "A great part of the subsequent observations, however, concerning the symptoms and the treatment of the Yellow Fever, will, I think, be found equally applicable to the sporadic, and to the epidemic disease."

[27] The writer considers the foregoing quotation peculiarly in point. The first passages cited from Dr. Wilson, page 30, were addressed to him in a communication from a junior medical officer, as the reason for not using depletory mea-

sures in some severe cases of febrile affection which occurred to new comers. The subsequent remark, and the concluding extract in the 31st page, formed the present writer's reply upon that occasion.

[82] If the inexperienced practitioner consults a variety of West-India authorities to direct his conduct, he becomes necessarily bewildered in the mazes of the most opposite evidence and opinion. If, placing his dependence upon the doctrine of the justly celebrated writer here recurred to, he treats the Yellow Fever upon the plan suggested by Dr. Fordyce, sad would be the probable consequence. The subject is introduced here, because the disease has been oftentimes thus treated, and dreadful was the result.

[29] Wherever marsh exhalation is evolved, we find fever affecting those exposed to its action; and it is always Fever of Type:—and whenever such a Fever has been present to the Writer's observation, it could always be traced to marsh effluvium as its cause.—The cause of such disease, therefore, is completely identified by its results.

The property possessed by the effluvium from certain soils to excite Idiopathic Fever,

and many circumstances which influence its extrication and govern its baneful effects on the human body, have long been pretty accurately made known. Indeed so very palpable a cause of disease could scarcely escape detection. The limits of its sphere of action sufficiently demonstrate its existence and the locality of its power. What has been written, however within the writer's knowledge, concerning the specific nature of marsh effluvium, deserves no manner of regard.

[30] The cold stage with its concomitant symptoms, it is true, has *sometimes* been wanting in some severe attacks of Idiopathic Fever, even in fevers of type; but the symptoms of debility or depression of nervous power, *never* occur in the Inflammatory Endemic.—It is a disease of excitement, rapid in its increase and decline.

The re-action which constitutes the second stage of fever, consists in a series of symptoms dependant upon a change in the circulation, analogous to, if not identified with the symptoms distinguishing inflammation: viz. increased action of the heart, with topical determinations. If these occur in a severe degree, they will assuredly require a depletory management.

But notwithstanding the parallel here drawn,

it will be found erroneous to consider the Inflammatory Endemic, as a form of Idiopathic Fever; because, in the latter disease, a state of depression of strength *precedes* the stage of re-action, and relaxation leading to a renewal of healthy function *succeeds* the re-action.

This series of phenomena in Idiopathic Fever, however varied, proceeds in their course, often without so materially affecting the functions as to endanger organization: and after a short period, sometimes indeed so indistinctly marked as to be scarcely obvious, of remission, the same series will again arise, and continue to be repeated to an indefinite extent; at length leaving the system in a state of depression not rapidly overcome, and rendering the subject affected, liable to frequent relapse.

Although inflammatory appearances, or the symptoms of re-action, do often preponderate in the idiopathic febrile paroxysm, yet are they not an essential constituent. A series of paroxysms may ultimately terminate in death or recovery, without having been attended by the phenomena of re-action.

The Inflammatory Endemic is characterized by the phenomena of the second stage of Idiopathic Fever from the *first* commencement of the attack: there is no previous stage of de-

bility—no spontaneous termination. If the general excitement be not subdued at the onset, it passes rapidly to its acmé, with inflammation from increased afflux of blood to certain organs; and it at length ends in the exhaustion of their function and derangement of their structure.

If the Inflammatory Endemic, on the other hand, be cured, it is by bringing down the morbid excitement to the measure of health; and hence preventing topical determination from taking place.

[31] Dr. Dwight observes of Yellow Fever, "no distinct remissions or exacerbations occurred in any instance, but the disease marched steadily on till it was arrested by medicine, or till it had finished its course." "The difference in this respect between Yellow Fever and the common Remittent, was very remarkable."——"We had several severe cases of Bilious Remittent Fever, and in every instance there were distinct alternate remissions and exacerbations." *Med. Jour.* vol. xiv. p. 313.

"They who have mistaken the Bilious Remittent for the Causus, (Yellow Fever) consequently speak of remissions which do not happen in this fever."

Moseley—Tropical Diseases.

[32] "The predisposing causes of remittent and intermittent Fever are well known to be those that operate by producing debility; such as poor or insufficient diet, great fatigue, frequent exposure to cold and damp with-

out proper covering, habitual inebriety, grief, sorrow, and mental anxiety: in short, whatever exhausts or diminishes the powers of life."—*Medical, Geographical, and Agricultural Report of an Epidemic Fever in India*, 1816.

"Those belonging to the upper orders of society in Walcheren, were always less affected with its endemic fevers than the poorer inhabitants."—"The British officers suffered less in this campaign, than the private men."

Medico-Chirurg. Trans. vol. iii.

[33] It does not possess any natural means of curing itself, unless through the media of certain spontaneous evacuations, as epistaxis, or diarrhœa; but the occurrence of these is not to be relied on, nor are they always sufficient for the purpose, without the aid of other more powerful means.

A common cause of the failure of medical management, arises from the patient not being presented to the practitioner, until the period has passed when every hope might reasonably have been entertained of the beneficial result of decisive measures. To prevent an attack of the Inflammatory Endemic, we must reduce the tone and vigour of the system. To ward off marsh fever we must endeavour to support the vis vitæ.

"Grenada, 8th of December, 1813.

[34] There is, at this time, in the garrison hospital,

a severe case of the Inflammatory Endemic, which has arisen from great exposure to intense heat under violent exercise. A second, from the same causes, aggravated by a fit of intoxication. Less formidable in their symptoms, there are likewise a few examples of an ephemeral affection from intemperance alone. Together with these, there have been received into hospital three cases of Remittent Fever brought from Hospital Hill, to the northward of which, is a considerable extent of swampy soil. They are now convalescent.

The first cases adverted to required the sudden detraction of thirty ounces of blood, the exhibition of active purgatives, and the assiduous application of a reduced temperature. The ephemeral fevers proceeding from intoxication, were as usual, removed by purging and abstinence. The marsh fevers have been successfully combated by early and moderate evacuation of the bowels, with the exhibition of antimonials succeeded by cinchona, chalybeates, sulphate of zinc, a nourishing diet, moderate allowance of wine, and change of air.——Note Book of Cases.

CAUSES AND PREVENTION.

In the Introduction, some general remarks have been submitted to the reader, relating to the persons most susceptible of the Inflammatory Endemic; and it has been noticed that from the observations made during a frequent attendance upon great numbers attacked with the disease, the author has been led to consider it as resulting from the sudden impression of a new and peculiar climate upon particular constitutions. It has been likewise stated that the disease appeared whenever strangers from temperate regions visited the West-India colonies, while the native inhabitants—those who are inured to the climate by a certain period of residence,—and such as had sus-

tained an attack of *any* disease capable of reducing the tone of the system, remained exempt under every circumstance of a free communication with those who were suffering from the Yellow Fever in its most formidable character. It was further observed, that the disease was neither contagious, nor transferable to other countries;[1] and that it was at the same time distinct from Marsh Fever; —often occurring in situations unaffected by miasmata—running a rapid course divested of the strong characteristics of such disease, and requiring a different rule of conduct both for its prevention and treatment.[2] It was moreover given as the result of an extended experience, that the Inflammatory Endemic considered in these pages, is the disease which certain authorities have regarded only as "sporadic and comparatively rare." The writer will therefore proceed to a consideration of the circumstances under which he has repeatedly seen it produced.

The causes of the Inflammatory Endemic are predisponent and exciting.

Predisposition consists in that state of the body which is usually denominated the Inflammatory Diathesis;—an aptitude to the diseases which result from an increased action of the sanguiferous system. The peculiar concomitants of this diathesis are a youthful period of life, a vigorous constitution, fulness of blood, and great tone;—in short, the common characters of health and strength. To this general predisposition of the system, inaction on ship-board, a full diet of animal food, with a liberal allowance of strong drink, will be found very materially to contribute.

Whatever tends to correct this disposition by lowering the system, may be esteemed the ground upon which to establish a successful prophylaxis.

It deserves attention therefore, that in those subjects stated to possess a certain inaptitude to the disease, or, who are not predisposed by fulness and tone of the system, the exposure to the exciting causes in them will generally be inadequate, to produce a serious attack. The particular habit of body presents, in this case, such a natural

barrier of preservation as in the opposite temperament we should endeavour to create.

With this view, recourse should be had to the following measures as we approach the warm latitudes:—namely, blood-letting, moderate and occasionally repeated purging, abstinence from fermented liquors of every description, and a reduction in the quantity and stimulant quality of solid food.

These precautions should be continued during the remainder of the voyage: while bleeding and purging must be repeated on such occasions as are pointed out by a predisposed state of the system, after an arrival in the country; at which period, too, a rigid perseverance in the abstemious plan of diet, already recommended on ship-board, will be highly requisite.

These are among the chief means of preventing an attack of the Inflammatory Endemic, by changing the habit of body. But if the more immediate exciting cause can also be diminished in its power, and the individual can repair, at his arrival in the West Indies, to an elevated situation in the interior of the country, where the tempera-

ture, compared with the heat of the maritime towns, is very low, his safety will be greatly insured.

The cause immediately productive of the Inflammatory Endemic in those predisposed by the circumstances of constitution and habit, will be commonly discovered to be an exposure to the direct impression of solar radiation, while unaccustomed to its influence, and unprepared for resistance by the adoption of any sufficiently preventive means.

The effects of violent muscular exertion and intoxication, must be noticed as similar to, and usually concomitant with those of high atmospheric temperature.

These causes are, to a certain extent, within the power of medical control.

The attack of disease will therefore vary in degrees proportionate to the intenseness of their action, and the circumstances of predisposition.

One cause may predominate:—For example, extreme heat, or the stimulus of alkohol. And the greater degree of the operation of a particular exciting cause, may produce such

appearances as to constitute a *variety* which it shall be proper to distinguish in practice. This variety, however, will be in *degree* only, not in *kind*.

And hence, under different degrees, agreeably to the above-mentioned modifications of the causes predisponent and exciting, we may have an instance of the most sudden and severe disease, and of every intermediate degree between this and a slight unimportant attack.[3]

Among those who have been much longer in the climate, the same causes will produce nearly similar effects. Since, however, the constitution in this case has become habituated to the climate, the degree of exposure that would be productive of a violent disease in the person of an inflammatory new-comer, will now merely induce a slight affection, which will easily give way; unless, indeed, the exciting causes have been applied to a most inordinate extent.

The effect arising from the exciting causes, is almost simultaneous with their application; and therefore an attack of the Inflammatory Endemic is, very sudden.

The manner of correcting predisposition has already received attention. The next, and indeed the only remaining consideration on the prophylactic means, simply relates to the suggestion of such precautionary measures, as will be found calculated to obviate the operation of the exciting causes:—Namely, to avoid sudden exposure to the direct and powerful radiation of the sun;—to use exercise in moderation, and to observe an unvarying rule of temperance.

The successful application, on several occasions, of the prophylactic measures above suggested, is rendered particularly important by the extent of the numbers to which they have been applied, so frequently, indeed, as to afford as strong evidence as the case admits:—while in many instances there has been reason to lament the consequence of a neglect in their seasonable employment; and where instead of them, an opposite plan was adopted, that plan was followed by the most serious results.[4]

The producing causes of the Inflammatory Endemic, are generally compounded of the predisponent and exciting, in states of various

co-operation and force, and singularly modified in different subjects.—Exemption from an attack is dependant upon so many contingencies, that in order to give those who are inexperienced in tropical diseases a better chance of attaining an adequate conception of the subject, it may not be amiss to represent a new comer from colder latitudes on his arrival in the West Indies, under several diversities of circumstances; as these are connected with him in relation to the probability of his suffering an attack of this disease:—First. The writer will give the outline of a case, much more frequent than were to be wished; and as it too often met his eye, in most, if not in every particular here noticed.

A new comer, from England, Holland, North America, &c. in the highest state of predisposition, arriving in July or August, no sooner lands, than he begins to use severe exercise under the direct influence of a tropical sun. To allay thirst, recourse is commonly had to copious draughts of sangarèe, punch, diluted spirits, porter, &c. An indulgence in full meals, abundance of malt liquor, wine, and spirits, conjoin with the change

impressed on the constitution by exposure to intense heat, to produce, very suddenly, the symptoms of violent excitement.

Thus circumstanced; if seen at the commencement of the attack by an experienced practitioner, the disease will, in all probability, be most frequently subdued.

But it more frequently happens, particularly among military and seafaring men, that a new comer is scarcely known to be indisposed, until the primary symptoms, of increased action of the heart and arteries, produced by the combined stimulation of external heat, violent exercise, and spirituous liquors, shall have begun to subside.

At this time, the patient is probably free from pain: he is cool, and the surface bedewed with moisture. By one who is inexperienced he would at first be liable to be considered as relieved by a remission of the disease; when, in fact, the second stage has already supervened, and he is now in the greatest danger. Organic derangement has, most probably, taken place; and within a less period, perhaps, than twenty-four hours, he is beyond the reach of human aid.

Upon such occasions, there is no supposition of a Contagious Fever in the community. There is neither direct proof nor analogy to support the opinion, and the situation in which the subject of attack has been placed, is demonstrably free from Marsh Effluvium, or from Miasmata, which might, under certain circumstances, be derived from vegito-animal decomposition, or other atmospheric taint, whether arising from a crowded state of population, want of cleanliness, or of free ventilation.[5]

Happening to an individual new comer, such an attack has sometimes been considered so rare, and hence unimportant, as to merit an attention only due to an infrequent casualty. But, had a thousand youthful, plethoric, and unseasoned subjects, equally confident in their own security, thus imprudently exposed themselves to the sun's direct rays, under violent exercise and intoxication, nothing less could be expected than a very general participation.[6]

Second. From an instance in which the combined operation of the predisponent and exciting causes induce a rapid, sudden, and

severe attack—let us turn to the contemplation of less formidable views of the subject.

If a new comer, although strongly predisposed, shall have used the prophylactic precautions already laid down, notwithstanding he should imprudently expose himself to the sun,—using at the same time too great freedom, as well in exercise as with the bottle, yet, such is the confidence the writer is led to place in the preventive value of correcting predisposition by diminishing plethora, that he would expect, in consequence of such a preparation, a less serious attack.

Third. Another stranger to the climate, under circumstances of equal predisposition with the foregoing, but which, however, he does not judge proper to correct by the measures advised, although he is cautious in his exposure to the exciting causes, presents a very common case. The result of such a neglect will, most probably, be soon discovered by an attack of the disease. This will be slight in degree, agreeably to the state of undiminished plethora and inflammatory

diathesis, and the effects of sudden change of climate simply.

Fourth. Should another instance occur, of a new comer who, although predisposed to the disease, yet readily accedes to the plan of prophylaxis advised, and also takes care to avoid the exciting causes, the writer would not hesitate to consider him safe. Or, if he did suffer in consequence of change of climate simply, it would be in the least formidable degree.

Fifth. The detailed accounts of many cases now lying before the writer, lead him to notice the arrival of a stranger to the climate, less strongly predisposed to the disease. If a person thus circumstanced follows the path pursued in the last example with respect to the action of the exciting causes, he may consequently calculate upon the same happy result. But should he, though not strongly predisposed to an attack by his peculiar habit, be regardless of exposure to the sun's direct influence, undergo violent exercise, and riot in intoxication, although the seizure might not prove severe,

yet would it pretty certainly occur in a greater or less degree.

