

**A manual of the climate and diseases of tropical countries : in which a practical view of the statistical pathology and of the history and treatment of the diseases of those countries is attempted to be given : calculated chiefly as a guide to the young medical practitioner on his first resorting to those countries / by Colin Chisholm.**

### **Contributors**

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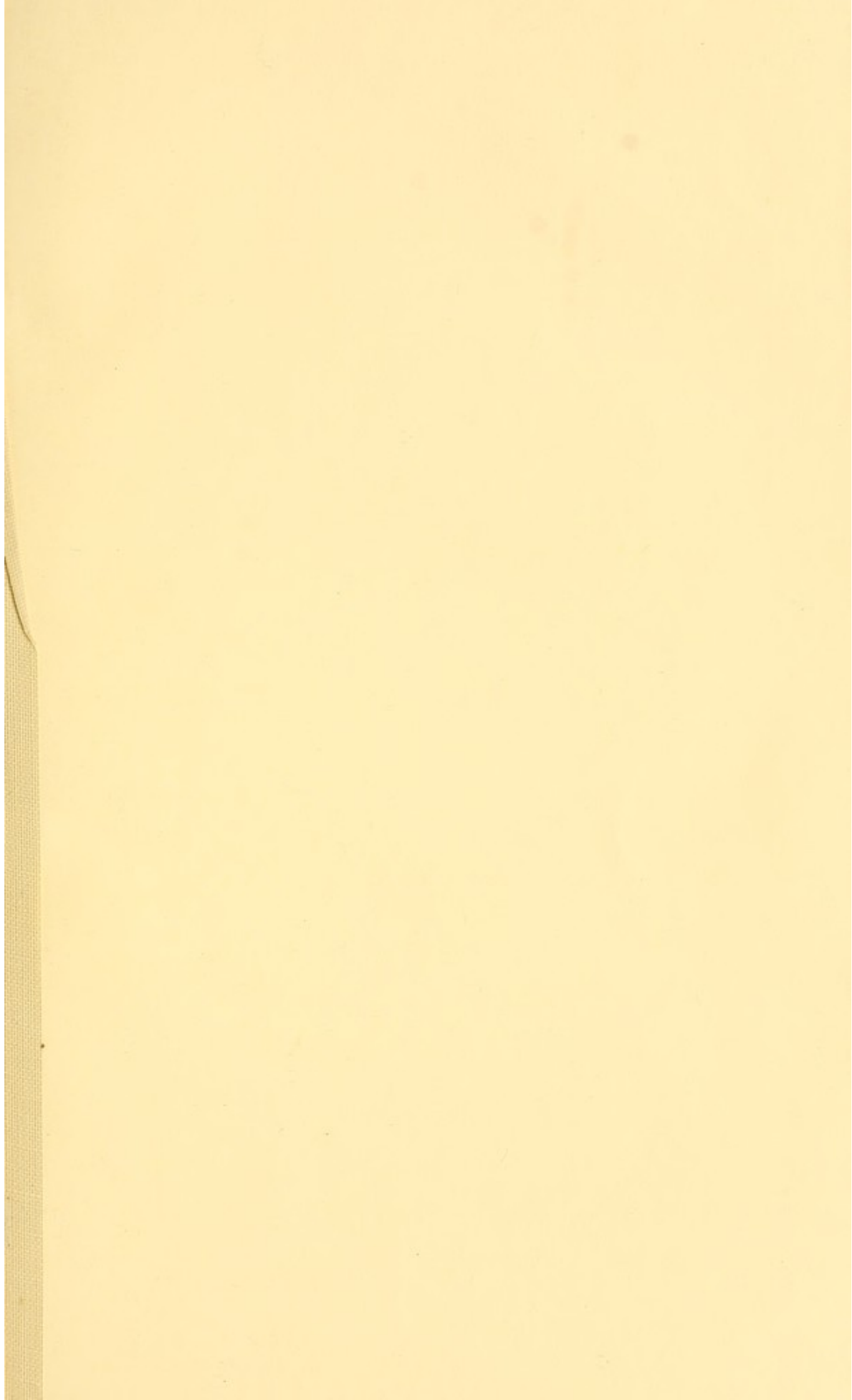
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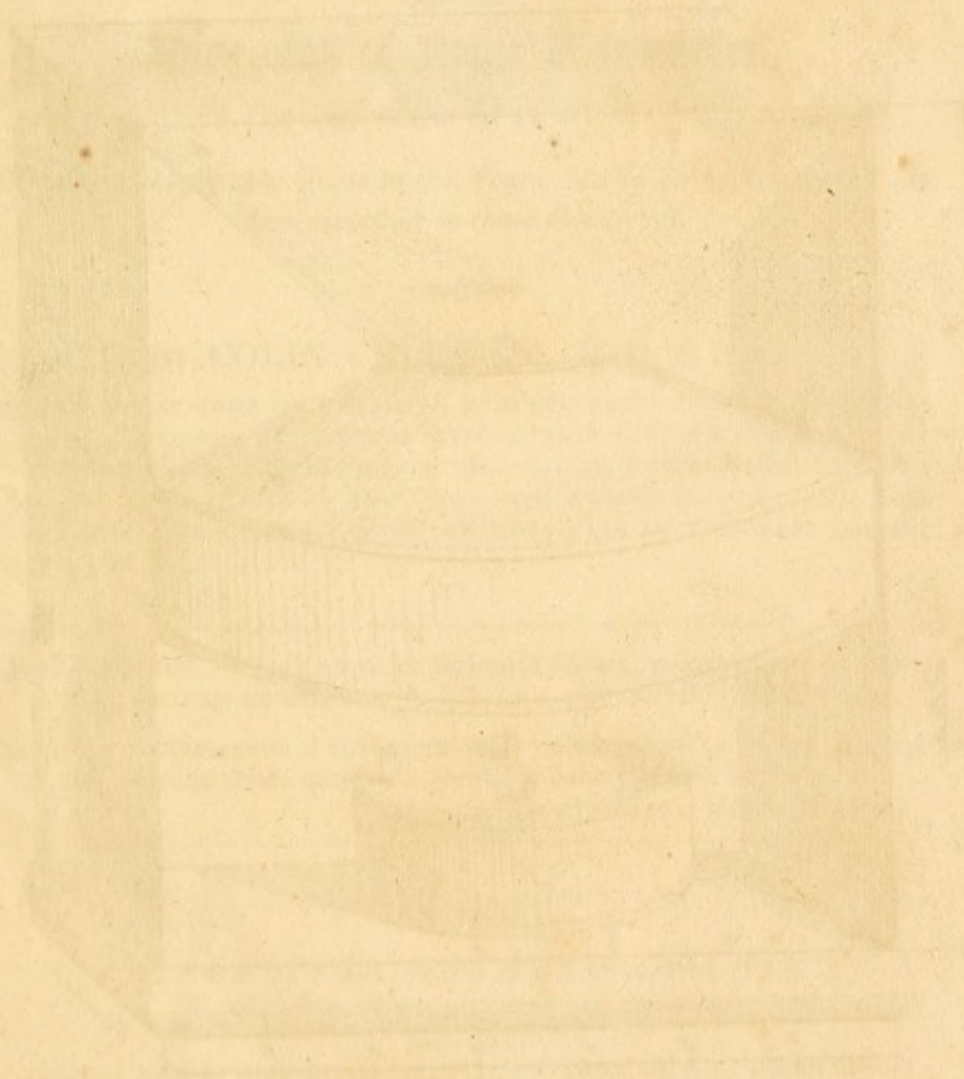
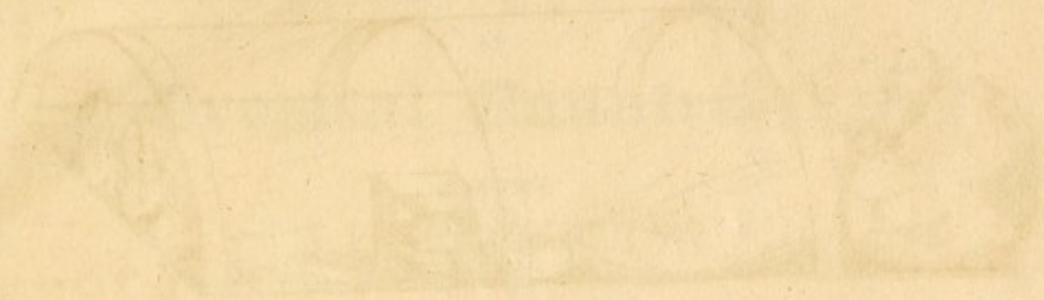


Fig. 2.

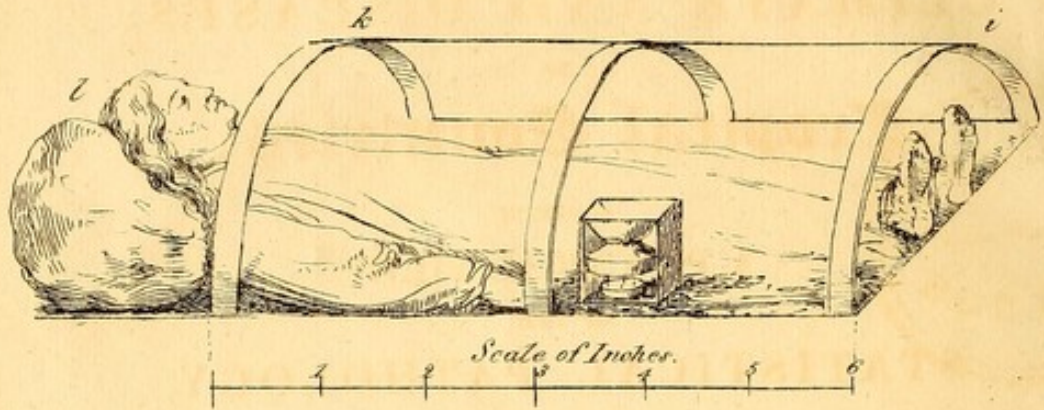
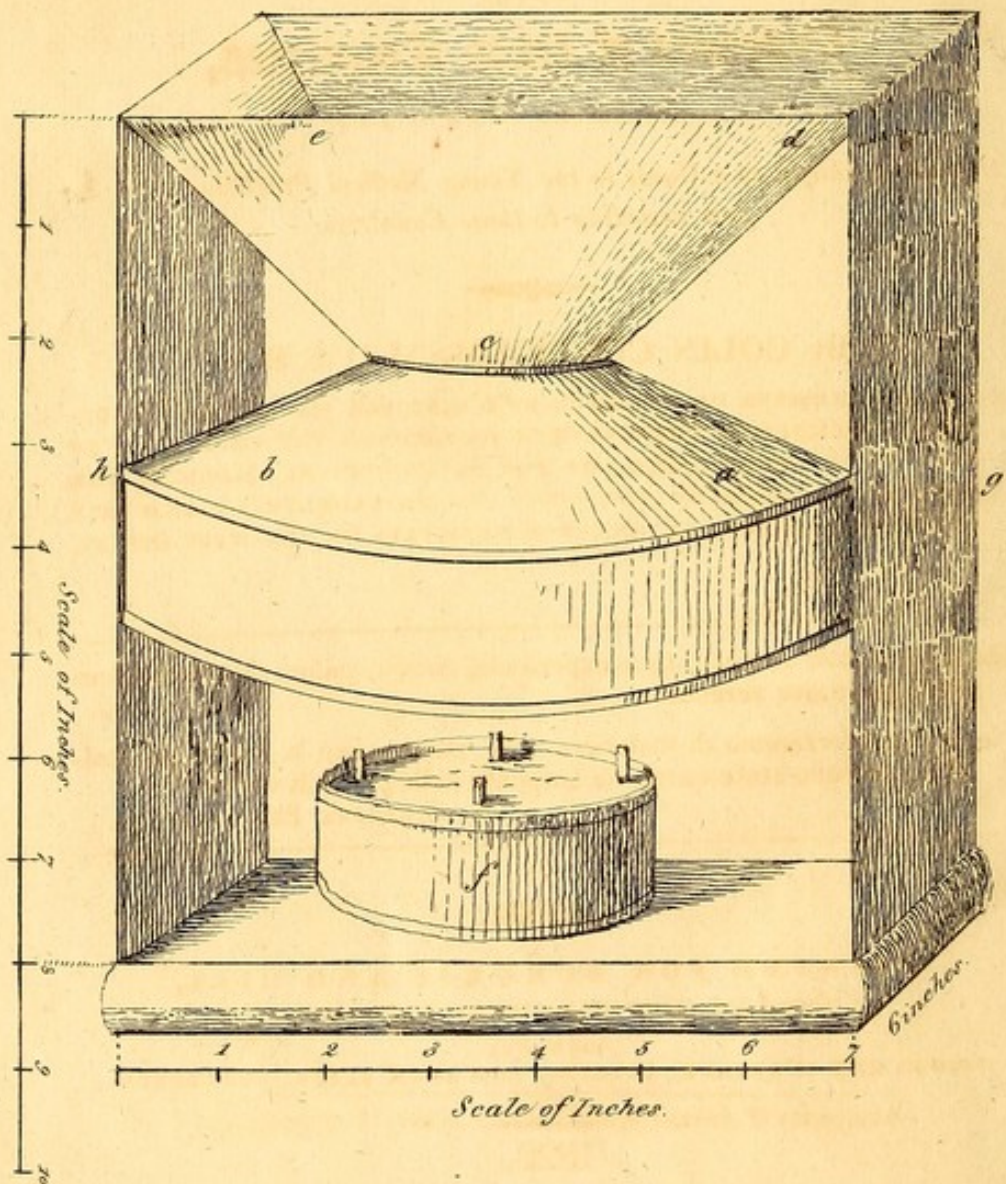


Fig. 1.



A  
MANUAL  
OF THE  
CLIMATE AND DISEASES,  
OF  
**Tropical Countries;**

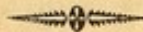
IN WHICH  
A PRACTICAL VIEW  
OF THE  
STATISTICAL PATHOLOGY,

AND OF THE  
HISTORY AND TREATMENT

OF THE  
**Diseases of those Countries,**

IS ATTEMPTED TO BE GIVEN :

*Calculated chiefly as a Guide to the Young Medical Practitioner on his  
first resorting to those Countries.*



By COLIN CHISHOLM, M. D. F. R. S.

HONORARY MEMBER DE PHYSIQUE ET D'HISTOIRE NATURELLE DE GE-  
NEVA ; MEMBER OF THE HELVETIC SOCIETY FOR THE PROMOTION OF  
SCIENCE OF SWITZERLAND ; OF THE PHILOSOPHICAL, MEDICAL, AND  
NATURAL SOCIETIES OF NEW YORK AND PHILADELPHIA ; AND LATE  
INSPECTOR-GENERAL OF ORDANCE HOSPITALS IN THE WEST INDIES,  
&c &c. &c.

---

Quod me in hac re usus atque experientia docuit, palam eloqui et etiam  
propugnare non verebor. SYDENHAM,

Noi qui ci sforzeremo di sostenere colle osservazioni la nostra proposi-  
zione, essendo state queste la sorgente delle più utili verità.  
GIUSEPPE BERGAMASCHI.

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London :

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55, GREAT WINDMILL-STREET, HAYMARKET ;

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HODGES AND M'ARTHUR, DUBLIN ; AND ADAM BLACK, EDINBURGH.

1822.

ANNUAL

CLIMATE AND DISEASES

FREDERICK HALL OF TOWN

1390

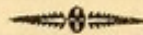
TO

HIS ROYAL HIGHNESS

FREDERICK DUKE OF YORK, K. G.

&c. &c. &c.

FIELD MARSHAL AND COMMANDER IN CHIEF OF THE  
BRITISH ARMY, &c. &c. &c.



SIR,

*When I approach Your Royal Highness, to lay at your feet the following work, I do so with confidence of its experiencing your patronage and protection.*

*I presume to say so, because it is universally known, and exultingly admitted,—that whatever has for its object the preservation of the health, and the cure of the diseases incident to His Majesty's subjects inhabiting tropical climates, and more especially those which British soldiers are exposed to, during their service in those climates, is sure to obtain both.*

*Under this persuasion, and without claiming any other merit, but the best motives, in the arrangement and composition of the Manual of the Climate and Diseases of Tropical Climates, I humbly request permission to place it under Your Royal Highness's protection, to the end that, if it is capable of producing good, that good may be as extensively elicited and applied as your Royal Highness's power and influence are exerted in the dispensation of justice, humanity, and happiness, in the high and most important situation which Your Royal Highness fills.*

*I have the honour to subscribe myself, with the most profound respect and admiration of your exalted character,*

*Your Royal Highness's*

*Most obedient and most humble servant,*

*C. CHISHOLM.*

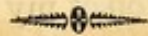
GENEVA, May 1, 1821.

TO

SIR JAMES MACGRIGOR, M.D. F.R.S.

&c. &c. &c.

DIRECTOR GENERAL OF THE ARMY MEDICAL BOARD.



MY DEAR FRIEND.

THE accomplishment of the benevolent and patriotic views which influence your conduct in the important office which you fill, will be, to you, a source of the highest gratification. These views induced you to urge me to undertake the following work ; to turn my mind to the formation of a small volume, easy of purchase, comprehensive of matter, direct and pointed in its precepts, solely the result of actual experience, and consequently purely practical ; for the use of young medical practitioners going to hot climates to reside in public or private practice. Conscious of the inadequacy of my own ability, to execute a work possessed of these qualities, you know, I long resisted your flattering, but friendly entreaties. I have, at length, however, yielded up my own judgment to yours :—and with the warmest and most genuine wish to endeavour to be useful in the obtainment of so very important an object, I submit, through you, the result of my experience and observation to the public. I wish to prove, in doing this, that pains have been taken, to give the unexperienced, that knowledge of what they are to meet and contend with, in the tropical climate, which may enable them to enter the combat with courage and effect. How very far my success may have fallen short



of my endeavours, it is not for me to determine : but, on one sustaining circumstance, I look with confident pleasure—that the friend who has assigned the task, is to be the judge of its execution.

My advanced age, and my final retirement from medical practice, permit me not to act—they may, perhaps, still permit me to instruct. Let me hope, therefore, th's mite may be received as a demonstration of that wish, of that endeavour, to benefit my fellow creatures—my fellow countrymen more immediately—which, I boldly say it, has been the principle of every action of my whole life. It is a legacy I solemnly bequeath through you, to those men who may follow us, in the difficult and dangerous practice of medical science within the tropics.

I wish to say something of this Manual, before I proceed to treat of the multifarious subjects of it.

The work, such as it is, has this recommendation, at least, that it is not a compilation ; that it is not a collection of varying opinions and practice, often tending more to mislead and bewilder, than to guide and inform. In it nothing has been advanced, the truth of which has not been known to myself or to others on whose knowledge and judgment I could rely. A great deal has been already done and written on the subject, with the view of rendering our settlements in the Torrid Zone less injurious to the European constitution ; but much still remains to be done towards effecting those most important objects, on which the maintenance of human life in the East and West Indies, so totally depends, viz. the assimilation of the European Constitution, the means of preventing, and the mode of treating the diseases incident to Europeans in those countries. In the elucidation of these objects, I have endeavoured to be more explicit.

Two principal causes of mortality among Europeans, on their first arrival within the tropics, are, first, the injudicious

choice of season for their departure from Europe, and consequent arrival within the tropics ; and secondly, the dread of climate their minds are unhappily impressed with, before they leave their own country. The first I have attempted to obviate, by pointing out and ascertaining by indisputable facts, the seasons most healthy, and most sickly : and the impression of the second I have endeavoured to destroy by the adduction of facts, which prove that the climate of the Torrid Zone, is not more injurious, under common circumstances of life, and the observation of temperance and prudence, than the climate of Great Britain.

It is an obvious truth, that to be previously acquainted with, or at least well informed of, the nature of the country and its climate, we propose to make our residence, or the field of our medical practice, is the part of wisdom and prudence ; for we are thereby enabled to avoid many dangers, we ourselves should, otherwise, suffer by ; and we are better prepared to act with energy and effect, when called to the aid of others. The utility of a Manual comprizing the information and the instructions necessary for the accomplishment of these objects, cannot fail to be acknowledged ; I have felt the want of it. The victims of the want of this information and of those instructions are well known to have been incalculable, during the various wars, the West Indies have been involved in. I believe few will be disposed to dispute the proposition, that a physician, endowed with the most splendid talents, whose mind has been cultivated professionally and generally, with skill and assiduity ; and who has acquired ample knowledge of the diseases of cold climates ; placed within the tropics to practise his profession, must long be considered and long prove himself an ignorant man ; and the mischief he does, with every desire to do good, is great and lamentable.

Such ignorance can scarcely exist in the East Indies, where a permanent establishment of medical, civil, and

military staff is constantly maintained ; the members of which are well educated, intelligent and experienced men, and who readily communicate their knowledge to the newly arrived young surgeons. These, after being kept at certain stations until they acquire all the advantage such communication necessarily presents to them, practice ; and in their turn succeed to important situations, possessed of the accumulated experience of their predecessors : and thus, instead of any deficiency or deterioration of tropical medical science, there is a constant increase and improvement. In fact the most valuable part of the medical practice of the West, has been derived from the East, and that at no very remote period. It is therefore more especially to the West I hope my efforts may prove beneficial ; and it is to the climate and diseases of that country I purpose chiefly to confine myself—it was, indeed, my original intention to devote a part of the following work to the medical topography and pathology of the East Indies ; but I found unsurmountable objections to an attempt of this kind. The principal of these are, my never having been in that country, and my plan embracing nothing but what has come under my own observation, or of those with whom I associated in the West ; another is the great extent and variety of British India ; and a third, and perhaps the most weighty, is its being quite unnecessary, Dr. James Johnson having most fully, most ably, and perspicuously discussed the subject—in truth having in a manner exhausted it. His work on Tropical Climates is a masterly performance, whether we consider the ingenuity, the zeal, the talent for observation, and the research, he has manifested in the execution of it. I shall quote, without scruple from this work, on such occasions as demand the elucidation it is so capable of giving.

It has been justly said “ whoever warns the living against  
“ a mortal distemper, or shows the cause of it, and the mode

“ of prevention, and the final remedy, may be said to stand  
“ as a guardian angel between the dead and the living.”  
How far the following work may have any pretension to  
such a character, it is not for me to judge. This I may say,  
however—if experience and faithful observation, authorize  
the attempt to become a useful guide in this dangerous  
field, I may be considered as in some degree authorized.  
Be that as it may, I can confidently assure the young  
practitioner, that nothing I have offered to his consideration  
is lightly advanced, or has not had its truth proved in many  
thousand instances. The substance of the topographical  
part, much of the means of prevention of disease within  
the tropics, and some of the practical observations on fever,  
endemic and contagious, have been already, in another  
form, before the public.

Adieu! my dear Sir—proceed in the road to fame and  
honour—in the accomplishment of that great and glorious  
labour, the placing the Hospital Establishments of the  
British Army, on a basis which may assure to the brave  
defenders of our country, the greatest possible good, and  
the greatest possible permanency of that good ; and which  
may render them the pattern and the admiration of all  
other countries.

With most sincere esteem and regard,

I ever am, my dear Sir,

Your faithful friend,

C. CHISHOLM.

*Geneva, May, 1821.*

of prevention, and the final remedy, may be said to stand  
 as a guardian angel between the dead and the living.  
 Now for the following work may have any pretension to  
 such a character, it is not for me to judge. This I may say,  
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 field, I may be considered as in some degree authorized.  
 Be that as it may, I can confidently assure the young  
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 the greatest possible permanency of that good; and which  
 may render them the pattern and the admiration of all  
 other countries.

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I ever am, my dear Sir,

Your faithful friend,

C. CHISHOLM.

London, 1781.  
 Printed by J. Johnson, in Pall-mall.  
 CHAP. I. Of the Nature and Extent of the Disease.  
 CHAP. II. Of the Causes and Progress of the Disease.  
 CHAP. III. Of the Symptoms and Signs of the Disease.  
 CHAP. IV. Of the Treatment of the Disease.  
 CHAP. V. Of the Prevention of the Disease.  
 CHAP. VI. Of the Operations on Fever.  
 CHAP. VII. Of the Operations on Contagious Diseases.

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TABLE 1. (continued)

(In francs, for Paris, Lyons, Marseilles, and the principal cities)

TABLE 2. (continued)

(In francs, for Paris, Lyons, Marseilles, and the principal cities)

| Year | Paris     | Lyons     | Marseilles | Other cities |
|------|-----------|-----------|------------|--------------|
| 1910 | 1,200,000 | 800,000   | 600,000    | 400,000      |
| 1911 | 1,300,000 | 850,000   | 650,000    | 450,000      |
| 1912 | 1,400,000 | 900,000   | 700,000    | 500,000      |
| 1913 | 1,500,000 | 950,000   | 750,000    | 550,000      |
| 1914 | 1,600,000 | 1,000,000 | 800,000    | 600,000      |
| 1915 | 1,700,000 | 1,050,000 | 850,000    | 650,000      |
| 1916 | 1,800,000 | 1,100,000 | 900,000    | 700,000      |
| 1917 | 1,900,000 | 1,150,000 | 950,000    | 750,000      |
| 1918 | 2,000,000 | 1,200,000 | 1,000,000  | 800,000      |
| 1919 | 2,100,000 | 1,250,000 | 1,050,000  | 850,000      |
| 1920 | 2,200,000 | 1,300,000 | 1,100,000  | 900,000      |

TABLE 3. (continued)

(In francs, for Paris, Lyons, Marseilles, and the principal cities)

| Year | Paris     | Lyons     | Marseilles | Other cities |
|------|-----------|-----------|------------|--------------|
| 1910 | 1,200,000 | 800,000   | 600,000    | 400,000      |
| 1911 | 1,300,000 | 850,000   | 650,000    | 450,000      |
| 1912 | 1,400,000 | 900,000   | 700,000    | 500,000      |
| 1913 | 1,500,000 | 950,000   | 750,000    | 550,000      |
| 1914 | 1,600,000 | 1,000,000 | 800,000    | 600,000      |
| 1915 | 1,700,000 | 1,050,000 | 850,000    | 650,000      |
| 1916 | 1,800,000 | 1,100,000 | 900,000    | 700,000      |
| 1917 | 1,900,000 | 1,150,000 | 950,000    | 750,000      |
| 1918 | 2,000,000 | 1,200,000 | 1,000,000  | 800,000      |
| 1919 | 2,100,000 | 1,250,000 | 1,050,000  | 850,000      |
| 1920 | 2,200,000 | 1,300,000 | 1,100,000  | 900,000      |

TABLE 4. (continued)

(In francs, for Paris, Lyons, Marseilles, and the principal cities)

| Year | Paris     | Lyons     | Marseilles | Other cities |
|------|-----------|-----------|------------|--------------|
| 1910 | 1,200,000 | 800,000   | 600,000    | 400,000      |
| 1911 | 1,300,000 | 850,000   | 650,000    | 450,000      |
| 1912 | 1,400,000 | 900,000   | 700,000    | 500,000      |
| 1913 | 1,500,000 | 950,000   | 750,000    | 550,000      |
| 1914 | 1,600,000 | 1,000,000 | 800,000    | 600,000      |
| 1915 | 1,700,000 | 1,050,000 | 850,000    | 650,000      |
| 1916 | 1,800,000 | 1,100,000 | 900,000    | 700,000      |
| 1917 | 1,900,000 | 1,150,000 | 950,000    | 750,000      |
| 1918 | 2,000,000 | 1,200,000 | 1,000,000  | 800,000      |
| 1919 | 2,100,000 | 1,250,000 | 1,050,000  | 850,000      |
| 1920 | 2,200,000 | 1,300,000 | 1,100,000  | 900,000      |



TABLE of Mortality relating to Pulmonary Consumption; for Geneva and Three Suburbs, (les Paquis, les Eaux-vives, Plainpalais.)  
Years 1817, 1818, and 1819.

| Year  | Died | Married .. | Unmarried .. | In each Period of Life. | Years.                    |         | In each Quarter of the Year.           | Died of Consumption.  | Married.... | Unmarried .. | For each Quarter of the Year.     | Males ..  | Females .. | Proportion which cases of Consump. bear to each other. | Married .. | Unmarried .. |         |          |
|-------|------|------------|--------------|-------------------------|---------------------------|---------|--|---|-------------|--------------|-----------------------------------|---|------------|--|------------|--------------|---------|----------|
|       |      |            |              |                         | (0-15)                    | (15-40) |  |   |             |              |                                   |   |            |  |            |              | (40-65) | (65-100) |
| 1817. | 474  | 234        | 119          |                         | Males .. 73<br>Females 64 | 137     | 1st-143<br>2d-101<br>3d-109<br>4th-121 | Males .. 75<br>Females 68<br>Females 51<br>Females 59<br>Females 50<br>Females 71                             | 20          | 13           | 1st-12<br>2d-11<br>3d-9<br>4th-9  | Males .. 7<br>Females 5<br>Females 4<br>Females 3<br>Females 6<br>Females 3               | 0,0850     | 0,1092   | 0,0608     | 0,0608       | 0,1111  |          |
| 1818. | 559  | 248        | 159          |                         | Males 102<br>Females 102  | 210     | 1st-131<br>2d-140<br>3d-160<br>4th-122 | Males .. 63<br>Females 68<br>Females 83<br>Females 77<br>Females 51<br>Females 77                             | 23          | 10           | 1st-11<br>2d-7<br>3d-17<br>4th-10 | Males .. 6<br>Females 5<br>Females 5<br>Females 1<br>Females 12<br>Females 4              | 0,0205     | 0,092  | 0,104      | 0,083        | 0,111   | 0,031    |
| 1819. | 497  | 232        | 124          |                         | Males .. 79<br>Females 77 | 156     | 1st-174<br>2d-118<br>3d-100<br>4th-103 | Males .. 84<br>Females 90<br>Females 47<br>Females 71<br>Females 43<br>Females 57<br>Females 48<br>Females 57 | 28          | 12           | 1st-18<br>2d-12<br>3d-9<br>4th-8  | Males .. 11<br>Females 7<br>Females 4<br>Females 8<br>Females 6<br>Females 3<br>Females 1 | 0,0946     | 0,126  | 0,128      | 0,083        | 0,053   |          |

# A MANUAL, &c.

## PART I.

### ON THE STATISTICAL PATHOLOGY OF TROPICAL COUNTRIES, MORE ESPECIALLY THE WEST INDIES.

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#### CHAPTER I.

##### ON THE GENERAL STRUCTURE AND APPEARANCE OF THE WEST INDIA ISLANDS, AND THEIR CLIMATE.

THE West India islands may be divided into the high and low, respecting surface; and into argillaceous, with granitic basis, and coralline with all its varieties, respecting structure:—and all marked with more or less vestiges of volcanic influence. In all the mountainous islands, the distinguishing form of the summits, is the cone, a feature chiefly observed, I believe, in volcanic countries. These circumstances have a powerful influence on their atmosphere, their productions, and their salubrity. Tobago, Grenada, St. Vincent, Martinico, St. Lucia, Dominica, part of Guadaloupe, St. Christopher, Nevis and Montserrat, are of the former; Trinidad, Antigua, Barbadoes, part of Guadaloupe, St. Croix, and a few others, of the latter. The larger islands, St. Domingo, Cuba, Jamaica, Porto-Rico, possess every variety of surface and structure. The vestigia of volcanic formation, are by no means uncommon. There are some islands more remarkable for marsh, than others; which, consequently, renders those, so unhappily distinguished, more inimical to the European constitution. Of these are, more especially St. Lucia, Grandeterre of Guadaloupe, many parts of Martinico, part of Dominica and of Tobago, a large portion of Trinidad, the windward side of Grenada, and many of the more important stations of the large islands. But the great agent of insalubrity in the higher islands, is the irregularity of their temperature. The windings of the innumerable hills, produce a change of temperature, as they recede into hollows, or project into prominences, giving a quick and most unpleasant alternation, of almost unsupportable heat, and consequent profuse perspiration, and

comparative cold with dry and corrugated skin. Another cause of insalubrity in the mountainous islands, is the humid state of their atmosphere, occasioned by the attraction of their peaks or conical summits and cliffs, and extensive forests. From this cause, too, these islands, seen from sea, are almost always obscured with clouds, and the summits of the mountains are seldom distinguishable. The low islands are never thus enveloped in mist; and their atmosphere, being less loaded, becomes a purer medium, and seldom lets fall the deluges of rain, experienced in the higher.

The islands encumbered with marshes, are so, chiefly, by embankments of sand, thrown up by the violence of the surf, on the windward coast, which shut up the mouths of their rivers, and give rise to the stagnation of water, and the formation of extensive marshes, furnishing ample materials for the most pernicious exhalations. Other islands are rendered marshy by large tracts of land, lower than the surface of the adjacent sea, and reclaimed from it, without the establishment of proper and sufficient drainage. This is particularly the case in Trinidad, where it has been productive of very great mortality among the negroes, more especially for a considerable time after the cession of the island to Great Britain.—Since then, following the example of the Planters of Demerary, whose drowned lands have been rendered as healthy as they are fertile by the correct application of the principles of drainage, the “*terre-aquatique*” of the former is now, I believe, much more safe, and much more productive. Antigua, being altogether argillaceous, is distinguished by a peculiarity in the temperature of its atmosphere; it is, a degree of cold not observed in any of the other islands, but which has, on the human body, all the influence of marsh exhalation, although no swamps are in the neighbourhood of St. John’s, where this singular cold is chiefly felt, after rain has continued to fall for a few hours.—On these occasions Fahrenheit’s thermometer falls to 62°, five degrees lower than I have observed it on the accessible heights of Vauclan in Grenada, or at the rim of the crater of the Soufriere of St. Vincent. I have mentioned that Antigua is altogether argillaceous—but whether that is the cause of the cold of its atmosphere, after rain, I know not—at Martinico, viewing the country of Lamantin from the height of Morne Garnier, on which Fort Bourbon stands, in the morning, before the sun has penetrated through the fog, astonishment is excited, that any human being can exist in it. Nothing is perceived but the summits of the hills, every other object lying hid under a vast expanse of dense white fleecy damp vapour:—if a calm prevails, the fleecy atmosphere is immoveable; but if the gentlest breeze springs up, an undulation takes place, and presently huge volumes accumulate, and slowly roll along, carrying their pestiferous miasms towards Fort Royal, or mingling them in the waters of the Bay. The consequence of this is, the temperature of Fort Royal, and the immediately adjacent country, is subject to great variation; and the chilliness or aguish cold which prevails here during the night,

excites the most unpleasant sensation imaginable. The coast of the singular and most interesting colony of Demerary in Guiana, runs nearly SSE, and NNW, consequently a NE, E, or SE wind must blow on it obliquely, and drive every thing noxious, or what might be rendered so, by the immobility of the atmosphere, into the interior country, leaving the air on the coast divested of every impure gaseous fluid. But when the wind changes its direction, and blows from the land, or any westerly point, a most unpleasant chill, such as that experienced at Fort Royal, from the same cause, is instantly produced. No other disagreeable consequence takes place, because the wind seldom continues longer than a few hours, at those points. It is the want of this salutary agitation by easterly or sea-winds, and the density of the woods in the interior country, which have at all times, rendered the settlement on the banks of the rivers, beyond the influence of the sea-breeze, so extremely destructive of health, and which have, for more than forty years, directed to the necessity of abandoning them, and establishing plantations on the sea-coast, where through the united operation of a salubrious air, the natural fertility of the soil, and the correct employment of drainage, health and wealth have been found in happy combination.