Sixth. If a new comer should be so fortunate, on his arrival, as to retire to an inland and elevated station, the chance of his escaping an attack of the Inflammatory Endemic, will in great measure be determined by the several circumstances of predisposition and exposure to the exciting causes. So that if, as auxiliary to the situation, he takes all means to correct predisposition, and be careful to obviate the action of the exciting agents, he will possess every prospect of escaping the disease.[7]

The measure of the external temperature most congenial to health, appears to be regulated and determined, in a great degree, by habit; since the constitutions both of animals and vegetables are perceived to be adapted by nature to the climate under which they may have been originally placed, and to the influence of which, alone, they have hitherto been accustomed.

The exposure, therefore, of new comers from temperate latitudes to the permanent heat of a tropical climate, proves, in proportion to the degree of change in the scale of temperature, and the suddenness with which it has been effected, a stimulus of so inordinate an agency upon particular constitutions, as very soon to derange, the system of health.[8]

But that a sudden application of diminished temperature should, on certain occasions, contribute to the production of the same disease, demands attention.

Let it then be observed, first, that the application of intense solar heat frequently produces not only very painful sensation on the surface, with flushing and suppression of the perspiration, but even raises blisters on such parts as may happen to be the most exposed.[9]

This degree of heat continuing to be applied to the exterior of the body, its stimulant effects augmented, perhaps, by concomitant muscular exertion, and the agency of alkohol, and the subject of these influences a new

comer from a temperate climate, of plethoric habit and inflammatory diathesis,—the action of the heart therefore, is soon preternaturally increased, and determinations to particular organs take place.

On such occasions a reduction of the excessive heat of the surface, by the application of a diminished temperature, if not carried below the degree which is agreeable to health, has a direct tendency to reduce the morbid heat, to reproduce perspiration, and to restore the vital actions to their natural balance.

This salutary application of a reduced temperature requires, however, to be regulated by a precise measure; because it must bring down the animal heat to its healthy standard, but not below it. And such, therefore, is scarcely to be looked for as it occurs to those who are accidentally overtaken by a heavy shower of rain, or who become casually, and very suddenly, exposed to the effects of a brisk current of air.

Should, however, a reduced temperature

be applied to the body under any of the above-mentioned circumstances,—if the direct and powerful stimulus of solar heat be immediately re-applied and continued for any considerable length of time, a more violent condition of increased action and general excitement will be apt to succeed; the system being rendered, by the previously sudden application of cold, more susceptible to the effects of violent heat.

It is in this latter mode of its application, that cold is found to contribute to the production of the Inflammatory Endemic, by increasing the subsequent stimulation of intense heat.

In illustration of these remarks, the writer will again trespass upon the reader's time, by adducing an example which has, in the original, been often familiar to his observation.

A person, such as has been already described liable to the Inflammatory Endemic, soon after his arrival in the country, proceeds to walk from an intensely hot West-India town, situate nearly on a level with

the sea, to a neighbouring height, three or four miles distant;—the day sultry, the range of the thermometer 130°—140° in the sun, from 86° to 96° in the shade.

There is perhaps in the commencement of his walk no breeze: he has not proceeded far before the painful sensation of heat on the surface becomes severe. The action of the sanguiferous system is much increased; the head begins to ache, the eyes feel hot and appear inflamed,—the face is flushed, and the respiration hurried and laborious; then suddenly, by a turn in the angle of the road, he is instantly exposed to a brisk current of wind, or to a heavy shower of rain.

On the continuance of this walk, the sun again, perhaps, darts forth his powerful rays, while once more the traveller is excluded from the breeze under cover of the hill. What is the further consequence? A few of these sudden transitions bring him to the summit of a very healthful station; and here he is found with a severely febrile affection, proportioned to the violence of

exposure and the previous state of predisposition.[10]

This is a common case. It happens to the unwary new comer with a lamentable frequency. It is sometimes considered to be fever from Marsh Effluvium, and sometimes the consequence of infection.

In as much as it may happen to be limited to a few recently arrived persons from a cold climate, who are by early attention and proper management conducted safely through the attack, it is often very correctly referred to the sudden effects of change of climate, rendered more dangerous, perhaps, by some act of intemperance, and in this view, is regarded to be merely sporadic, and of no serious moment.

But attacking, under like circumstances, a great part of a battalion at their first arrival within the tropics, or a detachment of young recruits, or a number of imprudent seamen, the same disease has been set down as an Epidemis of a new and tremendous character.

Under proper regulations, nothing can be more grateful to the over-heated European, than the application of a diminished temperature, if the immediate re-application of excessive solar radiation can be avoided. Nothing in the bounty of nature can be imagined more refreshing, more invigorating and salutary, than exposure to the cool breeze, and cold immersion or affusion, when the system is in a proper state to receive its grateful influence.

The effect of temperature affords a striking example of the powerful influence of habit on the human system. Accustomed from birth to a temperate climate, several degrees of a permanent increase of heat suddenly applied to particular constitutions is liable to occasion great derangement of health, until a gradual adaptation inures us to the change. A period of no wide extent secures the stranger from the further risk of dangerous suffering by an attack of the Inflammatory Endemic. But when this immunity has been purchased

by the necessary length of inter-tropical residence, when the constitution has become assimilated, as it has been called, to the climate of the West Indies, what has generally happened? An exchange of original tone and native vigor, for relative weakness, deficient energy, and chronic diseases of debility.

Although no longer liable to the severe and sudden attacks of that inflammatory commotion which is the early consequence of sudden change of climate, the stranger has become a ready subject to receive the fever of Marsh Effluvium, whenever brought within its sphere of action. Where the measure of exhaustion, the consequence of long residence, has greatly passed the salutary bound, and undermined the constitution, where chronic visceral derangements have supervened, no means of repair exist, to bring back the healthy actions of the vital system, thus weakened and perverted by continuance in these unhealthful regions, except by a removal from their baneful influence to more tem-

perate latitudes. And exceedingly efficacious indeed have been the repeatedly experienced effects of change of climate, after the unavailing application of all other means.

NOTES

AND

ILLUSTRATIONS.

[1] It is stated by Dr. Bancroft, "that no disease, to which a specifically contagious property does not *originally* and *naturally* belong, will ever acquire that property in certain circumstances and situations in which sick persons are crowded together in close or ill-ventilated rooms or apartments, and where there is a manifest neglect of cleanliness, followed by an accumulation of filth, &c." Yet the occurrence of fever from exhalations emanating from the *living* body, under the influence of peculiar morbid changes, can scarcely be overlooked. If, therefore, the present writer considers the Inflammatory Endemic not infectious, yet is he not unmindful that if great numbers of persons afflicted by disease should be brought together within a confined and

ill-ventilated space, without due attention being given to the preservation of cleanliness, a fever, under such circumstances, might arise, the product of which would be liable to dissemination by contact, or by the medium of the atmosphere; but nevertheless, such a contagious fever would be a distinctly different disease from the Inflammatory Endemic or Yellow Fever of new comers from temperate to torrid climates.

Of an infectious fever imported into the West Indies, and thence transferred to other countries, the writer has already mentioned his having no experience: but a series of circumstances noticed in their connexion with the introduction, dissemination, and long continuance of a contagious principle, in an active and virulent condition, have been stated by Doctor Chisolm, in "an Essay on the Malignant Pestilential Fever, introduced into Grenada by the ship Hankey from Boulam."

It has been thought, and probably with reason, that the heat of the tropical climate tends to dissipate, or perhaps to render innoxious, the peculiar morbid principle of typhus infection. A fever, very fatal in its progress and of infectious character, prevailed on board a transport with foreign troops, to whose assistance the writer was directed while at sea, Feb. 1796.

As the ship approached the warm latitudes, it soon disappeared; no new case occurring after the change of climate.

"In India, (Sir James M'Grigor observes,) we never saw a case of (Typhus)—To the existence of this fever, the climate of India is inimical. We know instances where, in transports, typhus had broke out, and, on the passage to the Cape of Good Hope or India, had proved little less destructive than the plague could have done; but the disease never reached India. If a case was landed there, it never propagated the contagion: a second case never appeared on shore."—*Medical Sketches.*

"I never saw any reason to believe the Yellow Fever infectious, either in private families, or in the Military Hospital."—*Hunter, Diseases of Jamaica.*

"The state of the atmosphere between the tropics, does not seem to admit of the generation of a high degree of contagion; and wherever such exists, it must arise from the most unpardonable neglect of cleanliness, and the retention of contagious effluvia from a total want of ventilation."—Dr. Blane says, "there is reason to think that the open air soon dissipates and renders inert all infections of the volatile kind; and of course, the warmer the air is, the more readily it will have this effect."—*Chisolm, Essay on the Malignant Pestilential Fever, introduced into the West-India Islands from Boulam,* 2nd edit. p. 95.

"I am completely satisfied, than if, in place of quarantine laws prohibiting the importation of Yellow Fever, a primium were offered for its introduction, the measure would be found utterly impracticable. In the West Indies, the

Yellow Fever has been and may be again multiplied to a great extent, among robust and recently arrived Europeans, in such situations as utterly preclude the idea of contagion, or miasma as a cause, unless the rays of heat and light are to be considered the parent of the one, and a calcareous and in some degree basaltic soil the source of the other."—*Veitch on the Yellow Fever*, 1818.

The extension of the fever described by Dr. Chisolm to classes of subjects who have been found at all times unsusceptible of the Inflammatory Endemic, (as natives, persons of color, and Africans,) is a circumstance which, of itself, would sufficiently distinguish the Fever of Dr. Chisolm from the latter disease; but its infectious character could only be ascertained by the direct proof of its being communicated from those labouring under it to others, while in health, who were not exposed at the same time to other causes capable of producing Idiopathic Fever:—as, for instance to Marsh Effluvium, which, although productive of Idiopathic Fever not communicable by contagion, is yet known to attack such numbers at once, of all classes as to assume, occasionally, the appearance of a wide-spreading Epidemic.

But the *mere* circumstance of the prevalency of Marsh Fever, or of the Inflammatory Endemic of strangers, at the same time with the fever

described by Dr. Chisolm as contagious, offers no valid argument against the infectious character of the latter disease. Might they not, possibly, have each existed at the same time, and in the same district, independently of each other? The writer is much disposed to think that West-India febrile affections, arising from various causes, have too often been confounded by an exclusive attention to a similitude of symptoms.

[2] That the "febrific exhalations which are commonly called marsh or paludal miasmata should be evolved in a state possessing augmented virulence in situations where their source is liable to escape common observation,"—"existing in a variety of unsuspected places," would, if proved, be a curious and interesting circumstance;* more especially when it is considered that the Yellow Fever is excited in its most formidable character, (upon the introduction of new comers to the West Indies) in those "*unsuspected*" situations, while the surrounding community maintain their wonted health, although the latter are not exempt from the effects of such febrific exhalations, should they happen to approach their more *obvious* source. If any member of a West-India community should visit a distinctly marshy dis-

* A Sequel to an Essay on the Yellow Fever, p. 255. By G. N. Bancroft, M. D. 1817.

trict, he will, most probably, be seized with its characteristic fever. Thus it appears that the more virulent and concentrated effluvium which is said to excite Yellow Fever in one class of subjects, "in soils and situations which are *not* marshy," is harmless in its application to others, who yet suffer by the same description of miasma when it is exhaled from a distinctly marked marshy soil.

It is still more extraordinary, that when a new comer has recovered from Yellow Fever excited at stations free from miasmata, and healthful to all accustomed to the climate, and when he remains no longer susceptible of a second seizure by Yellow Fever, he nevertheless is liable to repeated attacks of remittent or intermittent fever, as often as he visits a district obviously marshy; from the effects of which he shall seldom escape until he changes his station, and upon doing this, his health will be soon re-instated, notwithstanding any number of new comers may be suffering at the same time and in the same place by the severest attacks of Yellow Fever.

"I here venture to predict, that when the influence of climate is correctly estimated, that the opinions of green wood, of miasmata, and of contagion, will cease as primary causes of the Yellow Fever."

Veitch on the Yellow Fever, 1818.

"In the year 1811,(says Dr. Bancroft,) I proved the Yellow Fever to be no other than an aggravated form of that multifarious disease, which is known to result from the action of those exhalations commonly denominated Marsh Miasmata, though often extricated from soils and situations which are *not* marshy; and existing in a variety of unsuspected places."—"When those miasmata or exhalations from which intermittent and remittent fevers derive their origin, have been matured and concentrated by the action of an high atmospheric temperature on a fit soil, the fever which they produce will assume the continued form, particularly in the young and robust; especially when the causes which contribute to its production are so extended and exasperated as to render it epidemical."

Sequel to an Essay on the Yellow Fever, Lond. 1817.

Upon this statement the writer has to observe, that within the limits of his experience the *Yellow Fever* has never possessed the intermittent or remittent character; while the simple Marsh Fever has never occurred without remissions. He has never known the febrific exhalations which are productive of Remittent Fever to arise from soils and situations which are *not* marshy; while he has often witnessed the Yellow Fever in situations where exhalations capable of occasioning the disease, could not be imagined to exist. The Yellow Fever thus produced without the discoverable agency of febrific exhalations,

has never possessed the characteristic symptoms of remissions and exacerbations.

A high atmospheric temperature does not appear *necessary* to mature and concentrate the miasmata from which intermittent and remittent fevers derive their origin; although a high atmospheric temperature is the *sine qua non* of Yellow Fever. A high atmospheric temperature merely acts on a fit soil, by bringing such a soil to the condition called marsh. But the fitness of the soil to be thus acted upon by a high atmospheric temperature depends upon other contingencies, which equally render the miasmata "more matured and concentrated." Thus if the soil has been long dried up, an addition of simple moisture renders it fit for the extrication of febrific miasmata—or, if the soil be overflowed, the draining off a certain portion of the moisture will render it a source of febrific exhalation;—and the same will result as a consequence of the gradual absorption of superabundant moisture. These contingencies act upon the same principle with a high atmospheric temperature; that is, they bring the soil to a condition implied by the terms marshy, paludal, muddy, and in which condition the febrific exhalations are evolved, and frequently produce an exasperated disease, without the concurrence of a high atmospheric temperature, as well in debilitated

constitutions, as in the young and robust, who are exclusively the subjects of Yellow Fever.

A high atmospheric temperature acts on the *subject* of disease, rather than on the deleterious effluvium from which remittent and intermittent fevers derive their origin; more especially in those cases, where "life is destroyed in a few hours." In a debilitated subject, for instance, a high atmospheric temperature augments the debility; but the disease nevertheless always possesses the characteristic marks of Paludal Fever. In the young and robust, whose cases are "aggravated by circumstances of exposure, fatigue, intoxication, &c.," a high atmospheric temperature acts by producing morbid general excitement, and topical inflammation, in addition to the idiopathic febrile derangement: in which case, if the superadded inflammation be promptly removed, the idiopathic febrile derangement, the result of the action of Marsh Miasmata, will subsequently recur, either with an intermittent or remittent type, conformably with various contingencies.

The continued form of fever, therefore, which is produced by the simultaneous operation of marsh exhalation and a high degree of atmospheric temperature, aggravated by circumstances of

exposure, fatigue, intoxication, &c., derives its *continued* form from the superaddition of general excitement and topical inflammation—not from an augmented virulence of the febrific miasmata.

A high degree of atmospheric temperature, aggravated by the circumstances adverted to above, will of itself produce in *susceptible* subjects (the young and robust) a violent disease of excitement liable to terminate in exhaustion, *without* the agency of marsh exhalations;—while experience shews that marsh effluvium, unaided by a high degree of atmospheric temperature, will produce in *any* class of subject, young and old, robust and weakly, a fever the characteristic feature of which is invariably marked by more or less perfect remissions and exacerbations.

The first disease adverted to is the Endemic or Yellow Fever of new comers of plethoric habits and intemperate conduct, from northern to inter-tropical climates. The second is the Marsh or Paludal Fever of all climates and constitutions. They are distinct in every important circumstance of their character;—distinctly different in their cause—in their symptoms—in their nature—in their prevention, and in their treatment.

It is however considered by the writer, that they are not unfrequently combined—topical

inflammation being superadded to that state of "peculiar debility" which appears to constitute the Idiopathic Fever.

[3] Hence no defined period of residence can be accurately stated as sufficient to afford the necessary degree of "seasoning" or "assimilation:" because it does not depend upon the idiosyncracy of constitution, nor upon length of residence, exclusively; but upon the combined influence of the causes, predisponent and exciting. Hence, although second attacks are unusual, unless the subject of a first attack return to a temperate climate for a considerable length of time, yet they may perhaps occur.

[4] "Few, comparatively speaking, perished in the field, almost all were destroyed by this most dangerous malady, (the Yellow Fever.) Those officers who took advice before leaving England, as to the best preventive means to be followed in the West Indies, were nineteen in twenty advised to guard against debility and relaxation of climate; and you therefore often found vigorous young men, who ought to have been bled and reduced by a spare diet, swallowing bark and wine."

Veitch on the Yellow Fever, 1818.

Dr. Drysdale remarks on the Yellow Fever in Baltimore, in 1794, that "Almost all the victims were persons habituated to the immoderate use of ardent spirits"—"all

the first occurrences of mortality by the Yellow Fever, were generally ascribed to the primary influence of rum."

Dr. Burnett in his account of the Mediterranean Fever, introduces the following remarks.

"The Eagle, of 74 guns, having arrived (at Malta) to careen, her men were quartered in a barrack, nearly a mile from the ship, where they had easy access to spirits and wine, and committed the usual excess of soldiers when on shore. The effects of this were soon visible; a fever made its appearance amongst them, and ultimately extended to nearly 60 of her men."—"The symptoms were highly inflammatory; the brain, stomach, liver, thoracic and abdominal viscera, particularly affected."—

Mr. Allen in his report observes:—"I consider this Fever to have been brought on by intemperance and exposure to heat.——Mr. Wardlam reports:—The state of the weather for these six weeks past has been extremely warm; the thermometer ranging from 80° to 87° in the shade. The Weazle arrived at Malta in the month of June, and went up to the Dock-yard to refit, and the ship's company were then perfectly healthy. Liberty being given to go on shore; and they having received a considerable sum of prize money, intemperance was the consequence. Fever began to make its appearance on the 28th June.

Mr. Craigie reports, "The fever which has prevailed on board the Berwick made its appearance in June: the only exciting causes which could be assigned, were hard labour on board of prizes at sea, and in harbour, during

the three preceding weeks, with some opportunities of indulging in the use of intoxicating liquors."

Burnett on the Mediterranean Fever.

[5] It was observed of the Yellow Fever of America, by Dr. J. S. Stingham, "In as much as any alteration in the constituent parts of the atmosphere may be involved, no such change did exist.—There was no perceptible difference (after a careful and attentive analysis) between such situations (where the Yellow Fever prevailed) and those which were several miles distant."

Edin. Med. and Sur. Journal, vol. i.

[6] "On my landing at Kingston, (Jamaica,) I was enjoined to expose myself as little as possible to the sun; but I paid no attention to the advice given me, and walked daily in the streets of that town, in those hours when its influence was the greatest. However, before I had been a fortnight landed, I was attacked with a Fever."

Doughty on the Yellow, or Bulam Fever.

The above was Mr. Doughty's own case. See the case of an Officer of the 85th Regt. given at page 59 of the same work,—"he drank greatly of spirits and water, or strong grog,—he was in the habit of amusing himself by shooting wild pigeons amongst the lagoons and brush-wood, regardless of the season, or sun's influence."—See also the case of the sergeant and 12, men at page 73, who were "exposed to considerable fatigue and the influence of the sun, and also drank a much greater quantity of rum than if they had remained in quarters."——"Whether the sergeant and men I have mentioned were

exposed to any cause more exciting than the sun's heat, fatigue, or drinking a greater quantity than their accustomed proportion of spirits, I have not learned:—however, every one of them was attacked with the Yellow Fever in its most violent form, and they all fell victims to the disease."

Doughty on Yellow Fever.

"Chapman," says Dr. Pinckard, "had been one of the party employed to drag the fishing-net in the sea"—"He was a man who possessed great strength of constitution—had been exposed to the heat of the sun immediately previous to the attack—and was very rapidly destroyed by the disease."—*Notes on the West Indies.*

"Though the disease (it is observed by Dr. Dickson) proceeds from the concurrence of strong muscular action, under a vertical sun, with intemperance, yet, where the predisposition is already strongly established, it is excited by causes less powerful, dissimilar, and even obscure."

"Hence under these circumstances, when a body of men, as a regiment or ship's company, are indiscriminately exposed to the influence of such powers, the effect will also be general, and so many men will frequently be seized with the same complaint, as to give it an epidemic appearance."—*Edin. Med. and Surg. Jour.* vol. iii.

Mr. Boyle remarks on the Endemial Fever of Sicily: "The weather, from about the 1st July, became extremely oppressive,—no rain had fallen for several weeks; the thermometer usually ranging from 84° to 88°."——"To Malaria, says he, the fevers prevailing in Melazzo and its neighbourhood, during the hot months of summer, had for a long time been attributed; and it was

solely from the information gained by dissection, that we have been enabled to trace, with much certainty, those fevers to the powerful action of the solar heat, occasionally aided by intemperance, violent exercise, and the like."—*Edin. Med. and Sur. Journal*, vol. vi.

"The summer fevers made their attacks especially after exposure to heat and exercise in the sun."——"Soldiers on duty have been so powerfully and rapidly affected, as first to drop their arms, and immediately afterwards to fall down themselves: and a man, sitting in the sun in perfect health, has been seized in a few minutes with vomiting, and exhibited every symptom of fever. The ordinary symptoms of acute synocha characterized the attack."—*Irvine—Diseases of Sicily.*

Dr. Burnett remarks, "During the spring months, and the early part of summer, the ships enjoyed an exemption from fever. Towards the end of June, and commencement of July, slight attacks of fever begin to present themselves;—as the summer advances, the attacks become more formidable."

Dr. Winterbottom observes, "The Yellow Fever mostly affects persons just arrived from Europe, or from the northern parts of America; particularly those of a robust, full habit of body, who appear in the highest health. It is most prevalent during the hottest months of the year, and is often a consequence of too violent or too long-continued exercise in the sun. It is most frequent on the sea-coast, and in a heated dry sandy soil, than in the interior parts of the country; and in mountainous situations it rarely occurs. The Remittent Fever, on the contrary, appears chiefly in low swampy situations,

in uncultivated places, and stagnant air; and it chiefly attacks such as have resided some time in the West Indies, especially when weakened by previous illness, or of a delicate, relaxed habit of body. The Yellow Fever attacks very unexpectedly, and with very great violence, while the patient thinks himself in the most vigorous state of health."—*Med. and Phys. Journal*, vol. vii.

Dr. Dancer remarks the following facts:—"The Yellow Fever prevails only on certain occasions:—it generally begins among sailors, soldiers, and others, newly arrived from Europe. It has no connexion with local causes: that is to say, it makes its appearance indiscriminately, in all seasons and situations, or rather it may be said to prevail most in situations remote from marshes and swamps, which generate Bilious Remittent, not Yellow Fever."—*Med. Journal*, vol. xiv.

"Upon tedious garrison parades, (Mr. Howship observes) in the Island of Minorca, it has very often happened that a young soldier, a recruit lately joined from England, has been overcome by the heat of the sun, and has fallen down in the ranks.

"The force with which the sun is capable of acting upon the human body, is truly astonishing: it is such, as will very readily explain its occasionally exciting inflammatory action, either local or general, in the system, even allowing that in some instances predisposition is not taken into the account."

"One of the most frequent immediate effects of the solar heat acting in force upon the living body, is the production of an inflammation; the stimuli acting either upon the external surface of the body, or else through the

surface upon some of the contained viscera, any of which are liable to be thrown into a state of high excitement from the power of this most active agent."

Med. Journal, vol. xxiii. p. 193.

Mr. Christie remarks, "The 72d Regiment soon after their arrival in India, in one march, left behind them 200 men; many of these expired almost instantly, from great heat and fatigue."

"Of the effects of such causes, I saw (Mr. Christie observes,) a still more striking and melancholy example in India in 1797: when an European regiment, little habituated to the climate, but very much addicted to drunkenness, and quartered in a station where arrack was sold remarkably cheap—the men, after a night's debauch, were taken out in the morning to be marched a few miles to sober their senses, as it was called—the sun rose—the men lagged—many dropt—six were brought in dead—The lives of many were saved by the use of blood-letting, from being apparently attacked with phrenitis."

Med. Journal, vol. i.

The board of physicians of Baltimore, in 1794, reported, "Many of the laborious class of the people were destroyed by the extreme heat of the sun."

[7] It is observed by Mr. Boyle, on the fevers of Sicily, that "owing to the temperate and abstemious mode of living, peculiar to the native inhabitants of these climates, as well as to constitution, and habits formed in infancy—they are exempt from those violent attacks of inflammatory diseases, to which the British soldiers are more particularly subject."

Edin. Med. and Surg. Journal, vol. viii.

Dr. Dickson remarks, " The preservation of individual health in the West Indies, will very much depend upon following the advice contained in the comprehensive maxim of Celsus—the avoiding of various predisposing and exciting causes, until the physical sensibility of the system is reduced by habit."

Edin. Med. and Sur. Journal, vol. xiii.

[8] " Whatever may be the peculiar coincidence of circumstances, or modification of causes, most fertile in the generation of Yellow Fever, an uniformly high temperature, is the *sine qua non.*"

" In the Caribbean Archipelago, the temperature is not only high, but equally and durably so: from its little variation in this respect, I consider the Yellow Fever as the legitimate product of the climate."—*Dickson on the Causes of the Tropical Endemic, or Yellow Fever.*

[9] " New comers are often greatly distressed when travelling, or otherwise exposed to the sun, if any part of their face or neck should be unsheltered by their hat, or their hands by their gloves. Such parts are subject to be painfully inflamed, or blistered, by the scorching solar rays."—*Moseley on Tropical Diseases.*

The writer has seen the face, hands, shoulders, and back, terribly scorched in soldiers, who have most imprudently exposed themselves at noon-day to wash their clothes in the river; on these occasions, the heat of the surface has been found intense—the skin always parched and dry.

"When febrile heat is considerable, the secretion of perspirable matter is prevented; just as the secretion of other organs is suppressed during a high inflammatory action of their vessels. In such a state, then, the augmented heat contributes to keep up the inflammatory constriction of the vessels; the two conditions mutually support each other; and whatever aids the accumulation of heat, necessarily augments the inflammatory, or febrile action of the blood-vessels—in other words, aggravates the febrile disease."—*Rees's Encyclopædia, Art. Heat.*

"It has been proved by the experiments of Dr. Alexander and Dr. Currie, that a considerable elevation of the heat of the body, above the standard of health, is incompatible with the process of perspiration."

Rees's Encyclopædia, Art. Cold.

"Excess of caloric obstructs the action of the vessels by which the perspirable matter is thrown out."

Med. and Phys. Journal, vol. xxvi. p. 90.

"Dr. Currie remarks, "While a moderate, gradual, and general stimulus from heat opens the pores of the skin, a sudden and considerable increase of heat constricts them; the violence of the stimulus, in this, as in other instances, occasioning a morbid resistance of the living fibre on which it acts."—*Medical Reports.*

[10] The stimulus is most probably communicated from more points than one. First, from the surface generally, in consequence of the application of excessive atmospheric heat. Secondly, from the stomach, in consequence of stimuli applied directly to that organ. Thirdly, muscular,

and likewise mental exertion may contribute to the general effect. By these, the action of the heart is preternaturally excited,—determinations take place to particular viscera—and every severe and fatal symptom of West-India Yellow Fever, is liable to arise from such exposure to the inordinate action of natural stimuli, in the absence of marsh effluvium, or other atmospheric impurities, or of animal contagion.

SYMPTOMS AND TREATMENT.

In the preceding remarks, the author has endeavoured to show, that *sudden change of climate* is liable to produce, under certain circumstances, a violent excitement, or inflammatory commotion of the living system:—That such a commotion is effected by quick transitions from a low to a permanently high degree of atmospheric temperature: That it is produced with greater certainty when the body is predisposed by a vascular fulness, attended with great tone;—a condition which has been called the phlogistic or Inflammatory Diathesis; and which distinguishes the young and robust European, or North American, from the native inhabitants of torrid regions, or such as by long residence have been brought to resemble them. The means of obviating the evil effects of such a predisposition, have also been made known with a confidence which has been insured by the success of the wri-

ter's own practice, and by the testimony of those facts which have induced him to attribute the Inflammatory Endemic, to the direct and powerful influence of violent heat and intoxication.

The author may also observe how much he might have strengthened the opinion here advanced on this subject, by a recurrence to many examples of the fate of new comers to the West Indies, when no such prophylactic preparation was resorted to, or when a very different plan was pursued. But as this seems scarcely necessary, he purposes to lay before the reader such a view of the appearances induced in the living body, in consequence of the application of the causes already stated, as may tend to evince the correctness of the proposition advanced in these pages, that the character of this disease is purely inflammatory from its commencement, and that its tendency is to terminate in exhaustion;—thus differing widely from Idiopathic Fever, derived from human contagion, or Marsh Miasmata, to which inflammation is not essential, although it often occurs, as a dangerous concomitant.

When we consider how much one constitution differs from another in its degree of susceptibility to the Inflammatory Endemic,—the dependance of this disease upon the exciting causes in the different degrees of their intenseness and continuance,—the various states of their combination,—the peculiar circumstances of certain idiosyncrasies,—together with the agency of minor causes, which may have escaped attention from being less evident and less readily traced;—it cannot excite much surprise that it should be difficult to present such an individual case, in detail, as might afford a faithful delineation of every feature arising out of this variety of circumstances.

A slight attack has seldom been recognised to bear any strict affinity to the much-dreaded "*Yellow Fever*."—Considered merely as a "seasoning," it has rarely been regarded of the same kind—as produced by the same causes; and prevented, or, removed by the same general means, which are applicable to that fever in its severer aspects.

In a somewhat greater degree this "seasoning" has received the title of fever,—a

" sporadic,"—" an unusual and slight occurrence." In its more formidable character, conformably with the violence of the symptoms excited, it has been contemplated with great alarm. It has been considered a disease " sui generis," and sometimes identified with the most fatal of those Idiopathic Fevers, with which the observer may have been acquainted.