The usual temperature of the atmosphere of the islands is determined by the height of surface it is superincumbent to: thus at the sea-side, in the shade, the medium heat is about 84° of Fahrenheit, at the accessible parts of the higher mountains, it is about 60°; so that the range from accessible altitude to the level of the sea, is about 24°. This will be found an important fact when we come to consider the preparation of the unassimilated European constitution to the torrid zone; and in conjunction with the cold sensation produced by the exhalations from marshes, of a nature so different from the bracing effect of the former, will assist much in deciding the pathology and treatment of diseases, which are the product of them. I shall here further observe, that this gradation of temperature, according to the altitude of surface, is principally efficient in rendering the West-India islands very healthy, when no foreign cause of disease exists, and when the inhabitants are exposed to that only which is endemic. That they would prove so to every description of their inhabitants, European and native, British and French, were they all equally careful to avoid those excesses, and those imprudencies in diet and personal exposure, which, in all climates, are dangerous, and too often fatal, may be demonstrated in many instances. The uninterrupted health and longevity of the French and Creole inhabitants of both sexes, are the result of an active, prudent and temperate life. Eighty, ninety, a hundred years, is by no means an uncommon age among these people—nor does this appear to be owing to their residence being higher and cooler, than that of the British, although that, as a general cause of health, is, as I have already remarked, particularly remarkable; for many European French, and some Creoles, possessing fine plantations, on the coast, enjoy the same exemption from disease.

All the West-India islands are extremely interesting in their geology, mineralogy, and vegetable productions but a detail of these does not enter into my present plan. It may, however, be generally observed, that a remarkable feature in the construction of all these islands, is that their windward or north-eastern, are infinitely more level or more declivous than the leeward or south-western sides; nor are they encumbered with the multitude of conical hills and cliffs, which characterize the latter. The consequence invariably is, that the windward are more marshy, and therefore more unhealthy than the leeward; and although perflated by the regular trade-winds, yet being exposed to the northerly winds of Spring, called the *Norths*, peculiarly sharp and cold, the inhabitants are annually, at that season, severely afflicted with pulmonary and hepatic inflammation.

The year, in the West Indies, is divided into two portions, the dry and the wet seasons. Some divide each of these also into two, which they call the long and the short winter, and the long and the short summer. This sub-division is not always observable in the islands, but uniformly so on the continent (Demerary.) The dry season is the portion of the year between the beginning of December and the end of April. In its ordinary course, it is pleasant and healthy. It is almost constantly ushered in by northerly winds, which prevail, with little variation, the whole of its duration; but they are most chilly, dry and boisterous in December, January and February. The total suspension of vegetation, during this season, is surprizing, and seems to be occasioned by the want of moisture and exiccative shriveling quality of the North winds. All deciduous trees are stripped of their leaves; the pastures become parched and brown; and the cane-fields assume the autumnal hue of northern climes. The latter months of this season are the most pleasant of the year; for nothing can exceed the freshness of the mornings, and the softness of the evenings of April and May. The rainy season includes the two last months of summer, all autumn, and generally the first month of winter. Its approach is awful, and always indicated by thick fog resting on the tops of the higher mountains, soon followed by heavy dark watery clouds, slowly rolling along from the NE in terrific volumes, enveloping the mountains, and darting bright electric corruscations from their edges. From these clouds tremendous torrents of water suddenly fall, and, rolling down the bottoms of ravines, and the beds of rivers, carry every thing before them, and discolour the sea several miles in every direction with ochry earth washed from the interior mountains. This portion of the year, is not, however, composed of a continued series of rainy weather. Many successive days occur of dry weather, chiefly in August and September, and are distinguished by an almost insupportable sultryness and closeness. As the surface is mountainous, such as many of the islands—or woody as Demerary and the larger islands; so is the quantity of rain, which annually falls. Thus at Martinico, 100 inches, on an average, fall;

at Demerary, 80. During this season, southerly, westerly and easterly winds blow, and are always hot and sultry. The months of March and September are particularly stormy, in all the islands: but the more northerly and southerly in latitude seldom experience the disastrous effects of those awful storms called hurricanes; those tremendous atmospheric whirls seem to observe a uniform limited tract, seldom exceeding the 18th degree north, and the 11th of south latitude, and maintaining a diagonal line between these degrees. Thunder and lightening are not so frequent as the geographical situation, and local circumstances of the islands, might lead to expect. In the dry season they never occur. Southerly winds generally accompany them. The thermometer (Fahrenheit's) almost uniformly exhibits the following movements:—At seven A.M. the Mercury begins to rise, and continues to do so, till one, P.M.; from which time till four, P.M. it is stationary; it then begins to fall, and continues to do so till about ten, P.M.; from which time till seven, A.M. it is again stationary. This routine of temperature is disturbed, only, when any remarkable change takes place in the atmosphere, such as much rain, attended with strong wind. The greatest change, from this cause, I have observed is  $10^{\circ}$ , the least  $4^{\circ}$ . The thermometer, exposed to the direct rays of the sun, has risen in ten minutes to  $130^{\circ}$ , or  $42^{\circ}$  above its stationary point at one, P.M. of that day;  $30^{\circ}$  may, however, be considered the medium difference between the heat in the shade and in the sun. The medium difference between the heat of the atmosphere at one and ten, P.M. is  $9^{\circ}$ .—I may here take notice of the difference of temperature produced in water by the state of the atmosphere during the day and night. It shews how extremely sensible the human body is to the smallest deviation from the usual heat it is exposed to, and that our sense of cold in this climate is merely relative. At ten, P.M. into a Spanish unglazed gullet, full of water, I plunged a small thermometer; in five minutes, the Mercury sunk  $3^{\circ}$ , its stationary point then, in the open air, being  $82^{\circ}$ . I then placed the gullet with the same water, in an open window, where it was left till six, A.M. On plunging the thermometer then into the water, the mercury sunk to  $72^{\circ}$ , or  $10^{\circ}$  lower than the stationary point during the night. This degree of coolness in the water, rendered it, to my feeling, rather cold and chilling—this I have frequently repeated. A cold bath, constantly covered from the sun's rays, may be generally considered about  $70^{\circ}$ ; a degree of cold, which, if inconsiderately applied to the body, by suddenly plunging into it, has often produced the most fatal consequences. The greatest height of the thermometer (Fahrenheit's) at one, P.M. in the shade, is  $92^{\circ}$ , the least  $74^{\circ}$ , the medium is of course  $83^{\circ}$ . In Demerary, differing essentially in all its local circumstances from the islands, and only  $6^{\circ}$  from the equator, the medium heat is only  $80^{\circ}$ . The barometer, within the tropics, is little affected, its greatest range not exceeding, in any year, one inch.

## CHAPTER II.

ON THE CLIMATE, WITHIN THE TROPICS, AS IT TENDS TO THE PRODUCTION OF DISEASE.

WERE we to exclude the effects of the miasmata of marshes, and those proceeding from the irregular temperature of the air, in the higher islands; the former giving rise to the worst endemic fevers, and the latter to the most dangerous local inflammations;—we should find that in common years, there is, by no means, much sickness; the mortality, from climate alone, being not more than one in thirty-seven, or, more generally, one in forty. This seems the fair inference from the foregoing rapid sketch of the climate and localities of the West India islands. Would, then, avoiding those endemic causes of disease, secure health to the inhabitants and to strangers resorting to the islands?—Were it always possible to avoid them, the answer would be, obviously, affirmative; knowing, as we do, from long contemplation of the climate, and from actual experiment, that pure solar heat, unless under peculiar circumstances of exposure to it, has never been found a cause of disease. Then how does it happen, that our armies and navies, and strangers in civil life, resorting to these islands, and frequently, even the inhabitants, assimilated by long residence, are so often the victims of disease and death?—The answer is equally obvious; and is found in the imprudent exposure of the assimilated and unassimilated to those local causes of diseases I have mentioned, fatal in all climates; in the neglect or ignorance or inexperience of our Commanders; sometimes in the exigency of the public service during war; and, in a more especial manner, in the intemperate conduct of strangers with respect to dress, to exercise, and more particularly to diet.—In short, temperance and a common share of prudence, are the means of maintaining health in the West Indies; the neglect of them, the means of producing or predisposing to disease. I have given my sentiments on the agency of solar heat, as a cause of disease, in another work, (*Essay on the Malig. Pestilent. Fever*, vol. ii. p. 261.) To that I beg to refer for general reasoning on the subject;—on the present occasion, it may suffice to observe that “the strong light and intense heat of the sun, depriving the atmosphere of its oxygen and leaving nothing but the mephitic or heavier part to the inhabitants to breathe,” is a mere theoretic and visionary notion; for, under such circumstances, animal life must cease. Another notion equally theoretic, and equally incapable of demonstration, is, that endemic and other diseases, when the cause does not immediately and obviously come under the cognizance of the senses, must proceed from “a peculiar state or constitution of the atmosphere. The only disease I am acquainted with which may be considered as the direct effect of intense solar heat, is that species

of Phrenitis, known, within the tropics, by the name of Coup de Soleil; (Carus ab insolatione, Sauvag. 1, 842)—but the conditions necessary to the production of this disease, are different from those in which solar heat is usually applied to the human body; the subject must be exposed to the direct rays of the sun, during the hottest time of the day, when the thermometer is generally  $130^{\circ}$ ; he must be stationary; his head must, in general, be uncovered; and the atmosphere must be still. Although, therefore, pure solar heat, within the tropics, cannot be considered, in common circumstances, a direct cause of disease; yet it should, always, be deemed an indirect one, inasmuch as it powerfully predisposes the system of a native of a cold climate, to be acted on by the direct endemic or imported causes of disease, it may be subjected to on its arrival in the tropical. In proof of this observation, it may be remarked, that a change of climate produces no change in the animal heat, providing no excitement is employed to increase it. Experiments carefully made in Demerary, lat. N.  $6^{\circ} 30'$ , by myself, gave this general result, that “the mean heat of sixty-seven persons of different countries, different climates, different temperaments, different ages, and of every shade of colour from white to black, is  $97^{\circ}$ , or that which is the mean heat observed in the human body, in health and vigour in Great Britain.” (Essay, vol. ii. 473.) It seems, then, necessarily to follow, that, abstracted from marsh miasmata, and the irregular temperature of the higher islands, the quantity of disease, and the extent of mortality, will be nearly the same in both civil and military life, and in hot and cold or temperate climates, under the common circumstances of life. But the point may be settled with greater precision by the adduction of facts, and a calculation founded on those facts. It is unnecessary to enter into a minute detail; I shall therefore only state the conclusions drawn from the consideration of the state of sickness compared with the general number of the Royal Artillery and Ordnance department, in the Caribbæan islands, during more than four years of the late war, viz. from March 1793, to Sept. 1797. In a calculation, founded on such premises, strict correctness cannot be looked for, but an approach to truth may be obtained, which will answer the present purpose sufficiently well; and, certainly, the conformity of the result of the experiments on animal heat, just stated, with the probable chance of preserving life in the West Indies, during a time given, which this calculation presents to us, seems to furnish a satisfactory enough proof of the proposition, that the quantity of disease and the extent of mortality, will be nearly the same in both civil and military life, and in hot and cold or temperate climates, the circumstances of the conduct of life, common to both, being the same in both. It is to be recollected that, during the period, within which this state of the sick of the Ordnance existed a pestilential fever raged in all the islands—and that this department of the army had their full share of suffering from it. Allowing, therefore, for the operation of pestilence, superadded to endemic causes of disease, I was enabled to construct



this equation, viz.  $1350 - 450 = 900 \div 450 = 2, 1$ . But, allowing endemic causes of disease alone to have operated, then it will stand thus— $1350 - 300 = 1050 \div 300 = 3, 150, 1$ . That is, in the first case, it will be 2 : 1 that an artillery soldier will live in the West Indies four years; but that in the second it will be more than three to one that he will live the same number of years. In comparing these chances to the chance which men possess in Great Britain, of living the same time, we must keep in mind that as military men are generally from twenty to fifty years of age, and consequently adults, and as the fourth part only of the population of any country, is adults; so must the fourth part only of the chances calculated of any number of the latter maintaining life, for a given time, be compared to the chance an artillery soldier has of living the same time, within the tropics. This alone can place men in civil and military life on an equality of age, and this alone can give the comparative chance sought for. Now it appears by the calculations of political economists that three, sixty-six to one, or the fourth of the average chance, is the chance an adult of thirty years old, in London, has of living four years. Hence we have a considerable probability that a man of 30 years old in London, has only a trifling chance (1.66) greater of living four years than an artillery soldier in the Carribbæan islands during war, and the existence of pestilence superadded to the endemic causes of disease; but that in common circumstances of war, or during the existence of endemic causes of disease alone, the chance of the former will be eighty-four less. I am perfectly aware there are weighty objections to the data, and consequently to the result of this calculation, so that a standard of comparative chance cannot be fully established on them. I aspire only to an approach to truth where the object is necessarily involved in difficulty and doubt: but it will serve at least to show that the climate of the West India islands has been charged with destructive effects on the human European constitution, it is not, itself, in truth, productive of; and that, in peace, this charge is still more unjust. Many remarkable proofs of this occurred during the peace, from 1784, to the fatal introduction of the infection of the malignant pestilential fever in 1793. These proofs shew that it is possible in the West India climate to preserve a degree of health unknown in the variable climates of Europe and North America. The absence of marsh miasmata, and the irregular temperature of the higher islands, is understood in those proofs; and the inhabitants of both countries are to be considered as placed in the common circumstances incident to their usual mode of living. I shall only present the reader with two in military life, although I have in my power to adduce many from both civil and military. The 9th regiment, stationed on Brimstone-hill St. Christopher's, in five years, viz. from 1787 to 1793, lost only seventeen men; that is, allowing the average strength of the regiment to have been annually 500, 1 in 147—or it may be stated thus,  $500 \times 5 = 2500 \div 17 = 147$ . The 66th regiment, stationed on Dorsetshire-hill, St. Vincent, from 1786 to

1791 lost only thirty men, that is, allowing the average strength to have been annually, 500, 1 in  $83\frac{1}{3}$ —or  $500 \times 5 = 2500 \div 30 = 83\frac{1}{3}$ . These statements give an average of loss in the two regiments of 1 in rather more than 108. But in order to put this in the strongest light, let us suppose the strength of the first of these regiments to have been 500, and their loss by death in one year to have been 17, instead of 17 in 5 years, then the proportion would be 1 in nearly 30. Compare this case, infinitely exaggerated beyond the truth, with the mortality which annually takes place in England and Wales. From the year 1780 to 1809, the proportion of mortality has varied from 1 in 40, to 1 in 53, giving an average of mortality in the general population of 1 in 46, a difference by no means great, when we consider that in the former case, the calculation is from the mortality among adults alone—military adults; in the latter among the general population. If, however, the calculation is made from the mortality among the male adults of both, the difference will be 18 to 8 in favour of the 9th regiment. (See *Observ. on the Bulam fever* by Dr. Pym, p. 130, for the dates and deaths of the regiments.—*Observ. on the circumstances which influence the condition of the labouring classes of society*, p. 58, as quoted from the last edition of *Malthus on Population*, by J. Barton, 1817.)\*

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\* The proportion of mortality in England since the year 1780, to the year 1810 inclusive appears from the report of Mr. Rickman, of the population in 1811, to have been, from 1780 to 1790, 1 in 50—from 1790 to 1800, 1 in 57—from 1800 to 1810, 1 in 49—or on an average of thirty years, 1 in 47. Mr. Malthus states the proportion of mortality of England previous to 1811, at 1 in 40.—He states the mortality of Norway at 1 in 48—of Russia, 1 in 48—of Sweden, 1 in 35—of Holland, 1 in 23—of France, 1 in 30.—Mr. Susmilch states the mortality for all countries at about 1 in 36. See P. Colquhoun's *Treatise on the Wealth, Power, and Resources of the British Empire*. Ed. 1815, p. 20.

The very judicious and highly important remarks of Mr. Colquhoun in the concluding chapter on the West India islands, are very opposite to the facts I have adduced in the text—I here transcribe them. “The more  
“this interesting subject is investigated, the greater will be found the  
“importance of the conclusions to be drawn from an accurate knowledge  
“of facts. Early and judicious measures, well conceived, and prudently  
“executed, may preserve these valuable colonies to the parent state for  
“which it may be difficult, if not impracticable, afterwards to remedy.  
“When Barbadoes and St. Christopher's were first settled, the cultivation  
“of the soil was conducted entirely by emigrants from England, who  
“grew rich and flourished, before negroes were employed. And had they  
“remained stationary, their dwellings would have been more numerous,  
“and embellishments would have surrounded them, indicating comfort  
“and contentment, which can never prevail under the present system.—  
“To those who must labour with the sweat of their brow in this country,  
“ (England) for a scanty subsistence, one half the corporeal labour in a  
“tropical climate would produce the greatest abundance, with the cer-  
“tainty of a surplus in proportion to the industry which would be em-  
“ployed. Such was the state of the first settlers of Barbadoes; when by  
“their own industry a population of ten thousand found the means of  
“support. In an evil hour the black population was introduced, and

## CHAPTER III,

ON THE MEANS OF PREPARING THE EUROPEAN CONSTITUTION FOR  
THE PROCESS OF ASSIMILATION TO THE TROPICAL CLIMATE.

IN the course of a long residence in the West Indies, I have observed that the descriptions of men most subject to the attack of the higher grades of the remittent fever, as well as that of the malignant pestilential fever, have evidently been such as are unhabituated to the torrid zone, and such as possess plethoric habits, sanguineous temperaments, and rigid fibres:—and that in proportion as their residence is lengthened, and the circumstance of predisposition removed;—in other words, as the process of assimilation advances, so is the danger attached to the diseases they may encounter, lessened. The principle this assimilation depends on, may, I imagine, be deduced from the statements in the preceeding chapters. I have said that solar heat, although seldom a direct, should always be deemed an indirect morbid cause, in as much as it powerfully predisposes the system of the native of a cold or temperate climate to be acted on by the direct endemic or imported causes of disease, he may be exposed to on his arrival in the tropical. It follows, therefore, that the lessening the action of heat on the system of such a person, constitutes the principle on which assimilation depends; and in its consequence gives a ready solution to all the phænomena of seasoning. It is manifest, however, that tranquillity of mind and body, for sometime after arriving in the tropical climate, is a necessary condition to give effect to a plan of preparation founded on this principle. In those cases where this condition cannot be complied with, the plan must necessarily fail, or be only very partially successful. Hence the difficulty of effecting this object among troops, employed, immediately after their arrival, on actual service: during which, the excessive heat and fatigue during the day, and

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“from that moment the white inhabitants ceased to labour.” (p. 379.) And well might the able political economist add—and to be independent, for few are the instances of absolute independent fortune, compared to the general mass of planters, obtained from land cultivated by negroes. At present, 1821—the abolition of the slave trade, the consequent inability, experienced by the planters, to keep up the number of labourers sufficient for the cultivation of land, the immense price paid for slaves by the few able to purchase them, and the comparative low price of produce, have united in obliging many planters to abandon their lands, which are, therefore, unoccupied and waste. What a resource for the surplus of the population of Great Britain and Ireland, now plunged in wretchedness, by want of employment and all its attendant evils! For the lands thus unoccupied, are generally extremely fertile, and in the situations most salubrious of our colonies, where, we have seen, the proportion of mortality even among military men, is not more than 1 in more than 100.

the cold and humid evaporations in the night, they are alternately exposed to, together with the large quantity of animal food which enters into their diet, gives a manifold increased aptitude to suffer by endemic or imported causes of disease. Could, however, the exigencies of the state, and the situation of the colonies, during war, permit the indulgence of a few months of ease and tranquillity, with a cooling refreshing diet, to troops, on their arrival from Europe, in an island where endemic causes of disease are not common, such as Barbadoes, St. Christopher's, St. Vincent, and the higher situations in Grenada, and the other islands, not subject to irregular temperature, there is no doubt a great deal might be done to prevent the danger in assimilating their systems to the climate. The situation of white European servants, on plantations and in counting-houses of merchants, is, in many respects, similar to that of soldiers on their arrival from Europe. They have, not unfrequently, the misfortune to be employed by inconsiderate masters, and are consequently exposed to all the heat of a sun which raises the mercury of Fahrenheit's thermometer to  $120^{\circ}$  and  $130^{\circ}$ ; to sudden alternations of this heat with cold moisture, which, sometimes, sinks the same thermometer, in an instant, nearly  $40^{\circ}$ ; to great fatigues in occupations, the very opposite to their former habits, and perhaps totally uncongenial to their dispositions—and to uncomfortable accommodation, and heating irritating diet. When humanity and generosity, and I may add, the interest of sound policy, direct to a different treatment, assimilation goes on tranquilly, and they become capable of enjoying health, equal at least to what their native air might permit. The situation of persons in better circumstances of life, leaves it optional to themselves, whether they shall be healthy, or fall victims to their own imprudence and irregularity.—With respect to troops and men employed in the plantations, in commerce, or in the shipping, the words of the illustrious Pringle, the unequalled model and prototype of this species of writing, are very applicable, for it may be truly said, “that the whole amounts to this; considering all the hardships, and expositions to colds attending the easiest service, those troops will be best seasoned to undergo the fatigues of a second campaign, whose constitutions have been least weakened in the first.” (Observations, p. 122.)

In crossing the Atlantic to the West Indies, the change of temperature is gradual; and it is not till the  $24^{\circ}$  of N. latitude is reached, that the thermometer rises to a height varying from  $72^{\circ}$  to  $80^{\circ}$ , when the human body perceives itself materially affected by the heat. The difference between the heat in the shade and in the sun, is, in this latitude, almost never more than from  $6^{\circ}$  to  $8^{\circ}$ .—At this period of the voyage, catarrhal complaints, and determinations to, and slight congestions in the lungs, the liver and head; together with eruptions on the surface, and a tendency to stupor and drowsiness are felt. The presence of these, and the degree of their violence depend altogether on the person's being accustomed to continued and uniform heat, as well as on his temperament at

the time ; consequently youths and men in the prime of life, on their first voyage, are most acted on by the augmentation of heat. If nothing is now done, a febrile diathesis of more or less danger may be excited ; but if measures of common prudence are resorted to, the symptoms I have mentioned, gradually disappear, the perspirative process readily carrying off the surplus of heat. On arriving in the West Indies, the danger of the unassimilated is always in proportion to the measure of prudence adopted ; and the rest and tranquillity they are permitted to enjoy, in a cool healthy medium. The wise provision of nature often compensates, indeed, for the indiscreet conduct of strangers to the climate, an ample flow of perspiration rendering ineffectual their own endeavours to give additional predisposition to disease ; but this is still oftener counterbalanced by a variety of causes. If nature is disturbed or counteracted, by intoxication, by violent exercise, by a lengthened and especially a stationary exposure to the rays of a fervid sun, by late hours, by night air and dews ;—the heat accumulates, and conjoined with other morbid causes, to whose action it predisposes, produces the most fatal effects. With this idea of the process which takes place in the human system, on a change from a cold or temperate, to a hot climate, we can readily perceive the utility of resorting to the following preparation.

On reaching the northern tropic or N. lat.  $23^{\circ}$ , every stranger to the torrid zone should be bled to an extent proportioned to his age and strength ; and a pill of five grains of calomel, given at night, and a saline purgative the following morning. The bleeding should be repeated, if necessary, once before landing ; but the calomel and salts should be frequently resorted to ; and this will be more necessary, should there be a disposition to constipation. I have already observed that on approaching the tropics, a considerable tendency to congestion is perceived :—this greatly increases on a further advance, more especially hepatic congestion, which, in fact, is the most serious consequence to be apprehended on entering the tropics.—Nothing more effectually obviates this than moderate bleeding, and mercurial and saline purgatives. To assist this course, the diet should be made as cooling as possible. Perspiration being the great means employed by nature to carry off the superfluous heat, every thing which tends to restrain it should be avoided ; dilution is, therefore, in every respect, highly necessary ; and it is evident, that, with this view, water is the fluid best calculated, for whilst it promotes perspiration, it necessarily prevents determinations and congestions. Should any addition be deemed necessary, it should be such as may render the water more pleasant, and give it a greater tendency to increase alvine evacuation and perspiration. These effects cannot be promoted by the copious commixture of ardent spirits, so freely indulged in by soldiers and sailors ;—nor can the intention of dilution be fulfilled by the large quantities of wine and fermented liquors indulged in to an equally destructive excess, by a great majority of men in the higher walks of life. When the fore-

going course is begun, it should be further seconded by daily cold bathing, either by immersion or affusion. No rule can be more easily adopted and pursued on ship-board, so that any direction for carrying it into effect, seems quite unnecessary. It is, I hope, equally unnecessary to direct the attention of commanding officers of troops, in transports, to the indispensable objects of sweetening the ship, by scrubbing and inspersion, fumigating and ventilating. During the whole voyage these should be assiduously employed; but certainly more so, on entering the hot latitudes. Other precautions are equally necessary to preserve health, to prepare for change of climate, and to prevent or destroy infection. I shall notice only the dividing the men into watches according to their number; maintaining due discipline; using hammocks instead of berths; exposing these and the blankets on deck during the day; not permitting the use of beds or mattresses; encouraging cheerfulness and innocent mirth; and enforcing such exercise as the situation admits, such as dancing more especially.

After landing, the first object is to place troops, without any unnecessary delay, in a situation not subject to the influence of marsh effluvia, but perfectly open to a uniform uninterrupted perflation of sea-wind, and so high above the sea as to secure an atmospheric temperature of from  $70^{\circ}$  to  $80^{\circ}$ . Every arrangement for this disposition of the troops should positively be made before they quit the ships, so as to avoid delay on the sea shore, or in towns, the sure foundation of future evil. No cause should exist for this fatal detention after debarkation from a cold climate—but most unfortunately it happens, that proper arrangements, and this salutary disposition of the troops, unaccustomed to a hot climate, are almost never made; but they are allowed to lie on a burning beech, or to intoxicate themselves with the inflammatory liquid poison sold to them under the name of rum, in grog-shops, or by huksters. A most lamentable error!—New hammocks and blankets should be distributed; the diet should be regulated by the Regimental Commanding Officers, and not left to the whim, caprice or indolence of the men themselves, who should be divided into messes of six or twelve, and who should have their victuals cooked, either by one or two of themselves most capable, or by skilful negroes, constantly and exclusively employed for that purpose. Exercise should be frequent and regular, but not fatiguing; and exposure, during exercise, to the sun, should be gradually introduced, so that the body may become accustomed to its usual heat, before the exertions of the men in the field are required. I may here express my astonishment, that although it is well known that atmospheric temperature is greater or less, according to the altitude of the situation; and that the influence of marsh exhalations is more or less perceived, in the same proportion; no seasoning barracks have, I believe, been ever thought of, for the accommodation of troops, during the first three or four months of their residence within the tropics. Until a measure of this kind has been adopted, raw troops must be

unhealthy, must perish before they are employed in actual service, A better preparatory measure cannot be employed! The very reverse of this seems long to have been the plan; and ever must remain to be the plan, whilst ignorance and selfish views direct it—Be that as it may, assuredly that which is at present generally pursued, is productive of no good, but infinite positive evil—for thousands fall victims to the fatal impression made on their constitution, by this culpable policy—if policy it may be called.

Medical treatment, after landing, must be regulated by the same principle as during the voyage. Plethora must be diminished by occasional bleeding and purging; the surface of the body must be kept clean and permeable, by bathing twice in the week in cold water—the sea, if convenient, is preferable. Some discrimination, however, must be observed in bathing;—for, if congestion has already taken place, the tepid bath must be substituted; or simply washing the body, instead of immersing it, if cold water only can be found. There are great and obvious objections to the use of the tepid bath by soldiers, such, chiefly, as the frequent impossibility of procuring it; but these do not apply to individuals who possess the power of accommodating themselves to circumstances; and to such, it is evident, the tepid bath may be highly beneficial. It is difficult to remove from the mind of a native of a cold climate that flannel next the skin and a hot climate, are absolutely inconsistent, although every day presents innumerable proofs of the contrary.—This excellent and simple means of prevention of disease, is now, universally adopted in the army, and with the best effect. There is another preventive means I am induced highly to recommend, from my knowledge of its utility—I mean inunction, so universally employed by all eastern nations. The efficacy of this preventive in the cure of plague, is not its least recommendation. It would, doubtless, be a wise measure of Government, to instruct the Commanding Officers of Regiments destined to serve in the torrid zone, to enforce, as a regulation not to be deviated from, the anointing the bodies of soldiers with warm olive oil, in the morning, before dressing themselves. Such an instruction, sanctioned by government, cannot surely be considered as unnecessary; nor can any ridicule be attached to it, when we reflect on the salutary nature of the measure itself, and when we know the dreadful consequences which have so often resulted from the neglect of it. In the colony of Demerary, in Guiana, a singular and almost uninterrupted freedom from disease is enjoyed by the labouring negroes, who are never permitted to make use of any other covering, in the way of clothing, whilst at work, but such as is sufficient to answer the purposes of decency. The nature of the country, renders immersion in water during work, to the middle, very frequently necessary; and during the rainy seasons, they are, at the same time, exposed to rain. To counteract the supposed baneful effects of these causes, nothing is done, but furnishing them most amply with wholesome nutritious, chiefly vegetable, food. Is it the equable

temperature, which leaving their bodies in almost a state of nature, produces the cause of this uncommon health? This is more than probable from the fact, that sickly negroes, and those subject to the *mal d'Estomac* (*cachexia Africana*) of the islands, when sent to Demerary, and reduced to nakedness, and well fed, have their health quickly restored to them. Besides this, there can be no doubt that the "unctuous sweat" peculiar to the negroe, which we may suppose guards the system against the effects of wet, contributes much to this end; for it is not absorbed by clothing, and is consequently always present during labour, and "sustains a more uniform perspiration as well as evaporation." (See Dr. Currie on this subject, Reports ch. 15, where it is treated with his usual ingenuity and perspicuity.)—A most important means of preserving health within the tropics, is to keep the surface of the earth, for a considerable distance round the barracks, or quarters of the soldiers, and the dwellings of men in civil life, perfectly clear of brush-wood and the long grass and rank weeds, which grow so abundantly and luxuriantly in all uncultivated grounds.—Remittent fevers and dysenteries, during the warm months, are always the consequence of neglecting this easy precaution.—Many instances could be adduced in proof of this—(for one remarkable instance in the 45th regiment at Grenada, see *Edin. Med. and Surg. Journal*, vol. vi. p. 393.) Wherever it is at all practicable to combine the exigency of public service, and the health of troops, no means should be left untried to do so; and the sure means of doing so, is to occupy a position distant from the influence of marshes, or even screened from it by the intervention of a projecting hill, and as little as possible subjected to the irregular temperature of high situations; to regulate the diet on sound dietetic principles, always in the power of a commanding officer of a regiment, however scanty the supply of provisions may be;—to keep the persons of the men clean by bathing, and by obliging them to wash their own linen, a regulation by no means difficult, and in its effect of an importance few are fully aware of;—to observe regular parade duty, without the silly minuteness of the martinet, always a troublesome, and seldom, perhaps never, an useful character; and, generally, to enforce all the points of useful discipline, as it regards the health, the morals, and the military ardour of a soldier. The most effectual way to accomplish this highly important object, on which the result of all military operations necessarily depends, is by impressing precept by example—how indeed can a soldier be expected to accede to regulations, and a system of conduct, which he sees neglected by his officers. It is the nature of man to imitate his superiors in rank—let these superiors maintain their authority, therefore, by manifesting that moral, that correctly religious mode of life, and that obedience to command, and that coolness and spirit before the enemy, which mark and distinguish the genuine military character; then, and then only, shall the British army be composed of *good* soldiers.



Of the efficacy of the intervention of a projecting hill in preserving soldiers from the influence of marsh exhalations, I have known many proofs. The first I experienced was at Kingsbridge, near New York, in the year 1778. The two companies of the right wing of the 71st regiment, to which I was then surgeon, were so placed as to be immediately exposed to marsh exhalations, with which that post abounded; the rest of the regiment were screened from them by a projecting clift, but distant from the two right companies only a few hundred yards.—The consequence of this accidental arrangement was, that two-thirds of the two companies were sick in hospital, whilst the remainder of the regiment had scarcely any sickness.

The process here described for preparing the European, more especially the British, constitution for assimilation to the tropical climate, will serve pretty well to produce all the prophylactic effect on that constitution, which the ingenious Dr. James Johnson very judiciously assigns to a protracted voyage to India, which “during the period of time necessary for its performance, gives the human frame the best possible means of accommodating itself to the change of climate—by a more steady range of temperature, and of a lower degree, than that of the ultimate destination.” (*Trop. Climates*, 2d Ed. p. 78—81.) Such a process too seems the most likely to bring the endemic yellow remittent fevers of the west to a level with those of the east, by lessening inflammatory action, and moderating “the orgasm in the hepatic system.”

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## CHAPTER IV.

THE SEASONS COMPARED WITH REGARD TO HEALTH; AND THE DISEASES INCIDENT TO EACH, IN THE WEST INDIES.

A TABLE constructed on the returns of sick of the Ordnance department in the Carribæan islands, from 1793 to 1797, inclusive, gives the following statement—there were twenty quarters thus arranged—five March quarters, gave an average number of sick equal to 489; five June quarters, an average number of 612; five September quarters, 833; and five December quarters, 731. From this it appears that the months of July, August and September, have been the most sickly; that October, November and December, have been the next most sickly; and that January, February and March, have been the least so. This result is strictly conformable with the observations of attentive physicians; and the revolution of eighteen years of my own observation in the West Indies, has established its truth. In the foregoing statement care has been taken to deduct the number which laboured under the malignant pestilen-

tial fever, so as to show the genuine effect of the seasons, and of the endemic causes of disease. We thus find the remark of Sydenham extends to the torrid zone—"porro et sua habet incrementi ac declinationis, tempora, non secus ac cæteræ rerum naturalium species." Disease most certainly has its seasons of increase and decline, and each climate exhibits a variety in those seasons conformable to its peculiar nature. Thus, if we compare the statement I have here given of the proportion of sickness in each season in England, we shall find a curious illustration of the remark. For this purpose I shall beg leave to make use of Dr. Woolcombe's ingenious and very useful work on this subject; as he has concentrated, as it were, I believe, all the observations which have been published in England on "The Influence of the Seasons on Mortality:"—and for the sake of a clearer distinction, I shall mark the seasons, according to the influence they possess, by the numbers 1, 2, 3, 4; 1 being that possessed of greatest influence.

| WEST-INDIES.    |     | ENGLAND.         |     |
|-----------------|-----|------------------|-----|
| July - - - -    | } 1 | December - - -   | } 1 |
| August - - - -  |     | January - - - -  |     |
| September - - - |     | February - - - - |     |
| October - - - - |     | March - - - -    |     |
| November - - -  | } 2 | April - - - -    | } 2 |
| December - - -  |     | May - - - -      |     |
| April - - - -   | } 3 | September - - -  | } 3 |
| May - - - -     |     | October - - - -  |     |
| June - - - -    |     | November - - -   |     |
| January - - - - | } 4 | June - - - -     | } 4 |
| February - - -  |     | July - - - -     |     |
| March - - - -   |     | August - - - -   |     |

No comment is required, the contrast being most evident and remarkable.