These states of the Inflammatory Endemic present, however, only different aspects of the same disease; the diversity of appearances, with their ultimate effects, solely arising from their greater or less degree of of violence. It should be, however, explicitly understood, that the termination of inflammation in the exhaustion of vital power, constitutes in the latter stage of the disease, a change which, in the treatment, must regard *degree* as *kind*, inasmuch as the remedy of the *first* stage, would prove destructive in the *second*.

In the less severe example, exposure to the exciting causes is soon accompanied by heat and dryness of the skin, with increased action of the sanguiferous system.

These effects will, however, commonly subside by rest and removal from the further influence of their cause.

In a more decided attack, the sensation of heat upon the surface is increased to a painful degree; but feelings of heat and slight chillness[1] alternate for a time, until the morbid temperature be perfectly established. This sensation of heat is accompanied by a general blush, tension, and dryness of the skin, flushing of the face, and inflammatory appearance of the eyes. There is a universal sense of soreness,—flying pains—diminution of the power of muscular exertion—restlessness—sighing—yawning and stretching;—occasionally a disposition to doze, but this disposition is not followed by tranquil sleep.

These symptoms commonly precede, and accompany a greater or less degree of pulsating pain within the head, particularly severe over the eyes, and rendered more so by pressure on the eye-balls. Pain is felt in the course of the spine, across the loins, and in the lower extremities. There is increased sensibility to the impression of

light and sound.—If any nourishment be attempted to be taken, it produces nausea.—The tongue is clean—red—dry and hot; or sometimes white, with heat and dryness. Thirst is generally urgent—the pulse is commonly full and frequent, amounting to 130 in the minute.—The respiration is laborious, with a painful sensation of stricture across the chest.—The bowels are costive:—sometimes, there is vomiting very early in the attack, with singultus, and pain on pressure, at the pit of the stomach. The urine is scanty and high colored; its evacuation is attended with difficulty and with scalding pain.

Should these symptoms occur in a degree not particularly severe, and the patient retire at their first commencement to rest and perfect quietude in the shade;—should the heat of the surface be reduced to its natural standard, as also the increased action of the sanguiferous system, by the free admission of cool air, the use of cold drink, and by the frequent ablution or gradual immersion of the body in cold water, and if, in addition, a hœmorrhage from the nose, or

a bilious diarrhœa arise,[2]—the excitement would, very probably, be soon reduced, and perspiration would follow the reduction of excessive temperature.

Should it, however, so happen that the symptoms of a severe attack proceed uncontrolled,—in this case, the patient becomes extremely restless, with a continual desire to change his position, but without obtaining any relief. In aggravation of the appearances detailed already, there arise a greater degree of increased heat, as ascertained by the thermometer, and more violent pain of the head,—vehement throbbing of the carotids, with "a sense of tightness over the eyes as from the binding of a cord"—occasionally confusion—delirium—vertigo—loss of vision—tinnitus aurium. The pupil of the eye is contracted. Sometimes there is a dry cough, with heat and soreness of the fauces. The pain at the præcordia is urgent, especially on pressure; and is attended by great anxiety, oppression, deep sighing, and the sensation of intense heat. Nausea succeeds: it often comes on very early in the

attack, and increases to a vomiting of the contents of the stomach; which sometimes rejects, almost immediately, whatever is received, with little alteration or addition, except of a viscid mucus, often secreted in an astonishing quantity. Drowsiness is very common, but there is no sleep—and the continual restlessness is peculiarly distressing.

When great determination takes place to the liver, there is sometimes acute pain in the right side.[3] A yellowness of the skin, first discoverable in the eyes, with a similar tinge in the urine, and in the serum of blisters, will occasionally supervene. Or, in its place, a vomiting and purging of dark-coloured bile, with other morbid secretions, which resemble tar or molasses.

The yellowness of the surface and the vitiated bilious evacuations, here noticed, seldom appear at the same time, in the same case.[4] If the passage for the bile into the intestines be free, whether it is spontaneously evacuated, or carried off by the action of medicine, this jaundiced appearance will sel-

dom take place; nevertheless, in some cases, it may possibly arise from redundant secretion, even although the bilious canals are free. In this latter example, the vomiting and purging of bile may occur together with the bilious suffusion on the skin, and perhaps carry off the attack, in the same manner as epistaxis, when the determination is principally to the head. But if the yellowness of the skin appears in consequence of an interruption to the passage of the bile into the intestines, it is to be considered a favourable symptom, in as much as the liver is relieved from congestions, occasionally producing serious results.

The symptoms proceed with various degrees of violence,—occupying a less or greater duration of time, agreeing with circumstances not always obvious, and commonly eluding even the most careful research. When the disease has, however advanced thus far uncontrolled, the excitement of the system soon sinks into irreparable exhaustion.

The period has, nearly elapsed, in which decisive remedial means might have availed; in which, a hæmorrhage from the nose, a

spontaneous diarrhœa, or an universal diaphoresis, might have proved salutary; and within which period, the employment more especially of copious venesection, the administration of purgative medicine of full and efficient operation, the application of a reduced temperature, externally by ablution or by immersion—of cool air, and cold drink—might likewise have been expected to produce every good effect. But, in a case to which no adequate means have been applied, within 12, 24, or 36 hours, or perhaps after a longer but indefinite period, a different condition of things presents itself to view, constituting the commencement of a second stage of the disease.

Many of the more urgent symptoms have probably declined. The patient is generally free from pain—sometimes perfectly tranquil, at others very restless. The heat on the surface subsides—a chillness often prevails, and the skin is partially damp. The head-ach is less severe, the pulse becomes softer, and is evidently sinking. The eyes, from a fiery redness, are now dull, and suffused with moisture—the pupil dilated.

There is sometimes great drowsiness, but no refreshing sleep. The urine continues to be discharged in small quantity. The tongue is dry, hot, furred, discoloured, and tremulous. If spontaneous evacuations from the bowels take place, they are black and fetid.

The coolness and moisture of the skin, together with the general abatement of pain, so much assume the appearance of a remission of fever, as to have given great hope to the anxious solicitude of the inexperienced practitioner. But they bespeak the commencement of other symptoms, which are full of danger.[5]

Determinations of blood to certain organs continue to take place—more particularly to the brain, to the stomach, or to the liver. And when the more violent degree of morbid impression appears to be excited by such determinations to any one organ; the other, not unfrequently, suffers in a much less considerable degree. If, for instance, the stomach should be chiefly affected, the sensation of heat and pain at the præcordia, with singultus, will distress the patient; and there will often occur incessant efforts to

vomit; or sometimes, without apparent effort, there is an immediate rejection of every thing received. Under these circumstances of a predominant affection of the stomach, the head is often but little disturbed;—the intellect remaining perfectly clear.

It happens at other times, that the stomach being retentive, there shall be a proportionally greater affection of the head; manifested by a continuance and increase of pain—sometimes by a sudden and fatal convulsion—at others by violent delirium, subsiding rapidly into coma and total insensibility. In some cases the patient sinks suddenly, after the subsidence of violent excitement, without the continuance of these determinations to particular organs; apparently destroyed by the general affection, and he dies, at the moment when the inexperienced observer cherishes the hope of speedy amendment.

As the disease advances, there is great anxiety in the countenance, and a discoloration of the skin often takes place. It usually appears in patches—yellow, brownish, or livid; and is at times sprinkled with

petechiæ. It is first perceived about the angles of the mouth, the nose, upon the neck and clavicles; in irregular patches on the chest, back, thighs, scrotum, and legs. This discoloration never comes on until the subsidence of the more violent symptoms of excitement, however early in point of time. It occurs with the passive hæmorrhagies from various parts: viz. from the nose, mouth, eyes, ears, &c.; and at the same time with the black or coffee-ground vomiting. This discoloration appears to be an extensive ecchymosis, proceeding from exhaustion of the vis vitæ in the extreme vessels of the surface, in consequence of previous inordinate excitement. It is very dissimilar from the yellowness, which is sometimes occasioned by the presence of bile, and which is first discoverable in the eyes—being pretty uniformly diffused, and, from the light yellow of the lime, gradually acquiring a deep orange hue. This bilious suffusion tinges the urine deeply, the serum of blisters, and gives a similar tint to the membranes investing the several viscera, and to the water effused into the serous cavities;—while, on

the other hand, the discoloration adverted to above, appears to arise from a vitiated state of the serum effused into the cellular structure.[6]

At length the countenance becomes dejected—the surface cold and moist—the pulse sinks—and there is a disposition to faint upon the least exertion.—These symptoms bespeak the melancholy change which has taken place, and point out to the practitioner, that the time is passed, when he might possibly have checked the growing mischief, had the patient been brought under his inspection at an early period of the attack.

If the stomach has been much affected, the vomiting will sometimes continue incessantly, with heat and pain on pressure at the scrobiculus cordis—occasionally extending over the whole anterior surface of the abdomen.

The first discharges by vomiting, are found to be merely the ingesta;—afterwards, a large quantity of serous fluid is ejected—usually with an admixture of a viscid mucus, although little or nothing has been drunk.—But as the disease advances, the material thrown up,

whether any thing be taken into the stomach or not, is ropy and mixed with numerous small shreds, flocculi, or membraneous films of coagulated lymph, which float in the ejected fluid. These soon acquire a dark brown, purple, or black colour; but do not, at first, communicate much general tint to the liquid brought up.—Afterwards the matters vomited are more intimately mixed together; and, with the addition of dark-coloured blood effused into the stomach, vitiated bile, and other morbid secretions, in the aggregate give an appearance, either of thick coffee-grounds, or else the liquid, being occasionally clearer, possesses an inky or fuliginous tint. There is at this period, usually, a purging of dark-coloured matters resembling tar—sometimes mixed with blood. This tar-like evacuation of sanguineous matter is found, after death, oozing from the mouths of vessels on the surface of the villous coat of the stomach and intestines, in the gall bladder, liver, and hepatic ducts.

Sometimes sooner, at others after a much longer period, the scene draws towards a close. There is dilated pupil,—Strabismus

continuance of singultus,—subsultus tendinum,—coma,—deliquium,—passive hæmorrhages from various channels;—from the nose—corners of the eyes—ears—gums—mouth,—sometimes from the lungs—more commonly from the stomach,—from ulcerated surfaces, and from accidental abrasions of the skin;—suppression of urine,—low muttering delirium,—total insensibility,—occasionally violent raving,—and incessant disposition to rise in bed. These are among the last symptoms of the disease, and they mark the near approach of death.

When an anatomical examination of those who have recently died of this disease takes place, much information is obtained of the state of particular organs; the altered structure of which, as observed after death, may usually be referred to morbid changes effected prior to the fatal event. Thus, the symptoms affecting the head in certain cases would lead us, à priori, to expect the appearance of disease in the brain, its vessels and membranes, which, upon inspection, are commonly found with strongly marked traces of inflammation.—There is greatly increased

vascularity and redness of the membranes—venous turgescence—rupture of the vessels of the choroid plexus—adhesions of the hemispheres and membranes to each other—deposition of coagulable lymph between the membranes—extravasated blood—and serous effusion within the ventricles.[7]

The pain and heat at the corbiculus cordis, nausea, vomiting, singultus, &c., also lead us to anticipate some derangement in the structure of the stomach, and adjacent viscera.

The appearances, however, are dissimilar, in some respects, from those which have been remarked within the cranium. Instead of the transparent layer of coagulated lymph, of which the writer has seen an entire sheet interposed between the cerebral membranes, a pellicle or film is formed by the effusion of lymph, in numerous places upon the surface of the villous coat;—which, at first, is light-coloured, but soon becomes dark, apparently from admixture with black blood.—It is easily detached, and is ejected with the contents of the stomach.—This adventitious membrane constitutes the flocculent

material already noticed at the 135th page. It leaves the villous coat, from which it may be separated by the finger-nail, sometimes natural in appearance, at others extremely florid from increased vascularity. Numerous dark-coloured spots are also interspersed upon the surface of the villous coat, which, upon close examination, present the mouths of vessels from whence issue black blood. The same appearances are seen in the duodenum,—and in greater or less quantity throughout the track of the intestines. These materials appear to be effused from the vessels which open upon the surface of the villous coat: pustules or small vesicles, containing a brownish-coloured serum, are sometimes observed in the same situation.

When there is great determination to the liver, indicated by pain and tension in the right hypochondrium, deep-coloured urine, obstinate costiveness, tar-like or sanguineous evacuations, nausea, vomiting of bile, and occasionally absorption of it into the blood, the liver is found very much diseased:—sometimes it is livid and overspread with dark-coloured spots, frequently of a deep

purple colour, throughout its structure:—greatly enlarged, and full of dark-coloured blood, or deep yellow bile. The gall-bladder and hepatic ducts are occasionally turgid with black viscid bile.

Hurried respiration, dry cough, and pain across the chest, indicate, when they have been severe, the inflammation, which upon examination is discovered to have attacked the lungs, and their investing membrane; as manifested by serous effusion, by adhesions to the pleura, and by the deposition of lymph. The lungs are sometimes gorged with black blood, and the surface full of dark-coloured spots; and similar congestions are found in the spleen. There is sometimes serous effusion into the abdominal cavity—the omentum is thickened, dark-coloured, and shrivelled.

These are the usual symptoms of the Inflammatory Endemic, and of its destructive inroads upon the healthy fabric of the body, supposing it to pursue an uninterrupted course in a case of great severity. The symptoms, nevertheless, are very irregular, both in regard to their general appearance,

their less or greater degrees of violence, precise order of succession, and duration.

The disease, in its more violent form, and when neglected at the attack, consists of two stages. In the first, there is increased excitement, resulting from an unusual stimulus applied in an excessive degree to a system peculiarly sensible to its impression: it produces a derangement in the functions of some or many viscera. If it goes on, the second stage appears, in which the structure of these viscera is altered to a degree incompatible with the living state.

The second stage is formed, in various and uncertain periods of time, from the beginning of the attack, and likewise from the first appearance of the subsidence of the inflammatory range of symptoms. One symptom gives way after another, in varying succession. The disease passes from high excitement to exhaustion.

Sometimes, indeed, the inflammatory stage is followed by the most fatal symptoms, which indicate debility, without any intermediate period of relief that can be observed: and this may possibly occur within a

few hours from the attack. The progress is determined, in relation to time, by the severity of the first symptoms, and the delay in their removal. Those of the first stage, induced by the direct agency of the exciting causes, produce those of the second stage; for the latter do not appear, if proper means are employed to subdue the first.[8]

Before the author takes leave of this division of the subject, it may be well to remark, that similar appearances occur in the opposite stages of the disease; but they will be found very dissimilar in their effects. For instance, at the attack, hæmorrhage from the nose shall occur;—a most fortunate event, either of itself removing the existing symptoms, or teaching the proper method of treatment by the certain relief it always affords. The same may be observed of spontaneous diarrhœa, and of an universal and copious perspiration. But nasal hæmorrhage, diarrhœa, and a profuse perspiratory discharge in the second stage of the disease, almost certainly indicate a fatal termination.

Great is the value of experience towards

the good management of this disease. A young medical officer unprepared by observation of the disease in its opposite stages,—if called upon for the first time to see it at the commencement, treated with complete success, so that the symptoms of the second stage should not present themselves to his view,—would scarcely recognize its relation to an example of the same affection, if only perceived in the last hours of a fatal attack; and not being aware of its rapid advance from inflammation to exhaustion, he might see a great number of cases in the different periods and degrees of their progress, before he would be able to distinguish them as varied aspects of the same disease.