The foregoing table, by pointing out the most sickly and most healthy seasons, and the gradations between them, also leads to another consideration of the highest importance, the season for landing troops from Great Britain in the West India islands. Thus it is evident that great care should be taken to send soldiers, particularly new levies, to the West Indies, if possible, before the month of October; for if the men, intended for the West Indies, are embarked, or rather sail in September, or early in October, the dangerous period, between that and the dry season, is employed in crossing the Atlantic; and they reach the torrid zone, when drought with a moderate temperature, has dissipated, in a great measure, the endemic causes of disease; and during the healthy dry months which follow, their constitutions, providing the instructions already pointed out (ch. 3d) be properly attended to, are, in a considerable degree, assimilated to the climate; they are better prepared to encounter the sickly miasms of swamps, concentrated by heat; and they may, if the urgency of the service requires it, with less risk

from a new climate, discharge the duties of their stations in the field. There are, often, circumstances, no doubt, under which it may be impossible to attend to a policy dictated by reason, and confirmed by experience ;—and morbid causes may exist, within the tropics, which may baffle the most judicious arrangements ; but under such circumstances, and exposed to such causes, judicious arrangements, if they cannot altogether prevent, they may, at least, render the result less destructive. The very pernicious consequence of employing soldiers in very active service, *immediately* after their arrival from England, and more especially under the extraordinary circumstance of an existing and ravaging infection, superadded to endemic causes of disease, is evinced by the lamentable fate of Sir Charles Gray's, Sir Ralph Abercromby's, and of the army sent to St. Domingo during the last war.

The endemic diseases of the West Indies, and of all tropical countries, are either bilious or inflammatory, as the seasons are hot and wet, or cool and dry. Thus, in the summer and autumnal months, or that portion of the year which includes the rainy and hot season, remittent fevers, dysenteries, colics, cholera morbus, phrenitic affections, and ulcers of the legs, particularly those of the herpetic kind, are the most prevalent diseases ;—and, in marshy districts, at this time of the year, obstinate intermittents, generally, almost always indeed, depending on glandular obstruction and visceral inflammation, yellow remittents of the most concentrated kind, and hepatic dysenteries are very common, frequently epidemic, and very fatal. During the winter and spring, when northerly winds chiefly blow, and occasion, in exposed situations, an uncommon and disagreeable chilliness, but when the atmosphere is less moist than at any other time of the year, pleuricies, often attended with fever, catarrhal fevers, rheumatic fevers, ophthalmias, inflammatory anginas, erysipelas, chronic rheumatism, and the guinea worm, in certain situations, are the most common epidemics. At all seasons, hepatic inflammation is very frequent, particularly in those districts which are at all marshy ; and when it is anomalous, always epidemic. Worms are also common, and frequently give rise to very extraordinary symptoms. Other diseases appear, which certainly are not influenced by the seasons ; but nevertheless, they are not less tremendous in their consequences, although much longer protracted in their course. These are, every species of herpes, elephantiasis, the glandular disease so well described by Dr. Hendy, of Barbadoes, hydrocephalus, yaws, putrid and ulcerous sore throat, mortification of the fingers and toes, chronic apthæ, lepra, tetanus and trismus nascentium, and occasionally hydrophobia. The latter settled islands have been often visited by the small-pox, sometimes of the confluent and malignant kind. In every instance, this disease has been introduced from the coast of Africa, by slave-ships. It is now, however, a very rare disease since the abolition of the slave-trade, and the introduction of vaccination. The measles and hooping cough seldom appear within the tropics,

No instance, as far as I have been able to learn, has occurred of a bite or sting of any poisonous reptile, snake or serpent, except in the islands of Martinico and St. Lucia, and the colonies of Demerary and Berbice. Scorpions, scolopendras, a hideous species of spider, called Tarantula, and two or three species of wasps, are sometimes troublesome, occasioning painful inflammations by their stings. They are, however, never poisonous. The sting-rays very frequently inflict dangerous wounds, and the spines of the sea-eggs, often, unperceived, give the unwary a shock as violent as that of electricity. The little wounds they inflict, though not dangerous, are exceedingly troublesome and painful. The negroes employ a very simple method of extracting the spines of these animals:—they place the patients foot over a fire as close as possible without burning, and when the part is sufficiently heated, they rub it well with candle-grease, and repeat the operation three or four times; they then wrap the foot up.—After a few hours, the spines fall out. The pain ceases after the first operation—chicoes are also extremely troublesome to strangers;—a single drop of spirit of turpentine applied to the part into which the insect has insinuated itself destroys it. The insinuation of the sucker of the mosquettoe, a large species of the gnat, another very troublesome insect, is attended with no unpleasant consequence, if the person stung abstains from disturbing the insect in its operation, or from rubbing the part after it—a self-denial, however, almost impossible. Sometimes disagreeable and even obstinate ulcers have been the consequence of breaking off the sucker of the mosquettoe by rubbing the part whilst it is employed in sucking—lime-juice is an excellent remedy in these cases, both as preventive and curative.

The foregoing rapid sketch of the diseases of the tropics, gives a division of them into those which follow or arise out of the course of the seasons, and are, therefore, properly speaking endemic; and those which are adventitious and sporadic or foreign. The first of these may be sub-divided into those which proceed from marsh exhalations; and those from the irregular temperature of the atmosphere, more especially, that irregularity produced, during the dry season—and the prevalence of northerly winds, at that time peculiarly piercing and chilly, by the frequent alternation of hollows and projections of the surface of the country;—thirdly, those from cold and moisture united—and, fourthly, from imprudence in diet, exercise and clothing.

1. Of all these sub-divisions, the first, proceeding from marsh exhalations, are, by far, the most formidable both in appearance and reality; and from them proceeds the greatest proportion of mortality. In some situations, even a twelfth of the inhabitants of marshy districts annually perish. Those afflicted with the diseases, peculiar to such districts, are either carried off in the proportion I have stated, or languish out a wretched existence till the return of the dry season, when they recover health in some degree, or remain tolerably well till the rainy and hot season again developes the seeds

of disease. Their only absolute safety is to quit the marshy district during the sickly season, but this the more opulent alone can do. The yellow and sallow complexion of those who may be considered *ascripti glebæ*, manifest the nature of the air they breathe; and the short lives of the men, more especially, constitutes a still more forcible testimony. This observation is remarkably applicable to the Lamentin and other marshy districts of Martinico, where the cause and the effect are most prevalent:—but it is more or less so, to every island, and every country, within the tropics, possessing marshy districts. Many of the bays or inlets of these countries, whilst they derive their security, also derive their unwholesome air through the agency of the hills which surround them, which gives them an atmosphere little agitated by winds, and in which, consequently, the morbid exhalations from the marshes which form the coast of these bays, continue suspended, accumulate, concentrated by heat, and become infinitely more pernicious. The French have, therefore well denominated these situations “*lieux etouffés*.” In one of these little land-locked bays, within the great bay of Fort Royal, Martinico, called “*les trois îlets benits*,” it was usual, after the occupation of the island by the British, in 1724, for the admirals on the station to secure the ships of their squadron, during the hurricane months; a custom uniformly productive of the most mischievous consequences to the crews. In the year 1795, the *Majestic*, 74, Admiral Sir John Laforey’s ship, whilst shut up in this “*gouffre de la mort*,” as the French appropriately named it, lost in seven weeks, 189 men. A good deal of this mortality, no doubt, was attributable to the malignant pestilential fever, the infection of which then very generally prevailed in the squadron;—but during the same months of 1796, Admiral Harvey’s ship, the *Prince of Wales*, lay at the same place, and lost 97 men, without any suspicion of infection;—and during the same months of 1797, the same ship lay in the open bay of Fort Royal, about a mile from shore, and did not loose a man. The carenage or harbour of Fort Royal during these years, exhibited a still more lamentable proof of the dreadful insalubrity of these situations; the yellow remittent fever having committed almost universal devastation among the crews of the transports and merchantmen moored in it, on account of its safety and convenience. In truth, this harbour is the most secure from winds, but at the same time the most sickly situation in the West Indies; and yet some ingenuity and the judicious expenditure of some money, might in this, and in most other similar situations, considerably lessen the danger attached to them. Errors in moral conduct, and in the regulation of diet, however, are often the stimuli or the irritants which bring forward these causes of disease into action, for it has been observed, where men have been prudent and temperate, they have not suffered at all, or if the fevers of such situations come on, they have been milder.

2. The second sub-division is little less dangerous, and more insidious, if possible, than the first. In the month of November in-

flammatory symptoms begin to appear, blended with those which may be called bilious, or those which are more peculiar to the hot and rainy season. In January, February and March, during which the nights, mornings and evenings, are cold, and the days warm, violent pleurisies, hepatic inflammation, coughs and rheumatism prevail much. This state of weather, and the diseases incident to it, are much more evident in the North and North-east sides of the islands, than in the leeward sides; and doubtless proceed from the former being much more directly exposed to the piercing northerly winds, called Norths by the inhabitants, which almost constantly blow during the Winter and Spring months. During the time between the wet and dry seasons, and between the dry and wet, there is, sometimes, a kind of anomaly in the symptoms when these appear;—thus, pleurisy and hepatitis then assume a diathesis which has been designated in Europe, typhoid, which gives them a character of peculiar danger and insidiousness. A very remarkable instance of this occurred in the island of Grenada in the year 1785. The Spring months of that year were distinguished by sudden changes from excessive drought to excessive moisture, from great heat to a very considerable but variable degree of cold. An epidemic anomalous hepatitis was the consequence, most insidious in its symptoms, and most fatal in its result. It was chiefly prevalent in those districts of the island which are most exposed to the influence of the chilling northerly winds; and was most epidemic and most fatal in January and February, when the degree of cold was greatest. All colours, sexes and ages were subject to it. It is not a little singular that the vicinity of marshes rendered the disease considerably more anomalous, insidious and dangerous. So much, indeed, did this disease partake of the typhoid character that Dr. John Stewart and myself, who for some time jointly observed and treated it, had reason, in many instances, to consider it contagious.—A full account of this disease was published in the Edin. Med. Commentaries for 1786. In other situations in the West Indies this anomalous hepatitis has been observed, and always with greater insidiousness and danger in proportion to the vicinity of marshes, a detail of its symptoms and treatment is given in Part ii. ch. 4, sect. 1.

A stranger to the climate of the torrid zone, trusting to a general view of it, and believing that its diseases must necessarily proceed from heat; and not aware of the change of temperature and direction of the winds, at the commencement of the Winter months or dry season, believes that catarrhal complaints of every description must be infinitely more rare than they really are in the torrid zone. There is not, however, a more fatal error. M. Desportes, a most intelligent French physician, who practised many years in the island of St. Domingo, observed that “*les habitans des pays chauds sont encore plus sujets aux catarrhes que ceux des tempérées. L’alternative du chaud et du froid arretant ordinairement trop subitement la transpiration, doit occasioner des engorgemens dans les*

“parties exterieures.” (Hist. de Malad. de St. Domingue, tom. i. p. 70.) This extract comprises almost every thing that can be said on the subject. Catarrhal fevers are very common in the dry season;—and once during my residence in the West Indies, has that species of it, called in Europe, Influenza, appeared in the months of November and December of 1789, and January 1790. This, however, was of foreign not endemic origin. (See Edin. Med. Comment. for 1791.)

3. The third sub-division, viz. the diseases from cold and moisture within the tropics, also demand a no less assiduous attention. Exposure to this state of the atmosphere has always been found injurious to the human constitution in hot climates. In these climates, this combination has never failed to produce the effects of marsh influence, united with the inflammatory diathesis proceeding from cold alone. In fact its product is typhoid inflammation, which is always topical, and often attended by symptomatic fever. The form the inflammation assumes is either pleurisy, hepatitis or rheumatism, and the type of fever is remittent generally, often intermittent. The intestinal canal is not unfrequently the seat of this inflammation, and almost always in the form of dysentery, so often experienced by armies obliged to lie on wet ground, and after exposure to rain and great fatigue. The most remarkable instance of this, within my own knowledge, occurred to the army under the command of Sir William Howe, after the battle of Brooklyne, on Long Island, near New York, in August, 1776. The regiment (71st Highlanders) I was then surgeon to, suffered so much from this cause on that occasion, that more than half their number, were seized with dysentery, and a great many fell victims to it. Another disease, often of a very distressing nature, and, not unfrequently, dangerous, proceeding from this state of the atmosphere, is chronic apthæ. It is peculiar to this disease, that natives of the tropical regions, are most subject to it. The predisposing cause is debility, brought on by improper or insufficiently nutritious food, or by various indulgencies. Dysentery and chronic apthæ, when produced by the combination of cold and moisture, have, consequently, a common remote cause, and both are the immediate product of typhoid inflammation, but the form of disease is regulated by the habits and states of system, that cause acts on. They are both mere modifications of the same diseased action, and their medical treatment must depend on the same pathological principles.

4. The fourth sub-division of endemic diseases, are those proceeding from imprudence in diet, exercise and clothing. Imprudence and intemperance are most prolific causes of disease in hot climates, either as predisposing to the action of endemic causes of disease, such as those enumerated, or of those which may be called foreign or imported;—or as they themselves are more immediately the causes of some of the most fatal of the former. Often in situations where no marshes exist, extreme imprudence in exposing the person to a very high temperature during the day, succeeded at

night by chilling dews;—and extreme intemperance in eating and drinking, more especially the last;—are followed almost immediately by fatal yellow remittent fever, or no less fatal hepatitis, terminating with rapidity, little known in cold climates, in gangrene of the liver. Dysentery and enteritis are also very frequently the consequence, and as frequently prove fatal, by a quick termination of the disease in mortification of the bowels. Most certainly no rule of conduct, no means of preservation or prevention are more necessary to a stranger, or even to the assimilated to the climate of the tropics, than those founded on prudence and temperance. I have seen the fatal effects of a contrary conduct, in very many instances in the course of a very few hours; by a fever of a most uncontrollable nature; by hepatitis which resisted the most powerful remedies, hurrying the liver into mortal gangrene; or by enteritis equally irresistible. Happily, prudence and temperance are now more observed, consequently these melancholy consequences of their neglect, are less frequently met with than when I first settled in the West Indies, and for some years after. A want of due clothing as well as a superfluity of it, are equally excitants in a cold wet, or a hot and wet atmosphere. In the one case, perspiration is suppressed, in the other it becomes too profuse. In this last state, exposure to a cold current of air soothes, by cooling the surface of the body, but it is, generally, succeeded, if continued any length of time, by the effects of imprudence already stated. The only safe way of relieving the body from this superfluous heat, is to strip off all clothing in a room where there is no draught of air; and whilst naked, to dash cold water quickly over the surface, and as quickly to wipe it dry and dress. The safety and moderately cooling effect of this method, I often experienced in my own person, the animal heat diminishing with pleasing feeling and perfect safety, from  $101^{\circ}$  to  $98^{\circ}$ . Another method of reducing animal heat to comfortable feeling, is by continued immersion in cold water, either upright or horizontally. This is not unfrequently resorted to in the West Indies, and in countries possessing the same temperature in Summer. (See Essay on Malig. Pest. Fever, Vol. ii. p. 464.—Curries Reports, Vol. ii. also Hobhouse's Albania, p. 270.)

Under this sub-division may be classed ulcers; a disease very common during the hot and wet months, and which a little caution, in avoiding all those things which may slightly wound or even scratch the skin of the legs, may prevent. When accidents of this kind take place, and are neglected, it is wonderful how quickly the little sores degenerate into extremely troublesome ulcers. Among soldiers, sailors, the lower orders of white servants, and negroes, ulcers, during the hot and wet season, are often occasioned by the irritation or pricking of thorns, and the sharp lanugo or prickles of the cow-itch, the sugar-cane, and several species of coarse grass; and such a diathesis then exists in the system, in low and marshy situations, that these ulcers spread with surprizing quickness, often affect the whole limb, either by anasarcaous swellings, or by per-



manent enlargement and induration, assuming the appearance of elephantiasis; and are cured with the greatest difficulty, indeed, frequently resist every means suggested by experience and skill, until a change of season produces a corresponding change of diathesis in the system. There is one species of ulcer, possessing many of the features of herpes, but, certainly, not herpetic, I believe, peculiar to the tropical climate; and seems to proceed from the excess of heat acting as an irritant on the human system. This disease is singularly troublesome and insidious. In another part of this work I shall give the observations I have been enabled to make on it.

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## CHAPTER V.

### OF ADVENTITIOUS AND SPORADIC DISEASES.

OF these by far the most important, and certainly, the least perfectly understood, is the malignant pestilential, vulgarly, but most improperly called yellow fever. The cause of this most tremendous disease is imported infection. But as I propose to throw my observations on it into a separate part of this work, I shall here confine myself to the means of preventing infection, within the tropics, an object of the highest importance. Our great and lamentable experience of the fatal horrors of the Malig. Pest. fever, is surely too recent in our memory, to render this a doubtful, or in any respect a problematical subject, although it has, most unhappily, by some, been considered so. I shall avoid all discussion and all controversy in detailing the means I found most useful and most successful in preventing the introduction and dissemination of this pestilence; my sole object being to instruct the uninformed not to combat opposition where there should be no contest.

### SECTION I.

#### *Means of Prevention depending on public Policy.*

A GENERAL plan of prevention has, in all our tropical colonies, for its objects, the destruction of all those small wooden buildings, erected purposely for the accommodation of the lowest class of white people and free people of colour; who, renting them with no other view than to retail rum of the worst quality, and to harbour poor transient persons, in order to despoil them of their scanty property, become the greatest nuisance in towns within the tropics, and

literally the pest of society ;—the enactment of a law which shall enforce the strict observance of this regulation, and of the construction of towns in such manner as to secure cleanliness, coolness and ventilation :—and 3dly, the appointment of proper persons, under the designation of health officers, with suitable and encouraging salaries, whose duty shall be to prevent the erection of buildings impeding cleanliness and ventilation ; to regulate the licensing of rum-stores ; to visit all ships and other vessels which shall carry on trade with the colony ; to ascertain their health, or the existence of infection on board ;—if the former, to permit them to enter the port and land their cargoes ;—if the latter, to oblige them to retire to a place appointed for the performance of quarantine, in which lazarettoes or pest houses, and stores and shades should be erected, for the safe lodgement of the crews, passengers and cargoes, and their purification. In order to effect these great objects, it is of the utmost importance to ascertain the time during which the infection of pestilence or a pestilential fever, may continue attached to the persons of men, their clothes, their bedding, or the cargoes of vessels, without discovering itself. Dr. Russel is inclined to believe the infection of the plague rarely remains inactive or latent beyond ten days, but that the clothes and other packed baggage of passengers, who, after a voyage from places infected enter sound into the lazaretto, are more to be dreaded than their persons. My own observations induce me to believe that this remark is perfectly applicable to persons and clothes imbued with the infection of the malig. pest. fever ;—with this difference only, that it discovers itself in a much shorter time. The destruction of personal clothing and bedding, in such cases, should be considered as absolutely indispensable. With respect to the time, the police cannot err, if they extend it to fourteen days. The health officers should have power to examine on oath, and to inflict punishment on delinquents conformably to the enacted law. I may here, as illustrative of the subject, take notice of the wisdom and sound policy which dictated the regulations instituted by the Senate and Assembly of New York, for the purpose of preventing the introduction and propagation of infections and pestilential diseases. They constitute a model whereby similar regulations may be drawn up. The very great utility of these quarantine laws is clearly demonstrated by the absence of pestilence from that city for several years since 1805. My much valued friend, the learned and experienced Dr. Hossak, of that city, thus writes to me concerning them, in a letter dated 23d September, 1817. “ We continue under the rigid system of quarantine ; to “ which our experience and suffering have given rise, to enjoy an “ entire exemption from yellow fever, except that it exists at our “ lazarettoe, where ships from the tropics are quarantined. Not “ so in Charlestown, South Carolina, where the disease prevails “ with great mortality, cutting off from 60 to 70 persons weekly. “ In that city, as has been publicly said by Dr. Ramsay, in his “ history of South Carolina, the quarantine law is a dead letter—

“consequently it would be matter of great surprise, if, during the  
 “unlimited intercourse that has been kept up between Charlestown  
 “and the West Indies, particularly with the Havannah, that they  
 “should, under such circumstances, escape the disease, especially  
 “too, when the physicians of Charlestown, at least the majority of  
 “them, disbelieve its contagious nature, and identify the yellow  
 “fever with the billious remittent, the product of their marshes!  
 “Into that city, you know, it was introduced from the West Indies  
 “in different years, as has been recorded by Dr. Lining, in the  
 “Edin. Physical and Literary Essays. The same observation  
 “that was made by Dr. Lining has been made recently by others,  
 “who also remark that they have experienced much greater heat  
 “in those years in which they have enjoyed exemption from fever  
 “than they suffered during its prevalence. Contagion and not  
 “heat alone must be looked to as the source of the pestilence. I  
 “am also confirmed in the correctness of this opinion by the fact  
 “that has been noticed at Charlestown, that the disease prevailed  
 “first at their *marine hospital*, before its appearance in the city.  
 “This fact I received last evening from a gentleman from Charles-  
 “town.”

## SECTION II.

### *Means of Prevention depending on individual Precaution.*

WHEN an individual of a family has been seized with a contagious or pestilential fever, care should be taken to prevent all, but those who are necessary in attending him, from going into the room in which he is confined:—if he recovers, the bed-clothes and wearing apparel, which he used, during his illness, should be, as soon as possible, destroyed by fire; his person well washed, and dressed with clothes that cannot be subject to suspicion; he should be carried into the country, if possible, and remain in it till he acquires his usual strength; the room he lay in, should be new painted, if wainscotted, or white-washed, if otherwise; and the floor and ceiling, doors, window-shutters, &c. should be well scrubbed, and the whole afterwards fumigated. The nurses and other attendants, before they again mix in society, should be obliged to purify their persons, and change their clothes. When the disease appears on ship-board, the sick should be instantly separated from the healthy, and conveyed to a place on shore, from which the infection cannot spread; the space between decks, the hold, the cabin, should be immediately well scrubbed, and, if it can be done, white-washed; fires should be lit in the hold and between decks, and whilst they are burning the hatches should be kept close shut, and the whole, afterwards carefully fumigated, and sprinkled with vinegar or spirit of turpentine. But as the hammocks and bedding of seamen are

most subject to receive and retain infection, the greatest care should be taken to wash them well, and to burn those used by the sick. Many remarkable instances of the efficacy of these means of prevention on ship-board, when the infection has not been imported in the ship, but adventitiously received, after their arrival in port, have occurred to me; and many have I also witnessed of the dreadful consequences of neglecting them. It is by no means necessary, to shut up families in their houses, when an individual of it has been seized with the disease; for as the sphere of infectious atmosphere, in the climate of the torrid zone has, in no instance exceeded ten feet, but has been generally, less than six; and as all, beyond that, have remained untainted, so it is evident that a measure of this kind would not only be unnecessary, but extremely hurtful. But it is otherwise, when the disease breaks out in a regiment of soldiers, in barracks, or on board a ship of war:—in these cases, an establishment, on the principle of Houses of Recovery in the large towns of Great Britain and Ireland, should be adopted, to which the sick should be carried, and the barracks or ship should be afterwards purified by the proper means.

### SECTION III.

#### *Medical Means of Prevention.*

WITH respect to those means which may be comprised under the names, Aromatics, Amulets, &c. either inhaled, or wore about the person, certainly no dependance whatever should be placed in them;—they raise a treacherous and fatal confidence. There are, however, some general rules that may be classed under this head, which are indispensable. Those whose duty or business lead them to the chambers of the sick, should be particularly careful to avoid entering them with an empty stomach, or when heated, or when they are in perspiration:—the approaching the sick, when heated by wine, or when the system has been irritated by other irregularities, is extremely dangerous. Under this head, too, may be properly stated, the various modes of fumigating, white-washing, ventilation, inspersion;—the burning of aromatic resinous substances; and the use of such substances as may absorb the basis of contagious effluvia, whatever that may be, and prevent their diffusion, thereby, in the atmosphere of such chambers. In fact, there are only two ways, which we may suppose to be efficient in the destruction of infection, by increasing the volume of vital air, and by absorbing the infectious effluvia; and the six modes of prevention, I have mentioned, produce one or other of these effects, in a greater or less degree. Fumigation is certainly the most powerful of these.

The use of nitric acid gas, obtained by the decomposition of

nitre in sulphuric acid, now universally employed in our hospitals, and very generally in private houses, is at least pleasant and easy, and may be highly useful from the facility with which it may be every where applied, without affecting the respiration. But I have reason to believe that oxygenated muriatic gas is infinitely more beneficial. The application of it has been successfully employed; and the following simple mode of disengaging it, was discovered and communicated to me by the late ingenious Mr. Cruikshanks, Chemist to the Board of Ordnance. Let four pounds of common salt be intimately mixed with a pound and a half of manganese reduced to fine powder; introduce them into a leaden vessel (a)



with a cover, and add about two pounds of water, through a hole in the cover (b). By means of a glass funnel, introduce, by degrees, and at different times, three pounds and a half sulphuric acid. On every addition of the sulphuric acid the oxygenated muriatic gas will escape in great abundance through the spout, and may be directed to any place, and in any quantity we please. By the application of a moderate heat to the vessel, a very considerable quantity of gas may be obtained from the same materials, after they have ceased to give out any in the cold. This gas may be employed in moderate quantities to correct putrid and offensive smells, in any particular ward, or chamber, without removing the patients.

The only other method I shall mention here is inspersion, for white-washing, ventilation, &c. are well known and obvious means. It is of much importance, to employ, for this purpose, such fluids as possess the greatest chemical attraction of infectious air, for the advantages resulting from inspersion, altogether depend on this attraction. The most useful fluid, in this view, is also the most simple;—it is water, with which, it appears, from a variety of facts, the pestilential effluvia are readily and entirely miscible. Water sprinkled or scattered in a sick chamber or ward, properly ventilated, so that the heat may not be greater than that of the atmosphere is in the shade, by means of a common garden watering pot, will, perhaps, effect more in the decomposition of infectious effluvia, than any other means we are acquainted with. The decomposition of infectious effluvia may also be powerfully affected by lime-water, quick-lime, moist earth, common salt, and the caustic alkali. Any of these, when used, should be placed in earthen vessels, broad and shallow, in different parts of the infected room, and should be once or twice in the day renewed.

## SECTION IV.

*Dietetic Regulations and Moral Conduct.*

DURING the prevalence of a pestilential fever, the great prophylactics are temperance in eating and drinking, regularity in exercise, the proper distribution of time with respect to sleeping and watching, attention to cleanliness of person, and abstaining from such gratifications as have a tendency to weaken the vital powers. Whilst the pestilential fever raged at Grenada, the utility of these means of prevention was remarkably illustrated, by the almost total exemption of the French inhabitants from the disease. Their mode of living is temperate and regular in an uncommon degree. Animal food and strong liquors are very moderately used by them; and vegetables and small considerably acid wine, chiefly compose their diet. Their passions are seldom excited to any degree bordering on excess; and their minds seem, in general, tranquil or actuated by a vivacity which nothing depresses, and which, indeed, is peculiar to themselves. The same exemption, doubtless from the same causes, was observed at St. Pierre's, Martinico, when the pestilential fever was imported into that city from Philadelphia, towards the end of 1793. An illustration, still more remarkable, is presented to us, among the same people, when placed in opposite circumstances. When under the pressure of passions of a debilitating and turbulent nature, and under unaccustomed restriction to diet of animal food, and heating pungent liquors, the French emigrants at Grenada, St. Vincent, Dominica, and other islands, where, indeed, they found an asylum from the tyranny of an opposing, cruel, and enthusiastic faction, but experienced the full force of the baneful influence of pestilential infection. The same event took place among French prisoners, who were obliged to live on salted animal food. From the fullest experience of the truth of the precept, I advise with confidence and earnestness, abstinence from wine and every kind of strong liquor, and moderation in the use of animal food, as more conducive to the preservation of health, during the presence of pestilence, than any other dietetic regulation whatsoever; for it is an established and well known fact, that water-drinkers, and vegetable eaters, either escaped the contagion altogether, or had the disease in a remarkably mild degree. Every dietetic and moral precept will be of little avail, however, in preventing or rendering mild, the pestilence, if the state of the bowels is not attended to. Constipation should be most carefully obviated, either by articles of diet suited to that effect, or by the occasional use of Epsom Salt in small doses. The frequent use of the cold or tepid bath, is an equally necessary precaution.

I shall conclude what I propose to offer on this interesting subject, by observing, that it is a most absurd and groundless opinion,

that fatigue cannot be supported under the rigid observation of temperance, whether voluntary or compulsatory, or arising out of existing circumstances. The contrary is most true, and the following little history of facts, which passed under my own eye, will prove it. The campaign in the two Carolinas of North America, of the Winter and Spring of 1781, long distinguished by the name of Lord Cornwallis's campaign, was the most remarkable of the whole American Revolutionary War, owing to the dangers, fatigues and privations sustained by the army, in the course of it. They effected a march of nearly 2000 miles, through a poor country, inhabited by inveterate enemies, always more than 200 miles from their resources; forded many large deep and rapid rivers at the hazard of their lives; fought one pitched battle against thrice their number; were almost constantly engaged in skirmishes; were deprived of rum or any strong liquors; were for weeks successively reduced to the scanty support which a few heads of Indian Corn, and a precarious very limited allowance of lean fresh beef, afforded them; had no shelter from the inclemency of the weather, or the damps of the earth and night, but a single blanket, and a few boughs of trees, hastily put together in the form of wigwams. These hardships, fatigues and privations, they were enabled cheerfully to support, by the example shown them by their excellent and amiable Commander; by the exercise of marching being alternated by rest every third day, when practicable; by parading in clean linen once every marching day, and twice every halting day; being obliged to clean and bathe themselves every day; by the men being obliged to wash their shirts and waistcoats and pantaloons themselves; by a necessary abstinence from strong liquors; and, finally, by what may be considered as not the least cause, their pursuing, not flying from, an enemy. The Regiment I was surgeon to, the 71st Highlanders, composed a part of this truly gallant army;—they consisted of about 600 men, and the average number of their sick, during this arduous service, was about 25, exclusive of wounded, and they were all trifling cases.

## PART II.

### OF THE DISEASES OF HOT CLIMATES, MORE ESPECIALLY THOSE OF THE WEST INDIES.

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HAVING in the first part, treated in such comprehensive form as is suitable to a Manual, of the structure, appearance and climate of the West India islands, and of the degree of tendency these possess to the production of disease;—of the means of preparing the European, more especially the British constitution, for the process of assimilation to the tropical climate;—of the seasons, with regard to health, and of the diseases incident to each, and of their causes;—and, finally, of the means of preventing and destroying infection, within the tropics;—I shall proceed, in this second part, to state the history of the symptoms, and the mode of treatment, of each disease, chiefly as they have passed under my own observation. These diseases may be divided into two classes: the Endemic, or those proceeding from the circumstances of climate and peculiar localities—and the Foreign or Imported, or those which do not proceed from the circumstances of climate and peculiar localities of the West India islands, originally; but which may be powerfully influenced by them.—I propose to allot this second part to the consideration of the first class, the Endemic Diseases—and I shall devote a third part to that of the second class, the Foreign or Imported.

The first class or the Endemic, may be subdivided, in the manner stated in Chapter IV. of the first part, viz. the diseases proceeding from marsh exhalations;—2. those from the irregular temperature of the atmosphere;—3. those from cold and moisture united;—and 4, from imprudence in diet, exercise and clothing. But the causes of disease within the tropics, more especially the West Indies, are often so mingled, or so often assist each other in the production of disease, either by exciting predispositions of the system, or by giving a greater preponderancy to accessory symptoms, by augmenting the diatheses, of which they are the signs, without specifically changing the peculiar nature of the disease, originally brought on by any one particular cause; that the subdivision I have stated, although certainly existing, and generally obvious, is not always so distinct, as to render it necessary to treat of the endemic diseases of the country, according to that subdivision. Thus the diseases, which originally proceed from marsh exhalations, may be so impressed with the action of irregular temperature, as to render them highly inflammatory, although the



character and nature of the original disease, are so manifest, as to make a mode of treatment, suitable to the two diatheses, or rather the mixed diathesis, prevailing in the system, necessary. Thus, too, those diseases proceeding from irregular temperature, may be so tempered, as it were by the diathesis, produced by the union of cold and moisture, as often to render pure antiphlogistics, which the former, alone, would require, highly dangerous. And so of others.—This is, indeed, a principal source of the danger attached to tropical diseases. To give the history and mode of treatment of the endemic diseases of the West Indies, therefore, founded on an arrangement of causes, would, in fact, be to enter into frequent repetitions, and would be tedious, without being useful. My arrangement, in the following chapters, shall have a view more to the frequency and danger of these diseases, than to any other circumstance.

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## CHAPTER I.

### OF THE YELLOW REMITTENT FEVER.

THE violence, not the form, of Yellow Remittent Fever varies according to the source from which arise the exhalations which are the true and undeviating cause of it. This source is—1, marshes, the exhalations from which produce this disease in its most tremendous form—2, damp unventilated places, stagnant water, thick woods, &c. exhaling vapours which may be considered as the cause of the disease in a less violent degree—and 3, the decomposition of wine which has escaped from casks on ship-board in large quantity, and may be considered as a cause of the disease, in a degree of violence, sometimes equal to that which is the immediate product of marshes. Some remarkable instances of this are recorded in my Essay on the Malignant Pestilential Fever, Vol. I. p. 279. As the subject is not, perhaps, generally or well known, I shall transcribe the following passage. “Ships containing wine, in their holds, in a state of decomposition, are, generally, extremely sickly; and the character of the prevalent disease, is that of Yellow Remittent Fever. Several instances of this took place in Fort Royal Bay, in the years 1797 and 1798; and the situation of the ships in the open bay, far from the influence of marsh effluvia, precluded a suspicion of the fever proceeding from that cause. The following instance is offered as an illustration of a remark, I believe, new, or seldom made. The ship Nancy, Capt. Needs, from Fyal, with a cargo of wine for the army, arrived at Fort Royal Martinico, in the month of October, 1798; she met with a gale of wind at sea, on the 17th September, and several of the casks, from the motion of

the ship, became leaky. The captain was taken sick at sea, and died with every symptom of the highest grade of Yellow Remittent Fever. The mate and several of the crew were attacked with the same complaint; they recovered; but a mate, shipped at Fort Royal, fell ill on board and died. The ship lay out in the open bay, no vessel near her was sickly, and she, herself, became very healthy, after the cargo was landed."

The Marsh Yellow Remittent Fever has been ushered in in various ways. Symptoms of dysentery have continued for two, three or five days, after exposure to wet and heat in the immediate vicinity of marshes, and have suddenly been superseded by those of this fever. Fainting fits have, in several cases, preceded the predominant symptoms of it. In some instances there has been a remarkable flow of spirits, previous to the attack; in others, violent acute pains resembling rheumatism. In some the attack has been without any premonitory signs; it has in others been preceded by general febrile phenomena, assignable to no particular form or organ, for a few days, before those distinguishing the yellow Remittent, have appeared. The fever has, however, much more frequently, at once, assumed the type of a quotidian or double tertian.

The Yellow Remittent Fever which is the product of the exhalations from damp, unventilated places, &c. is less disposed to assume the intermittent form, than that which is immediately produced by marshes. The fever which so destructively prevailed among the corps of Royal Artillery in Grenada, in the year 1791, furnished a remarkable proof of this. Another curious circumstance of Yellow Remittent Fever, is, that in proportion to the distance from marshes, but in an uninterrupted line of exposure to their exhalations, or more properly speaking, in proportion to the diluted state of the exhalations from marshes, so has been the violence of the symptoms, and the disposition to the intermittent form. Height has little effect in attenuating the virus of the exhalations, if that height rises immediately from the marshes; but distance is wonderfully efficient in doing so. Fort Bourbon, at Martinico, Fort Scarborough, in Tobago, and other places, which will readily occur to the reader, are remarkable instances of this. (See Essay on Malignant Pestilential Fever, Vol. I. p. 277, and Vol. II. p. 201, 133.) There is not unfrequently observed a curious exception to the general remark of the inefficiency of height in attenuating the virus of marsh exhalations, in the barracks of soldiers.—It has sometimes happened that when these barracks are built in marshy situations, and are composed of two, three, or more floors, the next to the ground, or rather that immediately on the ground, has been the most unhealthy, the second less so, and the third still less so.—Several instances fell under my observation, during the late war; but I shall mention only one.—The barracks in Fort William Henry, at the mouth of the river Demerary, are built in a very marshy situation, are very lofty, consisting of four floors.—At the time I particularly inspected the hospitals of this post, December

1798, the drains constructed for the purpose of carrying off the superfluous water of the station itself, and of an immediately adjoining plantation, had been for a considerable time much neglected, so that the air was in a state of great impurity and unwholesomeness. The soldiers were quartered on the first floor, elevated about ten feet from the surface; the officers inhabited the remainder of the building. In every instance of sickness proceeding from endemic causes, the soldiers were invariably afflicted with fevers of a remittent type, distinguished often by the worst symptoms, whilst the officers and their attendants had only slight attacks of such, or of intermittent fever.

I shall first describe the worst form of this destructive fever; and afterwards subjoin some of the peculiar features of that which prevailed in the Royal Artillery at Grenada, in the year 1791.

In whatever manner the Yellow Remittent fever approaches, its symptoms and progress, when formed, are uniform, and more or less rapid and violent, according to the circumstances of temperament, assimilation to climate, and the activity and power of the pre-disposing and exciting causes. When the fever is formed, it is characterized by a violent pain extending to every part of the head, pains in the lower extremities, stretching the whole length of the thighs and legs, and although severely felt at the calves, never confined exclusively to that part; pains in the lumbar region, frequently of a violence exciting inconceivable torture; an oppression at the scrobiculus cordis, attended with great anxiety;—and frequently, a sense of fulness, distension, and obtuse pain in the right hypochondrium. It is also distinguished by an uncommon redness and flushing of the face; by such a turgidity of the blood-vessels of the eyes, as gives them a very highly inflamed appearance, and occasions very uneasy sensations on the admission of light; and, finally, by a singular expression of countenance, which conveys the idea of incipient alienation of mind.—The heat of the surface, and the state of the pulse, are, in a great measure, regulated by the exacerbations and remissions, the periods of which are not, however, by any means certain and fixed. During the former, the surface feels excessively hot, generally of a degree varying from  $102^{\circ}$  to  $112^{\circ}$  of Fahrenheit, dry and parched; and the pulse is generally full and rebounding, varying from 100 to 140 strokes in the minute.—During the remission, the surface is restored to nearly its natural temperature, and the skin acquires some degree of softness and moisture; the pulse also becomes considerably slower. It is to be observed, however, that as the disease advances towards a fatal termination, more especially, the heat of the surface, during the exacerbation, becomes pungent, and leaves a most unpleasant sensation on the fingers after the touch; and the pulse, with its former quickness, is also feeble, tremulous and intermittent. During the remission, at this period, instead of the natural temperature, the skin acquires a most unpleasant coldness, and feels as if bathed in a clammy fluid, whilst great

internal heat is remarkably perceptible at the præcordia. The exacerbations and remissions are then, too, more frequent, less distinct, and the former more particularly, of shorter duration, that is, the vital powers lose so much of their energy, as to produce but feeble excitement; and nature, overpowered, is incapable of resisting the approaching dissolution of the system. Notwithstanding this state of the body, hæmorrhage is rather an uncommon phenomenon, in yellow remittent fever; and, instead of vibices and blotches, resembling the suffusion after a severe blow, the whole surface acquires a deep yellow colour; and numerous petechial eruptions are thrown out. The period at which this discolouration of the surface takes place, determines, with wonderful precision, the future event. It thus happens on the 2d, 3d, 4th, or 5th days the most fatal prognostic may be founded on it;—if, on the contrary, it does not appear till the 7th, the apprehensions of a fatal termination are considerably lessened, or may be altogether removed. Thirst and absence of constipation may be justly considered as distinguishing symptoms, no period, except, perhaps, towards the close of life, being exempt from the former, and the bowels being open at all times, unless restrained by medicine. In fact, diarrhæa is frequently a most dangerous circumstance of the yellow remittent fever, and often prevents a sufficient retention of the only remedy which has been found adequate to arrest the progress of the disease. The exacerbations, I have said, in the advanced state of the disease, when no favourable change has as yet, been perceived, are more frequent, but of shorter duration;—they are, then, too, divested of those pains which distinguish the preceding periods, and are marked with wild, sometimes furious, delirium, and exertions of what has been happily called, morbid strength. The balls of the eyes, which were, hitherto, red and inflamed, now, assume a very different aspect; an exudation of coagulable lymph giving them the appearance, in many instances, of one uniform gelatinous mass of a greyish colour. But the irritability of the iris seems, at no period of the yellow remittent fever, to be suspended, having never observed permanent dilatation of the pupils. The remissions, in the advanced state, are further distinguished by coma, sighing, a flowing of tears, faintings, subsultus tendinum, hiccup;—but, during this state, when the powers of life seem thus prostrate, the voice does not appear to undergo a similar change, being strong, full, and as sonorous as in health. The vomiting, which is one of the most alarming and dangerous of the symptoms of this fever, although not peculiar to it, is sometimes concomitant with the accession of the first exacerbation, and increases as the fever proceeds: but, in general, although in almost every instance, there is a certain degree of nausea present from the beginning, yet vomiting does not come on, and become a dangerous symptom, till about the third day. From that period, unless signs of a favourable change should take place, it becomes every instant more urgent, and, at length, is accompanied with what has been

improperly considered, as the diagnostic of yellow remittent fever, a discharge of a black or brownish coloured fluid, of the consistence of coffee grounds. Before the black vomiting comes on, the discharged fluid is sometimes bilious, and has the bitter taste and the yellow or greenish colour of bile; and is frequently, in consistence, ropy and glary. From the excessive pain at the stomach, which accompanies this vomiting, it is presumable that an inflammatory state of that organ, terminating in rupture of the more minute blood-vessels, and in gangrene, is the principal cause of the symptom, and gives the black colour to the fluid discharged. In the progress of the disease, the tongue, fauces and gums, undergo morbid changes, but undistinguishable by peculiarity. A suppression of urine, attended with pain above the pubes, almost always happens late in the disease; but no uncommon morbid change in the state of the bladder or kidneys has been remarked on dissection. The urine, as well as the perspired fluid, are deeply tinged with the yellow colour. Death takes place in this fever, generally, without violent or convulsive agitations of the body; and at that awful crisis, there is more frequently a placidity of countenance, and a tranquillity resembling sleep, in which the patient expires:—a termination the more singular as the preceding periods exhibit an uncommon anxiety and perturbation of mind.

I have mentioned the fever which appeared in the corps of artillery at Grenada, in 1791, as a remarkable instance of the irregularity of type the yellow remittent fever assumes in the immediate vicinity, or rather in the midst of marshes. The barracks of the artillery were built in the very midst of a marsh, part of a plantation, which had been abandoned, some years before, on account of the unwholesome nature of the situation, about a mile from the town of St. George, and at the foot of Richmond-hill, on which the principal fortresses stand. The town, besides being fully a mile distant from this marsh, is completely separated from it, by a high projecting hill. The fever appeared first towards the end of September, and did not entirely cease till nearly all the men had been attacked, in January 1792. Of more than eighty sick, twelve died. The general type of the fever was a quotidian intermittent, but so extremely irregular, as not to admit of reference to any of the common species. It was truly anomalous, and so insidious as to endanger the life of the patient before any apprehension could be entertained of its fatal tendency. The symptoms which most marked this fever, both during the paroxysm and the intermission, if they can be properly so called, were unceasing headach, and a pain and throbbing in the temples, attended by lethargic drowsiness; and during what seemed the intermission, whilst the patient thus suffered, his skin was preternaturally cold, his pulse small, quick and hard, and his whole body covered with a clammy moisture. Instead of entering into a detail of symptoms, I shall state one or two cases, which may give a more distinct idea of the fever, by showing its nature and form, the morbid changes

produced by it, and the mode of cure adopted in consequence of the demonstration of these.

In the case of a gunner, Michael Scott, the first paroxysm began about midnight, with all the most violent symptoms at once;—a deadly coldness and excessive delirium. These, constantly augmenting, terminated at the end of two hours in total insensibility, coma and death. In two other gunners, the disease began in the same manner; was not so rapid; but, nevertheless, terminated in the same manner. One of these, George Wiseman, was admitted into the artillery hospital, on the 21st of September, and died on the 11th of October. He always bore a good character, and was never known to commit any excess in drinking, nor to have suffered by sickness, during several years he had served in the West Indies;—but he was remarkably robust and fat. The fever, till the 7th of October, appeared a common remittent, although ushered in in so singular a manner, apparently attended with little danger. But on the night between the 7th and 8th, he was seized in the manner Scott was. On the 8th and 9th the same mode of seizure with imperfect solutions of the fits;—the 10th passed without accession of paroxysm; but on the night following, a dreadful fit came on, which put an end to his existence on the morning of the 11th. A few hours after death, I inspected the body. On cutting through the integuments of the abdomen, I found the adipose membrane at least three quarters of an inch in thickness, and the whole of the cavity lined with a prodigious quantity of fat;—the mesentery loaded with it in a very extraordinary manner. All the mesenteric glands were much enlarged, and several, which I cut open, were filled with pus. The whole of the intestinal canal was sound;—the spleen much enlarged, the pancreas so likewise, and both extremely tender. The liver was uncommonly enlarged, and its substance almost of the consistence of grumous blood, with its investing membrane curiously diversified with a variety of colours. The gall-bladder not much distended, but the bile it contained of a chocolate colour, and on being taken up on the knife contained much granulous matter; the biliary ducts too were obstructed. The stomach presented nothing remarkable. These morbid appearances led me to the use of mercury, in all the subsequent cases; at first, certainly too cautiously, and therefore, unsuccessfully,—afterwards boldly, and with the most happy effect—under the mercurial treatment in this fever, the following prognostics were observed. When great restlessness, and raving drowsiness, delirium, sudden recollection, immediately succeeded by lethargic heaviness, an excessive almost insupportable heat at the præcordia, whilst the extremities were cold and clammy, were perceived; the danger was great indeed; and, in such cases, if salivation could not be excited, death, with certainty, might be soon expected. On the contrary, when the fits, after the mercurial course was begun, became less frequent and of shorter duration, if the thirst abated, the tongue became clean,—a favourable issue might be looked for.

And, upon the whole, if salivation could be brought on, in the worst cases, the patients recovery might be depended on.

The foregoing is a faint description of the yellow remittent fever, in its most aggravated form, and from it, perhaps, a sufficiently correct idea may be formed of the simple remittent fever. These are the great features of this most formidable disease, so prevalent among, and unhappily so fatal to, most European and other strangers to the tropical climate. But this, although generally ascribed to the West India climate, and even distinguished by a name, importing the country in which it is supposed to originate, is, by no means, thus confined. The action on the human body of the miasmata of marshes, and of the exhalations from humid and unventilated places, aided by the predisposition of the subject, and the heat of the climate or season, must be every where the same, where marshes, stagnant water, and humid unventilated places, are found. Some modification may arise from local or casual circumstances, but the disease must be essentially the same: and the testimony of every medical observer, in such situations, serves more fully to confirm the opinion. It is the endemic of the marshy and woody tracts of Asia, and more especially of India;—it is also the prevalent fever of many similar tracts of Africa, and of North and South America;—and instances of its frequent existence in the southern parts of Europe; and even in the central and northern parts when the pre-disposing causes have been powerful, and the temperament plethoric and sanguineous, have extensively and fatally occurred. Walcheren has ever furnished a dreadful illustration of this observation, where the experience of Sir John Pringle, and the expedition commanded by the Earl of Chatham, have given the most decided and most fatal testimonies of its pernicious air, during the hotter months.—The similarity of what has been called the Walcheren fever, to that which prevailed in the corps of Artillery at Grenada, in 1791, is very remarkable, and tends to give reciprocal explanation to the causes, the symptoms and the mode of treatment of both; although, most unhappily, this coincidence was not resorted, perhaps not, adverted to, during the most distressful prevalence of the former, until the mischief was committed. An account of the Grenada fever of 1791, here slightly sketched, was fully published in Dr. Duncan's Medical Commentaries for the year 1792. A much valued and highly respected friend, wrote me from Walcheren, in November, 1809, a letter, in which is this passage:—"The first step which I took, on assuming the charge here, was to remove the sick from the cause of this disease. In the course of six weeks that I have been here, I have sent to England nearly 8000 sick, and will send 3000 more. The prevailing disease, now, is intermittent fever with its consequences, dropsies and visceral obstructions; but the disease from which the army has principally suffered has been a remittent fever of the worst form, frequently with hardly perceptible remissions;—the disease, which you know well, which is often seen

“ in the West Indies, and which is most destructive in some parts of India. The most successful practice has been, *in giving the bark*, and, at the same time, pushing calomel so as to affect the “gums.” It is not to be wondered at, that this fever, always endemic in the hot season, should at all times prove fatal to the inhabitants of this most unhealthy island, as well as to strangers resorting to it, since it appears that no idea of any other medical doctrine, but the humoral, is entertained by the resident physicians; and that they “speak of mercury with horror, as inducing putrescency of the fluids, and laxity of the solids.”

The eastern hemisphere abounds with dreadful proofs of the fatal consequences of direct and near exposure to the miasmata of marshes, to the human body;—and I know not any author who has given a more lively, more elegant, and more just delineation of them, than Dr. James Johnson;—to whose book I confidently refer the young practitioner whose destination is India. But the Western is unhappily no less abundant. In many parts it presents a surface of country not inferior to the Eastern in the production of the most pernicious and deadly exhalations. From the Carolinas of North America to Surinam of South America, including the countries bordering the gulf of Mexico, this observation may be made. The shores of South Carolina and Georgia, those of the Floridas, the banks of the Mississippi, the shores of New Spain, Yuccatan, of the country of which Carthagená is the capital; and of the islands of St. Domingo, Cuba, Jamaica, and of some of the windward groupe, correspond in a considerable degree with the *sunderbunds* of Bengal, and other districts of the East, which are completely overrun with forests, underwood and jungle, and “which, during the rainy season, exhibit woody and jungly marsh, neither perfectly overflowed, nor yet quite dry;—in a word, presenting a surface as well supplied with animal and vegetable matters in a state of decomposition, and combining all the other circumstances necessary for giving miasmata their full influence on the human body, viz. intense heat, moisture, calms, &c. as, perhaps, any spot on the face of the globe.” (Johnson’s *Influence of Trop. Clim.* p. 44.) The consequence is that these countries of the Western hemisphere, within the tropics, or possessing a summer heat, equal to, sometimes even greater than, the tropical, have desolating remittent and intermittent fevers, to the full extent, the same ingenious writer informs us, as those prevailing in the countries watered by the Ganges, or in the peninsula of India, or at Batavia, (p. 40—155.) If the Eastern hemisphere has its island of Edam, so has the Western its St. Lucia, its St. Domingo, its Cuba, its Dawfuskie in Georgia, and many others.

Fevers, of a singular character, are sometimes produced in situations least suspected, and wherein no adequate local cause has appeared for their production. A singular instance of this occurred in the year 1812, on Brimstone-hill, St. Christopher’s, under circumstances, certainly, very extraordinary, and from causes which



the medical gentlemen, on the spot, professed themselves unacquainted with. In a situation, such as Brimstone-hill, where fevers never, but once, before, when they were clearly traced to an imported infection, (See Essay on Malig. Pest. Fever, Vol. II. p. 291) appeared, it must indeed be difficult to assign a local or endemic cause, unless we refer it to the volcanic composition of the hill, and adopt the theory of the Hon. Mr. Boyle. But here, even these do not avail us, because fevers were not known in this situation before the year 1793, when imported infection was the cause. I have seen no published account of this fever; but the summary of the Report made to the Army Medical Board, with which I have been favoured, furnishes the following particulars:—

“ Situation N. lat. 17°, soil light and dry—composition rock and sand—elevation 600 feet—distance from the sea a quarter of a mile. Barracks exposed to currents of air, and strong winds directed on them by ravines.—No swamps in the neighbourhood. Change of temperature sudden, from 70° to 80° and 90° in the course of a few hours. This, however, though not a radical cause of general disease, is, undoubtedly a cause of great power in giving form, and in aggravating danger when disease does occur. Rain abundant.—Mortality not considerable until 1811, and Spring of 1812. The fever very general, very formidable and fatal. In 1812 head principally affected.—Action decidedly inflammatory, producing serious effusion, adhesion, and stagnation, like gangrene. These forms of disease have been unusual at this place, and accounted for, only, in this instance, by supposing *the prevalence of an epidemic influence.*”—“ Disease in the 25th Regiment in 1812, from 24th February to 24th June, was marked by the suddenness of the attack, without warning, and the rapidity of its course. Probable cause—previous hot dry weather, ill ventilated and ill constructed barracks—some of them bomb-proof.—Epidemic cause unknown; and prevalence of the disease cannot be accounted for.” The fever is described in the following brief manner in the summary of the Report of the 24th of February.—“ Since last Report a fever of a most continued type appeared in one of the barracks, occupied by a company of the 25th Regiment. Thirty-four admissions from this alone. Symptoms in all of a most unfavorable character from the first attack—great head-ache, sickness and vomiting—pulse full and hard—eyes inflamed—face flushed—ardent heat of the skin—in many cases yellowness of the whole body on the second day of the disease. Treatment—blood-letting and purging on the first attack. In great heat of skin with full pulse and sickness, the cold affusion advantageous. After treatment mercury (calomel and ointment) of calomel, three or four grains, with James’s or Dover’s powder every four hours. Blisters to the head and scrobiculus cordis, and glysters in almost all cases. In fatal cases, delirium and extreme sickness, and irritability of stomach, on the second day.” On the 25th of March, admissions 65 out

“ of 207 new arrivals from Europe, of whom 11 died, besides increasing sickness in the 25th Regiment, and all the symptoms aggravated. On the 24th of May, the 25th Regiment embarked for Guadaloupe—but fever since March greatly increased in violence and extent.” This Regiment was relieved by the 15th, at that time well. The report of the 24th of June, states that the fever now became as prevalent and as violent in this regiment as it had been in the 25th—in so much that the deaths were more frequent than the recoveries. On the 25th of July, it is reported to have ceased. The appearances on dissection are slightly described. “ Adhesions and inflammations in the membranes of the brain; effusion and flaccidity of its substance; large quantity of black matter in the stomach, gall-bladder and small intestines.” No notice is taken of the state of liver. It appears that the principal and leading phenomena in this extraordinary and very fatal fever, were “ great and increasing determination to the head; delirium and torpor of the bowels, with constant vomiting.”—When the disease was at its height, the officers, who had hitherto escaped, were seized with it, and several died. The prognostics were obvious. If, on the second day, the symptoms abated, a favourable termination might be looked for—a contrary state of things on that day forebode death. The character of the symptoms, and the great determination to the head, we are told, pointed out the necessity for abundant depletion. Accordingly, when the disease was better understood, and the mind of the practitioner became more collected, after the surprize and dread it had been thrown into, a bolder practice was adopted—fifty two ounces of blood were drawn at the first bleeding, and as soon as possible after the patient was seen. The effect of this is described as having been, frequently, decisive. This was repeated as often as necessary, and was seconded by mercurial purgatives, cold affusion, blisters—“ and after free evacuations, mercurial plan persisted in.” When remissions were distinct, bark was tried—but, as might have been expected, with the very worst consequences.—Wine was used in the latter stages, and it is said to have been found necessary to give it sometimes to an enormous extent. Of this fever 422 cases occurred, and of that number 118 died. The whole number of admissions was 942, of which 422 were cases of fever; and as no mention is made of any other fatal disease, it is presumed that the number of deaths (118) were confined to the fever cases.

From all the circumstances of this fatal disease, stated concisely in the summary I received from the Medical Board—(by the regulations of the Board, no reports can be taken from the office)—we are led to the suspicion—perhaps belief—that it was one of the several instances of Typhoid Yellow Remittent Fever (Malignant Pest.) which have occurred at different times, and generally in the most healthy situations and seasons, in the East and West Indies, since the year 1793. This fever may be usefully compared with that described, in so clear and interesting a manner, by Dr. John-

son, which appeared on board the *Centurion*, in Bombay harbour. The observation of that able writer, on this occasion, ought to be well attended to—"the fevers of Batavia, Madagascar, Johanna, West Indies, &c. are never originally contagious in their own nature, but may, under peculiar circumstances, acquire that character, &c.

Another very important instance of this kind occurred at Barbadoes on the arrival of a transport, the *Regalia*, from Sierra Leone, on the coast of Africa, in September, 1814.—The medical reports on the state of this ship, and of the sickness induced by that state, furnish ample room for belief that the seeds of an infectious fever were brought on board by blacks at Sierra Leone, for it is considered as "fairly deducible from the evidence that has been collected that the disease took its rise from highly diseased subjects, with ulcers and fluxes, being improperly sent from the hospital to the ship."—And again, in the report dated 26th September, it is stated that "it must be evident that a source of fever which has now afflicted every white individual, exists in the ship beyond the reach of ordinary fumigations, ventilations, and white-washings; and that it would be unsafe to embark the invalids on board of her." Let these statements be compared with the circumstances of the ship previous to the embarkation of the blacks at Sierra Leone. It is said expressly that "the crew on the coast of Africa were healthy till the blacks were sent on board." And it is stated that the proper medical officers visited the transports as soon as they came to anchor, and found them to be clean and well arranged in all respects; not over crowded, and amply supplied with provisions, water, bedding and clothing."

A third instance is presented to us from Trinidad, still more important—the fever described by Dr. M'Cabe. (See *Edin. Med. and Surg. Journal* for October, 1819) as prevailing in the Royal York Rangers, stationed at Trinidad, was evidently a marsh fever in its origin; but from the peculiar circumstances of Port of Spain, and St. Joseph's, the two principal stations of the island, at the time, especially the former, acquired a contagious character, and became truly the malignant pestilential fever. The causes of the fever in its origin, were excessive heat, marsh effluvia from a marsh of immense extent in the immediate vicinity of Port of Spain, considerable labour and fatigue: its contagious character superadded to its marshy, was produced by an influx of Spaniards from the Spanish main, in a deplorable state of misery and wretchedness. It was among these unfortunate people, the contagious fever began. Dr. M'Cabe proves its contagious nature by several facts. One of the most singular circumstances in this very fatal fever, was the length to which the stimulating plan was carried in the treatment of it. Three bottles of brandy were given to a patient in less than twenty-four hours, and this proportion continued for several days, with great success. In cases of extreme debility, it is, indeed, wonderful the quantity of this stimulus, which the system requires to

excite its vital powers into that action which restores life. The practice of Dr. M'Cabe, however uncommon and bold, is admirably adapted to that state of the malignant pestilential fever, in which life is suspended by the most delicate thread. I have given in the chapter on Tetanus, under the article "brandy and wine," a very remarkable instance of the extent to which these powerful direct stimuli may be given with the greatest advantage.

I advert to these important and interesting details, with the view of putting the young and unexperienced on their guard, in such cases;—so that, if they err in opinion, the error may be on the safe side.—Under such circumstances as those of the Brimstone-hill fever of 1812 or of the Regalia at Barbadoes of 1814, when the nature of the fever appears, at least, equivocal, but still more, when, as at Trinidad, it assumes a character which certainly marks it as capable of communicating itself from the sick to the healthy, although originally a Yellow Remittent fever proceeding from Marsh exhalations; I say, under such circumstances, it will be the part of wisdom, as it will be that of duty and humanity, to adopt and enforce those measures of prevention and precaution, which I have detailed in the first Part of this work, chapter 5th.—It is evident indeed, from Dr M'Cabe's history of the Trinidad fever, that typhous infection does exist, perhaps does originate, within the tropics. How fraught with mischief, therefore, is that theoretical notion, that such infection cannot exist, cannot originate, and cannot be propagated in hot climates. Let the young and unexperienced practitioner guard himself against it; and be prepared for it when he meets it.—

When the Remittent fever appears in the winter months, or dry season, (p. 1. ch. 4.); its form is rather more continued, than the fever of the hot and wet months, and this is more especially the case if the distance from marshes, prevents their contributing their influence in any considerable degree; and if the prevalence of northerly winds produces a peculiar modification of their usual type. Thus, at this season, the progress of the Remittent fever is marked by headach, pain in the loins and extremities, loss of appetite, incessant thirst, a heaviness in the eyes, and a redness of the albuginea, on the first day. To these, on the second day, is added a flushing of the face in scattered spots; and all increase gradually till the evening of the third day, when an imperfect remission takes place. On the first day, the pulse is generally, 100, small and hard—on the second and third, 120; and when the remission takes place, it sinks to 80, when a copious diaphoresis comes on: but although this discharge continues great part of the fourth day, it seldom proves critical. Crisis seems uniformly to be a sudden cessation of strangury, (which had been very troublesome during the preceding days), and followed by a very abundant discharge of urine. The Remittent of the dry season is often accompanied by symptoms of rheumatism, pleurisy or hepatitis, and then requires an appropriate treatment.

The inspection of a great number of bodies, dead of the Yellow

Remittent Fever, gave a result almost always uniform. The principal organ affected was the liver; and it is not a little singular, that in those cases of the worst kind of this fever, which terminated fatally, this viscus was found either in a loose, dissolved putrid state; or sphacelated, and having the consistence, the feel and colour of rotten cork! or full of abscesses:—in such cases, too, the biliary ducts were rendered impervious by stricture; little bile in the gall-bladder, and that always black, ropy and granulated. In many cases, several portions of the intestinal canal, were inflamed, particularly the duodenum; and here and there evident marks of gangrene were observed. The spleen was greatly enlarged. The mesenteric glands were, generally, enlarged, in a state of scirrhus, or full of pus. The stomach, in general, had its coats thickened, the villous coat abraded, and the blood vessels much distended. No bile was found in it;—but black mucus, or the fluid discharged resembling coffee grounds. Every part of the body appeared tinged with a deep pellow colour.—It was remarkable that the blood, in the large vessels, was in very small quantity, and had more the appearance of serum or water, tinged with a yellowish red colour, than of blood.

#### TREATMENT.

The first object is to obtain a free evacuation of the stomach and bowels, and to obviate the violent action of the blood vessels. If the patient is seen, immediately after the accession of the first symptoms, a copious bleeding and plentiful evacuation by stool, very often put a stop at once to the disease. The following instance is one of many which have occurred to me, in proof of this. Lieut. William Lloyd of the Royal Artillery, came to the West Indies for the first time, with Sir Ralph Abercromby's army, and soon after his arrival, was employed in the siege of Morne Fortunée in St. Lucia. The Artillery suffered extremely from the difficulty and labour they experienced in bringing forward the battering train.—Mr. Lloyd's uncommonly plethoric habit rendered such service to him, literally a service of danger, exclusive of the usual contingencies of a siege;—and, accordingly, one morning he came to me labouring under all the symptoms of an incipient Yellow Remittent Fever. These and his habit indicated bleeding; and fully three pounds of blood being taken away and being followed up by quiet, copious purging, and dilution, at the expiration of 24 hours, he was perfectly recovered, and was able to fulfil the duties of his station with his accustomed alacrity; and with the satisfaction of feeling himself capable of doing so with impunity from the climate. If, however, the disease persists, the bleeding must be repeated, and alvine evacuation again plentifully procured. When, at this period, irritability of the stomach seems likely to prevent the retention of the purgative medicine, it should be always preceded by about a

grain of opium, or a draught containing 20 or 30 drops of laudanum. If the disease still appears disinclined to yield, the mercurial plan must be adopted without delay,—but further bleeding is generally unnecessary or hurtful—five grains of calomel, with or without opium, according to the state of the stomach and bowels, are then to be given in a little treacle or syrup, and repeated every two, three or four hours, according to the urgency of the symptoms, and the degree of danger apprehended.—Thirty or forty grains have, generally, brought on ptyalism.—When this happens, all the alarming symptoms disappear. In three or four days after, the patient becomes convalescent—but the disease has too often proved obstinate under this milder treatment.—When, therefore, the symptoms of a more formidable fever appear, and the danger is evidently imminent, the dose of calomel should be increased even to 20 or 30 grains every third or fourth hour; and, if the vomiting increases, various means should be employed to allay the irritation of the stomach. These means are opium, ether, effervescing draughts, blisters to the inside of the thighs, and the very frequent use of common laxative clysters, or of those consisting of a watery solution of assafœtida.—But mercury, assisted by cold affusion, must be mainly trusted to; and its exhibition, under the untoward circumstance of an irritable stomach, must be varied in every possible way—by injection, by friction, without measuring or attending to the division, of the strongest ointment, into portions, but rubbing it in on every part of the body, ad libitum, until the effect, on which alone safety depends, is produced. I can confidently assure the young practitioner, that not a single patient in my practice, died, even under the worst form of the disease, if mercury could be introduced in sufficient quantity to produce ptyalism. But the practitioner must not be afraid to use this medicine with the utmost freedom in such cases;—he must have confidence in it, and persevere until the object is obtained. Abundant fœculent discharges are necessary, whilst mercury is producing its specific effect; and this may be done by mercury (calomel) alone; or, if there is constipation, by the addition of jalap, or the extract of colocynth: but an opposite state of the bowels, is, by far, more frequent, and rather requires the restraining power of opium.—I may sum up the treatment, I have uniformly adopted since the year 1791, in Yellow Remittent Fever, thus: it is my first intention to relieve the system in general, by plentiful and reiterated bleeding and purging; but having effected this, during the first 24 or 30 hours of the disease, long experience has convinced me, that it is upon a new action being excited that the safety of the patient depends. Although many instances have occurred, of a copious and protracted diaphoresis, or an abundant and sudden flow of urine, having removed every complaint, yet I was chiefly, perhaps always, directed in forming a favourable prognosis, by the supervention of mercurial action on the gums and salivary glands.—Many instances have occurred to me, which have taught me not to despair whilst

the most distant hopes remained of accomplishing that:—and, therefore, where this action has been tardy, and where there are, at the same time, symptoms of the most imminent danger, I have endeavoured to introduce the medicine in every possible way, and assisting the means I employed by cold bathing, and, if necessary, by the use of spiced wine and nourishing food made as acceptable to the stomach as possible.

It is almost unnecessary to say, that tonic medicines of every description are worse than useless in Yellow Remittent Fever. In the low state, and as an aid to mercury, and to prevent the tendency to collapse, which is sometimes observed, after the application of the cold bath, spiced Madeira wine is useful, nay, necessary.—But I have never experienced good from bark; on the contrary, the most decided mischief.—Yet this was considered the sovereign remedy in Yellow Remittent Fever at no distant period in the West Indies. But the modes of treatment adopted before the nature of the disease was properly understood, were necessarily erroneous;—they were founded on principles which neither the symptoms of the disease, nor the morbid changes produced by it in the body, gave any sanction to. A theory was formed which rested solely on the supposed tendency of the tropic climate to produce putrescence in the humours of the body; antiputrescents, tonics, &c. were therefore the remedies resorted to;—and dreadful was always the consequence when the disease assumed its more violent form, and when the powers of the system were incapable of counteracting the baneful influence of the treatment.

In the Remittent Fever of the dry season, often accompanied with evident symptoms of rheumatism or pleurisy, it will be necessary to make free use of the lancet; and this with mercury will be sufficient to effect a cure—always observing, that the danger not being very pressing, the necessity for urging the exhibition of mercury, or rather for exhibiting it in large doses, is proportionally less than in the Yellow Remittent of the hot and wet months—always observing, also, that the preliminary measure is, the bowels must be copiously evacuated. But although considerable heat attends the Remittent of the dry season, cold bathing, under the circumstance of local inflammation, must be very cautiously employed;—indeed, its use ought rather to be desisted from altogether.—When the local inflammation is strongly marked, it will be necessary to excite ptyalism; otherwise a slight affection of the mouth will be sufficient. In mild cases, antimonials, joined to the acetated solution of ammonia have been sufficient, after general purging and one bleeding. It ought to be a general rule of practice, however, to consider *all* Remittent Fevers, within the tropics, as symptomatic of local congestion and inflammation. It is a rule, the observation of which can never be injurious—almost always positively beneficial—and the neglect of which always productive of positive harm—under this view, the judicious practitioner will consider the tendency to congestion, as the object of his main attention, and direct his ef-

forts to prevent it—upon the whole, then—the treatment is reduced to one sentence—bleeding to the extent necessary, plentiful alvine evacuation, mercurial ptyalism, and cold effusion, with the exceptions already stated, are the surest, I may say, the only sure means of effecting this object.