Moreover, a similitude in many symptoms occurring in the course of Idiopathic Fever, and other febrile affections of a different character, might lead him to associate these fevers with the Inflammatory Endemic; to which, however, they only bear a casual resemblance.

This circumstance may sometimes account, not only for the opposite practice pursued

on certain occasions, but for the variety of success resulting from modes of treatment apparently similar.

The prognosis will chiefly be regulated by the consideration of the general increase of excitement, compared with the determination to particular organs, the healthy structure of which is essential to the living state; as the brain, the stomach, and the hepatic system. The morbid increase of excitement, and the symptoms of violent action thence arising, are never uniformly great throughout the body. This results from the partial action of the exciting causes of the disease, in consequence of their direct application to particular parts, together with the different degrees of power possessed by different organs, to sustain equal degrees of morbidly increased excitement and subsequent debility, without correspondent injury to their healthy structure, and the due performance of their functions.

The causes productive of the Inflammatory Endemic, and the phenomena resulting from their operation, have been detailed. The author proposes, in the next place, to advert

to them in a brief recapitulation, with the view to elucidate the rule of practice, which experience directs him to advise.

The mode in which the change of climate acts upon the constitutions of northern new comers to the West Indies, admits of explanation in the following manner.

First. The subject of attack possesses an Inflammatory Diathesis. This gives him a peculiar aptitude to the impression of such a change, which is entirely new, and suddenly effected. The system is thus often raised to the highest pitch of susceptibility, commensurate with health:—it is, indeed, brought to the verge of disease.

Secondly. The high atmospheric temperature of the new climate is permanent: the state of susceptibility induced by change, continues therefore, for a while, undiminished.

Hence, an inordinate exposure to solar radiation, or to the agency of any stimulus of more than ordinary power, raises the excitement of the system to a morbid degree.

There are, however, contingent circumstances, that occasionally obviate or modify

the effect of change. These are often sufficiently obvious, and act upon the principle of diminishing the susceptibility to impression, by reducing the inflammatory diathesis:—in this manner, security is derived from the means already considered prophylactic; and from the attack also of *any* disease which, of itself, or by the measures adopted for its cure, will bring down the constitutional diathesis, and the highly susceptible state of the system induced by sudden change. Familiarity with the climate presents another variety of producing more gradually the same effect; the stimulus from continued action slowly diminishing the susceptibility, so as to excite in time a less sensible impression.

After an assimilation or seasoning to the climate has been accomplished, the new comer is placed under the same circumstances as the native inhabitant; and, like him, not liable to the Inflammatory Endemic—until, by a return to cold latitudes, or by a residence in tropical elevations, which present a considerably reduced temperature, the state of constitution is brought back to

that degree of excitement, which formerly constituted predisposition.

When the action of climate, above expressed, has not been obviated, the early consequence of change, especially if followed by inordinate exposure, is commonly disease.

The high atmospheric heat occasions painful sensibility of the surface—the pores of the skin are constricted—there is an immediate suppression of the cutaneous exhalation—increase of heat, as ascertained by the thermometer—the action of the heart is greatly augmented, which still further increases the susceptibility of the surface by the determination of blood and consequent over-distention of the extreme vessels. These are therefore excited to more violent action; and the phenomena evince, that the entire vascular system is soon brought to participate.

It should however be remembered, that a high atmospheric temperature, in the degree adequate to occasion these effects, is generally applied in concurrence with other exciting causes:—as for example, muscular exertion,—mental emotion,—and more espe-

cially, intoxication, the agency of which is extremely great.

If, under this combination of circumstances, disease ensues, and is immediately opposed by efficient means,—if the action of the heart be diminished, and the heat of the surface brought down to the scale of health,—relaxation will take place. But should this be neglected, the circulation is further quickened—the sensibility still more augmented—and symptoms of inflammation arise in certain organs, which possess a structure unable to resist the increased afflux of blood.

After a period of violent and uncontrolled exertion, exhaustion succeeds. The increased action of the heart and heat of the surface subside—healthy secretion is not performed—the blood passes into the capillaries, without undergoing the necessary change in the secreting organs, forming congestions and effusions—with passive hæmorrhage from almost every outlet.

This state of exhaustion, proceeding from over-excitement, is rendered manifest by a survey of the changes which take place, du-

ring the rapid progress of the disease in certain organs, and the functions they perform.

Thus: 1. The external surface.—In the first stage, heat, dryness, redness; hot, dry, red tongue. In the second stage, the skin is cold, damp, discoloured, and sprinkled with petechiæ.

2. The brain, its membranes and vessels.—In the first stage, rending and pulsating pain in the head—inflammatory redness of the eyes—increased susceptibility to the impression of light—contracted pupil—vertigo—delirium—want of sleep—tinnitus aurium—violent beating of the carotids.

In the second stage, dilated pupil—strabismus—coma—syncope. On examination after death, turgescence of the vessels of the brain—adhesions of the hemispheres—effusion of lymph and serum into the ventricles.

3. The stomach.—In the first stage, nausea—vomiting of the ingesta—of serum copiously secreted—mucus—lymph—bile—intense heat and pain of the præcordia. These are continued into the second stage, with ejection of lymph, mixed with blood

and vitiated bile, &c. On examination after death, extravasation of blood on the villous surface—the morbid lymphatic secretion here and there lining the villous coat—filaments of the same secretion swimming in the fluid contents of the stomach.

4. The liver and gall-bladder. In the first stage, pain and tension of the hypochondria—increased secretion of bile—absorption of bile into the blood—vitiated secretion intermixed with blood. These are continued through the second stage. On examination after death, the liver is found enlarged, and distended with yellow or dark-coloured bile—or with a vitiated bile intermixed with blood—the membranes inflamed with partial adhesions. The colour of its parenchyma yellow, deep-brown, purple, mottled—its structure compact and hard—or soft and yielding. The gall-bladder contains more or less of the morbid secretion found in the liver, which very much resembles tar or treacle in its appearance.

5. The intestines. In the first stage, obstinate costiveness—in the second, evacuation of vitiated bile intermixed with blood—

sometimes blood alone, or blended with morbid secretions from the villous surface of the intestines. On examination after death, the villous surface presents appearances similar to those observed in the stomach—spots of extravasation,—with numerous black points, from whence issues the tar-like material, which, mixed with the morbid secretions from the liver, is evacuated by stool.

6. The lungs. In the first stage, laborious respiration—dry cough—inflamed fauces—pain in the chest.—On examination after death—congestion—adhesions, with serous effusion.

7. The bladder. In the first stage, small quantity of high-coloured urine; which, in the second, becomes deeper in colour, and is occasionally mixed with blood.

8. Blood and pulse. In the first stage, the pulse is full, frequent, and hard—the blood is florid—cupped, and the upper surface buffy. There is occasionally epistaxis. In the second, the pulse sinks, the blood loses its texture—and passively oozes from the nose, mouth, anus, &c.

The consideration of these stages of in-

creased action, and finally of exhaustion, determines the rationale of the treatment; as an attention to the producing causes, predisponent and exciting, afforded the ground of prevention.

If then, at the moment of attack, the stomach should be loaded with solid matter, or over-stimulated by strong drink, an emetic will remove the impression of this exciting cause.

Every other occasion of increasing the excitement, must be obviated; after which,—1. General bleeding. 2. Active purging. 3. The warm bath. 4. Cold ablution, and cool drink.—These must be employed to reduce morbid action, and prevent the debility resulting from over-exertion generally, and from over-distention of particular vessels, causing congestion; while, in the actual occurrence of determinations of blood to the head, stomach, or liver,—topical bleeding, blisters, &c., must be resorted to, with the view to remove congestions already formed, and allow the vessels to recover their tone.

If, however, exhaustion has supervened, the practitioner can administer but feeble

aid. Quietude, a cool temperature of the atmosphere, gentle laxatives, nourishment and sleep, present the only means of restoration.

Nor will the most assiduous application of cordials, stimulants, anodynes, or antispasmodics, as certain medicines are sometimes called, often reward the anxious hope of the practitioner, even when aided by the more efficient agency of blisters, injections, and opium, although it will be proper to give them judicious trial.

The writer will next propose, in more full detail, the treatment which he has found to be the most successfully applied to the Inflammatory Endemic, in its different stages.

The curative indication is founded upon the inflammatory character of the disease in the earliest period of the attack, and will therefore comprehend the means best calculated to subdue the general increase of excitement, and to prevent, or, if possible, remove the effects of determinations of blood, to particular organs. The treatment is, consequently, simple at the commencement of the

disease, and is fully announced by the symptoms of that stage. In the advanced period of a violent attack, the practical rule is difficult, and not easily defined. If, to violent determinations of blood, or a congestive state of important viscera, disorganization should have succeeded, art will seldom interpose with much avail. As the disease proceeds, whether rapidly, or more slowly, from the state of increased excitement to over-exertion and ultimately exhaustion, the only treatment that can save the patient at the outset, becomes subsequently of diminished value, until its employment is altogether inadmissible. The copious bleeding that would prove completely remedial at the first commencement of the attack, in the future progress of the disease would accelerate dissolution.

In this disease the supposed restorative powers of nature must never be waited for. It does not possess any salutary re-action—any adequate means of curing itself. So that the chance of recovery will be diminished in a ratio proportioned to the length of time which may be suffered to elapse without the employment of efficient aid.

But if assistance has been delayed (which

so often happens) until the commencement of the second stage, when exhaustion has succeeded to previous excessive action, every endeavour to restore the general vigour of the system thus overcome, must be employed. And should a determination to particular viscera derange their functions, and threaten their structure, every measure must be used to prevent so fatal a result.

Before the means of cure are considered, it may be observed generally, that every cause of irritation should be removed. These will be obvious to the practitioner, as they may be found to present themselves on the particular occasions; and their removal constitutes what has been denominated the antiphlogistic regimen which should be strictly enjoined.[9]

Should indeed the patient have been seized soon after a full meal; or, should he be attacked by the first symptoms of the disease while under the influence of strong drink; in this case, the immediate administration of an emetic is a measure of the utmost necessity.

The general mention of these circumstances being premised:—

The most effectual means of fulfilling the curative indication at the first attack is by a

copious bleeding from a large orifice. With respect to quantity, it can only be determined by the particular circumstances of the case; to which no general rule can otherwise be applied, than that we should bleed until the inordinate excitement is reduced, and the predominant symptoms removed. If deliquium comes on, so as to prevent the requisite quantity of blood being withdrawn at once, we must embrace the earliest moment to renew the operation: or if, from the severity of the symptoms, an apparently great, and yet insufficient, evacuation has not removed the principal pain, and reduced the fulness, force, and velocity of the circulation; it will be absolutely necessary to repeat the bleeding, making its obvious effect upon the symptoms of the disease the measure of our rule in regard to the quantity it may be proper to take away. A third bleeding will seldom be necessary, if the previous evacuations have been promptly made, and sufficiently copious to remove the more violent symptoms, which, if they sometimes give way to the sudden detraction of 16 to 20 ounces of blood, will more commonly require that from 20 to 50

ounces should be withdrawn at first, and repeated to the necessary extent in point of quantity, as often, and after such intervals, as the continuance of local pain and the general increase of excitement throughout the system may demand for their entire removal. This must be effected, or little permanent good will be done.

While a sufficient evacuation by bleeding is obtained, nothing will more effectually contribute to the relief of the patient, than the immediate employment of the tepid bath, if the skin be soft, with a moderate degree of heat and apparent tendency to relaxation. But should the heat of the surface be high, with great constriction, dryness, and general tension—it is preferable to resort to the immediate application of a reduced temperature, so conducted, by ablution or immersion in cold water, as to abstract the excess of caloric and diminish the morbidly increased excitement: and to this effect, the admission of a current of cool air, through the patient's chamber, and the exhibition of cold drink, will essentially contribute.—Beside this general application of cold, we should enjoin its

assiduous employment, by sponging the surface with cold water, to diminish the inordinate heat which is continually accumulating in parts to which there occur topical determinations,—to the head—præcordia—hands and feet;—while, in addition to cool air and a refrigerant beverage, we must occasionally advise injections of cold sea-water.

Having without loss of time resorted to bleeding, a purgative of active power should be administered while the patient remains in the warm bath; as, for example, ten grains of the submuriate of mercury, with 15 or 20 of jalap, or the compound extract of colocynth; to be followed, unless a full effect is produced in two hours, by a solution of an ounce of the sulphate of magnesia, or other purging salt. Copious stools should thus be procured; and that this may be effected within as short a period as possible, an injection must be thrown up in aid of the medicine:—plentiful evacuations will generally follow the adoption of these means, succeeded by a general relaxation of the skin, and great relief.

A full evacuation of the contents of the bowels once obtained, the continuance of a

purgative exhibition must be determined by existing circumstances. Congestions in the brain and liver, are the frequent cause of fatal mischief; and it has been found decidedly beneficial, in almost every instance, to keep up a brisk catharsis, until the symptoms have manifestly abated. This is marked by the reduction of vascular action, and that restoration of secretion which accompanies universal relaxation. The object in this case is best effected by moderate doses of the submuriate of mercury combined with jalap; or by an adequate dose (from four to six drachms) of a purging salt, repeated agreeably to the circumstances of the case.

Cooled water, fruit, the saline mixture, imperial or soda water, may be liberally allowed, to diminish thirst. In a disease which runs its course so rapidly, it is almost superfluous to notice that the diet, if any nourishment can be required in the first stage of the attack, should be rigidly antiphlogistic.

Upon the prompt and decisive employment of bleeding, purging, the warm bath, a reduced temperature, whenever the morbid heat returns—a refrigerant beverage, and the

removal of every source of irritation that is practicable,—the writer always grounds his confident expectation of a successful result, provided the patient is brought under treatment at an early period of the attack. Nevertheless, a considerable difference will be found to obtain in a diversity of cases, from the particular suffering of certain organs, the more immediate relief of which will demand peculiar attention.

Thus, should there be great afflux of blood to the brain, notwithstanding the full employment of the general means above advised, recourse must be had to topical bleeding; the head should be shaved, and cloths wetted with cold water applied: a blister should be placed between the shoulders, and sometimes the symptoms arising from this cerebral affection have been much relieved by the gentle affusion of cold water over the head and shoulders, or by the application to the head of a large bladder two-thirds filled with cold water, while the inferior extremities as high as the knees are immersed in the tepid bath.

If, with this greater degree of morbid affection of the head, the stomach remains

undisturbed, the purgative plan must be continued :—the submuriate of mercury may be given alone, or combined with antimonial powder, two grains of each, (for example) in a pill, to be repeated every three hours; so as to maintain the open state of the bowels, and diminish vascular action.

This state of affection of the head, while the stomach remains tranquil, presents the only view of the case, in which antimony can be safely resorted to; and the author has often found it particularly serviceable. When irritability of the stomach is present, which is sometimes the case from the first, the employment of an antimonial preparation is particularly inadmissible.

Whenever nausea arises, it is indeed scarcely allowable to run the risk of disturbing the stomach, by the introduction of any thing, until the morbid sensibility has subsided, either spontaneously, or through the general means of treatment,—or by cupping on the epigastric region, and by the subsequent application of a blister to the same part. With the view to preserve

the bowels open, which is of the very first importance in the case of great affection of the stomach, small doses of the submuriate of mercury must be continued at stated intervals, combined with ginger or capsicum; and, as an auxiliary, a common injection should occasionally be given.

However fortunate the practitioner may have been in giving a complete check to the progress of the disease, still a greater or less degree of debility will supervene.