Before I conclude this chapter, I may observe, that fear has always been found one of the principal predisposing causes of the mortality by the Yellow Remittent Fever, as well as of that by every other dangerous disease, within the tropics. When a man arrives within the tropics, more especially if the first time in his life, strongly prepossessed with the notion, that if he is attacked with any of those dangerous diseases, but particularly fever, it must prove fatal to him, it generally becomes so.—It is therefore of the greatest importance, both in civil and military life, to destroy or obviate, by all practicable means, this most unhappy prepossession. This has more especially and more alarmingly prevailed since 1793, when a disease, certainly in many respects foreign to the climate, having committed ravages unknown, under the common circumstances of the climate, produced a new and fearful impression on the mind of strangers. But, if any thing can obviate this prepossession, surely the certainty which exists that the tropical climate, under common circumstances of life, and under the exercise of temperance and prudence in the conduct of it, is not more injurious to the human constitution, than a temperate one, should do so. The fact is of the highest importance to a commercial country, such as Great Britain, whose colonies are numerous, and chiefly confined in boundary to the tropical regions. It is a fact which may be considered as proved; (Part I. ch. 2.)—A knowledge of it, therefore should be widely diffused. Thousands have been the victims of the prepossession—and millions of money have been lost to the State by the transport of troops, whose safety and efficiency have been in a moment destroyed, by the operation of it.—The fatal despondency which seems thus necessarily attached to the fear of climate, in minds highly cultivated and enlightened, and, in other respects, strong and manly, is most remarkable and most lamentable.—Let me suggest, however, what may prove an easy means of prevention as it relates to our military force. Let it be made a regulation in our military code, that officers, commanding regiments, destined to serve within the tropics, shall be experienced men in military life; men of sound understanding, and capable of forming judicious and salutary arrangements: men who, knowing and appreciating the high importance of the charge entrusted to them by their country, are, as willing as they are well-instructed, to perform, with energy, the sacred duty it imposes on them;—men who have personally proved how possible it is to exist in health and safety in a tropical climate, even under the privation, and hardships of military service; let such men be selected, and thank God! there are many such to be found, and they will, by precept and example, communicate to those under their command, that strength of mind which alone can



effectually prevent the fear of climate, and all its direful consequences—as a proof of what a man of this description can do, let me refer to the instance I have given in another place—the illustration is most apposite, and highly honorable to the individual who exhibited it. (See Edin. Med. and Surg. Journal, Vol vi. p. 393\*)

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\* A late very ingenious and experienced French writer (Mon. Moreau de Jonnés) draws a most useful picture of the situation of the French St. Domingo Army of 1802, in this respect. “Lorsqu’en 1802, par suite de la  
 “paix d’Amiens, des grandes expéditions partizent des ports de France,  
 “pour reprendre possession de nos colonies d’Amérique, le terrible fleau  
 “qui y attendait nos armées, n’était-il pas plus connu après trois cents  
 “ans de ravages, que s’il avait paru pour la première fois? Rien n’était  
 “préparé pour résister à son invasion ou diminuer ses funestes progrès;  
 “les autorités n’avaient aucune idée de leurs devoirs dans ces circonstances  
 “critiques, habituées sous un climat plus heureux, à se renfermer dans  
 “un cercle borné d’opérations administratives et militaires, elles ignoraient  
 “les mesures dont la nécessité leur était imposée, ou même quelquefois  
 “dans l’aveuglement d’une confiance téméraire, elles en faisaient  
 “mépris. La plupart des médecins étaient étrangers à la pathologie  
 “des pays chauds, dont une longue guerre maritime ne leur avait point  
 “permis l’étude difficile et périlleuse; et ceux d’entr’eux que guidait une  
 “expérience salutaire, étaient privés de presque tous les moyens dont la  
 “réunion suffit à peine pour assurer à la science quelques chances de  
 “succès. La situation des hôpitaux au milieu des villes ou dans les lieux  
 “marecageux, l’insuffisance des fournitures, la mauvaise qualité des  
 “alimens, le prix énorme des médicamens qui souvent encore étaient sophistiqués,  
 “le défaut d’infirmiers, la confusion de toutes les espèces de maladies dans les mêmes  
 “sallés, la rivalité et la mesintelligence des différens chefs de service, enfin jusqu’à  
 “l’opinion publique, qui, pendant ces desastres, distribuant au hasard l’éloge et la blâme, asservit le médecin,  
 “et ne lui permet d’autres efforts que ceux d’une routine empirique et impuissante,  
 “tout sembla conspirer pour seconder, étendre et prolonger le pouvoir de la plus redoutable  
 “des calamités du nouveau monde.” *Monographie Historique et Médicale de La fièvre Jaune des Antilles, et Recherches physiologiques sur les lois du développement et de la propagation de cette Maladie pestilentielle*—Lues à l’Académie royale des Sciences de l’Institut de France, dans ses séances du 6 Décembre, 1819, 17 Avril et 19, Juin, 1820.—Par Al Moreau de Jonnés &c. Paris, 1820.—p. 87—90—The whole of the second part should be attentively studied by those, who may be charged with the arrangement of expeditions to the torrid zone.—It is full of useful instruction;—A work replete with curious, new and most interesting information.—Oh! that our Government would permit themselves to be instructed by the useful lesson!

## CHAPTER II.

## INTERMITTENT FEVER.

INTERMITTENTS always appear under the tertian, double tertian, quotidian or quartan form; but by far the greatest number are of the first and second. In the immediate vicinity of marshes the paroxysms are particularly violent, the cold fit often depriving the patient of sensibility, whilst it continues. The bed and even the room in which he lies, shakes in an extraordinary manner. The hot fit is not less severe, generally continuing twice the length of the cold fit. But in such situations, the paroxysms do not always begin with horror:—the patient, in this case, feels cold, but has no trembling; but, instead of it, violent pains in the joints and loins form the commencement of the fit, and continue until a copious perspiration removes them.—This is called, by the inhabitants, “dumb ague,” is endemic in the more marshy districts. Another form, in these districts, is marked by a kind of lethargy at the commencement of the fit.—On the approach of the usual hour of accession of paroxysm, instead of horror and rigor, the patient is suddenly seized with an unconquerable drowsiness; and lying down, falls into a profound sleep, which continues two or three hours; at the end of which he awakes with a violent hot fit on him. I remember a case of this form of tertian, in which a cure was effected by the use of a species of onion called scallion.—In this, after using large quantities of bark, without any benefit, it was recommended to the patient to eat six scallions on the approach of the paroxysm, and to repeat the dose, during the paroxysm, until it should be stopped. He observed the prescription. Ten scallions were sufficient to put an end to the fit, and ten more taken about the time of accession of the next paroxysm, prevented it, and effectually cured him.

The intermittents of the dry season, sometimes begin with pleuritic pains, attended with continued fever, some cough and expectoration.—At the expiration of five days or a week, the symptoms of a regular quotidian or tertian appear, and those first complained of disappear. At other times, a pain is complained of about the diaphragm, which at a certain hour of the day is felt, in the manner of a ball suddenly rising and compressing the lungs so violently, as to impede respiration, and bring on spasmodic affections, and faintings. A few days after the appearance of these singular symptoms a regular paroxysm of a tertian has come on at the same hour the patient was before seized with them. Very often the fever has appeared without any of these precursory symptoms, and, at once, assumed a regular intermittent type.—But the most usual mode of accession, is a remittent fever. I may, however, take occasion to notice one more singularity in the intermittents of tropical climates.

I have already said that intermittents during the dry season, and more especially, in situations exposed to the northerly winds, are ushered in with cough and other signs of pulmonary affection. But it has, sometimes, happened that, when the disease manifested its intermittent type, these signs of pulmonary affection continued to come on with the paroxysm, and to cease at its termination. Thus violent fits of cough came on with, and increased and decreased as it did. They appeared evidently to be more the signs of spasm than inflammation: for being induced, by a false indication, to order bleeding, I have found the blood, by no means, sizzly, or in any respect marking the presence of inflammation; nor did the operation relieve the symptoms, or at all prevent their recurrence.

#### TREATMENT.

The type of intermittents is however, no otherwise important, in a practical view, than as it enables the practitioner to ascertain, whether the disease is idiopathic, (if it ever is so indeed), or symptomatic. Its disposition to regularity may indicate the former; a propensity to remit only, with aggravation of symptoms, may assure him of the latter.—It was by these appearances, my mode of treatment was regulated, and I generally found them a sure guide. When the fever intermitted regularly from its commencement, and without signs of local affection, it was stopped by bark, after sufficient evacuation; but oftener and more completely by the arsenical solution. When bark is trusted to, the dose must be very large, at least a drachm every hour, during the intermission, mixed up in coffee or milk, which I have found the most agreeable vehicles. I have known instances, in which resolute men have taken more than half an ounce of bark with two scruples of the powder of jalap, at one dose, with decisive and happy effect. Few, however, are able to bear so large a quantity on the stomach at once. If the type is regular tertian or quartan, the bark should be given about twelve hours before the accession of the paroxysm, in as large doses as the stomach can bear, and repeated as frequently as the patient can be prevailed on to take it—and the addition of a sufficient quantity of jalap or rhubarb will be of infinite use, when evacuation is required.—The arsenical solution (liquor arsenicalis Ph. Lond:) must be used with considerable caution—i. e. in doses of from three to fifteen drops, thrice during the intermission of a quotidian or double tertian; and oftener in types of longer intermissions. To each dose should be added a few drops of tincture of opium, and a table-spoonful of water.—If the paroxysms are not prevented by this, and if it is determined to persevere, equal parts of extract of colocynth and the pil: hydrargyr. in a pill or two, should be given at bed-time, as a purgative, and repeated for a few successive nights. This is a precaution very necessary with the bark too, should the bowels be at all disposed to constipation—but with the arsenical solution it is indispensable.

But when the succession of paroxysm is very frequent, the intermissions very imperfect, and no indisposition appears in the fever to become otherwise, local congestion and inflammation should be considered as the real disease, and the irregular fever as purely symptomatic. In this case, no time should be lost in giving mercury, with such freedom, and so guarded with opium, if necessary, as to excite ptyalism, as soon as possible. This medicine, thus given, has never failed to stop the progress of the disease. It has, unfortunately, happened, sometimes, that the disease has been so insidious, that the second paroxysm, after an imperfect intermission, has completely overwhelmed the patient, and put an end to his existence.—I have therefore made it a rule of practice, in these irregular fevers with aggravated symptoms, to ascertain with anxious minuteness, whether pain and fulness exist in the hepatic region—and if they do, to begin the treatment with copious bleeding and purging; and then to proceed to the use of mercury, in the same confident manner as in the yellow remittent fever.—The disease, in truth, arises from the same cause, is then marked with the same symptoms, produces the same morbid changes, is possessed of the same danger, and consequently must be treated in the same manner. Hesitation or vacillation may be considered as the death-warrant of the patient. The young practitioner should assure himself that by thus acting boldly and perseveringly, he is acting correctly and consistently;—and that his efforts, in nineteen cases out of twenty, if he sees the patients early in the disease, will be crowned with success.—I must add, however, that the patients must be very frequently seen, so that the favourable moment for the employment of these efforts, may be advantageously seized—for let it be ever remembered, that even an hour in these tremendous fevers decides the fate of the patient.

It may act as an encouragement to know that when the cure is accomplished by mercurial ptyalism, preceded by the necessary evacuations, there is no danger of a relapse.—This may, doubtless, be considered as owing to the removal of local disease, of which both remittents and intermittents, of the more violent kinds, are symptomatic. This cannot be said, indeed, when the cure is attempted by bark, or the arsenical solution.—But it must be observed that in all cases of intermittents especially, if the patient continues in the vicinity of marshes, a relapse cannot be prevented with certainty, whatever the means of cure may have been. Safety is, therefore, better assured by a removal to a situation where marsh miasmata can have no influence in disposing to a recurrence of the disease.—When mercury has been the agent employed, and the patient has been removed to a healthy situation, health is the certain consequence. On the other hand, when tonics have been the agents employed, and exclusively trusted to, a relapse, or an imperfect cure, or a languid and listless state of the constitution, are long the consequence, even after a removal to a dry and healthy situation.—In such marshy situations the sallow or jaundiced com-

plexions, and emaciated persons of the inhabitants, manifest the little safety there is, if a stranger continues his residence, after the disease, which is the legitimate offspring of the situation, has been removed by medicine.

Intermittents frequently, under certain circumstances, interchange with dysentery; the type of the former, being observed by the latter—i. e. a paroxysm of dysentery, and one of fever have alternated; or if the fever ceases on the appearance of dysentery, then, the latter attacks with regular paroxysms and intermissions. The circumstances, under which this modification of disease, for in fact it is no more, happens, is when the removal of the patient, when in a convalescent state, from the neighbourhood of marshes, has been neglected, or is impossible. The occurrence of dysentery in this case is always dangerous. The most certain means of securing safety, is change of situation; but if that should still be impossible, mercurial ptyalism must be again resorted to, if it has been already employed, or now for the first time. But it almost never happens that symptoms of dysentery appear, after the original disease has been removed by mercury. This is a most important fact, and therefore deserving of particular notice;—nor is it less important that mercury not only puts a stop to all the symptoms of fever, but completely prevents all those consequences of it, which so frequently take place, and so often lay the foundation of future misery, when tonics alone have been employed.—I mean hepatic abscesses and scirrhus, enlargements of the spleen, the pancreas, and mesenteric glands, dropsies, &c.

I have known some men afflicted with a regular tertian intermittent, who, having fortitude enough to brave the approach of the paroxysms, have checked it, and even destroyed what may be called the catenation of phænomena, by mounting their horses, and riding for a considerable length of time, the exercise effecting what tonics too often fail to produce. I have frequently observed the same event to take place in soldiers, when it has been necessary from the exigency of the service, to put them into waggons at the commencement or approach of the paroxysm.—Before the end of the march, all symptoms of fever have disappeared, and the disposition to their return has been destroyed.

The moon has certainly great influence on intermittents within the tropics. A recurrence of the fever, as well as the original attack, have uniformly happened at the new and full moon.—The solution of arsenic, or the bark, taken for three days before these periods, have often prevented it.

## CHAPTER III.

## DYSENTERY.

WITHIN the tropics there are two species of Dysentery. One proceeds from suppressed perspiration; irregularities in clothing and diet, especially indulgence in the use of young green Indian corn, and the subacid fruits, as oranges and pine-apples; exposure to currents of air, in high situations, when the body has been heated by exercise of any kind; wet clothes and wet feet, without the power of maintaining an equable heat at the surface by exercise. The two last, indeed, act by suppressing perspiration, so that in fact the causes may be reduced to two—irregularity in clothing and diet, including the abuse of fruit; and suppressed perspiration. The season in which it is most common, is that comprising the hot and rainy months; although it is, by no means, unfrequent in the dry season.—The second species and the most dangerous, is that produced during the rainy and hot season, by marsh miasmata. The first is the form in which the disease appears where there are no marshes. It is sporadic; and the proximate or immediate cause seems evidently to be irritation of the larger intestines from an overcharge of their vessels, and consequent inflammation of their coats. The second is always a symptomatic disease, having its seat in the liver and smaller intestines. It is often epidemic; and as I have already observed, often interchanges with remittent and intermittent fevers, particularly the last; and, indeed, depending on the same remote and proximate causes, may be considered, in a great measure, as merely a modification of these fevers. Both species are dangerous, or may become so by improper treatment; but the second is infinitely the most so. I shall describe them separately, and endeavour to point out those symptoms which may be considered as characteristic of each.

## IDIOPATHIC DYSENTERY.

The species of Dysentery which may be called Idiopathic, is, as I have said, the product of irregularities in clothing and diet, including the abuse of fruits, and suppressed perspiration. It has been so often and so ably described, that an account of it here may seem unnecessary, but in order that the young practitioner may have a more precise view of the disease in all its forms, it may be useful to give a short detail of its symptoms. The diagnostics, then, of idiopathic dysentery, or rather of that species which is not the product of marshes, are pain and sense of fulness at the stomach, and generally over the abdomen, but especially about the navel; a frequent discharge of fœculent matter, thin, badly digested and frothy; afterwards, the

feculent matter gives place to a slimy fluid, attended with severe griping, when the call to stool comes on, which soon becomes incessant, and with a tormenting, but ineffectual, effort to discharge the contents of the bowels; or spasm of the rectum, and sphincter ani, or what is generally understood by the word tenesmus. This state having continued for a few days, the slime is tinged with blood of a florid colour, or rather the blood seems distinct from the slime, and never mingles with it, so as to produce a uniform colour. The increase of the griping of the tenesmus, and of the urgency to stool, are now accompanied with spasmodic contraction of the muscles of the abdomen. The whole constitute a state of great distress and horrible feeling.—The constant irritation occasioned by them, no doubt, is ultimately the cause of the inflammation and gangrene, and death, which too frequently follow, if the disease is not arrested by proper means. The tendency, however, to fatal termination, is certainly, never so great in this species as in the hepatic. Few diseases are attended with more mental depression, and apparent bodily debility.—The nature of the symptoms is such as to deprive the patient of all power and action—all wish to assist himself—and yet few diseases require more attention to cleanliness—for few are more apt to become contagious. The exigency of military service often renders it unavoidable, to crowd patients laboring under dysentery into small rooms—and when such defective arrangement takes place, most miserable indeed is the consequence.—A remarkable instance of this happened during the siege of Savannah in Georgia, in 1779.—Two hundred and fifty sick were left in September of that year in Callabogie Sound, blocked up by the French fleet commanded by Count d'Estaing.—They were necessarily left by the division of the army stationed on Port Royal Island, but now called to proceed, by every possible exertion, to assist their friends at Savannah, then invested by the united French and American armies.—Almost the whole of the sick thus left, were cases of yellow remittent fever and dysentery, but chiefly the last; they were confined to two ships of about 300 tons each, badly regulated, very foul, and very ill ventilated; and as very few well men could be spared to remain with them, there was scarcely a possibility of removing the stools of the dysenteric patients; they had few comforts, and very few medical attendants. The necessary consequence followed—the dysentery became malignant, a jail or hospital fever was produced; and more than two thirds of the whole number perished, before the siege was raised.—When the surviving cases were admitted into the hospitals at Savannah, infection was admitted with them, and for some time spread with destructive violence. It was arrested by proper measures, at length.—Such events, I am aware, are by no means uncommon.

In an army, serving in hot climates, the most common cause of this dysentery, when epidemic, is lying on wet ground all night, after a long fatiguing march, or a severe action in the field of battle, before the troops have been habituated to the hardships of military service, and before they have been assimilated to the climate.

Next to this, perhaps, is the inconsiderate indulgence in the use of fruit of any kind, but more especially of unripe fruit, and green Indian corn.—Instances of all these have often occurred to my observation in North America, and the West Indies.

In every instance of death from idiopathic dysentery, where inspection of the body has been made, I have found the large intestines in a state of inflammation. The effects of this state are gangrenous blotches, but oftener tubercular excrescences on the internal surface of the large intestines.—These excrescences are the result of exudation of lymph. The rectum is more especially the seat of these—the whole length of this intestine being often covered with a dark bloody slime, and a number of excrescences which resemble very much the pustules of small-pox of a flat kind, at the height of the disease. So much is the rectum the seat of active inflammation in this dysentery, that mortification often takes place some days before death, and large portions of it have been separated and been discharged by stool. Generally, when the rectum is thus affected, its protrusion takes place, and the portion mortified and separated is the protruded part.

The consideration of a prodigious number of cases of idiopathic dysentery;—and the inspection of the body after death, have led to this conclusion, that although the early symptoms sometimes present nothing to cause alarm, yet the remedy found alone useful in cases of the disease decidedly highly inflammatory, should always be resorted to;—and that no dependence should be placed on those, which may, indeed, be adequate to the cure, when the disease proves an ordinary one, but which oftener fail. For whether the inflammation is superficial or deep seated, in the larger intestines, especially the colon, the same remedy will cure without inconvenience, and with positive certainty. It will always be a desideratum in the pathology of dysentery, how to ascertain the existence, during life, of deep-seated inflammation; hence the uncertainty of cure, if remedies, at best of problematical effect, are alone trusted to.—We know, or at least, pretend to know, that when the pain is seated about the navel, the inflammation chiefly affects the small intestines; and that pains in the sides, back, and region of the kidneys, indicate inflammation of the colon, &c.—The chief indication of deep-seated inflammation in dysentery, that is inflammation which pervades all the coats of the intestine, and is not confined to the interior surface, as we suppose to be the case in common or milder dysentery, seems to me to depend on the obtuseness of the pain, and the gradual progression of the symptoms from mildness to violence; and their obstinacy in resisting all the usual remedies employed in idiopathic dysentery.—No doubt the situation of the pain may be of use in forming the indication; but the very uncertainty which must always exist in dangerous cases, is itself a powerful motive to employ the least equivocal mode of treatment; and no doubt remains with me, that had I treated the patients in the two following cases with bleeding and mercury, their



recovery might have been the consequence; but I was deceived by the early symptoms; and when bleeding and mercury could be advantageously employed, that is, when the true nature of the disease developed itself, it was too late. Taking this view of the disease, it must be evident, that the remedies of great efficacy in fluxes, whose inflammation is confined to the villous or interior coat, will be of little use in those I have here treated of. I have dwelt the more on this subject, and have thus endeavoured to impress the precept, from my thorough knowledge and conviction of its great importance; and from the well-known destructive nature of dysentery, more especially in armies. If the precept is fully adopted, death, under Providence, may, with moral certainty, be prevented; if it is neglected, the consequence must be fatal.—The two following cases are illustrative, and instructive. A gunner of the Royal Artillery was the subject of the first. The disease seemed mild, and assumed no uncommon symptoms, except an obstinate strangury, and the protrusion of the rectum, both of which were extremely troublesome and painful. On the 15th day of his complaint, a small portion of the intestine came away, when at stool.—On the 17th the whole of the protruded part fell off—and was preserved in rum. After this event, the griping and tenesmus abated very much, but the power of retaining the stools, was lost, and the stools became very offensive, and were composed of clots of blood, and small portions of brownish thin fœculent matter—appetite, however, was tolerably good—little thirst—pulse natural. He declared himself to be much better. On the 22d day, his spirits sunk, his appetite failed, he had much thirst, cold clammy sweats came on, and his pulse, much quickened, was low and thready. On the 24th day he expired, perfectly collected, calm, and aware of his approaching dissolution. On examination, after death, I found the omentum reach as far as below the pubes, where it adhered strongly to the peritonæum. The great curvature of the colon was prodigiously enlarged, and its coats were fully a quarter of an inch thick, and full of abscesses, and the interior surface covered with small bodies or excrescences of the steatomatous kind. The curvature adhered strongly to all the surrounding parts, and at first view had much of the appearance of an hydropic ovarium. All that remained of the rectum was in a mortified state.—All the small intestines, and, indeed, all the other viscera were healthy.—Sometime after the death of this patient, another gunner, labouring under symptoms of dysentery, very similar, was received into the hospital. They proved very unyielding, however; and the griping in particular, was almost unsupportable. On the 10th day of the disease, after a paroxysm of excruciating torture, attended by cold sweats, and delirium, he spontaneously discharged at three evacuations, a quantity of scybala sufficient to fill a common sized chamber-pot. After this he became perfectly easy, griping, tenesmus, dysenteric stools, &c. entirely ceasing. Many of the scybala were of the size of pullet's eggs, globular and extremely hard. He languished,

after this for several days, suffering under hectic fever and colliquative sweats, and then died. Before the discharge of the scybala, he suffered severely from strangury. The morbid appearances on examination, after death, were these:—the great curvature of the colon was enlarged and thickened, as in the preceding case, with innumerable little abscesses, and steatomatous excrescences.—Where the colon was not thus diseased, it was prodigiously distended with air. All the rest of the intestinal canal was healthy—the liver was equally so, but the gall-bladder was of a most uncommon size, and full of yellow bile.

Although the early symptoms of dysentery are generally deceitful, and although, therefore, it is the part of prudence to employ a remedy of well ascertained efficacy in the treatment; yet I shall here detail the means that may be resorted to in cases evidently of a mild nature, or in which the proximate cause may be supposed or deemed, superficial inflammation of the lining membrane of the intestinal canal, when mercurial ptyalism is inadmissible, from constitutional latent disease, or from the prejudice or fears of the patient. No disease manifests the sympathy between the skin and the intestinal canal, more than dysentery. The great object, therefore, should be to restore the skin to a soft permeable state; for in this disease it is generally, indeed I may say, always, dry and corrugated. When a gentle, warm diaphoresis is excited, the patient always experiences relief; the motions become less mucous, and more fœculent. When this method of cure is resolved upon, it may be conducted in the following manner.—After the full operation of an emetic, and a purgative, five grains of James's powder may be given every four or five hours, till a copious, warm diaphoresis is thrown out, which ought to be kept up by plentiful dilution with warm rice or barley water, for several hours, or until the griping and tenesmus cease, and the motions assume a better, that is, a less mucous and a more fœculent appearance.—This state being produced, the bark may be given in pretty large doses, mixed with port wine or with water; and a pill, such as the following, thrice in the day, or only once, at bed time, according to the circumstances of the case: ℞ opii gr. ss. ad gr. i pulv. Jacob. gr. iij. balsam Peruv. q. s. f. pilula. When the sweat is slow in breaking out, it may be promoted by hot fomentations;—or, what is better, by wrapping the belly and lower extremities in a blanket, wrung out of boiling water, or a hot decoction of aromatic herbs.—The efficacy of the last application in relieving the symptoms, and bringing on a diaphoresis, I have often witnessed in a very remarkable degree. An excellent mode of exciting diaphoresis, without the disagreeable inconvenience of having the body enveloped in wet, is by means of the vapour bath, which may be very conveniently and agreeably employed in the manner described in the chapter on rheumatism.

Another mode of treatment under the circumstances of the disease I have mentioned, is this—When the case is recent, and when ap-

plication has been early made, an emetic of ipecacuanha or sulphate of zinc may be given in the evening—and at bed-time, from four to ten grains of the compound powder of ipecacuanha, with from two to six or even ten grains of calomel, mixed well together in a spoonful of treacle. Generally, when the anodyne effect of the powder ceases, towards morning, the calomel procures one or two easy motions. If the motions are not free and easy, a solution of sulphate of magnesia may be given in frequent small doses during the following day; and at night, the compound powder of ipecacuanha and calomel as before.—If the tenesmus, griping and mucous stools again recur, the solution may be repeated, with the addition of a minute quantity of tartarized antimony; and glysters of castor oil diffused in warm water by means of mucilage, and with a few grains of ipecacuanha. When the griping is particularly severe, either hot fomentations, or a blister to the abdomen, may be employed with great benefit.—When the rectum is the principal seat of the inflammation in dysentery, the greatest benefit will be obtained from the application of leeches to the hæmmorrhoidal vessels—or abstracting a little blood from them by a lancet, if it can be done. In such cases, these vessels are very turgid. Relief in tenesmus has been sometimes obtained by the introduction of a piece of opium, rolled into the form of a small bougie; and, when, by means of this, the tenesmus has ceased, a moderate dose of castor oil should be given. When the symptoms of dysentery have been removed, a weakness of the intestines, in the form of diarrhœa, or lientery, is not an unfrequent occurrence. For this the compound powder of ipecacuanha in doses of two or three grains, chalk mixture, lime water, extract of catechu or of logwood, may be employed with desired effect, or a weak cold infusion of the Peruvian, quassia, or Simazouba bark, with the moderate use of port wine, and simple nourishing diet. Any of these, aided by keeping the feet warm and dry by woollen socks, and the body by flannel shirts next the skin, have always restored tone to the bowels. Strangury is very common, and a most painful and troublesome symptom in dysentery, when the inflammation is deep-seated, and more especially when the rectum is the principal seat of it.—If the means detailed are not sufficient to overcome the strangury, and when the irritable state of the part has been such as to render the introduction of the catheter impossible, the warm bath should be employed—or ten drops of muriated iron in a little poppy syrup and water, or a few drops of laudanum and water, every half hour, has given great relief.

## HEPATIC DYSENTERY.

The symptoms which principally distinguish hepatic dysentery as it may be called, are a fixed pain at the pit of the stomach, a constant headache, and frequent dejections, at the commencement by no means peculiar. The two first, although apparently not cha-

racteristic, are nevertheless, to be particularly noticed, more especially if the disease prevails epidemically. In other respects, it does not seem to differ from the idiopathic or common dysentery; so that it can almost never be known but by the experienced, until those symptoms appear, which, whilst they manifest the peculiar nature of the disease, also, unhappily, point out its approaching fatal termination. It is, therefore, I repeat it, of the highest importance, when the two symptoms I have mentioned, appear at the commencement of dysentery, to ascertain the local peculiarities of the patient's place of residence—that is, whether the patient has resided, and contracted the disease in the immediate vicinity of marshes, and what are the diseases which have most frequently occurred in the situation—whether there is any epidemic at the time. If the situation is marshy, and the epidemics have been, or are, remittent and intermittent fevers, and hepatic complaints;—then, the pain at the pit of the stomach and headache, accompanied by a disposition to frequent alvine dejection, should be considered as indicating hepatic dysentery. Every chance of success depends on the early detection of the disease, and, of course, the early adoption of the treatment which experience has proved to be the only useful one. Towards the fatal period, which, in the worst form of hepatic dysentery, comes on with an overwhelming rapidity, the sudden and unexpected supervention of a general coldness of the surface, with partial cold clammy sweats, an almost total cessation of pulse, an excessive sinking of the spirits, and a discharge from the bowels, composed of a slimy brown substance, floating in a fluid like bloody water, and having a fetor of intolerable offensiveness, mark the irremediable progress the disease has made. This is the worst state of the disease, in which no human means can avail—a less unfavourable form of the disease presents some symptoms less equivocal, and which more early discover its nature. The commencement, and for three or four days, the symptoms are those usually observed in dysentery; but at the end of that time, together with the pain at the pit of the stomach and the headache, a considerable anxiety at the præcordia, and a sensation as of a continued pressure in the right hypochondrium, with frequent stools, composed of a fluid like the washings of raw meat, are perceived. These symptoms should be particularly noticed, and deemed as truly characteristic of the seat of the disease being the liver. It will be happy for the patient, and creditable to the practitioner, if they are so; and if they are made the regulating principal of the treatment. But if these signs are neglected, and the fatal ones permitted to come on, nothing can be useful; and the progress of the disease from thence to death is most rapid, indeed so much so, that from the appearance of these signs, death takes place in six, ten, or at the most twenty-four hours.

Dissection has thrown the clearest light on this species of dysentery. The liver of all the viscera is found the most diseased—inflamed, enlarged, partially suppurated, or in some portions spha-

lated, or in consistence like rotten cork;—the whole of the intestinal canal more or less inflamed—but more especially the smaller intestines;—their coats, in many places, very considerably thickened, and in others sphacelated.

A circumstance which renders this species of dysentery more insidious, and consequently more dangerous, is, that the mode of treatment of idiopathic dysentery without mercury, I have described, seems effectual in relieving till the fatal change takes place. The mode of treatment I adopted in this obscure disease, after I became acquainted with its nature, was the following. After bleeding once or twice, if the pulse indicated the repetition, a vomit of tartarized antimony, or of what I found generally preferable, sulphate of zine, and a sufficient purge of castor oil, the following pills were given.—℞ submur. hydrarg. gr. iij. pulv. ipecac. gr. iv. opii gr. ss. mucilag. q. s. ft. pilulæ duæ. The two were given every three hours during the twenty-four. Emolient glysters, such as the following were administered thrice in the day—℞ amyl. solut. ℥vi. tinct. opii, gr. lx. ad c. pulv. ipecac. gr. viij. ℥ ft. enema. If the danger was imminent, and the symptoms increased in urgency, the dose of calomel was augmented in such manner as to excite ptyalism as quickly as possible. When this took place, danger ceased, and the patient soon became convalescent. I first began to use this mode of treatment in the year 1786, and have most successfully continued it ever since. It is now more generally known, and every judicious practitioner employs it.

The following explanation of the pathology of dysentery has been drawn up by a late learned and ingenious friend, of the medical staff of the army;—and as it tends to elucidate the subject in a very considerable degree, a subject hitherto very much involved in obscurity, it may very usefully follow the preceding practical observations on Idiopathic and Hepatic Dysentery. “In endeavouring to explain the manner,” says he in a very able report to the Medical Board, “in which an increased quantity of blood is thrown on the coats of the intestines, it may not be improper to call to mind the relative anatomical situation of their blood-vessels, with those of the liver. The colon receives its greatest supply of blood from the superior mesenterica, the largest of the abdominal arteries; the right or outside of the artery giving off the colica media to the middle of the great intestine; the colica dextra to the right, and the ileo-colica to its junction to the termination of the ileum; while the left portion of the intestine, and its segmoid flexure, with the rectum, are supplied from the inferior mesenteric. Here we have the primary branches of these large arteries going directly and without tortuosity or arching to supply the colon and rectum, while the arteries going to the small intestines form such a confluence of arterial arches previous to their termination, as to break the current of blood, and act as a wise provision of nature, by preventing its too rapid determination to these organs, when such

determination is occasioned by torpor of the hepatic system of the cuticular surface, or by the enlargement of the spleen, a not unfrequent cause of fatal dysentery. It is, thus, the colon and rectum become most frequently the seat of dysentery; and the progress of inflammation and ulceration in them becomes more rapid than in other parts of the intestinal canal. This also furnishes an elucidation of a phenomenon in diseases of the intestinal canal, which otherwise evades explanation. The first effect of an increased quantity of blood thrown on mucous membranes, appears very different from that on serous ones; active inflammation not taking place at so early a period, or running its course so rapidly, as in the case before us, as well as in the membrane of the nose, fauces and bronchiæ, in all which the first attacks of inflammation are merely attended by an increased secretion of mucus; whilst inflammation of the pleura, and peritonæum, soon arrives at a fatal termination, unless checked by large and repeated bleedings. It appears that the first effect of a determination of blood to the villous coat of the intestines is an increased secretion from its mucous follicles, and an increased and probably a depraved secretion of serum from the exhalent arteries; Nature endeavouring to relieve the portal and cuticular vessels by this vicarious discharge: but failing in her efforts, and congestion in the mesenteric vessels continuing, inflammation of the mucous membrane, constituting true dysentery, takes place. But as this inflammation, from the nature of the surface, is not rapid in its course, we have now, only increased irritation without any organic derangements, followed by spasm, the supposed proximate cause of dysentery of Dr. Cullen. And here the analogy between intestinal, faucial and bronchial inflammation, is most apparent. This spasm is generally confined to the portions of the colon, where, on inspection after death, it is evident the greatest inflammation took place, evinced by the thickened and contracted state of that intestine, as well as by the tubercles and ulcerations on its internal surface. In this situation of things nature makes ineffectual efforts to discharge accumulated fæces, and to restore the cuticular discharge, and the functions of the liver. Griping, tenesmus, partial perspiration, and effusions of mucus and blood, and the whole train of dysenteric symptoms. At this period, inflammation of the peritonæal coat of the intestines is not an unfrequent occurrence, more especially under injudicious treatment, a larger quantity of blood being thrown on the outer coat, and then inflammation of a very different character, attended by fixed pain on pressure, &c. ensues.

## CHRONIC APHTHÆ.

Under the head of Dysentery, I propose to offer a few observations on a very troublesome and sometimes dangerous disease of Tropical Climates, Chronic Aphthæ—the nature of which has been

imperfectly understood, and the treatment consequently injudicious and inadequate. This disease is not confined to tropical countries, although it much more frequently occurs in them than in those of colder temperature. I have already (Part i. ch. 4.) observed the affinity between chronic aphthæ and idiopathic dysentery—it remains therefore to state here what I have found the most useful mode of treatment, premising it with such remarks on its nature as may explain the principle of that treatment. Chronic Aphthæ seems to be, in its nature, a modification of dysenteric inflammation;—the same remote causes are common to both, but the form of disease is determined by the peculiar habits and states of system these causes act on. The unexperienced are greatly puzzled by the form of this disease;—and not adverting to the cause, and the mode of action of that cause, they form indications of cure which are not applicable, and which do not arise from the pathology which the correct consideration of the circumstances seems to present to us. In fact, the intestinal inflammation in this disease, sometimes extends itself not only over the whole of the canal from the stomach to the anus, but even over the stomach itself, and the surface of the œsophagus, so as to appear in the fauces; and instead of increasing the secretion of mucus, it produces an exudation of lymph which assumes the appearance of little granulated masses, under and around which, inflammation discovers itself with a bright florid colour. These singular appearances, however, do not alter the real nature of the disease; that remains the same, and is to be treated as true dysenteric inflammation.—Owing to a misconception of the pathology of Chronic Aphthæ, the disease is often rendered tedious, obstinate and ungovernable; nay, extremely dangerous—and sometimes fatal.—Suppressed perspiration, and irregular conduct in diet, acting on a constitution peculiarly circumstanced, being the causes of this disease, obviating the effects of these, as in dysentery, constitutes the cure. I have found nothing so effectual with this view, as opening the bowels freely by means of a powder composed of calomel gr. ij. ad v. and rhubarb gr. viij. ad xij. at bed time, followed up, if necessary, with the following draught—℞ infus. sennæ ʒi. ad ʒij. magnes. sulph. ʒi. ad ʒij. tinct. sennæ, ʒi. ad ʒij. ss. tinct. card. comp. ʒi. ℞ ft. haustus—After this the pill recommended in hepatic dysentery should be given in such manner as gently to affect the mouth. Gentle ptyalism is absolutely necessary to remove the inflammation. The cure is completed by a course of mild tonics, such as the cold infusion of cinchona, or simarouba, or cascarilla—or by the following pill, persevered in for a month at least—℞ oxyd. zinci gr.  $\frac{1}{4}$  ad gr. i. assafætid. pulv. valerian—extract. hyoscyam. āā gr. i. ℞ ft. pilula 3 in die sumenda. A country residence, and abstinence from fruits and vegetables, and the daily use of a small dose of lime water, are very necessary to confirm the favourable change effected by the other remedies.

I close this chapter with the following remarkable passage from

the narrative of the intelligent, most adventurous, but unfortunate Mr. Park. It may be received as an encouragement to act in the same way, by those who may be placed under similar circumstances to those under which the traveller was. "Ever since my arrival at Marraboo (on the Niger) I had been subject to attacks of the dysentery, and as I found that my strength was failing very fast, I resolved to charge myself with mercury. I accordingly took calomel till it affected my mouth to such a degree, that I could not speak or sleep for six days. The salivation put an immediate stop to the dysentery, which had proved fatal to so many of the soldiers." Park's last Mission to Africa, 4to. p. 145.

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## CHAPTER IV.

### HEPATITIS.

ALL the endemic diseases of hot climates have their immediate origin in the over-excitment of the hepatic and cuticular systems; fever, dysentery, and hepatitis, are thus produced. They all receive their pathological explanation, from the consideration of the phænomena, the climate, aided by marshy exhalations, intemperance and imprudence, or the contingent circumstances of military service, give rise to, in the liver and skin. It has been already observed, however, that the climate alone may be considered as proved to have little injurious effect on the European constitution, without the concurrent help of these agents; therefore it is presumable, that over-excitement, except under certain circumstances already stated in the first part of this work, never takes place from heat of climate alone: it certainly gives a disposition to over-excitement, but, otherwise, the healthy state of the liver and skin may remain uninjured. The whole of the abdominal viscera are so connected in their functions, and so united in their circle of action, that if a principal organ is excited to undue exertion, all the rest sympathize with it, and the consequences, congestion, inflammation, morbid secretion, &c. follow. Taking a more extended view of the pathology of the abdominal viscera, we find, that an intimate connexion subsists between the organic system of the skin, and that of the liver; insomuch, that whatever disturbs the operations of the former, necessarily and concurrently disturbs those of the latter. Thus acute inflammation of the liver almost always proceeds, when marsh miasmata are not the cause, from suppressed perspiration suddenly occasioned by the application of cold to the surface, after the undue excitement of the functions of the skin. This is, indeed, a frequent occurrence;—but the most rapid destruction of life I ever witnessed,



by acute inflammation terminating in gangrene of the liver, was occasioned by this cause: a gentleman, heated and profusely perspiring after violent exercise, lay down and slept in this state, in a current of cool air: he awoke soon after in the most excruciating torture in the right hypochondrium, and with great tumefaction of the whole abdomen. In two days he was dead. On inspection of the body, the whole of the intestinal canal was found considerably inflamed and inflated, and the liver greatly enlarged, and reduced in many parts to a state similar to that of rotten cork. The intensity of this inflammation is always in the ratio, however, of the temperance and discretion of the subject acted on. Chronic inflammation of the liver is generally the result of active or acute, and may be thus explained. From previous over-excitement of the hepatic and cuticular systems, torpor and atony, the invariable consequences follow—the secretion of healthy bile is suspended, and the expulsion of that already secreted becomes slow, or altogether ceases. The viscid and tenacious bile thus retained, stagnates in the biliary vessels, or is taken up by the absorbents into the general circulation, causing the yellowness of the conjunctiva of the eyes, and of the skin; whilst the intestines, deprived of their natural stimulus, become torpid, and accumulation of fæces and flatus follows.—Hypochondriasm, the constant result of such a state of things, discovers its usual phænomena, mental depression, solicitude about health, visions of evil, apprehension of death, and despairing consciousness and fear of future punishment. It is, indeed, wonderful, in this state of the hepatic system, how readily the mind receives deep and afflictive impressions of religious enthusiasm;—the most gloomy ideas are cherished, although, perhaps, the conduct of life may have been correct and virtuous. I have frequently witnessed this state, and as frequently dissipated it, by rousing the liver into a due performance of its natural functions. *Melancholia religiosa*, which, in fact, is only another name for hypochondriasm, occasioned by this morbid state of the liver, should never be considered as a disease of the mind. It is physical not moral derangement;—and, if the proper remedy is so applied as to restore the diseased organ to healthy action, this, the effect of that derangement, will disappear. A very usual concomitant of torpid hepatic function, is pain and enlargement of the spleen: and so constantly does a morbid state of the spleen follow a morbid state of the liver, that the former may, generally, be considered as the effect or consequence of the latter. The blood deposited in the spleen for the supply or elaboration of bile, when received into the liver, has its usual circulation disturbed—is prevented from entering into its vascular system—and regurgitates on the spleen—and there being no other means of escape, accumulates, and produces all the phænomena of splenitis. In fact, it does not appear possible from the organization of the spleen, that inflammation can be the consequence of this accumulation—it is merely the method employed by nature to relieve the liver;—and the only aid which art affords in

such a state of the spleen, must be applied to the liver in the first instance.—Obstruction being removed, the blood finds its natural and only passage from the spleen open—and the symptoms of splenitis consequently cease. (See Edin. Med. and Surg. Journ. vol. vii. p. 267, for further explanation of the functions of the spleen). Acute and chronic hepatitis are thus generally, in the succession of cause and effect, at all seasons of the year.—But there is another species of hepatitis, in many respects different from these, in the highest degree dangerous from its anomalous and obscure nature. It seems to be more immediately the product of marsh miasmata joined to cuticular constriction, and therefore always appearing, and epidemically so, in the dry season, and in situations exposed at once, to marsh exhalation and northerly cold winds. The islands of the West Indies thus circumstanced, are subject to this disease almost every year, and sometimes to a most afflicting degree. I shall give some account of this species, which may be called anomalous hepatitis, and afterwards describe the acute and the chronic, and the mode of treatment which experience has found to be the most successful in each.

## ANOMALOUS HEPATITIS.

I first saw this disease on the windward side of the Island of Grenada in the last months of 1785, and the first of 1786, in consultation with my respected and experienced friend, Dr. John Stewart. The weather, during those months and some time before, was remarkable for its changeableness; cold and heat, rain and drought, alternating in an extraordinary and rapid succession. The greatest prevalence of the disease, and the greatest violence of its symptoms, took place in January, 1786, when the degree of cold was greatest. It appeared in the districts of the island, by far the most exposed to the influence of the chilling northerly winds, and in which the most extensive tracts of marsh in the island are found—at this time, accidental hurts, particularly in the region of the liver, seemed to accelerate an attack of the disease. People of all colours, sexes and ages, were subject to it; but the most liable to suffer by it were blacks, and young people from the age of 8 to 25, a peculiarity, doubtless, arising from the greater exposure of these people to the cold dews of the night, and the northerly winds during the day. The disease seemed to possess another peculiarity—infection. Thus, on one plantation, the hermitage, whole families appeared to receive the infection from communicating with one of the parents, who had just before been afflicted with the disease—on another, the river Antoine, it was still more marked. Two cooper negroes, who had been hired to work on the estate, were recalled by their master to Grenville Bay.—During the latter part of their stay at the river Antoine, they lodged with the house-keeper, then

labouring under a mortal attack of the disease. Immediately on their return to Grenville Bay, they were seized with the disease, and narrowly escaped death. All the domestics and several of the field negroes who visited the house-keeper during her illness, received the infection. When patients were unnecessarily continued in the plantation hospital, they were much more liable to returns of the disease, than others who had been sent to their houses on their recovery. The disease began with a considerable degree of headach, pain at the pit of the stomach, and tightness across the præcordia, with difficult respiration. The skin was dry, corrugated and cool; the tongue moist and foul; the belly natural, and the discharge of urine free. No thirst, no sickness, scarcely any diminution of appetite; the pulse soft and not more than 70 or 80, and of a natural fulness. On the second day, the headach increased much; the pain at the pit of the stomach became excruciating; cold shivering came on; the skin, on pressure, communicated an intense, penetrating heat, although, on slightly touching, it felt cold, and its surface excessively dry and corrugated; the tongue covered with a thick moist fur, purplish towards the edges, and grey in the middle. In negroes a bronze or coppery colour on the cheeks, out of which large drops of clammy sweat issued, whilst a greasy moisture overspread the rest of the face; in whites, the colour of the face became dingy with the same kind of moisture—the pulse quickened at once from 80 to 120 and 144, and became hard and contracted. A short cough, or rather a sudden, quick expiration came on, with a sensation at the diaphragm, as if a heavy weight pressed on the lungs, and was about to suffocate the patient. On the sixth day, if the patient lived so long, the pulse suddenly sunk, so as to become almost imperceptible; the greasiness of the face increased, a glassiness appeared in the eyes; a disagreeable cold clamminess over the whole surface took place; a great increase of weight at the diaphragm, and a sense of stricture in the pharynx, with excessively difficult deglutition succeeded; and the whole closed with coma and death. The proportion of death to recoveries was as one is to six; and the fatal days were the 3rd, 5th, 7th, 11th. Repeated observations and numerous dissections alone directed to a knowledge of the nature of this most treacherous disease.—The morbid appearances were very uniform.—The liver astonishingly enlarged; on its surface, particularly the convex side, an irregular intermixture of red purplish and tallow coloured spots, exhibiting a marbled appearance; yet the texture, although the whole so much enlarged, as, in eight cases out of ten, to occupy both hypochondria and the epigastrium, was otherwise, in a natural state, and without the smallest vestige of suppuration or gangrene. All the other abdominal viscera were in a sound state. The diaphragm seemed, indeed, in most cases inflamed, and its blood-vessels distended with blood.—Every other part of the body had a healthy appearance.

Relapses were frequent when the patients, in a convalescent state, exposed themselves to cold; and when they happened, they were almost always fatal.

The following mode of treatment was adopted, after numerous attempts by other means. The patient was bled as soon as possible, until a faintness or actual deliquium came on, or till some relief was obtained. Forty or fifty ounces were frequently taken away at one bleeding. A blister was then applied to the right hypochondrium, and the bowels were freely opened. After this a powder, composed of three parts of nitre, one of camphor, and a minute proportion of tartarized antimony, was given every two hours.—In the evening of the first day, the bleeding was repeated in the same liberal manner. In the course of three or four days, I have known from 40 oz. to 10 lbs. of blood drawn. But it was not found eligible to trust to these remedies alone.—On the second day after the third bleeding, if there were not evident signs of amendment, which, indeed, very seldom happened, from two to ten grains of calomel made into pills, with or without opium, according to the state of the bowels, were given three times in the day. This practice generally brought on a copious salivation in two days. When this was effected the patient was considered safe. In debilitated subjects, for the disease attacked the weak and the strong, the young and the old, although the young were the greatest sufferers, it was necessary during the salivation, to support the strength with wine and nourishing food. It was astonishing how readily cases, of the most dangerous tendency, yielded to this treatment; and it was no less so, how quickly the sick recovered their usual health and strength, notwithstanding the great loss of blood they sustained; while many, who had been bled more sparingly, continued in a languid state for months.—It soon became evident, however, that this remedy alone, as I have already observed, could not effect the cure; for when mercurial ptyalism did not take place, while bleeding was liberally employed, recovery was extremely tedious, or the patients died on the 7th or 11th day.—Upon the whole, bleeding to a degree beyond all common bounds, and promoting a copious salivation as speedily as possible, were the only means of cure we placed confidence in.

This very anomalous and dangerous disease occurred several times after this, during my residence in the West Indies, sometimes epidemically, and sometimes sporadically, but always with the same obscure and treacherous symptoms. The same method of cure always divested it of its danger, by being instantly put in practice. A detailed account of the first epidemic was drawn up, and sent by me to my friend Dr. Duncan senior, and published by him in his volume of Commentaries for 1786. It is not unfrequent in the larger islands, in situations and seasons similar to those in which it occurred in Grenada. It furnishes a remarkable illustration of the connexion between the cuticular and hepatic systems; and is therefore highly important in the pathology of intertropical climates,

where that connexion is most conspicuous, and possesses so remarkable an agency in the production of disease.

#### ACUTE HEPATITIS.

It is certain, however extraordinary and remarkable it may be thought, that acute hepatitis was scarcely known, as an idiopathic disease, in almost all the West India Islands, till about the year 1770.—The causes of the disease have always existed; but such was the prepossession that every disease, in which febrile heat, a quick hard pulse, and yellow suffusion of the skin were observed, must be bilious fever, an expression to which no definite idea was attached, that further enquiry was deemed unnecessary, and anatomical investigation never resorted to. In fact, when I first settled in practice in that country, I have known the most marked symptoms of hepatic inflammation entirely overlooked; and whilst local inflammation was thus the real disease, putrid diathesis was alone dreaded, and alone provided against by bark, wine, and other stimulating tonics. The natural consequence followed. Hepatic gangrene, hepatic abscess, and hepatic diarrhoea, have destroyed thousands; and yet improper treatment of the original disease, had never been considered as the cause. The disease was imperfectly known, and little understood, when I first settled in Grenada in 1784; insomuch, that the very first case which I had occasion to treat, in consultation with one of the oldest and most experienced physicians of the island, mercury was long considered as inadmissible, and at length administered with the utmost caution and fearful hesitation. The disease terminated in abscess; and though death did not follow, yet life was rendered uncomfortable for many years after. The disease was then new to me in practice in a very great degree—but the lesson was important and valuable, and I availed myself of it. Since that time the disease and its appropriate remedy have become gradually better known.—It is of high importance to the young practitioner to be informed of the errors of his predecessors—they become a beacon by which to direct his course.

Acute hepatitis often comes on without any previous warning; and is distinguished by violent pain in the right hypochondrium, a tightness across the abdomen, and a fulness, difficult respiration, and inability to lie down in any posture, the most easy position being a sitting one, with the upper part of the body inclined forward. There is no heat, no quickness of pulse at first; but excessive and undefineable anxiety and restlessness. In this form death sometimes happens, on the 3rd or 5th day, from gangrene of the liver.—When the disease approaches more slowly, there are, for some days, the usual precursors of disease, followed by the symptoms of remittent fever, and a sense of fulness and obtuse pain in the right side. At this period, bleeding in a moderate degree, and the operation of a brisk purge, relieve the patient so much, as to

induce him to neglect his situation. In a few days, the same symptoms appear again with greater violence; but again disappear by some purging and other antiphlogistic means. All this time, however, the disease is gaining ground, but the apparent mildness of the symptoms, and the ease with which they seem to be removed, throw the patient off his guard; and it often happens that medical advice is not deemed necessary until the disease is completely formed, has considerably advanced, and manifests itself by excruciating pain in the right side, attended with twitchings or spasms, and pain in the right shoulder, great anxiety, excessively difficult respiration, and total inability to lie down. In this state, if the most vigorous measures are not adopted without hesitation, and assiduously pursued, gangrene or suppuration in the liver soon follow.

The treatment in the first form must be prompt and decided—very plentiful bleeding, until abatement of pain is sensibly perceived, abundant purging, and mercurial ptyalism, in the shortest space of time possible.—A very large blister covering the whole of the right hypochondrium will be of great use; but the three first remedies are those to be depended on. Such is the emergency of the case, that no minute attention to quantity or the division of the medicine into dozes, should be observed in giving mercury.—Excite ptyalism by large and frequently repeated doses of calomel—or, if the bowels are too readily affected, by the strongest mercurial ointment rubbed in assiduously, and every where. The second form admits of more time and less extent, in the administration of these remedies; but the remedies must be the same. If there is a tendency to diarrhœa before ptyalism is excited, it must be checked by opium. An important fact, in endeavouring to excite mercurial action, should be carefully kept in view.—If the patient is particularly robust, and of a sanguineous constitution, mercurial action cannot be brought on, until the system is reduced to that level, which permits that action to take place—on the other hand, if the system is low, and the natural constitution of the patient feeble, whilst the hepatic inflammation is going on, a coincidence by no means unfrequent, means of raising it to the level, permitting mercurial action, must be employed whilst the administration of mercury is proceeding. In the first case copious and reiterated bleeding—in the second, the cold infusion of cinchona, and simple though nourishing food, are the means I have found most productive of the desired effect.—Sometimes ptyalism comes on rapidly and unexpectedly, and becomes troublesome—*scarcely ever dangerous*. The means of checking it, are the warm bath, opium, occasionally purging, and the use of a gargle, composed of a decoction of dry figs, with nitre, in the proportion of two drachms to a pint—sulphur and the sulphuret of potash have been seldom useful.

It may be generally observed, that regular acute hepatitis is a very tractable disease, if early known, and the suitable means, bleeding, purging and mercurial ptyalism promptly and judiciously administered; but if there was any doubt or hesitation, or an attempt

at half measures ;—and the early stage of the disease thereby neglected, it becomes not only extremely difficult to cure, but is very apt to relapse, or degenerate into chronic hepatitis, and to be too frequently a most troublesome companion for life. It is, perhaps, peculiar to regular acute hepatitis, that it appears in all seasons, and situations, that all constitutions are subject to its attack :—but it must not be forgot, however, that the rapidity or slowness of the progress of regular acute hepatitis, is generally proportional to the contiguity or remoteness of marsh effluvia ; that the irregularity and obscurity of its symptoms, or rather its approach to the nature of anomalous hepatitis has observed the same order ; and that its commixture and co-existence with diseases, known to be the product of marshes, such as dysentery, intermittent and remittent fevers, have been more frequently remarked in such situations, than in others of a drier soil, greater height, and more remote from the influence of marsh exhalations. Indeed, in such situations, hepatitis may be considered as the primary disease, and dysentery and intermittent and remittent fevers as symptomatic of it. The morbid changes observed on inspection after death, and the mode of treatment alone found sufficient to cure them, evince this.—I may further remark, that both anomalous and acute regular hepatitis, accompanied an epidemic catarrh or influenza which prevailed generally and very fatally in the West Indies in the last months of 1789, and the first of 1790 ; and in this instance the peculiar state of the weather seemed to be the exciting cause of hepatic inflammation. During those months, particularly December, the coldness of the N. E. and N. W. winds was exceedingly piercing, communicating a sensation similar to that which is felt at the commencement of a paroxysm of a regular intermittent. In this combination of the influenza with hepatic inflammation, the danger was most pressing ; and recovery was obtained alone by the bold employment of bleeding, purging and mercurial ptyalism. Cases of this combination occurred, in which, unhappily, the catarrhal symptoms were alone attended to ; and these always terminated fatally. On this occasion, a very instructive case occurred, the detail of which may be useful to the unexperienced reader. A negro, labouring under yaws, and with others in the same condition, lodged at a distance from the habitations of the healthy, was seized with the epidemic catarrh, in the form of anomalous hepatitis. His situation was not known for more than two days. At length I accidentally heard of and saw him. I found him so exceedingly reduced by the disease, that I thought it imprudent to bleed him ; I only directed him to be put on the diaphoretic course, adopted so successfully in the uncombined catarrh or influenza. On the following day, finding no change, although he had sweated very profusely, and that the most urgent symptoms were a pain at the pit of the stomach, stretching to the spine, and compressing the lungs in such manner as to render respiration extremely difficult and laborious, and violent headach, I immediately ordered five grains of calomel and one of opium, to be given to him

every three hours. At the end of four days, no ptyalism, and no abatement of the symptoms, but extreme debility, small tremulous pulse, and very quick, with delirium. Next day his situation was still worse, and he had now diarrhœa. The mercury was discontinued, and opium very freely given to him, with wine and nourishing food. I had every reason to consider the patient as fast approaching his end: but two days after, when I again saw him, I was most agreeably surprized to find the diarrhœa had ceased, and that a gentle salivation had taken place. The salivation continuing, he daily became better, and in about a fortnight he was able to walk about. The jaws all this time remained unchanged.

## CHRONIC HEPATITIS.

This is generally the result of acute hepatitis neglected or improperly treated. One general, but by no means a pathognomonic, symptom of it, is a sense of oppression, fulness, and *bulk* in the right hypochondrium, about the third of the false ribs, reckoning from below, accompanied by an obscure, obtuse pain, which is only occasionally evident to the feelings of the patient. Drinking even a moderate quantity of any strong liquor; the suppression of perspiration; falls, or external injuries to any part of the abdomen; too full meals; violent exercise or exertion of any kind; in short, any thing, the tendency of which is to render inflammation more active, may be considered as the exciting causes of pain, or of the increase of it, in this disease. It is from a variety of circumstances that scarcely admit of explanation—from the habits of life and constitution; from the consideration of the spot on which the patient resides, with respect to moisture, swamp, and its endemic diseases; from a knowledge of the diseases the patient has been previously subject to; and from a minute examination of every symptom he is afflicted with; that a knowledge of the actual existence of chronic hepatitis can be drawn. The following circumstances, however, appear more conclusive, viz. pain felt in the right, on lying on the left side; difficult respiration, or a sudden, quick expiration, following an attempt to inspire deeply; and an exacerbation of all the symptoms at a particular time of the day. The third seems peculiar to chronic hepatitis, and therefore more worthy of our attention, when the other less distinguishing symptoms are also present. The exacerbation takes place, generally, about four o'clock in the afternoon of every day, and continues one, two, or more hours. It is marked by aggravation of the other symptoms, and the presence of considerable heat and quickness of pulse, neither of which are at any other time perceived. But difficult respiration, or the quick and sudden expiration following an attempt to inspire deeply, when a fulness and obtuse pain are felt in the right hypochondrium, I consider as the most pathognomonic of all those symptoms ascribed to acute and chronic hepatitis; and I have been therefore more guided



in forming a diagnostic, as well as prognostic, of the disease by the state of this symptom. This remark is not the result of partial observation, but of what I have noticed in many thousand instances, attention to the state of the respiration will enable the practitioner to distinguish between a rheumatic affection of the muscles of the right side, by no means an uncommon complaint within the tropics, and every species of hepatitis. If the respiration is free and unimbarassed, the pain proceeds from muscular affection;—if otherwise, it certainly indicates inflammation of the liver.—The “decubitus in sinistram latus difficilis,” is also a good and pretty certain diagnostic, and exists, whether the disease is seated in the right or left lobe of the liver; and even too, when the pain, on account of the preternatural extent of the left lobe, is felt in the left side. I am aware that dependence has at all times been put on the pain extending from the region of the liver to the top of the right shoulder and clavicle, as a distinguishing symptom in acute and chronic hepatitis: but this is really a very uncertain symptom, and innumerable instances of both species exist without it. Within the tropics were this considered as the true distinction, much danger to the patient, and discredit to the practitioner would be the consequence.—All that can be said of it is, that if it be present with the other symptoms, it is a corroborating circumstance. Vomiting and hiccup, although enumerated as such by Dr. Cullen, are not distinguishing symptoms; for they seldom, if ever appear, particularly the last, till the approach of death. Attention, however, to hiccup in this disease is of use, as it pretty certainly points out the mode of termination; that is, it indicates sphacelus in the liver; and therefore, it more frequently occurs in very acute hepatitis. In fact, it is one of the justest observations in medicine, that as is the ratio of the violence of symptoms in local inflammation, more especially of the liver, so will be the nature of the termination. When excessively acute, sphacelus may be predicted, if less, suppuration, if still less, resolution. Icteric colour of the skin and eyes is, certainly, more peculiar to chronic than acute hepatitis; and, indeed, in the latter, unless when combined with fever, I do not recollect a single instance of it. With this colour there is always torpor of the bowels, and the motions are of a clay colour and consistence. In chronic hepatitis, I may further observe, that there is generally a circumscribed solid substance felt, inclining or suspended, as it may be described, from the right to the left side, on attempting to lie on the latter. It is described by the patient as an unconnected mass, which seems to roll from side to side, according to the position he places himself in;—if bending forward, which is, indeed, the easiest posture in this disease, it seems to press against the parietes of the abdomen;—if towards the left, it inclines that way, and gives considerable pain of that kind, which we may conceive a heavy weight suspended from the right side may give, and is well defined by the expression *dragging pain*;—if backwards, it rests on the spine, and occasions instantaneous acute pain, with tendency to syncope.

With a view to detect and clearly ascertain the existence of chronic hepatitis, the practitioner should make it a constant rule, not to be deviated from, when there is any doubt, to make the patient strip himself, and lie successively in every posture, but particularly on the right and left side, and on the back; and whilst he is in these postures, to examine minutely whether the circumstances I have mentioned, as indicating the presence of this disease, actually exist. If they do, no time must be lost in putting in practice the following mode of treatment. The obscurity and frequency of chronic hepatitis render it highly important to throw as much light on it as possible. Its very nature makes it an insidious and most dangerous complaint, and thousands perish under its influence, who, probably, might be saved, had experience been the guide of the practitioner in detecting, and decision been his rule in treating, it. —In the treatment of chronic hepatitis, the two principal objects must be, 1st, to remove any inflammation that may be present in the liver; and 2nd, to rouse it to the natural and due performance of its functions.—The first is obtained by moderate, general or partial bleeding and purging; and the second, by exciting a gentle mercurial ptyalism, and giving tone to the secreting vessels, by the use, at the same time, of mild tonics, combined with the nitric acid, and interposing every second or third day, a plentiful discharge from the bowels. To excite the degree of ptyalism required, if the bowels are torpid, their usual state in the disease, from two to five grains, or even more of calomel, may be given alone thrice in the day; or if diarrhœa is brought on, opium may be added. But in this open state of the bowels, it may be better to introduce the mercury by friction. For this purpose, a drachm of the strongest mercurial ointment should be well rubbed in on the inside of the thigh every night, or oftener, according to the excitability of the patient, until a gentle ptyalism is established. —The following draught should also be taken thrice in the day— $\mathcal{R}$  infus. gentian.—colomb.  $\bar{a}\bar{a}$   $\zeta$ vi, tinct. cinchon. comp.  $\zeta$ i, acid. nitrici, gtt. viij ad gtt. xij. If there is evident tumour in the right side, a seton should be introduced over it. When the bowels are torpid, during this course, the following powder and draught should be given every second or third day, or seldomer, according to circumstances:  $\mathcal{R}$  submur. hydrarg. gr. ij ad v. pulv. rhei. gr. x,  $\mathcal{M}$  ft. pulvis horâ somni sumendus— $\mathcal{R}$  infus. sennæ  $\zeta$ iss, magnes. sulph.  $\zeta$ i, tinct. sennæ—card. comp.  $\bar{a}\bar{a}$   $\zeta$ i  $\mathcal{M}$  ft. haustus primo mane post pulverem sumendus.—This mode of treatment I have uniformly found successful, when the disease admitted of cure, that is, if instituted before the supervention of abscess. But, indeed, in very many instances, if the tumour is the result of abscess, it gradually disappears, through the increased action of the absorbents, brought about by this course; or, as happened in a few cases, the pus passes off by the common biliary duct into the duodenum, and thence is discharged by stool.—If, however, the tumour increases and the abscess proceeds to maturity, without the possibility of arresting it by any internal means, and points outwardly, with evi-

dent adhesion to the integuments, then an opening must be made, and the matter discharged. This, as I have already observed, becomes unnecessary, if the foregoing plan is assiduously persevered in. When the abscess has been opened, it has, sometimes assumed a most unpleasant aspect, with an exhausting weeping, without any disposition to heal. When this unhappily takes place, if the pecuniary and other circumstances of the patient admit of it, a cold climate must be resorted to. A case of this kind occurred in Grenada, in the year 1784, when the mercurial treatment was little understood, and, almost never, therefore, effectually adopted, which resisted even a change of climate, until the frost of winter, in the patient's, native country, Scotland, set in: then an immediate change took place in the sore: instead of bloody ichor, pure pus was discharged; the part healed, and the patient perfectly recovered, and returned to Grenada, where he enjoyed good health for many years after.

There are obscure and indolent states of the liver, in chronic hepatitis which require the use of stimulants in the first instance, in order to develop the disease and ascertain its actual existence, when hitherto it has been only suspected. In such cases, which are frequently the result of low debauchery, dram drinking, and the abuse of malt liquors, particularly porter, it will be prudent and judicious to open the bowels freely, and then give tonic draughts with the nitric acid; or, instead of the nitric acid, which does not always agree with the stomach in such cases, the oxy-muriate of potass may be given with excellent effect. When, by the use of this, joined to the cold bath every day, or every second day, the vascular system of the liver is rendered active, and some degree of acute inflammation is excited in that organ, then proceed as already directed. Bleed moderately, and gently salivate;—and then strengthen the system by the proper restorative means of simple nourishing diet, country air, suitable exercise, &c.—I may here remark that full living, and indulgence in wine, spirits or porter, a too common practice within the tropics, particularly in the West Indies, without exercise, or rather with sedentary habits, are the most usual causes of that obscure and indolent state of the liver, which gives rise to a set of symptoms difficult to assign an origin and seat to—but which are indescribably dreadful in the mental and bodily affection which accompanies them.

It is beyond all doubt that oxygenated medicines, particularly the oxy-muriate of potass and the nitric acid, are possessed of much greater powers in hot than in cold climate—in the East and West Indies than in Great Britain. I can assign no satisfactory cause for this, but the fact is indubitable. A great deal of experience in the use of these medicines, led me to draw the following conclusions,—viz. 1. that the nitric acid is a most safe and efficacious medicine in hepatic complaints of an old standing; in all visceral obstructions and diseases depending on them.—2. That the oxy-muriate of potass has cured in every instance of simple bilious remittent fever, and in hepatic affections of the chronic kind—and 3,

that neither of them, but more especially the nitric acid, can, in the smallest degree, be depended on in the yellow remittent fever. It has been denied that the nitric acid has any power in exciting ptyalism; but probably on insufficient grounds; for certainly, in a hot climate, ptyalism uniformly follows the exhibition of it. The operative effects of the nitric acid within the tropics, are confined to the tongue, gums, kidneys, and salivary glands. The tongue assumes a whiteness, but not so remarkable as from the oxygenated muriate of potass; but more generally, it is covered with a thick fur, of a greenish colour in the centre, deepening towards the edges into a dark shade, whilst the edges are of a bright red or florid. The gums become florid and swelled, and symptoms of ptyalism are brought on, such as are excited by mercury;—the whole head is affected by tension and fulness, the articulation of the jaws becomes painful, the teeth are loose, and saliva flows into the mouth in abundance, proportioned to the quantity of the acid exhibited.—The only distinctions perceived between salivation, excited by the nitric acid, and that by mercury, are, that the former is not attended with the peculiar fetor of the latter; and that the salivation by the acid ceases very soon after the exhibition of the medicine is discontinued, and 3dly. that on creating serous discharge from any part of the surface of the body, by a blister, the salivation by the acid ceases, and does not return when the blistered surface is healed, unless the exhibition of the acid should be renewed.—From these observations, made on a vast number of cases at the ordnance hospital at Martinico, by myself and by my direction, I consider the relation of the nitric acid given by Dr. Helenus Scott, as fully confirmed.

Dr. Scott has lately given to the public an account of a new mode of introducing into the system, by absorption, a fluid that bids fair to supersede the use of mercury in chronic hepatitis. This fluid is formed by the chemical union of the nitric and muriatic acids—the chlorine of Sir Humphry Davy. This is mixed in a certain proportion, with warm water, so as to form a general or partial bath. Dr. Scott has published some useful directions for the application of the “nitro-muriatic or chlorine bath,” and a formula for the strength of it. He says, he has frequently, in India, exposed the whole surface of the body, below the head, to the action of the bath; but that in England, he has found, that it is generally sufficient to bathe the legs to the knees, or a little above them. He describes the apparatus, as a wooden tub, just wide enough to hold at its bottom and at top, the legs and knees.—The bottom of such a tub should, consequently, be wider than its top, for it is desirable that, in addition to the feet and legs, it should hold as little as possible. It should contain, besides the feet and legs, about three gallons of water. To every gallon of water in the tub, there should be added three ounces of the acid composition; but a better rule in apportioning the acid to the water, is to make the bath so strong as to taste like weak vinegar. The temperature should be 85° or, perhaps, a little more; or, in general, agreeable

to the feelings of the patient. Dr. Scott's formula for the composition of the acid is the following:—"℞ aq. fontan. ℥v.—adde acid. muriatic. ℥ij. dein adde acid. nitric. ℥ij. ℥. In order to form this acid very readily, get a bottle, divided into ten parts; five of these parts are water; above this, three parts are muriatic acid, and two are nitric. The bath should never be allowed to come in contact with any metallic substance, as it dissolves all metals, becoming quite inert itself, or forming with some of them highly injurious compounds." These directions are dated in London 1816 and 1817.