The debility thus induced, whether by over-exertion of the system during the previous disease, or by the operation of the remedies employed for its removal, is seldom of much importance. Nevertheless, the attention of the practitioner continues to be required through the period of convalescency; during which, the observance of a rigid rule of temperance must be enjoined, both as it respects diet and exercise. The bowels should be kept open: a simple infusion of quassia, camomile, cascarilla, calumba, or gentian, will be also serviceable; the cold bath may be tried, with a view to

its strengthening power; and when practicable, in more unusual cases of protracted recovery, change of air and climate will be required for the re-establishment of health.

The management here recommended, in the case of convalescence after the successful application of such means as have prevented the accession of the second stage, by the reduction of inordinate excitement during the first; will equally apply, if the patient be so fortunate as to surmount the symptoms of exhaustion which constitute the second stage—and which follow as the inevitable consequence of a severe attack, if unsubdued at the commencement:—only in the latter case, the debility may be very great, and convalescency proportionably tedious; while in the former, recovery is generally rapid and complete.

Should it happen, as the author is much concerned to say, it often does, that the practitioner is not consulted early in the disease, while in full possession of the power of employing to advantage the means in his

hands,—not perhaps until the appearance of the symptoms which denote the commencement of the second stage,—a very different view presents itself to his consideration.

The vital system is now exhausted from over-exertion;—important organs have suffered in their structure, and the functions are materially deranged:—unless the natural restoratives of nourishment and sleep can be brought to the patient's aid, our most sanguine hope is but a shadow. Nevertheless, every endeavour must be directed to restore the powers of life. It will be necessary to guard against the excitement of those actions of the system, which may tend to exhaust the remaining strength. Accumulations in the bowels must be carried off by small doses of the submuriate of mercury, in combination with capsicum, or some other aromatic, and aided by injections as occasion requires. We must also enjoin perfect quietude—a cool room—moderate light—and refrigerant beverage to allay thirst.

If the stomach continues retentive, and

there is no violent degree of cerebral affection, nor of hepatic derangement; if the general symptoms of exhaustion constitute the disease at this period, unattended by violent topical affection; the chief object of attention is the restoration of strength, by appropriate nourishment and rest.—Broth, panada, sago, arrow-root, and milk, should be given in small quantities, and pretty frequently repeated; and varied conformably with the patient's desire.—A small quantity of wine may be mixed with the nourishment, or even a moderate allowance of porter, if likely to be relished, as called for by the patient.—And under these circumstances, an opiate may be given to procure sleep; the quantity and repetition of which must depend upon existing circumstances.

If the stomach should particularly suffer,—the only means of restoration,—appropriate nutriment—is consequently inadmissible. All that can be attempted, is to endeavour to lessen the irritability productive of incessant vomiting: but this, as it is too often accompanied by a morbid change in struc-

ture as well as function, in the advanced stages of an unsubdued attack, must generally be considered a forlorn hope. When, instead of the stomach, or along with it, the head, or liver, has been the part to suffer by a violent determination; there exists as little prospect of advantage from the efforts of art. Depositions of lymph—serous effusions—and hæmorrhagies—are the ultimate results of such previous inordinate action as sets all the power of medicine at nought.

Nevertheless, before matters have arrived at the worst, a favourable change has sometimes taken place:—the vomiting has been restrained by promoting the action of the bowels. Therefore aperients are here suggested, notwithstanding the general debility which prevails. The best purgative, in this emergency, will still be found the submuriate of mercury in small doses, aided by a common injection if occasion requires. A blister should be again applied to the scrobiculus cordis.

Mustard and other cataplasms, ardent

spirits, &c., applied to the præcordia, are worth the trial, although of doubtful effect. The class of antispasmodics have, in the writer's experience, been the occasion of frequent disappointment. He believes, however, that Dr. M'Arthur derived great benefit from the use of the carbonate of ammonia; and Dr. Wright found that "when the black vomit had even taken place, the capsicum has snatched the patient from the most imminent danger."

The vomiting has also been reported to have been checked by æther—brandy—cold brandy and water—milk—porter—punch—spruce beer—saline draughts in the effervescing state—small doses of the carbonate of magnesia in peppermint-water—hock—claret—camphor—bitters—carbonate of soda—soda water—with some other exhibitions, upon which the writer fears no steady reliance can be placed.

If disorganization has already succeeded derangement of function, the case is hopeless: before that event takes place, he has much more frequently known the vomiting

to stop spontaneously, than by virtue of the most pressing solicitations. It may therefore be judged the most expedient, not to harass the patient by too many unavailing efforts; but rather to interdict any further interference of doubtful effect; and only endeavour to remove every cause of irritation that is within the power of control.

If opium, in small doses, combined with calomel and an aromatic, can be retained, it promises the best effect; more especially when it induces sleep.

Whatever other means are resorted to, with a view to check the vomiting,—they can do no other service, than by enabling the stomach to receive and retain proper nourishment.

Whenever this, their wonted effect, is produced, they should gradually be withdrawn; and a moderate quantity of food of easy digestion, gentle exercise, the cold bath, tonics, with change of air, and even climate, should supersede their further use.

When recovery takes place in consequence of the early employment of decisive

measures, the period of convalescence soon terminates in health, with future exemption (under certain limitations) from an attack of the same disease. But when a patient has rallied after the formation of the second stage, the progress towards recovery has been generally both tedious and uncertain.

NOTES

AND

ILLUSTRATIONS.

[1] This chilliness is not analogous to the morbid impression, which is attended by a decided cold stage in the Marsh Fever. In the Inflammatory Endemic, the feeling of chilliness arises from the casual application of a cool atmosphere to the surface of the body, when the standard heat of health is morbidly increased. The cold stage of the Marsh Fever takes place, whatever may be the heat of the body or of the surrounding atmosphere. It appears under every circumstance which is calculated to maintain the standard heat of health, and to guard against the application of external cold: for it occurs at the stated period of the recurrence of the febrile paroxysm, although the patient should have been previously placed in bed surrounded by an at-

mosphere of 90° Fahr., while the animal heat is attempted to be preserved by warm covering, by tepid diluents, and cordial medicine.

[2] "A bleeding from the nose, or from an artery, in the beginning of the Fever, has sometimes saved the patient's life."—*Lind.*

"Moderate bleeding, and a free use of gentle acid antiphlogistics, and sometimes some other evacuations, and encouraging a free diaphoresis, generally takes this (the Yellow) Fever off; but a great languor often continues for some time after it. This lax state of the fibres has its advantages, as well as its disadvantages; for if the fibres were not thus relaxed, but were to continue in that elastic active state, which they are usually in, in colder countries, every extraordinary motion and exercise, accompanied with the great heat, would bring on a fever of the inflammatory kind."—*Hillary on Yellow Fever.*

[3] Determinations of blood to particular organs, should not appear to take place, simply, by the increased action of the heart;—as, on any increase of action, the force of the heart and the velocity of the blood consequent upon it must be, in proportion, *equally* distributed to *all* organs:—particular organs may, however, be *less able* to bear the new force and quantity of blood, and disease may be thus established in some, while others remain unaffected, although the determination has been equally great to *them*. Again, independantly of their relative weakness, the augmented *sensi-*

bility of certain organs produced by the application of topical stimulants, which do not, however, affect the general circulation, may occasion determinations of blood, as is exemplified in the case of slight ophthalmia induced by certain irritants applied to the external organ.

[4] Dr. Bancroft remarks, "I have never seen a yellow suffusion but where there had been some vomiting previously."——"As the suffusion results from the compression of the liver, by the violent contractions of the abdominal muscles and diaphragm in the efforts to vomit, during which compression a portion of the bile is forced out of that viscus into the vena cava, (as water is forced out of a wet sponge when squeezed,) the shade of the suffusion will depend on the quantity of bile that has been driven into the circulation, and this on the degree of compression which the liver has undergone, which may vary in patients almost *ad infinitum*."

The writer must, however, remark, that vomiting does not always precede, nor does it always occur when the bilious suffusion takes place. He has repeatedly seen the yellow suffusion when there has been obstinate constipation without vomiting. Sometimes a bilious vomiting and purging occur without the appearance of yellow suffusion.

[5] "It is proper to caution young practitioners against a mistake very common with regard to the Yellow, or

ardent Fever; that is, of taking the fatal stage, which follows the cessation of ardent heat and great excitement, and which accompanies a sphacelus of the viscera, for a salutary crisis of the disease."

Gillespie, Diseases of Seamen.

Hillary remarks, "When the pulse has begun to sink, and the fatal period seemed to be just approaching, to the great surprise of all present, the patient has recovered his senses, sat up, and talked pretty cheerfully for an hour or two, and in the midst of this seeming security, has been suddenly seized with strong convulsions, and died immediately."

[6] The suffusion of bile coming on during the inflammatory stage of a mild attack is, I little doubt, that which Towne observed as "the regular crisis discovering itself by a suffusion of bile, all over the surface of the body, about the third day."

Hillary, I apprehend, spoke only of the discoloration of the skin in the last stage, (however soon or late it appeared,) when he remarks: "this total yellowness is so far from being an encouraging prognostic, that it most commonly, on the contrary, proves a mortal symptom." The jaundiced appearance which arises from the presence of bile, is an uncertain symptom; because it is very uncertain whether or not the hepatic organs may be, in any given case, so particularly affected by the disease as to occasion this yellowness of

the skin, of the membranes, effused fluids, urine, &c.: and with respect to the discoloration which accompanies the black vomit and precedes death; it is likewise so far irregular, that its appearance depends upon the previous treatment and the peculiar severity of the original attack. "By the practice of depletion at an early period, (Mr. Thomas observes,) the yellowness of the skin, black vomit, and other symptoms characterizing the more advanced stage, might in the majority of cases be prevented."

Vide *Lond. Med. Repository, for Sept.* 1817.

[7] In cases in which the chief mischief has been done to the thoracic or abdominal viscera, the brain is often found less visibly deranged in structure. The organic derangements being occasioned by determinations of blood, and these being very various in their seat as well as in their degree of force, will, consequently, produce a correspondent diversity, not only in the degree of suffering by pain in those parts which are the most affected during life, but also a marked difference in the change effected in their structure, as manifested upon examination after death.

[8] With the evidence before us, derived from an attentive consideration of the subjects almost

exclusively susceptible of an attack—of the causes predisponent and exciting—of the measures experienced to be prophylactic—of the symptoms during the first stage, and the appearances after death; the propriety of bleeding to the extent of relieving symptoms upon the first accession of the disease, can scarcely admit of question: nor can it be doubted for a moment that if the same means are used in the second stage, when exhaustion of the vis vitæ has succeeded to previous excitement, the destruction of the patient must be the inevitable result. Every thing depends upon the well timing, and upon the decisive application of the most appropriate means: not according to the number of hours or days the patient may have been under the disease; but conformably with the degree of morbid state when remedies are to be first employed.

Hillary saw that bleeding was "absolutely ne-"cessary" in the beginning of the first stage, although his theory of a putrescent diathesis imposed upon him a considerable degree of unnecessary caution. He always found purging of "singular service."—"But," he continues, "as "soon as ever the physician perceives that the "pulse begins to abate and sink lower, he must "immediately begin to give the antiseptic and "warmer medicines, to support the vis vitæ."

[9] The conduct of this regimen is to be directed by the following rules and considerations:—

1. Impressions on the external senses, as being stimulant to the system, and a chief support of its activity, should be avoided as much as possible; those especially of more constant application, those of a stronger kind, and those which give pain and uneasiness.

No impression is to be more carefully guarded against than that of external heat; while, at the same time, every other means of increasing the heat of the body is to be shunned.

2. All motion of the body is to be avoided, especially that which requires the exercise of its own muscles; and that posture of the body is to be chosen which employs the fewest muscles, and which keeps none of them long in a state of contraction. Speaking, as it accelerates respiration, is particularly to be refrained from.

3. The exercise of the mind also is a stimulus to the body; so that all impressions which lead to thought, and those especially which may excite emotion or passion, are to be carefully shunned.

4. The presence of recent aliment in the stomach always proves a stimulus to the system, and ought therefore to be as moderate as possible. A total abstinence for some time may be of service: all aromatic and spirituous liquors are to be avoided.—*See Cullen's First Lines, &c.*

The following Abstracts are submitted to the reader as not being, *of themselves*, sufficiently important to merit attention; but as chiefly illustrative of similar facts interwoven with the preceding observations.

It is assumed that No. I. offers an example of the Inflammatory Endemic, or the Yellow Fever of new comers to the West Indies, from temperate climates.

No. II. is adduced with a view to exemplify the correctness of that distinction which I have previously attempted to establish between the Inflammatory Endemic and the Marsh Fever; by showing an example of the Marsh Fever in its seizure of certain persons, who, from the long period of their residence within the tropics, had become so far inured to the climate as to be no longer susceptible of the Inflammatory Endemic.

It manifests, at the same time, that the marsh effluvium, where it is abundantly extricated, is scarcely to be respired for any considerable length of time, without evincing its deleterious power; even although it be fully admitted that its peculiar *febrific* operation is sometimes diminished by the influence of a constant residence in the vicinity of swampy soils.

No. III. presents an instance of topical affection somewhat anomalous in character; and accompanied by much febrile derangement: yet it does not arise from heat or other causes of inordinate excitement, nor from marsh effluvium or human contagion; but from the partial application of cold to the heated and perspiring surface of the body.

APPENDIX I.

ABSTRACT OF A REPORT ON THE "YELLOW FEVER," AS IT APPEARED IN HIS MAJESTY'S 1st BATTALION ROYAL, AT PHILIPSBURG SAINT MARTIN'S, BETWEEN JULY AND OCTOBER, 1801.

WHEN I had the honour to join the 1st Royal, as Surgeon, in the beginning of July 1801, the general state of health was flattering to a regiment but a short time in the West Indies, and composed of young, plethoric Europeans, to whose highly excitable constitutions and irregular habits, the intemperate climate of the torrid zone has almost invariably proved unfavourable at their first arrival.

The Battalion left England in the winter season; and, from the period of their arrival within the tropics, had been engaged on active service. This, while it gave them that regular employ-

ment, both of mind and body, preventive of violent desultory exertions, precluded the leisure and likewise the means of intemperance. Had they upon going into quarters been subjected to the plan of prophylaxis conceived to be efficient, I can scarcely doubt that they would have, in a great measure, escaped the ordeal through which they eventually passed.

This favourable state of health continued to prevail until the middle of July. Some cases of febrile excitement, from certain irregularities of conduct at the stated settlement of accounts; a few dysenteric affections, from imprudent exposures; and a somewhat larger proportion of ulcerated legs and siphilitic cases, composed the catalogue of diseases.

From a longer period than usual of dry and sultry weather, the season had now become particularly unpleasant, even to the Natives, and others accustomed to the climate: and in consequence of this, few who were otherwise healthy escaped *the prickly heat*, often excited to a most tormenting degree.

From the above-mentioned period, considerable numbers were daily, and in general very suddenly, attacked in every situation. The island has been always esteemed remarkably healthful. Fever was unknown until the arrival of European troops, except as occasionally occurring to

a new comer, or as happening in particular seasons under a remittent or intermitting form, in marshy districts remote from Philipsburg.