I have directed the use of the chlorine bath in a few cases of chronic hepatitis, in consequence of Dr. Scott's high recommendation; but my own experience of it, is too limited to warrant an opinion. The experience of others, however, who have used it more extensively, encourages the belief of its great utility. Indeed, the ease with which it may be applied, for immersion of the feet and legs for half an hour before going to bed, as sufficient in most cases, is a further inducement to the employment of it.—The great importance of the subject, may be a sufficient apology for entering into it in rather more detail. An ingenious, learned, and experienced friend, now, alas! no more, has favoured me with the following report of its use, in a number of cases of chronic hepatitis in the military hospital at Chatham, where a considerable body of invalids from the West Indies were received, having their hepatic systems completely deranged by fevers which prevailed epidemically there in the year 1812. From this report it appears that the effect of the absorption, for on no other principle can the operation of the bath be accounted for, of chlorine, is precisely similar to that of oxygen taken into the system, through the medium of the stomach and lungs. If inflammatory diathesis still prevails in the liver, pain and other consequences of stimulation, in such circumstances, follow; but if the inflammation is previously subdued, by suitable means, then the bath, or rather the absorbed chlorine, increases the secretion of bile, deprives it of its vitiation, procures a copious discharge of it by stool, and finally restores the organ to its proper and natural functions.—“Having used the nitro-muriatic bath, both in my person, and in many others, I shall describe what appear to me its effects, and the stage of the disease in which it is most useful. From the liver relapsing into its former state of torpor, with congestion, and accumulation of viscid bile, in the ducts and duodenum on the omission of mercury, it was evident, that any means for the exciting the cuticular discharge, and its synchronous effect of biliary secretion, without much debility, was a great desideratum in medicine, and the nitro-muriatic bath, when judiciously used, bids fair to answer, in many cases, this purpose. I am, however, confident, where there is abscess, or any tendency to active inflammation, it may be attended with injurious consequences. On its first application, it very frequently caused considerable febrile irritation, indicated by headach, unusual frequency

of pulse, hot and dry skin, urgent thirst, and dryness of the mouth and fauces, often amounting to severe ptyalism; and even pain in the right side, in some instances, was felt for some days after its use, more severe than usual. But this was of short duration, and appeared to me to be caused by the momentary rush of blood from the hepatic arteries and porta to the liver, the ducts unloading themselves, and consequently rendering the circulation more free at that period. These effects were generally followed by determination to the extreme vessels on the surface, evinced by perspiration, and, not unfrequently, papular eruptions; and from the sympathies existing between these vessels and the extreme branches of the porta, increased biliary secretion, with a copious discharge of fetid fæces, and vitiated and acrid bile, took place. After the discharge of fetid and bilious evacuations, the patients felt considerable relief; but nausea and vomiting were not unfrequent occurrences, in consequence of the regurgitation of bile to the stomach, which required the exhibition of emetic or purgative medicines: I preferred the latter, as, by opening the mouths of the excretory ducts, the flow of bile was continued, and its accumulation in the duodenum, with that of the fæces, carried downwards. Now the liver resumed its healthy action *pro tempore*, and the patients, previously desponding, and unwilling to make use of either mental or corporeal exertion, became cheerful, and expressed themselves considerably better during the period they were affected by the immediate stimulus of the bath:—but, on omitting its use, they fell into their former state of despondency, and the portal and cuticular systems into their original torpor, with its consequences, diminished biliary secretion and perspiration; hence recourse was again had to the bath, for the purpose of obtaining more permanent benefit; and I was again disappointed, similar results ensuing; and a remedy so well calculated to supersede the use of mercury, appeared to me to have lost its efficacy, for this sole reason, its too frequent administration. In accounting for this, we must consider, that, though excitement and stimulants are necessary, they must be cautiously employed, and imparted as gradually to the system as cordials in typhus; otherwise indirect debility will follow as a necessary consequence; and the disappointed patient will be induced to omit the bath altogether. On the other hand, where there is no considerable structural derangement, its application for short periods, and at long intervals, alternated by the use of purgative medicines, will excite the liver to healthy action, without inducing debility;—and, by superseding the morbid actions, will restore its functions gradually, increase secretions, improve the digestion, and establish health and cheerfulness of mind.”—The experience of the late Dr. Ryan, distinguished by his proved ability in the line of practice in which he was employed, on this occasion (and on every other of his very varied and useful service) is even more valuable than Dr. Scott’s, inasmuch, as there can be no suspicion of prepossession for a favourite remedy;—but the former completely confirming the latter,

gives stability and conviction to both. Although the foregoing copious extract from Dr. Ryan's very valuable report to the Army Medical Board may, therefore, render the detail of Dr. Scott's printed opinion unnecessary, yet there are general conclusions inferred by that gentleman, which should be generally known, viz. 1. It appears that the bath is more particularly useful within the tropics, although its efficacy in the climate of Great Britain has been fully established.—2. It is capable of relieving or curing a great range of disease. And here it should be kept in view, that almost the whole range of endemic disease, within the tropics, arises out of the connexion between the cuticular and hepatic systems, and the derangement of either.—3. That the use of the bath is particularly applicable to all those diseases, included under the popular denomination "bilious;" and consequently to those which have often the indefinite appellation "nervous."—4. That sometimes the first bath produces decided effects on the hepatic system.—5. That the pulse, by a repetition of it, becomes quicker than natural, with considerable restlessness, which cease on the expulsion of dark coloured fæces, often approaching the colour and consistence of tar mixed with oil.—6. That when there is a deficiency of bile, the effects of the bath are known only by the fæces re-assuming, gradually, their natural colour, and by an improvement of health.—7. That when derangement of the system seems to follow the use of the bath, that may be readily obviated by laxative medicines.—8. That the advantage produced by it cannot be fully appreciated until the patient has given up the use of it for a considerable time. In many cases they are not known in less than six or even twelve months.—9. That sponging the body with it has the same effects as bathing in it; and for this purpose, all that is necessary is to put some tepid water into a basin with a proper proportion of the nitro-muriatic acid, and, with a sponge, moisten the thighs, legs and abdomen, for ten or fifteen minutes daily.— And 10, That with delicate people, and those who are very sensible to this remedy, it may be sufficient to put one hand into the diluted n. m. acid, in the proportion stated, for a few minutes; and that washing both hands and both arms, for a few minutes daily, will, in a short time, be found sufficient to affect some people, and to as high a degree as is prudent.

The modus operandi of a remedy so singular in its application, and so beneficial in its effect, I conceive to be the following. It is almost a demonstrated truth, that chlorine disengaged from the n. m. bath, is precisely the same as the substance disengaged from certain preparations of mercury, when received into the system through the medium of the stomach or skin:—and that both are what was formerly known under the name oxygen. According to Sir Humphrey Davy, the muriate and sub-muriate of mercury, consist of metallic mercury, combined with chlorine in various proportions. This combination acts much more powerfully on the system than simple chlorine communicated by absorption, through the medium

of the bath. It is hence presumable that the former not only communicates the power inherent in simple chlorine, but also possesses a stimulant quality, which gives greater energy and greater efficacy to it. In fact this is proved in practice, for chlorine, disengaged and communicated to the system through the bath, is much less efficacious than in combination with metallic mercury in the form of sub-muriate or ointment, in every disease, to which chlorine, simply or in combination, is applicable. This opinion is strengthened by the fact observed in the exhibition of mercury, after oxygenated medicines, or of oxygenated medicines after mercury. When the oxy-muriate of potass, for instance, has been given to a considerable extent, without any evident effect resulting from it, the exhibition of mercury has produced a sudden and salutary change. The same also happens when the course of these medicines has been reversed; for when mercury has been thrown in, in large quantity, but remains inactive, the substitution or alternation of the oxy-muriate, is very soon followed by a cure. It is further elucidated, by what I have already remarked, that in certain obscure and indolent states of the liver, stimulants are, sometimes, required to develop the disease, before the curative means can be employed with precision and effect. Probably in the use of the n. m. bath, the chlorine disengaged and absorbed is not of itself sufficient to remove the disease, until, by accumulation, it becomes a stimulus of itself, or until the stimulus of mercury, afterwards superadded, gives it capability of determination to, and fixation in, the organ diseased.

I shall close this chapter with some detail of a very instructive and interesting case which occurred to me at Clifton, in the year 1818, the phenomena and termination of which, throw considerable light on this theory; and prove, also, how often the symptoms of these obscure and ill-defined diseases are fallacious, and direct the experienced, *even* to a wrong view of their nature and seat.

Miss C. G—, an irish young lady of great beauty, accomplishment, and amiable manners, had been afflicted with anomalous symptoms for more than a year, in her own country. The physician who attended her there, attributed them to chronic affection of the liver; but not having succeeded in getting the system affected with mercury, and the general state of the patient deteriorating, he advised her going to Clifton. The physician first consulted there, at once, and without hesitation, judging from some of the symptoms, declared the malady to be scirrhus and incipient cancer of the stomach. This opinion, being so opposite to that of her medical friend in Ireland, and naturally exciting the greatest apprehension for the young lady's safety, induced her father to call in the aid of another physician, whose opinion coincided with that of the gentleman in Ireland. Such uncertainty and such discordancy, rendered it necessary to have recourse to further assistance; and on the 6th of May, I was consulted, and saw the patient with the two physicians already in attendance. The prominent symptoms were



these—a dull uneasiness rather than pain was felt in the right hypochondrium, attended with fulness, but without any appearance of circumscribed tumour, and with ability to bear pressure on the part. When made to lie on the left side, a little increase of uneasiness was perceived but not sufficient to render that posture difficult: an acute pain at the pit of the stomach, attended with frequent nausea, and vomiting constantly, after meals, of her food only: bowels almost unconquerably torpid: the motions have frequently appeared of the consistence and colour of clay, but the complexion clear and beautiful; the eyes perfectly free from any bilious tinge; the tongue clean and moist, no thirst, and even appetite tolerably good, although unable to retain the food; and, except when afflicted with the nausea and vomiting, extremely cheerful and lively. The body was, however, necessarily greatly wasted. The case appeared to me, certainly, very puzzling; but taking all the circumstances of it into consideration, I was induced to believe it to be one of chronic hepatitis, extremely obscure and indolent in its nature. The symptoms, which seemed to present an objection to this opinion, were the constant acute pain at the pit of the stomach, and the vomiting of her food, after eating, without any mixture of bile, and the clear complexion;—but on a more close investigation of these symptoms, I was persuaded that the opinion which the physician first consulted, founded on them, was erroneous: for one of the most distinguishing signs of scirrhus in the stomach was wanting, viz. increased pain, and sense of weight in that organ, on placing the patient in a posture which depressed the head, and upper part of the body, and very much elevated the lower extremities, and the abdomen. At all events it was evident, that no good could result from considering the case in this view, but, probably a great deal, from treating it as chronic hepatitis.—This was decided on. The different circumstances of the case were provided for by the following course of medicine, and the adoption of a milk diet, with the occasional use of animal food in the most condensed form possible, such as jelly and a fresh egg. ℞ submur. hydrarg. gr. iij. extr. col. comp. gr. v. ℥ ft. pilulæ duæ sumendæ hora somni quotidie vel pro renata. ℞ infus. cascarillæ ꝑss. liq. oxy-muriat. hydrarg. ꝑss. tinct. cinam. comp. ꝑi. carb. ammon. gr. iij. ℥ ft. haustus 3 in die sumendus, cum sequente pulvere. ℞ oxyd. bizmuth. gr. ij. pulv. tragacanth. comp. gr. x. ℥ ft. pulvis, and a seton was introduced into the side, where there was the appearance of the greatest prominency—for there was nothing like a circumscribed tumour. On the 9th she retained her food better. On this day and on the 10th, a very large discharge took place from the bowels, of a fluid, like cream. I had every reason to believe this was purulent matter. No test indeed was employed to ascertain this important point, a very reprehensible omission—but its colour and consistence, and the absence of all fetor, were judged sufficient proofs of its being pus. On the 11th the motions became perfectly fœculent, consistent, and of a natural colour. It seemed now pretty

evident that an abscess in the concave part of the liver, had discharged itself by the biliary ducts into the duodenum; for the pressure on the stomach being thereby taken off, the pain disappeared, and she now retained her food, without nausea or any disposition to vomiting—14th, still improving—the bowels now regular; the motions very abundant, natural, and well charged with bile. The mouth becoming affected, the nitric acid was substituted for the solution of the oxy-muriate of mercury;—and the pills at night, being unnecessary, were discontinued. On the 18th, still better.—The patient continued thus to get rapidly better, for about a month;—at the end of which time, another abscess forming, the symptoms all returned in the same aggravated form as at first. Tired of medicine, and getting into that state of despondency peculiar to aggravated states of chronic hepatic affection, I resolved on putting her on a course of the n. m. bath. In this she persevered for more than six months, in Devonshire, where she retired for change of scene and air, occasionally discontinuing it for a week or a fortnight at a time. For some time little change was observed in her situation, the vomiting only being sometimes severe, and at others disappearing. At the end of the time I have mentioned, I heard from her friends, and was highly gratified with the information, that all symptoms of her complaint had entirely ceased, that her health had rapidly returned, that her mind had lost all despondency, and that, in short, in all respects, she had become what she had been before her illness, a most beautiful and interesting young woman.

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## CHAPTER V.

### ENTERITIS.

ENTERITIS, or inflammation of the bowels, without any of the symptoms of dysentery, is a disease of frequent occurrence; and, within the tropics, is most commonly caused by moist cold, and more especially cold wet feet. Having entered so largely into the discussion of inflammation of the intestinal canal, as the proximate cause of dysentery, it is less necessary to say much in detail of the symptoms of Enteritis, further than to observe that those which distinguish it are tension of the abdomen, pain in the umbilical region, and obstinate constipation; with nausea and vomiting, considerable fever and hard quick pulse, but without spasm. It is a most dangerous disease, the inflammation having always a strong tendency to terminate in gangrene. The danger is augmented by the peculiar nature of this inflammation;—for whilst it is singularly violent and intense, it must be ever impressed on the young prac-

itioner's mind, that it possesses much more of the typhoid than pure phlogistic diathesis. This observation is of the highest importance in the treatment of Enteritis. The suitable means of cure must be employed with the utmost assiduity. The great, indeed, I may say, the only means of cure, are bleeding, mercurial purgatives, mercurial ptyalism, and counter irritation. If the views with which these remedies are employed are accomplished, the cure is effected;—if they are not, death necessarily follows, in most instances. Bleeding should be regulated, in quantity and frequency, by the violence of the symptoms;—but in the use of this powerful remedy, a caution, which much experience has taught me, must not be neglected:—it is, that the inflammation in Enteritis, however intense and urgent in its appearance and attack, being really of a typhoid nature, mercurial ptyalism will effect its resolution more safely and perfectly than bleeding, when early excited. This, therefore, should be considered the more essential remedy, and bleeding as an auxiliary in promoting the capacity of the system to be acted on by the mercury. The mercurial purgatives are to be administered with the double view of overcoming the constipation, and of assisting in the saturation of the system with mercury. But as resolution of the inflammation must take place before the constipation yields, the practitioner should not be satisfied with this mode of exciting ptyalism, should the disease assume alarming appearances, and be particularly obstinate. Mercurial frictions must be assiduously resorted to every three or four hours, always remembering that the danger from profuse ptyalism, although extremely troublesome, amounts to almost nothing, when compared with that impending, should the inflammation be unyielding—or should the vain hope be entertained of subduing it by bleeding alone, for the very remedy then increases the evil tenfold. An excellent auxiliary to these active means, is either hot fomentations to the abdomen, or a blister sufficiently large to cover the whole of it.—Of these, the last is certainly the best—for the counter irritation occasioned by so large a blistered surface, has, often been productive of the greatest benefit. I should consider myself as highly deficient in my duty did I not earnestly call the attention of the unexperienced to another important observation. As Enteritis is a disease purely inflammatory, of a typhoid diathesis indeed, but without any spasmodic affection, so, therefore, every curative means, the action of which tends to diminish serous exudation from the internal surface of the intestines, must be avoided as highly injurious, by augmenting the disposition the inflammation already possess to terminate in mortification. We must not, then, be led away by the delusive indication of allaying pain by the exhibition, in any shape, or in any quantity of opium. I have unfortunately witnessed the lamentable consequences of this error, on several occasions; and I feel the more solicitous to guard the unexperienced from falling into it. There is, however, a period of the disease in which it may be useful. When the inflammation has been subdued, which is

ascertained by the cessation of pain, and tension of the abdomen, by the purgative medicines exciting the action of the bowels, by the pulse becoming moderate and soft, and by the disappearance of the anxious expression, always present, in the countenance of the patient during the prevalence of the more distressing symptoms; but when the motions procured by the calomel, &c. are still mucous and slimy, then, a powder composed of five grains of calomel and three of the compound powder of ipecacuanha, (increasing or diminishing the quantity in this proportion, according to circumstances) has the effect of restoring tone to the intestines, checking the inordinate secretion of mucus, and procuring fæculent motions. But even when the disease has been brought to this promising state, the opiate must be used with great caution. When, indeed, ptyalism has been established in a moderate degree, the administration of opiates will be little required.

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Before I close the subject of abdominal inflammation, proceeding from exposure to wet and cold, whilst the body is heated by violent exertion, I shall take notice of two instances of the peculiar danger and fatal consequences of such.

1. It is not uncommon, or rather it is by much too frequent, both in military and civil life, but more especially the former, for the purpose of obtaining relief from heat and fatigue, to throw off the coat and waistcoat, and open the breast of the shirt, and in that state to stand or lie down in a current of cool air. The sudden suppression of perspiration, and abstraction of heat, have often been fatal, if not immediately, in a few days after. An intense general inflammation of the abdominal viscera, with excessive vascular action are the consequences. Both soldiers and officers have suffered by this extreme imprudence:—but I have known men of robust habit, and after more than twenty years residence within the tropics, and of course after perfect assimilation of the constitution to the climate, trusting to their long exemption from disease, and in confidence of their own strength, lose their lives in the course of a few hours, by the rapid and unrestrainable course of inflammatory action thus brought on. The most profuse bleeding in this case has proved utterly ineffectual. Gangrene of the intestinal canal has been the termination, as appeared in those instances in which inspection of the body was made after death.

Within the tropics, and in countries subject to tropical heat, in the summer and autumnal months, the gradual abstraction of heat by sponging the surface with cold water; or even, immersing the body in cold water, in such a manner as to prevent evaporation, has been attended with the most pleasing and salutary effects. The first of these modes I have often experienced the advantages of in my own person. If the overheated body is so placed in cold water, as to be entirely covered by it, except the head, and so as to

preclude all evaporation from its surface, no danger whatever results. A watery bed of this kind has been often indulged in, with, not only complete impunity, but complete relief from the feverish tumult consequent upon excessive drinking of wine, and other strong liquors, as well as from the overwhelming heat of the atmosphere during the hottest months of the year. (See p. 1, ch. iv. subdivision 4.)

2. There is another morbid state, produced by the same cause, although differently applied, which is even still more dangerous, because in every instance, I have witnessed of it, it has proved instantaneously fatal, unless when nature relieves herself by spontaneous vomiting. This morbid state is the consequence of seeking relief from excessive heat and fatigue by large draughts of cold water, taken into an empty stomach. It is a very extraordinary, but it is, nevertheless, a real fact, that many soldiers have died in a moment, on a march, after drinking cold water, whilst heated and fatigued, during the hottest time of the day. The sudden abstraction of heat, and depriving the system of the power of re-action, or rather the instantaneous production of gangrene in the viscera, from that cause, seems to constitute the proximate cause, of what may, perhaps, be called fatal gastric syncope. The stimulus of a powerful and quickly acting emetic, and the restoration of the power of re-action to the vascular system, by the hot bath and bleeding, seem, therefore, the most probable means of relief. The first remedy is pointed out by nature herself; for the only instances of recovery I have seen, has been effected by spontaneous vomiting: the second, it is almost impossible, in such an emergency, in an army to procure;—and the third, without the previous use of the second, I apprehend would only tend to render what is already hopeless totally impossible. How far the means employed in the East in the treatment of the destructive cholera morbus, which has prevailed there of late, may be considered as applicable to the morbid state in question, I cannot say. It is deserving of trial. (See the following chapter.) The salutary effect of an emetic is proved, not only by its being the remedy adopted by nature, and by the consideration of the circumstances of the case, but by my own personal experience. During the summer of 1777, when the heat in the sun, was fully  $130^{\circ}$ , through a part of the country, then, almost destitute of water, I drank freely and heedlessly of some which the soldiers of the regiment happened to fall in with, at a time when my body, by violent exercise, was heated to an almost insufferable degree. The immediate consequence was this gastric syncope, which I have so called from want of a better name: I became in a moment insensible, and an apparent cessation of circulation took place. A spontaneous vomiting, happily, came on, and I was relieved. I was, however, incapable of doing my duty, for nearly twelve hours after. Tea was the most grateful beverage after the vomiting subsided.

## CHAPTER VI.

## CHOLERA MORBUS.

HOWEVER correct the opinion may be held, and however well supported by respectable authorities, that Cholera Morbus is a disease proceeding from superabundant secretion of bile, and an acrid state of that fluid in cold and temperate climates;—yet the opinion, I am fully persuaded, does not apply to the disease of that name, in tropical climates. The disease seems rather, in all climates, to proceed immediately from a spasmodic state of the stomach, and of almost the whole length of the intestinal canal, more especially the duodenum, the jejunum and ilium, and sometimes, in a remarkable degree, of the colon. The biliary ducts appear also to suffer sympathetically; and, indeed, every part of the frame, in the more violent cases of the disease. In hot climates, this state of spasm seems to be the result of local inflammation and vascular action, often of such intense impetus, and such excessive rapidity in its course from the first impression of cause, whatever that may be, to the complete development of the effect, as to render this fatal in a few hours. Dr. James Johnson has taken the most distinct view of this disease, as it appears in tropical climates, and has drawn the most correct inferences from that view, of any medical writer on tropical climates I have met with.—The truth of his general proposition must be obvious to those who have witnessed cholera morbus within the tropics, viz. “that in no disease has a symptom passed for a cause with more currency and less doubt, than in cholera morbus.” Inflammation and consequent spasm, or spasm and consequent inflammation, for it is almost impossible to decide which precedes, seem, in truth, to constitute the proximate or immediate cause, and complete suppression of biliary secretion, the immediate effect, or the disease.—A solution of the spasm removes the obstacle to the functions of the hepatic system; and a copious flow of bile becomes a certain criterion of cessation of disease. In cold and temperate climates, the principal object is to procure this secretion of bile, and to correct its acrimony, by plentiful dilution, and to check spasm by anodynes.—These being effected, debility alone remains, which is removed by proper diet and regimen. This, however, is far from being sufficient, within the tropics, particularly in the East Indies, where the disease is often epidemic, and often assumes the most fatal and appalling form, setting at defiance all possible human aid, insomuch as to kill, sometimes, I am informed, two out of three seized with it. It appears indeed, from recent accounts of this direful disease, as it has prevailed, epidemically and most fatally, in our armies in India, that in the worst cases of it secretion of bile did not take place.

The remote cause of this disease, within the tropics, is found in the vicissitudes of atmospheric temperature, in woody and marshy countries. Dr. Johnson, in his animated description of Cholera Morbus, manifests the truth of this, by a detail of the state of the atmosphere in situations, where men were exposed to great heat, during the day, and to a chilling cold and damp during the night; or to the alternation of hot sea-winds, and cold raw land breezes, loaded, "with all kinds of terrestrial and vegetable exhalations, communicating to the feelings and frame, a chill far exceeding what the thermometer would actually indicate." That this is not an overcharged picture, I know from my own experience in several parts of the Western hemisphere, particularly in South Carolina and Georgia, in North America, and Guinea, in South America, in all of which precisely the same vicissitudes of atmospheric temperature take place, and, often, with consequences similar in their nature, but, certainly, by no means so violent in degree, as Dr. Johnson found on the coast of Ceylon. Dr. Johnson's explanation of the proximate cause is admirable, and strictly conformable with my own observation, and, also, with the accounts I have been favoured with, of the epidemic Cholera Morbus, lately, and I believe, still, so fatally prevalent in India.—"The sudden and powerful check to perspiration, the unparalleled atony of the extreme vessels, debilitated by previous excess of action, and now struck utterly torpid by the cold, raw, damp nocturnal land winds, loaded with vegeto-aqueous vapour, and abounding with terrestrial and jungly exhalations,—break, at once, and with violence, the balance of the circulation. The extreme vessels of the hepatic system sympathizing with those of the surface completely arrest the influx of blood from the portal, cæliac and mesenteric circles; hence, in the worst cases, a total suppression of biliary secretion, with distension of the abdomen and shrinking of all external parts. If this continue any time as in *Mort de Chien*, death must be the inevitable consequence, notwithstanding the unavailing efforts of nature, by vomiting, to determine to the surface—restore the equilibrium of the blood and excitability, and, with them, the functions of perspiration and biliary secretion." (p. 227.)

Through the friendly attention of Sir James Macgrigor and other friends, I am enabled to illustrate the preceding observations by most instructive notices on the fatal epidemic of India; and as the subject is of the highest importance, and hitherto imperfectly understood, I trust no apology will be necessary for extending this chapter, by the insertion of them, beyond the usual bounds I have confined myself to.

Mr. Baddenach, assistant surgeon of the 59th regiment, has given the following important and elucidating remarks in his official report to the Army Medical Board—viz. that it is not the cholera of Europe, but a dreadful disease running its course often in a few hours; that it appeared to him, from dissection and due consideration, to have for its proximate cause congestion of blood in the

veins of the abdominal viscera, similar to what takes place in the head, in that species of apoplexy produced by coup de soleil;—that in the violent cases, from the commencement, the equilibrium of the circulation seems destroyed;—that stagnation of the blood takes place in the extremities—that the vomiting and purging, which are of short duration, particularly in the more violent cases, appear to be nothing more than nature endeavouring, by these outlets, to relieve herself from the overwhelming load which is weighing her down;—that the first symptom is a violent pain at the pit of the stomach with distension, which is soon followed by vomiting and purging of a *fluid, thin, watery and whitish*;—that the pain and distension extend to the abdomen, then cold sweats break out, there is indescribable anxiety, spasms come on in the feet, legs and belly, the extremities become cold, the pulse sinks, the face is livid and lifeless, the tongue of a leaden colour, occasionally vertigo comes on, with violent pain in the head and tinnitus aurium. He goes on to inform us, that, on dissection, the stomach is found of a red colour, the blood vessels of the omentum and intestines loaded with blood;—that in one instance the vena cava was distended to a great size; that either the spleen or liver, or both, have been found gorged with blood;—that the vessels of the brain have exhibited marks of accumulation, and in one case, blood was found extravasated—in another, water in the ventricles. With respect to the treatment, he found that to restore the equilibrium of the circulation seemed the first indication, but from the rapid progress of the disease, this was often impossible; with the lancet, warm and cold baths, and calomel and opium and the free use of wine, he says, he attempted to combat the disease. It appears that in three or four cases, taken at the commencement, bleeding was certainly useful—but in some, blood could not be procured, and in others, its effects were not favourable.—Relief from suffering has been, for a time, obtained by the warm bath, but the effect was not permanent.—It appears also that calomel was freely administered; that wine was taken in considerable quantity; that laudanum, ether and brandy were tried in slight cases with advantage, but, in the more severe without relief. No account of the medical topography of the part of the country, in which the regiment is given; but it is stated that during the prevalence of the disease in the 59th regiment, from the 1st of March to the 1st of May, 1818, the period comprised in the report, the thermometer ranged from 72° to 94°—The surgeon of the 21st dragoons, has made some important remarks, also, on the disease, as it appeared in that corps, during the same period—viz. that it has been excessively severe and rapid in its progress, terminating in death in a few hours;—that his treatment has been with ether and opium, the warm bath, calomel in large doses, castor oil, frictions and blisters, together with brandy;—that on dissection he found the stomach and small intestines in a state of incipient inflammation *the colon contracted to a fourth of its natural size*, the vessels of the mesentery turgid; the liver sound, and the gall-bladder full



of bile, of a dark green colour, and the ducts contracted. The mortality was terrible, two out of three having died. (MSS. Extracts of Reports.)

A valued friend, lately from Bombay, has favoured me with the following statement, which being solely the result of experience in a very extended field of military medical practice; and being itself clear and perspicuous, and having the further recommendation of the sanction and the order for its publicity of the right honorable the governor and council of Bombay; I cannot, I imagine, present a more valuable and instructive document to the young practitioner destined for India. It seems to have been drawn up by Mr. Corbyn, the writer of it, whilst numerous subjects of the disease were immediately before him, for the private information of a friend; hence its value is considerably enhanced.

“ My dear Sir,

“ In compliance with your request to give you instructions for the treatment of the disease which prevails in camp, from the circumstance of your being frequently detached from the army without medical assistance, I give you a statement with much pleasure.

“ The symptoms are as follow: violent vomiting and purging of watery matter; spasmodic cramp in the extremities extending to the abdominal and muscles of the chest; a collapsed countenance, the pupil and the white of the eye covered with a thick film; a suffusion of blood and turgidity of their vessels; the eye at length sinks into the socket and immediately becomes fixed.—The extremities now become cold, and the pulse is not to be felt, and indeed the energy and action of the heart are considerably diminished. The first man I saw thus affected, was treated with three grains of calomel, and a quarter of a grain of opium every two hours, with frequent draughts of brandy and water, and other stimulants. The man died and I opened him on the same evening. I found the stomach partly filled with muddy water; the bowels were empty, and considerably inflated with air; hardly any bile in the gall-bladder—none in the biliary ducts; there was general inflammation of the bowels, liver, stomach and lungs. These were indications to follow a directly opposite mode of treatment. Consequently, on assuming the charge of the native hospital for the reception of camp sick of the centre division of the army, on the 16th of this month, one hundred and ten patients were admitted with the symptoms I have described. I immediately gave to each patient 15 grains of calomel, which I dropped on the tongue and washed it down with 60 drops of laudanum and 20 drops of peppermint in two ounces of water. Before I go further, it will be necessary to mention to you, that laudanum in a large dose of 60 drops is not a stimulant, but a sedative, whereas laudanum from 15 to 20 or 30 is a stimulant, the former producing sound sleep, removes pain and irritability, whilst the latter excites considerable uneasiness and convulsive startings. It will appear the more remarkable to you, when I also men-

tion that the variation of a dose of calomel has the same effects. Calomel, in a dose from 5, 8, to 10 grains, excites lassitude, sickness, irritation of the bowels, and, on account of its being a stimulant, acts as a good purgative; but calomel, in a dose from 15 to 20 grains, is a sedative, allays vomiting, removes spasms, sends the patient to sleep, and produces one or two motions. You will now observe on what principle I treated my patients; not on a plan of giving powerful stimulants, but on one which at once removes the irritability and spasms, composes the stomach and the bowels, produces sleep and tranquillity of the mind, excites the secretion of the liver, and prevents the progress of the inflammation.—On the second day, it was, indeed, a consolatory sight, to observe the wonderful change. The vomiting and the purging had stopped, the spasms removed with the general moisture on the skin, they had experienced sound sleep, and the pulse had returned to the wrist.—I now gave 30 grains of jalap, which effected one or two bilious motions. Of the one hundred and ten men, I lost only two, and those were decrepid aged men, in whom the vital energies were at once extinguished. The remaining one hundred and eight I had the good fortune to see all recover.

“In the treatment of Europeans, however, I should strongly recommend copious bleeding, and never less than 20 grains of calomel with 60 drops of laudanum, and 20 drops of peppermint in 2 ounces of water;—and, on the spasms attacking the abdomen, the application of a large blister. Should the blister fail in drawing, and the blood not flow from the veins, immersion in the warm bath will have the beneficial effects. Should the warm bath not be procurable, warm frictions and pots of warm water thrown over the patient, will produce an equally favourable result in bringing about the re-action of the circulating system.

“When the purging and vomiting are incessant, as well as violent, we ought never to be alarmed in giving as far as 80 drops of laudanum with 20 drops of peppermint, and 20 grains of calomel, and injecting 40 drops of laudanum in congee by enema.—A few hours determine the safety of the patient, therefore those few hours must not be lost in an undetermined manner, and by small and useless doses. After the first attack is over, that is, after three or four hours, if there is much spasms and irritability remaining, the dose of calomel and draught must be repeated; the patient will then fall into sound sleep, and awaken nearly recovered.—The after treatment will only be to keep the bowels regularly open with calomel and jalap, and to give occasionally 60 drops of laudanum to procure sleep.—It is, however, to be remembered, that it would be an error and do considerable harm, to bleed in persons who are weak, worn down by disease, and aged.

“The most urgent symptoms in this disease, are violent thirst and dreadful sensations of burning heat in the bowels and pit of the stomach. The frequent and lamentable calls for cold water should never be satisfied, for I observed many unfortunate camp followers, who had died in the act of drinking. I therefore gave warm con-

gee, and, by the means of sentries, prevented any water being taken into the hospital.—Hiccough is not a dangerous symptom in this disease, for there was hardly a patient recovered without suffering this spasmodic irritability.

“ I am of opinion, that unless a patient takes these remedies within six hours after the attack, the case is hopeless ; at least, I only recovered ten patients with the regular form of the disease, after a greater lapse of time, and in those the symptoms were peculiarly mild.

“ It is of the greatest importance to bear in mind the necessity of giving calomel in powder, instead of pills, for I have known many instances where pills were passed through the patient in the same state and form they were taken into the stomach. This point therefore is of such high importance, that, in fever, dysentery, but above all in this complaint, of which a patient is carried off in 12, at furthest 30 hours after the attack, from which circumstance it becomes necessary to affect the system immediately, otherwise, if this point should be overlooked, the chief object in the operation of the medicine may be frustrated, and the patient lost.—It is on this principle I recommend laudanum in preference to opium—one is directly active in its operation, but the other has to undergo the progress of dissolving ; or perhaps, never dissolving, pass through the system in the same state it was taken into the stomach, without producing any effect whatever. I am so convinced of what I now assert and recommend, that for the last three years, I have never once used any medicine in the form of pills. And I look back to the day when I first discovered this error in practice as one great improvement in the treatment of acute diseases—I have to add, that my reason for using peppermint in co-operation with laudanum, in so large quantity, was its known efficacy in expelling air from inflated bowels and stomachs :—this effect I have always found it to have in the most desirable manner.

“ That this disease is not infectious, I am perfectly convinced.—All my attendants on the sick have escaped the disease ;—and I have myself, more particularly, at all hours of the day and night, respired the atmosphere of a crowded hospital, with impunity.—But I fancy there has been a combination of causes, and perhaps, one of the principal, was the sudden changes of the atmospherical temperature ; for I never knew the thermometer vary so much as it has this season.—In the morning at day-break, it stood at 52° at 1 o'clock P.M. at 96° a variation of 44 degrees in six hours and a half.

(Signed,)

“ FREK. CORBYN,

“ Assistant surgeon in charge of the native hospital, centre division of the army.

“ Camp Ericth, Nov. 26th, 1817.”

Published by order of the Right Hon. the Governor in council,

(Signed,)

T. FARESH,

Sec. to Government.—Republished in July of the same year.  
Bombay Castle, 24th, January, 1818.

From a close investigation of the phenomena and causes, as well as of the result of the modes of treatment of this very important and fatal disease, within the tropics, I am inclined to propose the following plan of cure. The principle on which it must be founded, is the restoration of the equilibrium of the circulation. The means of affecting which are the following.—In such violent cases as those which of late have been so destructive to our armies, and the native population of India, the patient should be immersed in the hot bath, instantly, on the appearance of those symptoms, which are, in some degree, precursory of the disease; and bled freely whilst in the bath; giving him, at the same time calomel *ad libitum*, for the purpose of brisk purging. In all probability, these means, if resorted to at the period I have mentioned, which seems, indeed, to be that alone in which good can be effected by any mode of treatment; will restore the equilibrium of the circulation;—and, if that is restored, life must be saved. After this, calomel with opium may be persevered in, if necessary, with diluting warm drinks. Less violent cases require, of course, less bold administration of these means—but these means, proportioned to the exigency of the case, must be those employed. As to stimulants, such as ether, wine, brandy, &c. and opium and its preparations alone—they are certainly improper: they are not capable of obviating the consequences of congestion; and nothing but what is so can restore the equilibrium of the circulation, on which, alone, depends the safety of the patient. A very judicious observation of a young friend of mine, who is now in Bengal, and has seen much, and has treated many cases successfully, in this most direful disease, is highly deserving of notice. “With respect to the use of calomel, I am inclined to think, that the habit of the patient may have some effect on its mode of action; that an irritable habit would suffer, and a bilious melancholy one, be much benefited by it.” He proves the observation by cases.