The native inhabitants, the Creoles from other islands, the black men who composed a detachment of the 4th West-India Regiment, and such Europeans as were accustomed to the climate, or new comers who had already sustained an attack of disease, preserved their usual health during the whole time in which the Royal suffered so severely. But new comers from temperate latitudes, not belonging to the Garrison, were equally attacked with the Royal;—among whom, if there occurred instances of entire exemption, it was in consequence of a prudential conduct, which I regret to say was generally but little observed. Indeed, scarcely any case of great severity occurred not directly referrible to some material transgression of temperance.

The symptoms of the disease here adverted to, have already been selected, by a careful revision of a daily journal, in addition to such materials as were previously collected on other similar occasions, to form the general description of the Inflammatory Endemic in the preceding pages; and therefore I shall only notice a few less frequent in their occurrence, or which were considered to be characteristic of a particularly severe affection.

These were—violent pain over the orbits—inflammatory appearance of the eyes—contraction of the pupil at the commencement—dilatation towards the decline of unfavourable cases.

Sometimes the first symptoms were marked by lowness of spirits expressive of deep despair—lassitude—loss of muscular power—vertigo—sighing—singultus—violent cramp in the legs—flushed countenance—hurried respiration—white and dry tongue—intense heat at the scrobiculus cordis—a sense of weight with obtuse pain in the same region extended over the thorax. The pulse at the beginning was frequent, full, and hard;—but if the disease proceeded without control, it became soon diminished in force,—although increased in frequency; and as the symptoms of the second stage advanced, it rapidly sunk in correspondence with the general failure of vital power.

The pulsation of the temporal branches of the carotids was peculiarly distressful—accompanied by great intolerance of light and sound—total want of sleep—restlessness—violent delirium.

In the decline of the disease, when its termination was fatal, the heat of the surface subsided rapidly, and was followed by cold perspiration, fainting, symptoms of paralysis, suppression of urine, muttering, coma; or, the

opposite state of cerebral excitement, with raving and continual efforts to get out of bed. But on other occasions of equal fatality, the head was scarcely affected throughout the disease. These varied appearances occurred in states which were otherwise analogous.

Vomiting was an uncertain symptom, and of different import, not only in different cases, but as it occurred in the different stages of the same attack. Sometimes a bilious vomiting gave great relief; especially if it came on early, and was accompanied by an open state of the bowels.

In such cases, nothing more was required than to encourage the action of the bowels. The stomach usually became tranquil when the offending cause was removed, and the cerebral excitement was commonly mild.

Costiveness was a more general symptom of the attack, and was frequently difficult to overcome without the exhibition of powerful purgatives and the tepid bath. When the greatest degree of torpor was observable in the action of the bowels, the affection of the stomach was proportionally severe.

Diarrhœa ensued in the decline of fatal cases, accompanied with passive hæmorrhagies from the anus, nose, mouth, &c.; and with the other symptoms, some of which have been already

noticed as characteristic of the loss of vital power.

Several survived, after great suffering from violent and long-continued vomiting; and some cases were fatal, in which there was scarcely any disturbance of the stomach during the disease. It was almost constantly observed, that the head was much more alarmingly affected in these latter examples, than when the stomach was more especially the seat of disorder.

A sense of coldness was occasionally complained of at the beginning; but it never amounted to shivering, or continued for any length of time. The surface very soon became extremely hot, and continued so, until the accession of the second stage.

The appearance of the skin was very different in different cases. Sometimes it preserved its natural hue; and yellowness, when occasioned by the presence of bile, did not, of itself, indicate danger, but on the contrary it often preceded a favourable issue.

A livid cast, appearing in patches of unequal size spread here and there over a yellow or brownish ground, and sprinkled with petechiæ, was a dangerous symptom, especially when followed by hæmorrhagy, and by the vomiting of grumous blood, black membranous-like flocculi, a deep brown fluid, or these combined.

In some favourable cases, large boils covered, in tedious succession, many parts of the body, occasioning great distress.

Large collections of pus, in deep-seated abscesses on the arms and thighs, occurred in three cases, two of which recovered.

Hæmorrhage from the nose, at the attack, was sometimes the concomitant of general relief, and rapid recovery followed. And although effusions of blood, at the decline, bespoke much danger, yet there were instances of recovery in which they occurred.

If the first symptoms of inordinate excitement were severe, and had been immediately preceded by intoxication, or by an imprudent exposure to the sun, the consequent exhaustion was rapid, and beyond the power of repair. In such cases, there was great disposition in wounds and ulcers of the extremities to fall into gangrene.

A patient was received into the hospital from an out-post, on the second day of an attack, agreeably to his own report. The symptoms of excitement were on the decline. There was considerable exhaustion, but no very alarming affection either of the head or stomach. My attention, however, was directed to a mortification of the penis, which had commenced from a chancre on the prepuce near the glans. This mortification was said to have come on very sud-

denly, within a few hours. The bowels were freely opened—the strength was supported by nourishment, cordials, and tonics—moderately stimulating applications were applied to the topical affection; and the patient recovered in a reasonable time, without having sustained much loss of substance.

A man who had been punished for excessive drunkenness, but who was now nearly well, had a violent febrile seizure immediately after his exposure to the noon-day heat, while under the actual paroxysm of intoxication: the remaining sore place upon the back, not larger than a shilling, became the centre of a gangrenous slough which occupied the entire extent of the original sore inflicted by the punishment. His recovery was tedious.

The topical affection in both these cases was doubtless inflammatory at the commencement, and would, I conceive, have stopped short of mortification, if depletory measures had been resorted to in due time: this time, however, had elapsed, and supervening exhaustion demanded the support of the powers of life.

The Regimental Hospital contained one hundred and forty patients. It consisted of three divisions, and was conducted upon this general plan.

First. Every man reported with fever, was immediately visited, and ordered into the first division of the hospital, which contained, in large and well-ventilated apartments, sixty patients, very commodiously.

Secondly. In the early stage of convalescence the patients were removed from the first hospital to the Convalescent division, No. 1, about a mile distant, which accommodated, very comfortably, forty men with their attendants.

Thirdly. In the more advanced stage towards recovery, the patients were again moved; and from the Convalescent division, No. 1, were transferred to another hospital, established at Fort Amsterdam, a healthful position, upon an elevated site, about two miles from Philipsburg: and in this third division of the hospital, which also contained forty beds, the convalescents remained until their recovery was insured, and this was generally rapid and permanent.

It soon, however, became impossible to receive every case into the hospital: nor was it always necessary. Inspections of the men were frequent; and when the first appearance of symptoms was detected, the application of decisive measures arrested the progress of incipient disease. Therefore, the severer and more advanced cases were selected from the general number at each visit, and forwarded to the hospital; while

those of less moment were attended in their barracks, which were spacious, airy, clean, and comfortable.

The safety of the patient was chiefly insured by prompt attention. At the first appearance of the disease in the Royal, the inspections being less frequent than they afterwards became, many neglected to report themselves until the disease had made alarming advancement. This happened more commonly to married men, allowed to live out of barracks; and to those also who had sustained attacks after great intemperance, or an imprudent exposure to the sun.

By the early employment of decisive measures, the full formation of the disease was often prevented. This was effected by copious bleeding, carried to the complete removal of existing symptoms. If the seizure was slight, and the case reported at the period of attack, an adequate dose of the submuriate of mercury combined with jalap—perhaps followed by a solution of purging salts—together with the cold ablution—perfect quietude, and a diet strictly antiphlogistic—were then fully sufficient to arrest the mischief.

The appearances of a high degree of excitement, although frequently violent, were yet, in certain cases of imprudent delay, more equivocal and of shorter duration than I had usually

witnessed on former occurrences. The excessively sultry weather, and the pernicious habits of intemperance, seemed to have the effect of hurrying the disease in many instances, at once from inordinate excitement to irreparable exhaustion.

Hence the measures of depletion which, if employed at the commencement of the attack, would have extinguished the disease, could not be resorted to on these occasions; and all that remained for the power of art to accomplish, was to mitigate symptoms, to support the strength, and to tranquillize the stomach.

Soon after this disease had disappeared in Philipsburg, the rainy weather, which set in about November, was succeeded by attacks of Remittent Fever at a post which had escaped our late visitation, probably from its comparatively cool situation: but as the autumn advanced, it began to be generally unhealthful to all classes, from the exhalations derived from a soil rendered occasionally swampy after heavy falls of rain following a long period of drought.

N. D.

APPENDIX II.

ABSTRACT OF A REPORT ON MARSH FEVER, AS IT OCCURRED IN A DETACHMENT OF THE 90th REGIMENT, AT CARIACOU, IN NOVEMBER, 1812.

Grenada, Dec. 2, 1812.

On the 23rd November 1812, I embarked to visit a detachment, consisting of a Sergeant, a Corporal, and twelve privates of the left wing of the 90th Regiment, quartered in the Island of Cariacou.

This island,—one of the Grenadines,—is considered a healthy residence, except in marshy situations; one of the worst of which has been unfortunately chosen for the settlement of the Town of Hillsbro, near the Western coast. It is almost directly in front of a swamp which extends on each side of the town about half a mile towards the N. E. and S. W.

Behind the town, corresponding nearly with the centre of this marsh, is an eminence about 200 feet above the level of the sea. Upon this elevation has been constructed a small octagon, in which was lodged the detachment of the 90th, the object of my visit. But as the entire party, together with a woman and two children, were soon taken ill with Fever, they had been removed to Hillsbro, prior to my arrival.

None of them having escaped an attack; three being already dead, a fourth dying, and the remainder now suffering under the paroxysms of Fever in the different stages of its progress; I considered it my duty to bring back to Grenada three cases of the greatest danger, and to recommend the immediate return of the others, as the most probable means of insuring their safety.

This indeed they earnestly implored; and the hope of relief excited by an acquiescence with the desire of removal from the source of their present suffering, will contribute, I have no doubt, to the efficacy, which long and frequently repeated experience has taught me to result from this measure; which has been already effected, and they are now accommodated in the Hospital of this Garrison.

I purpose to transcribe from my Notes such a brief account of these cases, as may illustrate the general character of the Disease, and also

afford some testimony of the value of an early removal from the influence of marsh effluvium. But this intention must, necessarily, be postponed until the result can be finally known.

This example of Fever having occurred to so small a number, may not appear, at first sight, of sufficient importance to merit particular attention. Nevertheless, the entire detachment were alike sufferers, several of them greatly so, and four of them had already fallen a sacrifice out of fourteen. Besides the example is clearly in proof that, when the source of Paludal Fever is sufficiently approached, even by persons long accustomed to the climate, the particular disease only is found to arise in the system, which is characteristic of the effects of marsh exhalation—namely Intermittent or Remittent Fever; and from these circumstances, therefore, perhaps the statement of the present occurrence may be considered to possess sufficient interest to deserve recital.

The men of the 90th were in good health on their arrival at Cariacou; and had been generally so, since they came to the West Indies; to the climate of which they were now well seasoned. It affords peculiar satisfaction to the Medical inquirer to be able to ascertain, as upon the present occasion, that a minute investigation

evinced these poor fellows to have been most exemplary in their moral conduct.

The majority of them had resided in the West Indies from four to eight years; and were, generally speaking, rather the subjects of debility than of morbid excitement. It was about three weeks after their arrival in Cariacou, that they were attacked by fever.

Pain in the head—vertigo—nausea—languor—lassitude—loss of appetite, with a general sense of weakness, preceded the formal paroxysm; which commenced with chills, followed by a severe cold shivering, small and quick pulse, and great thirst. After two or three hours the skin became intensely hot: severe head-ach occurred—sometimes delirium—pains in the trunk and extremities—great anxiety—hurried respiration—costiveness and bilious vomiting;—the tongue became white and dry — the mouth parched and hot, and there was pain in the right hypochondrium. The paroxysm generally subsided in four or five hours, without any perceptible increase of perspiration, or other critical appearance; in all cases leaving the patient extremely debilitated,and much depressed in spirits.

Similar paroxysms, possessing little variety in their phenomena, returned daily about noon; sometimes an hour or two sooner, at others later, than the preceding day. In some cases the pa-

roxysms continued to recur for several weeks. Some were seized much later than others; but having made its attack, the fever kept possession until the removal from Cariacou: nor did it appear to suffer any mitigation by the change from the Octagon to Town.

After their return to Grenada, only two of the party experienced a severe recurrence of the febrile paroxysm; but they were all extremely weak, with an aspect remarkably pale, inclining towards a yellow tint of skin. The lips and gums were colourless; the eyes dull and pearly, or yellowish; the hands and feet cold, with a frequent and small pulse, no appetite, costive bowels, and general debility.

So long as they continued at Cariacou, the medicines employed did not appear to make the impression upon the disease which was requisite for its cure; and as a considerable check was given to it by the removal to Grenada from the source of the mischief, little opportunity was presented for the trial of remedies; except as they were directed to the recovery of strength, and to the regulation of functions disturbed by the previous disease.

Gentle aperients — occasional mercurials — change of air—tonics—nourishment—and a moderate allowance of wine—were the means which in general produced the desired effect. Never-

theless, the recoveries were tedious; and one man fell a victim to ascitès, from visceral derangement.

On examination after death, the liver was enlarged considerably, of great weight, deep purple colour throughout, and of an equal, compact texture. These cases, which are only recurred to here in a general manner, were particularly detailed in the original Report addressed to the Chief of the Medical Department.

The three men whom I embarked and brought with me to Grenada, on my return from Cariacou were in a very doubtful state; they had not escaped a daily attack of fever for several weeks, and were much reduced. They yet (1st January) continue in a condition of great debility, and two of them are affected by visceral disease: but though these were the most hopeless, they have scarcely sustained any recurrence of a formal paroxysm since their return.

The most striking peculiarity in the phenomena of the paroxysm of this Fever, was the severity of the cold stage; upon which no impression appeared to be made, by the use of warm cordials and an atmospheric temperature which was 90° and upwards in the shade. For under these circumstances, the sense of cold and shivering sometimes continued several hours. It at last was succeeded by a short period of intense

heat; but the paroxysm usually terminated without perspiration.

I think the universality of the seizure deserves attention. Every one belonging to the Detachment was attacked, sooner or later, when brought within the sphere of the febrile miasm. The subjects of the attack were completely inured to the climate, and until now were strangers to the Fevers of the country in any form. They are at present so peculiarly marked in the countenance by the impression of the disease, that they would be instantly noticed by the most superficial observer; although intermixed with any number of men, labouring under or recovering from other morbid affections.

It also deserves remark, that a non-commissioned Officer who went to Cariacou to arrange the Detachment's accounts—a young man also, long inured to the climate—in ten days after his return to Grenada experienced a first attack; which was successfully combated, by an emetic given before the expected return of the ensuing paroxysm, by warm cordials when a slight degree of cold shivering came on, the cold affusion as soon as the hot stage was formed—with liberal doses of the cinchona, in the intermissions; the bowels being at the same time regulated by mild aperients, and the strength sup-

ported by appropriate nourishment, with moderate exercise, and lastly change of air.

A Gentleman who visited Cariacou when the men of the 90th were quartered in that island, and a young man of colour from Grenada, had similar attacks of Fever in eight or ten days after their return. The disease was easily recognized; it assumed a form which changed from the quotidian to a tertian type; and was more tedious and difficult to remove, than usually happens with those who are so fortunate as to retire from the source of the disease.

From the natural character of this marshy situation, I should suppose the effluvium which arises from it to be, at all times, in a fit condition to exert its peculiar influence. It does not require the arrival of any particular season to give it activity, although it is more so than usual after much evaporation has taken place subsequently to heavy rains. These set in about June, and continue gradually declining until October or November. During the early period of this season, when the soil is in great part under water, the inhabitants do not experience so much of febrile attacks. From August to December the fever more particularly prevails. But as the ground never loses entirely the quality of a marsh, by the process of evaporation or absorp-

tion, to complete dryness of the soil; so the less or greater degree of prevalency of the Endemic Fever continues, until at the return of June or July it is again somewhat diminished in force by the partial overflowing from periodical rains.

It is worthy of observation, that all classes of subjects are liable to the Marsh Fever, whether European strangers, or old settlers,—natives—white, colored, or black,—Africans—men, women, and children; and so nearly in the same proportion, when they have been equally exposed to the influence of the effluvium, as to make it scarcely worth while, at present, to search for any preference it might, on more minute inquiry, be found to evince. Those of a weak constitution, howsoever induced, whether by too spare or too luxurious a diet—by too much or too little exercise—by excessive temperature, or excessive anxiety of mind, are certainly the most exposed to the effects of the febrific cause. Exemption, as it occurred among the opulent, is referred to the efficacy of a generous diet. If, however, what is denominated a generous diet, prove preventive of the disease; it can only be so esteemed when within the rule of temperance.

I saw few colored women or children, that did not seem to suffer in their general aspect, by the

constant inhalation of the noxious effluvium here adverted to.

Negroes, whose houses are at a distance from town, and who possess good health in their own district, frequently return home from an excursion to Hillsbro, with the seeds (if I may so express it) of an intermittent or remittent fever, which generally developes itself in eight, or ten days, by a regular series of paroxysms.

Habitual exposure to the noxious effluvium, does not appear to familiarize the constitution to its influence. Some, it is true, escape the fever, who always respire the atmosphere thus charged with the febrific miasmata: but the examples are much more numerous of attacks recurring as often as the exciting cause is applied in a state of concentration and of sufficient continuance.

I must observe in conclusion, that independently of the Marsh Fever, which has been the subject of this Report, the young plethoric Europeans who come out annually in numbers to engage as overseers upon plantations, too generally sustain soon after their arrival the attack of a violent and rapid febrile affection, in whatever situation they are placed. This attack, if fatal, commonly terminates in three or four days,—attended by black vomiting—yellowness of the skin—petechiæ—violent delirium in the commencement, and coma at the decline.

This febrile affection is of a strictly continued form: the Marsh Fever is always marked by remissions and exacerbations, although these may sometimes be very obscure, indeed scarcely discernible. The first-mentioned disease, seldom occupies more than from three to five days; the latter is often protracted to as many weeks, unless the patient is early removed from the agency of its exciting cause—the marsh exhalation; and such removal will often prevent the recurrence of future paroxysms, although it seldom produces any decided effect on that which is present.

N. D.

1st January, 1813.

APPENDIX III.

ABSTRACT OF A REPORT ON SOME CASES OF FEBRILE AFFECTION, WHICH APPEARED IN THE LEFT WING OF THE 90th REGIMENT, AT GRENADA, DURING THE MONTHS OF JANUARY AND FEBRUARY, 1813.

Grenada, 17th April, 1813.

On the first of January, I had the honor to transmit a Report, containing a few particulars of certain cases of Marsh Fever, which occurred in a detachment of the 90th Regiment, while stationed at Cariacou.

Soon after this period, we received into the Hospital, very suddenly, some other cases of febrile affection of an entirely different character.

These having occurred in a season which is usually considered as comparatively healthful, I was led at first to fear, from an attention to the symptoms in a few examples which happened

on the same day, a more general, as well as a more formidable disease than subsequently prevailed.

I purpose upon this occasion to select from the cases admitted into hospital, such of them as I think most deserving of attention*.

The situation in which the persons were stationed, who became the subjects of the present Report, requires a few preliminary remarks. It is an eminence between 600 and 700 feet above the level of the sea, from the margin of which it retires by a gradual sloping ascent of nearly a mile, forming at its summit a sharp double ridge, united towards the North, and open to the South, in shape resembling a horse-shoe, with a deep intermediate valley. The first ridge, rising from the sea about 500 feet, is called Mount Cardigan; the other upwards of 700 feet, is named Richmond Hill. On the different parts of these, have been constructed the Forts, Barracks, and Hospital.

Mount Cardigan and Richmond Hill are chiefly rocky: and from the sudden declivity on every side, no water can lodge; while, from the small quantity of soil spread over the surface, none can be long retained.

* For the present illustration, it is thought that a general recurrence to the cases is sufficient, without troubling the reader by a minute detail of the particulars, as contained in the Report originally submitted to the Head of the Department.

Whatever quantity of water may descend during heavy rains from the sides of the two ridges to the valley between them, which is formed by the angle of their meeting, is rapidly carried off by the channel thus produced, into the adjoining and well-cultivated lands. This station is therefore dry, comparatively cool from its moderate elevation, and nearly surrounded by a finely-cultivated country. To the N. E. and N. W. the prospect is terminated by distant mountains: while it is more exposed towards the S. E.; and to the West open to the sea; overlooking the Fort, Town, and Harbour of Saint George. Its general healthfulness to those accustomed to the climate, or when prepared, by an efficient prophylaxis, to meet the change, has been shewn by the returns of this Garrison, from the time I am warranted to form an opinion: that is, from the period of my residence here as the Senior Medical Officer, since 1804; during which time, no other form of febrile affection has prevailed, except the ardent continued fever of new comers, and, more commonly, an ephemera arising from intemperance.

From the local circumstances adverted to, it appears that the condition of soil productive of marsh exhalation does not exist in the neighbourhood either of Mount Cardigan or Richmond Hill, the situations in which the disease appeared

that forms the subject of these remarks; so that the only examples of Marsh Fever received into hospital since the arrival of the 90th in Grenada, were those already noticed in the last Report to have occurred at Cariacou, with the exception of three cases of Tertian Fever, some time ago received from Hospital Hill.

Thus much with respect to situation, in so far as relates to marsh miasmata, or to the peculiar condition of soil productive of fever.

I shall next mention such circumstances as seem to have been connected with the disease from the particular season of its appearance.

The weather has been more than commonly boisterous—a strong northerly wind has prevailed—more rain than common has fallen this season, and the thermometer has frequently indicated an unusual diminution of temperature, especially during the night.

These have been the principal variations in the state of the weather that I have had occasion to notice on the register; which, although absolutely unimportant in degree, may nevertheless be considered to influence the state of health in a climate so generally uniform.

The number of cases which so suddenly appeared at this time of the same disease, and which were registered upon the journal, amounted to twenty-two; so similar in their general

aspect, as to make it unnecessary to trouble the reader with any tediously minute detail.

They were, at first, pretty strongly marked by febrile symptoms; heat of the surface—frequent pulse—general sense of uneasiness—white and dry tongue—great thirst—loss of appetite—pain in the right side—hurried respiration. These symptoms were more or less urgent in different cases: but the most regular and characteristic appearances were, obstinate constipation—extreme anxiety and pain at the scrobiculus cordis—vomiting of the ingesta without any change—if stools occurred spontaneously, or in trifling quantity from the exhibition of a medicine only slightly aperient, they were costive and clay-coloured.

The urine was remarkably deep-coloured, and about the third day of the disease a yellow tinge of the skin came on, which gradually increased in depth from the colour of a lemon to that of a ripe orange. There was violent cramp in the calves of the legs in almost every case; in none did there occur the least uneasiness of the head.

These symptoms continued to increase for a time; being greatly determined both as to period and severity by the state of bowels induced. After eight or ten days, the patient was usually convalescent, although extremely yellow: but it

required almost as many weeks to accomplish his complete recovery.

The only patient who died of this disease, was a man debilitated by habitual drunkenness; he was not reported until five days after the seizure. I lament to say, that permission could not be obtained from his wife, to inspect the body.

The treatment consisted principally in the early employment of active purgatives: the submuriate of mercury combined with jalap, colocynth, or aloes, was given in a full dose; which was assisted by injections; and, after a complete effect had been produced, was repeated agreeably with the particular circumstances of the case, so as to keep up a moderate purging.

The tepid bath—a blister to the præcordia—a strictly antiphlogistic diet—comprise all that was necessary to effect a removal of the febrile symptoms: a continuance in the use of the purgatives was necessary to preserve an open state of the bowels during the period of convalescence; while the strength was gradually restored by the assistance of a more generous diet, bitters, the cold bath, and change of air.

The cases under consideration were few; and, perhaps, from their not having been accompanied by much mortality, they may also be judged not sufficiently important to warrant much attention:

nevertheless, as the febrile symptoms, generally speaking, ran high,—as the vomiting was exceedingly troublesome,—the pain and anxiety at the scrobiculis cordis intense—and as the yellowness of the skin was universal and strongly marked,—I have reason to think, from extensive observation, that this disease might have been considered by a medical officer unprepared by experience, an example of West-India Yellow Fever, under the general acceptation of that term: and indeed I was interrogated as to its identity with that disease.

The subjects of this attack were seized at Richmond Hill, or Mount Cardigan, the most healthful situation which the troops occupy in this garrison, although the most exposed with respect to wind and weather: none were attacked at Fort George, a less healthful station, as being nearer on a level with the sea, and much sheltered from the refreshing trade or eastern breeze. The seizures happened nearly at the same time, during a season more inclement than has been commonly remarked. The persons attacked, although inured to the climate by a residence of some years, were, notwithstanding, of a class who in their respective duties lead more sedentary lives than ordinarily happens to the soldier; and who, by consequence, from being less frequently exposed, were more susceptible to the effects of

sudden changes;—as for instance, the assistant surgeon, the mess waiter, the master tailor, the master shoemaker, the armourer, an officer's servant, orderly men; also a seaman belonging to the army ship Emma, who had been of late nursed in the cure of a slight bowel complaint.

In a majority of these cases, sudden exposure to the atmosphere during the night, was confessed to have immediately preceded the attacks. When all these things are considered, I am led to an opinion that the disease resulted from the partial application of cold to the surface of the body, rendered peculiarly susceptible to its morbid impression, in consequence of the subject having been previously under the influence of that degree of warmth, which favours relaxation and cutaneous exhalation at the same time.

From a consideration of the symptoms mentioned to be characteristic of the disease; from the want of remissions and exacerbations; and from the durable relief experienced when an open state of the bowels was procured, and continued; I am induced to regard it a topical affection, in which the system at large was brought to participate.

A degree of morbid excitement in certain internal organs, often arises from similar applications of cold; as in the instance of hepatitis, pulmonic inflammation—dysentery—catarrh—rheumatism, &c. &c.

In these cases, no doubt is often entertained as to the precise character of the disease; the evidence from topical pain, together with the increased action of the heart, sufficiently determining the real character.

But in the examples brought under review at present, the local affection was not so clearly defined; nor did the pulse manifest such decided inflammatory action, being less hard than is usual in severe states of purely topical inflammation.

The yellow or orange colour of the skin, that came on in every case of this disease, was manifestly occasioned by the presence of bile. The eye was first discovered to betray this change of colour; and soon after, the entire surface. The serum from blisters was yellow, and the urine tinged the linen as in ordinary cases of jaundice.

Pain at the pit of the stomach has been mentioned as a constant and leading symptom in every case; also vomiting of liquids unaltered in appearance; obstinate costiveness, and deficiency of bile in every evacuation which took place before purgative medicine was administered with full effect. When with these symptoms is compared the complete and permanent relief that followed the copious operation of cathartic medicine; the opinion receives support, that in consequence of the sudden and unaccustomed ap-

plication of cold, in most instances conjoined with moisture, to the previously heated and perspirable surface, some impediment had prevented the natural passage of the bile; whether inflammation of the liver, of the hepatic ducts and parts adjacent, or to what other immediate cause such obstruction might be referred.

Analogous cases have met my observation among negroes, who are very susceptible of the effects of sudden changes of weather. In these, the febrile and hepatic symptoms have been occasionally very severe; but always successfully removed by the prompt employment of active purgatives, maintaining a continual catharsis, until the complete relief of the symptoms was obtained.

In further illustration of these effects of the partial application of cold under circumstances unfavourable to its impression, it may not perhaps be unacceptably digressive, in concluding this Report; to advert to an example which I think received some notice in my former periodical communications. The instance in allusion, is not intended to form the ground of any argument from its affinity with the disease of the men of the 90th, considered in this Report.

It is merely adduced as being illustrative of the agency of trifling degrees of diminished tempe-

rature, to occasion visceral derangement in this climate, under certain conditions of exposure, and in peculiar states of the system; which deserve the more serious consideration, when it is reflected how powerfully efficient the application of diminished degrees of temperature are found to be, when resorted to under the governance of proper regulations.

Case.—The subject was one of four—three of whom had already died of an attack stated to have been precisely similar in every point of appearance. I saw this man (a negro) only four hours prior to his decease. He was unable to lie down, from difficulty of breathing and sense of stricture upon the chest—darting pain—the pulse was remarkably hard and frequent—the skin intensely hot—tongue dry and florid—thirst urgent.

I was told that at the attack, both in this case and in the preceding instances, which had terminated fatally, the subjects had been seized with difficult respiration—great anxiety—general uneasiness—intense pain at the pit of the stomach and in the right hypochondrium—hot skin—dry tongue and fauces, with much thirst.—They had not been subjected to regular medical treatment; but had been chiefly managed with feeble and inadequate means, consisting of injections and ptisans of no decided effect.

The suffering of the patient in the case before me from the severity of the symptoms adverted to above, determined me to take twenty ounces of blood from his arm by a large orifice: which certainly afforded immediate relief; but before any other measures could be adopted, he died.

The blood drawn from his arm was remarkably florid, and within a few minutes the crassamentum firmly coagulated; the red globules immediately subsided; and the upper portion of the mass, amounting to nine tenths of the entire quantity, was so tenacious that it closely adhered to the vessel which contained it, and was with difficulty separated from it, or cut with a common knife; it was of a light buff colour; there was about one ounce of serum.

Soon after death, a hasty examination only permitted a general inspection of the contents of the thorax and liver.

Upon opening the thorax, the pericardium was seen to occupy the anterior part, almost entirely. The left lung was thrown back by the encroachment of the heart, and closely adhered to the pleura costalis: the right lung appeared very much diminished.

The pericardium adhered to the pleura, and contained about two ounces of serum, in which floated a quantity of mucous fluid.

The heart was remarkably large; its internal structure could not be examined.

The liver was enlarged and inflamed; it adhered to the diaphragm, and by its increased size encroached so much on the thorax, that the lungs on either side had not room to act.

With symptoms, stated to be precisely the same as those in the four fatal cases alluded to above, four others succeeded to the subject of this examination. Assistance was called to their relief at the very first attack. The lancet was confided in as the only hope; and every one of them bore ample evidence of the advantage of the trust therein reposed, by their happy termination.

The remote cause of this disease for a time eluded research: it was however, I think, at last ascertained.

The eight persons mentioned to have been thus attacked, on coming heated and fatigued from labour in the field, contrary to their usual habits, had bathed and waited to wash some clothes in the water of a pretty rapid stream, under the arch of a bridge, through which continually passes a strong current of air.

The partial application of a diminished degree of temperature to the previously heated surface under perspiration, as occasioning this disease,

constitutes the apparent analogy between these cases and those stated to have occurred to the men of the 90th Regiment.

The chief difference appears in the different parts principally affected:—in the one case (of the 90th) being confined to the hepatic organs; while, in the other, the contents of the thorax also became involved.

N. D.

THE END.

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