The method of cure in *C. Morbus* recommended so strongly by Mr. Killet\* on the Madras establishment, is so simple and so successful, that there appears no doubt of its utility. The use of the nitrous acid as a substitute for blister, was first used by Mr. Powell of the Bombay establishment, and communicated by him to Mr. Killet. Mr. Powell’s success was wonderful, of 41 cases, he lost only 6.—The great good effects of this sudden and powerful counter-irritation, was strikingly illustrated in the case of an European, who received immediate relief to the burning sensation at the stomach, on the acid blister being applied. In the case of a Lascar, who was supposed to be past recovery, his stools passing away in-

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\* “The remarks on the use of nitric acid as a blister, p. 544 and 545 were written by Mr. William Scot, and not by Mr. Killet, to whom they were ascribed by a transposition of the communications. “Edin. Med. and Surg. Journ. for January, 1821. *Errata.*”

voluntarily, pulse imperceptible and extremities cold, the acid blister was applied to the stomach, and the patient got well. Mr. Powell uses two parts of acid to one pint of water, and with this mixture rubs the surface over the part affected to such an extent as may be thought necessary; as soon as the patient complains of pain, he neutralizes the acid by washing the surface with a solution of salt of tartar, the cuticle can now be easily detached, and leaves the cutis raw, upon which he applies a common blister to keep up the circulation. He employs, besides, small doses of camphor and opium, frequently repeated, to allay the irritation of the stomach. This, with emollient enemata, form his whole method of cure. I will conclude with saying, that the 41 patients treated with the acid blister, were all admitted in such a state, that no blood was attempted to be drawn. Edin. Med. and Surg. Journal, Vol. xvi. p. 542.

It may be deserving of the notice of practitioners who may be placed in similar distressing circumstances, that the stimulus of boiling water blisters, has roused the seemingly lost powers of life into action, when bleeding and every other practicable and probable means have failed. I have seen in the case of a young lady at Clifton, reanimation take place by means of this agent, when the pulse had ceased universally, when the heart beat no more, when the surface assumed a deadly paleness, and respiration was gone. The manner of applying it is this—let a towel be rolled up in such a manner as to resemble a printer's ball—let a skillet filled with water be kept ready in a boiling state on the fire—dip then the ball made by rolling up the towel, into the boiling water, and apply it instantly to the part where the stimulus is to be made.—A blister immediately follows, a repetition of which secures the beneficial effect desired.

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## CHAPTER VII.

### COLICA PICTONUM, OR DRY BELLY-ACHE.

THE Colica Pictonum, or dry belly-ache, constitutes one of the most remarkable proofs of intemperance being a principal cause of disease within the tropics, (see part 1. chap. 4.) The ravages of this disease, formerly, and the causes to which it was assigned, are thus represented by Dr. Philip Fermin, in his "Traité des Maladies à Surinam," more than sixty years ago.—"Il n'y a ni langue, ni plume, qui soit capable d'exprimer tous ses effets, et d'en donner une description, qui reponde à la singularité et à la vehemence des symptomes. Le nom de Beillac a été donné à cette maladie par les Creoles ou naturels du País. Les malheureux qu'elle attaque souffrent des

“ tourmens qui surpassent toute imagination, et l'état où ils sont re-  
 “ duits, fait sur les spectateurs des impressions auxquelles les cœurs  
 “ les plus durs ne souroient resister. Aussi, suivant l'etymologie de  
 “ son nom, c'est ouvrage du diable même dont la rage se deploye  
 “ sur d'infortunées victimes.—Ce mal diabolique n'est autre chose  
 “ que la fameuse Colica Pictorum.—Les causes les plus ordinaires  
 “ du Beillac, sont *les grandes debauches*, l'usage immodéré des li-  
 “ queurs fortes, et les nites passées à veiller, et à se divertir dans un  
 “ climat tel que celui de Surinam, ou la fraîcheur nocturne fait des  
 “ impressions, et autant plus fortes, que la chaleur du jour a été  
 “ plus vive.” p. 50—57. Contrast this with the latest record of  
 the state of this disease, and the proof will be still more evident.—  
 The latest writer on tropical pathology I am acquainted with, who  
 mentions Colica Pictorum, is Dr. James Thomson, a physician of  
 Jamaica, who observes, in his paper on dissections in convulsive  
 diseases, that this disease is now, comparatively rare, owing to the  
 improvement in morals, and to the inhabitants going warmer clothed;  
 that nothing can be more erroneous, than attributing it to the  
 poison of lead; and that when paralysis does follow, it may, in most  
 cases, be referred to the erroneous mode of treatment. (Edin. Med.  
 and Surg. Journal for Nov. 1818, p. 614.)—Five and thirty years  
 ago, when I first settled in practice in the West Indies, Colica Pic-  
 torum was very common, and often most afflictive and fatal. At  
 that time excessive abuse of wine, spirits, and malt liquors was ge-  
 nerally practised by all ranks of society; but more especially among  
 the lower whites spirits were the principal drink, because easily  
 procured—either raw or slightly diluted. Since then, a more rati-  
 onal mode of living has been gradually introduced—insomuch that  
 when I finally left that country in 1803, the inhabitants of no  
 country could be more moderate in the use of intoxicating liquors.  
 With this gradual improvement in the mode of living, the disap-  
 pearance of Dry Belly-ache has kept pace, so that it is now scarce-  
 ly ever seen. Medical gentlemen from Jamaica and the windward  
 Islands, with whom I have lately had opportunity of communica-  
 ting on the subject, have assured me that Colica Pictorum is a dis-  
 ease almost never seen; and they have all attributed its disappear-  
 ance to the happy change of manners which has gradually taken  
 place. That the disease, therefore, was chiefly attributable to in-  
 temperance in the use of spirituous and malt liquors, but more es-  
 pecially the former, there seems no reasonable grounds to doubt.  
 Alternation of heat and cold, doubtless, may have contributed;—  
 but that the poison of lead had any share in its production, within  
 the tropics at least, there is no just foundation for believing. In  
 Devonshire, where the disease may be said to be endemic, no lead  
 is employed in the cider presses or cisterns; and yet there is every  
 reason to be assured that it is the excessive abuse of this liquor, and  
 the peculiar harshness and acidity of it, which may be considered as  
 the principle cause of its prevalence in that country. The opera-  
 tion of this cause was thus explained to me on the spot. In the

summer and autumn, when the husbandmen are laboriously employed in the hay and corn harvest, the common practice of these men is to drink cider to the extent of their ability to buy, or rather, as it is allowed without limitation in hay harvest, to the extent of the capacity of their stomachs to contain it. The labour at this season produces an intolerable heat in their persons. Now the great cold of the cider, together with its harshness and acidity, acting against the heat produced by labour, gives rise to a spasmodic state of the bowels, which, acquiring its acmé in 24 hours, or even less time, in very many instances terminated in death. These labourers are so very inconsiderate, that, to allay the excessive heat and thirst occasioned by their work and the great heat of the season, often drink to the extent of six or eight quarts of cider in the day; and, not unfrequently, such is their avidity and the uncomfortable state of their feelings, fill their stomachs at one draught. I have witnessed the same intemperate use of cider during hay harvest in Gloucestershire—but unattended by the same consequence, because the quality of the liquor is quite different.—In neither Devonshire nor Gloucestershire is lead used in lining the cistern which receives the liquor from the press. The Colica Pictonum is, I understand, unknown in India, even among the European military—and amongst the natives, their extreme temperance secures their exemption from it. Among artificers, such as smelters of lead ore, manufacturers of the calces and oxyds of that metal, and painters, most certainly the disease is produced by its poison. And I have known many instances of house painters in Grenada afflicted with it.

As a tropical disease, it seems, therefore, almost unnecessary to treat of colica pictonum, seeing it, now, so seldom occurs in the Western hemisphere, and never in the Eastern. But there is one very important circumstance, which renders it proper to enter into some detail of its distinguishing symptoms. The circumstance I allude to, is the aptitude of young and unexperienced practitioners to mistake enteritis for colica pictonum, a mistake almost always fatal, as I have already noticed in the chapter on the former disease. The symptoms which distinguish colica pictonum from enteritis are these: the pain, at first, is rather more at the pit of the stomach; it afterwards fixes itself at the umbilicus, and thence darts in all directions over the abdominal viscera, accompanied by such retraction of the abdominal muscles as to oblige the patient to lean forward as the only posture in which he feels any thing like ease; whilst the circulation does not appear to be affected. In enteritis, the abdomen is tumid, prominent and hard, and the pulse is quick and full, the pain seems concentrated, and does not diverge in those spasmodic twitchings or dartings, observed in colica pictonum. In the latter, too, besides the rigidity and retraction of the muscles, the belly seems pressed or drawn towards the spine, with a force proportional to the degree of spasm. In enteritis there is no spasm. In colica pictonum there is soon perceived a disposition to paralysis in the extremities, and, often, a contraction of the joints; which in

enteritis never takes place. The colica pictonum, in the retraction of the belly towards the spine, gives it a resemblance to hepatalgia calculosa;—the paralytic tendency of the extremities discovers an affinity to cholera morbus; both which diseases are spasmodic.

With respect to the treatment of colica pictonum, it appears to me that one of two modes must be adopted,—1. to allay the spasm by means of opium, and afterwards to procure evacuation by suitable purgatives—and 2. to allay spasm, and subdue constipation, at once by the action of mercury. Either, if boldly adopted, will effect the object in view: but it will be always matter of most serious consideration to ascertain with precision, how far the previous view taken of the nature of the disease has been correct. Thus, if it should prove inflammatory, not spasmodic, opium will increase the evil even to a fatal extent; but whether it should be inflammatory or spasmodic, mercury will remove it, if given in large doses. The experienced practitioner need not hesitate—to him the nature of the disease being obvious, he will adopt the mode of treatment which is attended with the least troublesome consequences, opium and evacuants.—But to the unexperienced, who should hesitate and doubt, mercury is the safest and most certain remedy; for certainly, the inconvenience of ptyalism is trifling, compared to the danger incurred, should the choice be wrong. Perhaps an useful preliminary may be the abstraction of a little blood, whilst the patient is immersed in the warm bath, although it is a remedy seldom resorted to.—When the stomach is so irritable as not even to retain opium, embrocations, with a liniment composed of equal parts of liniment. ammon. and tinct. opii, to the abdomen and insides of the thighs; or to the insides of the thighs only, and a large blister to the whole of the abdomen, have often relaxed the spasm. The preferable purgatives are calomel and jalap. When chronic affections of the joints, and a rigidity of the muscles of the extremities are the sequels of this disease, a change of climate is the most obvious remedy, if it can be resorted to—if not, dry frictions, temperate living, chalybeate medicines, and the internal and external use of the Barbadoes tar, with due attention to the bowels, generally remove the disease.

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## CHAPTER VIII.

### GENERAL OBSERVATIONS ON COLIC.

IT is unnecessary to enter into any further specification of the intestinal diseases under the general name of colic; what has been said on enteritis, cholera morbus, and colica pictonum, seems perfectly sufficient to guide the young practitioner in the management



of them. I shall sum up my observations on the treatment of these diseases, by a few general directions.—If inflammation is present, opium must be avoided, until it is removed: if spasm constitutes the nature of the complaint, opium joined to calomel, will be the safest remedy; if the disease is of a mixed nature, begin with removing inflammation, and then proceed to restore the canal to its natural action; and end with purgatives, modified according to circumstances, that is, combined with suitable preparations of opium, or with appropriate tonics, or alone, as the case may be, in all intestinal diseases.

I shall conclude by observing that there is a species of colic, frequently prevalent in the West Indies, which has considerable alliance to the colica pictonum, and no less affinity to the bilious colic, but which, nevertheless, is different from both. A case of the disease may display its nature and character, and cure, better than description. An overseer of a plantation I had the medical charge of in Grenada, complained in the month of June, of a most excruciating pain, which, sometimes, he said, seemed to arise from the bottom of the abdomen to the stomach, and immediately after descend, and in this manner ascend and descend repeatedly in a short space of time. At other times, he felt it fixed in the region of the umbilicus, where it generally was most violent. For several days he had been most obstinately costive; and he sometimes vomitted phlegm, and sometimes pure bile. He had no appetite, and scarcely any thirst; but frequently his body was bedewed with cold clammy sweats, which the severity of the pain generally produced. His complexion was sallow, inclining to yellow, and the surface of his body was tinged with the same colour. He attributed these complaints to cold, having been often, for several successive hours, exposed to violent rains, without the opportunity of changing his clothes, and having his feet almost constantly wet. He had the reputation, however, of being much addicted to drinking spirits, particularly new rum. Before I saw him he had taken, of his own accord, a number of opium pills of a grain and an half each, without receiving relief. I gave him immediately a bolus of 10 grains of ext. col. comp. and 6 of calomel. On the following day, having had a few easy fæculent stools, and the pain abating, I directed calomel to be taken, in the following form. ℞. sap. dur. ʒi. pulv. rhei. ʒss. calomel. ʒj. confect. op. q. s. ft. pilulæ 24—duæ sumendæ 3 in die. The medicine had the desired effect, and he was soon restored to health. Soon after he had returned to his duty in the field, he got his feet wet, the consequence of which was a relapse. All his former symptoms returned with increased violence; the abdominal muscles became contracted in such a manner, as sometimes to throw his body into a curve forward; and his extremities being also affected with pain and some degree of contraction, the torment he suffered was almost insupportable. He had been costive for several days; had no appetite, and now much thirst; and the yellow suffusion became general over his body. I had first re-

course to opium combined with tartarized antimony and calomel, with a view to mitigate the torture, and then endeavoured to procure alvine evacuation by a mixture composed of sulphate of magnesia, tincture of jalap, antimonial wine and water; but with little effect. Calomel and opium, without the antimony, were then given, with some relief, but it was slow and imperfect. I therefore again had recourse to the pills which had proved so beneficial formerly. He accordingly took them as before, and in the course of a week was completely relieved from his distressing complaint, and without any other medicine, soon recovered his former health.

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## CHAPTER IX.

### CHOREA.

CHOREA has been deemed by Dr. Hamilton, of Edinburgh, a disease proceeding from derangement of the chylopoietic viscera, but whether this opinion may be considered as established, or whether it should be referred to morbid affections of the nervous system, it is not here necessary to enquire—perhaps the truth lies between. My object in introducing Chorea here, is principally to mention a remedy which I have, in a few instances, found singularly efficacious. It is a disease which I have occasionally met with within the tropics; but there I cannot boast of success in curing it. In England I have been more fortunate. Four cases occurred in the Clifton Dispensary—and about the same number in private practice. Of these six were completely cured. In all these cases, constipation certainly was a prominent symptom, but a removal of that state, and a free secretion of bile, did not obviate the spasmodic symptoms. It is, nevertheless, always a necessary point of practice to guard assiduously against torpor of the liver and bowels, although I did not find it alone sufficient. When purgatives in Dr. Hamilton's plan, and antispasmodics totally failed, I have made use of blistering the sacrum. If the first application had not the desired effect, I repeated it—thus the third application, uniformly in the six cases cured, put an entire stop to the spasms. In not one instance did it return. The patients were all young, from six to eighteen years old. This subject is again recurred to in the chapter on Tetanus. Although blistering the sacrum in Chorea, is not, I believe, altogether a new practice, yet it certainly has been very seldom employed—and within the tropics, I think I may say never.

## CHAPTER X.

WORMS—AND ON THE INTERNAL USE OF OLEUM TEREBINTHINÆ  
IN THAT—AND SOME OTHER MORBID AFFECTIONS.

WORMS constitute a disease of great distress, often of much obscurity, and not unfrequently great danger, among all classes within the tropics, but more especially among the negro race, and among the children of the white inhabitants;—in negro children indeed, such is the number and accumulation in different parts of the ileum of the teres worm, as to be the cause of fatal intussusceptio, in many instances. The symptoms worms give rise to are so various, and so little indicative of the real nature of the complaint, as to make it, as I have already said, often very obscure, dangerous and fatal. Worms, sometimes, occasion feelings resembling those of acute hepatitis; and when remedies for that disease have been administered, I have been surprized that the usual relief has not been obtained.— Sometimes, bilious colic seems to be the disease; but no relief is obtained, nor the real nature of the complaint discovered, until the spontaneous discharge of worms betrays it. A remittent fever is also not an unfrequent form of the disease; but being merely a symptom, attention to the real disease alone removes it. Upon the whole, the practitioner is seldom sure of the presence of worms, being the cause of the symptoms presented to him, until emaciation, accompanied with unnatural appetite, irritation of the nose, grinding of the teeth, tumid abdomen, bloated countenance, fœtid breath, &c. discover it.

The great variety of medicines recommended and used for worms, it would be tedious, and little instructive to detail; and I feel the less inclined to enter on an account of them, from a persuasion, founded on long experience, of their uncertainty. Calomel, jalap, tin &c. have indeed, frequently been found useful, but seldom effectual. The indigenous remedies are much more certain in their effect; but some, possessing a poisonous quality, in which their anthelmintic power is vested, are very dangerous. Others, when effectual, are so, from their mechanical action. Of the former of these, I shall mention two only. In the East Indies, the great remedy for tœnia, is the root of the pomegranate tree, dried and powdered. Of this twenty grains are given to an adult, thrice in the week; if not sufficient to dislodge the worm, the dose is gradually increased to ʒss. This seems to be the highest dose; for the medicine has a powerful effect on the stomach and bowels, and, if indiscreetly given, has sometimes been attended with very unpleasant consequences. The same may be said of the great indigenous vermifuge of the West Indies, the *Spigelia Anthelmia* of Brown, or *Arabaca* of Plumer, and known, among the French inhabitants, by the name of *Brainvilliers*.

The decoction of the leaves of this plant, called also worm grass by the English, is used ; but the effects are often so violent, as to render it extremely unsafe, unless administered by the negro nurses, who are exceedingly skilful in the use of it. The patient is made to fast for several hours before the medicine is given ; and although it occasions an intolerable thirst, indulgence in drinking is not permitted, until it has remained on the stomach for several hours, and its efficacy assured by the copious discharge of worms, on taking a dose of castor oil. The effect of this species of spigelia, is similar, in some respects, to that of belladonna, particularly in the dilatation of the pupils of the eyes. Spigelia seems to act on the worms by its peculiar poison, but has no purgative quality. Its operation seems also to be confined chiefly to the round long worm, (teres). It, often, however, fails ; but when it succeeds, the effect is surprising, many hundreds of the round worm coming away in knots and bundles, so entangled as to render it difficult to separate them. Of those indigenous vermifuges which operate their effect mechanically, the principal and most valuable is the stizolobium or cowage. A sufficient quantity of these prickles, (gr. iv. ad gr. x.) is given once or twice a day in a spoonful of treacle for three successive days, and on the fourth, the whole is carried off by a large dose of castor oil.

It is only of late I have employed a remedy that has not, in one instance failed me, and which possesses the combined powers of an active, certain, and perfectly safe anthelmintic, and of an aperient. I therefore warmly recommend it in preference to any other. This remedy is oil of turpentine. Ever since the fortunate but accidental discovery of its specific effect in tape-worm, it has been boldly and almost exclusively employed for the destruction of that animal, and its singular powers have been established by the reiterated experience of many practitioners. But I believe it is not much known that it is equally specific in the destruction of the teres and ascarides. The result of several cases of both these, but, particularly the last, leaves no doubt of the fact. The first case of this kind, I employed the oil of turpentine in, was a young lady, of about 12 years of age, at Clifton. She had suffered by a number of distressing symptoms, for a considerable time, which, of course, led to no decided practice for her relief. On enquiry, however, her friends recollected her having, occasionally, discharged small thready worms ; but they were, by no means certain, that these constituted the real cause of her complaints. I availed myself, however, of the hint, and determined on the use of oil of turpentine. I gave it to her, in the following form. ℞ ol. terebinth. ℥ss, aq. cinnamom. simp. ℥i, sacchar. alb. ℥ij. ℥ ft. haustus. She took one of these at bed-time, and another on the following morning. On calling, in the course of the day, I was surprised and delighted with the result. In the first motion from the first draught, the quantity of ascarides was so great as to fill a half-pint sized tea-cup, exclusive of fœculent matter. The after motions had, also some ; but the second draught brought

away none. All her symptoms disappeared, and she has continued since in perfect health, now two years. The second case, was a lady at Clifton, about 25 years of age. From her symptoms, I suspected the presence of tœnia;—an insatiable appetite, constant and gnawing pain at the stomach, a wan complexion, melancholy state of mind, torpid bowels, &c.—I gave turpentine here, as a sure remedy to destroy tœnia. She took six drachms unmixed. The consequence was truly surprising. It acted in about an hour, and brought away, at one discharge, at least three pounds of solid fœces, not scybala, but impacted masses, and an amazing quantity of ascarides. The patient herself was terrified at an effect so unexpected, and, to her apprehension, so frightful—but my astonishment was greatly increased, when at the end of three days the dose was repeated, I found precisely the same result. Every symptom then ceased, and she got rapidly well.—Several cases have since occurred; and two of teres; all with equally happy results. Upon the whole, therefore, I am decidedly of opinion, that no vermifuge, hitherto employed, should supercede the use of oil of turpentine, which I have reason to believe will be always found a safe, a cheap, and most certain remedy, in every case of worms, whether tœnia, teres, or ascarides.

I may here take notice of another remedy which has been sometimes used in England, with great success, in cases of ascarides;—I mean the extract of elaterium. This medicine, if given in small doses, is often in cases of worm inert; and, if in large, the effect on the stomach and nervous system is too often dreadful. As an hydragogue, I have seen it produce amazing discharges of watery fluid from the bowels; but leaving, afterwards, a deadly sickness, and great debility. When the patient is young, and possesses the vital powers in a tolerable degree of strength, I am confident elaterium in ascites, is a very valuable remedy; but to give it due activity, and at the same time, to prevent the extreme depression and debility consequent on that activity, it should be combined and accompanied with tonic cordials, and nourishing and moderately stimulating diet. As a vermifuge, I have never used elaterium myself, but a medical friend has informed me, that in a case of great distress, from ascarides, in which every accessible remedy had been given without any beneficial effect, and in which the pain in the stomach was so excruciating as to oblige the patient to lean forward almost double for relief, the following strong dose was given at bed-time. ℞ submur. hydrarg. scammon. āā gr. vi. extract. elaterii, gr. ij. ℥ ft. pilulæ, tres h-s-s. The effect was great; for, besides a large quantity of fœculent matter, fully three pints of ascarides were discharged in four motions. The patient's age was 14, and he had laboured under the complaint some months without a single worm being discharged, before the elaterium was thus used. Another patient, however, of about the same age, and equally afflicted with ascarides, took the same dose, and was nearly killed by it, and without any

discharge of worms. A remedy thus uncertain, and thus hazardous, should be administered with great caution ; or, perhaps, omitted altogether, unless in circumstances, peculiarly desperate, when any probable means are justifiable.

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I may not, perhaps, find a better place to communicate the observations I have been able to make on the use of oil of turpentine in other morbid states of the system, in which I have employed it.

I have given oil of turpentine as an aperient in chronic hepatitis, and hepatic melancholia, or hypochondriasis. Calomel alone, or variously combined with other deobstruents, has, in several cases of these diseases, only partially evacuated the bowels, and renewed the action of the biliary system ; oil of turpentine has done so completely in a very short time, and without griping or any uneasy feeling of consequence. The very great advantage of this medicine, exclusive of others, which I shall mention, in all complaints, of which a prominent feature is torpor of the intestinal canal, such as hypochondriasis, hysteria, chlorosis, maniacal epilepsy, &c. is, that it seems to stimulate the whole extent of the canal, and to loosen the impacted fæces in all its convolutions, and to make a speedy and thorough clearance. Another advantage is, that the most delicate habits cannot be injured, seldom suffer even temporary inconvenience from it, by nausea or griping : the occasional but short excitement of the urinary organs, is the only inconvenience I have known it to produce. I have had no opportunity of trying oil of turpentine in colica pictonum ; but, reasoning from its efficacy in similar, but less severe affections of the intestinal canal, I am induced to believe, it may prove, in even that intractable disease, an invaluable remedy. The efficacy of oil of turpentine in maniacal epilepsy, has been recorded by Dr. E. Percival of Dublin, and, afterwards by Dr. Lithgow of Colerain. (Edin. Med. and Surg. Journ. vol. ix. p. 271, and vol. xi. p. 300.) These gentlemen made use of small doses with great and decided beneficial effect. I have, on this highly respectable recommendation, given it in two cases of epilepsy, one attended with symptoms of mania, the other with those of fatuity. In the last, a girl aged twelve, after the long use of purgatives, mercurial ptyalism, bleeding and counter-irritation at the sacrum, without the least benefit, oil of turpentine was given in small doses, but no good resulted. In the first, a lady of sixty, the most complete case of maniacal epilepsy I ever saw, it was given in the manner directed by Dr. Percival, about three drachms in the day. It had the effect of relieving by lessening the violence and frequency of the paroxysms, but not of preventing them. Oil of turpentine is considered by Dr. Percival, as possessing an emenagogue quality only. How far this may be I am not desirous of disputing. Confining its powers, however, to this one action is certainly not sanctioned by experience, as we see by what I have said of its anthelmintic and deobstruent qualities, and by what I shall now state. Oil of tur-

pentine has always been thought to possess an anodyne or soothing power, under the term antispasmodic.—It certainly does so; but it also, possesses a stimulant one. These two, apparently, opposite qualities, unite to produce its wonderful efficacy, in diseases which have hitherto resisted remedies, believed to be the most valuable in their treatment. That oil of turpentine possesses a wonderful combination of the powers I have mentioned, is clearly evinced in the certainty of relief obtained by it, in that deplorable peritoneal inflammation consequent on parturition, puerperal fever. This is a disease, by no means unfrequent within the tropics. In the West Indies, I have often had occasion to lament the little benefit derived from, or rather the inutility of the modes of treatment of puerperal fever practised in that country. I shall, therefore, enter into some detail of the treatment with oil of turpentine, and I trust that by extending the knowledge of it to the western intertropical regions, I shall have the happiness of diffusing a real blessing to its inhabitants.

The testimonies to the efficacy of oil of turpentine in puerperal peritonitis given by Dr. Brennan, and Dr. Douglas of Dublin, and those which Mr. Edgell, a very respectable and skilful accoucheur of Bristol has published, are highly satisfactory. Like some other practical points in medicine, this puts all theory to a stand, and furnishes an additional proof that many of the more valuable discoveries of remedies for violent diseases, have been accidental. It appears from the pamphlet published by Dr. Brennan, that it was in the year 1812, he first thought of the exhibition of this medicine in puerperal peritonitis, or at least, first put it in practice. This was done publicly in the lying-in hospital of Dublin. The first case, he states, proves the efficacy of oil of turpentine in removing the diagnostic symptoms of puerperal peritonitis, although the disease proved fatal, as he thinks, from bleeding previous to his seeing the patient. The second was similar in every respect. The third was successful.—The oil of turpentine was alone given. In the fourth, Dr. Brennan endeavoured to confine the treatment to turpentine, but, unfortunately, after the state of the patient became promising, from the exclusive use of it, another practitioner saw and bled her, and she died. The fifth case furnished a remarkable instance of the efficacy of oil of turpentine. The symptoms were very violent, and the situation of the patient apparently hopeless; but the Doctor had the management entirely to himself, and she recovered. The sixth, from the same cause, was equally fortunate in its result. It appears therefore, that of these six cases of puerperal peritonitis, three took oil of turpentine, but were bled and died; and three took the turpentine alone, and recovered. Another case is given, treated by a clergyman with turpentine alone, which terminated favourably. Dr. Douglas in a letter to Dr. Brennan, thus writes. “I have several cases in recollection in which I administered the turpentine, with the most gratifying results; and I can positively assert that I never yet ordered it to any patient who

“ did not recover. If any body should suppose that my senses may have deceived me, I can refer him to living tests, some of whom can speak to what medicine they themselves, as well as I, attribute their recovery.” (Thoughts on puerperal fever, &c. p. 11—24). The paper and cases, published by Mr. R. Edgell, on the use of oil of turpentine in puerperal peritonitis, are exceedingly interesting. From these it appears, that much efficacy and successful result may be expected from the administration of this medicine, in the low state, when the patient begins to sink, and after bleeding and purging with calomel, have been carried to the verge of safety, but without relief. He used the turpentine as an embrocation to the abdomen, and gave it internally. From Mr. Edgell’s practice, and the result of it, we may infer that the low state of the disease is the proper period for the exhibition of turpentine: and this, indeed, is evidently more consistent, with the pathology of puerperal peritonitis, than the early use, and more especially the uncombined use of turpentine, before the inflammatory diathesis, peculiar to the disease, has been, in some measure, subdued, by bleeding and purging. In consequence of Mr. Edgell’s communication, (for I have frequently had the pleasure of conversing with him on the subject), I made use of oil of turpentine in one case of puerperal peritonitis at Clifton, under circumstances extremely unfavourable. The patient was a poor woman, with scarcely any of the comforts her situation required. The disease took place four days after delivery. Very alarming symptoms had come on, the abdomen excessively tumid and hard, and sensible to the slightest touch; the bowels completely torpid; and every sign of fast approaching sphacelus. Bleeding had been already employed, by cupping and leeches to a great extent, and calomel and other purgatives given, without any relief; in a word death seemed inevitable. This was the state of the patient, when I was requested to see her. Mr. Edgell’s communication was recent in my mind, and I determined on putting it to the test of experiment in this instance. A drachm of oil of turpentine in a draught made of an aromatic water, a little mucilage and sugar was given to the patient every three hours.—Before the fourth was given, some relief was obtained, and after the sixth, the disease ceased. The woman being supplied with proper nourishment, and personal comforts, rapidly recovered without any other remedy. It must never be lost sight of, that, although it has been asserted that oil of turpentine cures in puerperal fever, without any preceding depletion, yet this assertion should not regulate the practice. I am satisfied that without previous bleeding to the utmost limit of safety, a limit which must necessarily be decided by the judgment of the practitioner, and duly emptying the bowels by suitable purgatives, a cure cannot be effected by it. Bleeding and purging alone have, I believe, seldom, perhaps never, been found adequate to remove puerperal peritoneal inflammation in cases of great violence; in almost every such case sphacelation will follow, notwith-



standing bleeding almost to exhaustion. If oil of turpentine is then exhibited, there is reason to hope that recovery will be the result, in the proportion of 12 to 16, i. e. 12 will recover out of 16 cases.

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## CHAPTER XI.

### PLEURISY, PNEUMONIA, AND PHTHISIS PULMONALIS.

IN all very active local inflammations, within the tropics, the safety of the patient will greatly depend on the freedom with which blood is abstracted from the system. The course of such inflammation is, always, so extremely rapid, that, if not arrested very early, they inevitably terminate in effusion, abscess or sphacelation; the mode of termination being always determined by the peculiar circumstances of the constitution of the patient. Death follows, certainly, if the termination of the inflammation should be in the last, almost always, if in the second, and very frequently, if in the first. The only security is in resolution, which should, therefore, be brought about by every possible means. An example of the necessity for this prompt decision, for this bold and active treatment, I have already given, in anomalous hepatitis. To this, I now add pleurisy and pneumonia, if, indeed, they should be considered as distinct diseases. If they admit of distinction, it cannot be found in their nature; the morbid affection is the same, whether its seat be in the pleura, or in the parenchyma of the lungs; and the treatment must be the same in both cases. I have always, therefore, found it most simple, most convenient, and most consonant with the general circumstances of the disease, to include both denominations under one, viz. pneumonia. This, as Dr. Cullen very justly observed, comprehends all inflammations of the thoracic viscera, carditis excepted, for the symptoms do not, properly speaking, distinguish the seat of the affection with certainty, nor does a difference in the situation of the affected place, make any difference in the mode of treatment.

Among the tropical endemics, pneumonia occupies a distinguished place during the winter and spring months. It is, therefore, a disease of the dry season, and is brought on by exposure to the northerly winds, which prevail during that season. It is more frequent on the windward side of the West India islands; and, during the dry season, from the constant agency of the cause, it is often epidemic in those districts. On the leeward side of the islands, it is also met with; but it is not there, distinguished by such intensity of symptoms. (Part 1. ch. iv. subdiv. 3.) Pneumonia, within the

tropics, is marked by the same symptoms, as in temperate climates ;—the only difference observed, is in their greater violence, and their greater and more constant disposition to terminate in sphacelus or abscess. Every system of medicine presents the practitioner with copious details of these symptoms ;—it will, therefore, I imagine, be more useful here, to point out to him the result of experience in the use of the means of cure. Pneumonia is one of the many instances of disease, in which the skin and the abdominal and thoracic viscera, are consentaneously affected ; or, at least, the succession of cause, as it operates on the skin, and of effect, as it manifests itself on some internal organ, is so quick, that the application and impression, seem simultaneous. The sympathizing organs in pneumonia, are the skin and the lungs. It is on this account, more than, perhaps, on any other, that the use of flannel, immediately over the surface of the body, is so indispensably necessary, within the tropics ;—for this, by keeping up an equable and agreeable temperature, and absorbing the perspired fluid, and preventing its evaporation, as well as its application to the skin, as a new medium of cold, may prevent all the mischievous consequences of exposure to northerly winds, whilst the body is in a state of excitement.

When the disease has actually taken place, no time should be lost in taking away from the arm, such quantity of blood as may be sufficient to give relief to the respiration, and pain in the chest. If the pain abates, and a pretty deep inspiration can be made, the flow of blood, for the time, may be stopped ; but must be renewed in a few hours, if any doubt remains respecting the respiration and pain ; and again and again repeated, judging always by the effect on the patient, more than by the appearance of the blood ; for in pneumonia, as in rheumatism, the coat of coagulable lymph, on the surface of the blood drawn, is too often a fallacious guide. Immediately after the first bleeding, an ample discharge from the bowels must be obtained by from two to ten grains of calomel, according to the age, followed up by a strong solution of sulphate of magnesia, given in divided doses, every hour, till the effect is produced. A little tartarized antimony will be an excellent addition to the solution.—When this has been effected, a powder, such as the following, may be given every three hours, or oftener, according to the exigency of the case. ℞ nitrat. potassæ, gr. x. submur. hydrarg. gr. iij. pulv. Jacob. vel pulv. antimonial. gr. iss. camph. gr. iv. ℞ ft. pulvis.—The ingredients may be augmented or diminished according to circumstances in this proportion. This powder should be assiduously continued until ptyalism takes place.—When this happens, the symptoms always yield, unless the disease is particularly severe, and the patient very robust. When these are the circumstances of the patient, it will be a necessary rule, to take away, at the commencement of the treatment, a very large quantity of blood, not less than three pounds at once, for ptyalism cannot be established, nor the inflammation lessened, without great reduction by bleeding. When the symptoms are less intense, and the patient

delicate, or only moderately robust, less bleeding, and less mercury will be sufficient. A large blister over the seat of pain will be extremely useful—but it should be ample, and long applied, as its utility in this case is always in the ratio of depletion it causes. upon the whole, bleeding and mercurial ptyalism are the means by which the practitioner should look for success; and if they are boldly and judiciously employed, he cannot fail in obtaining it.

I may be permitted, here, to remark, and it is a subject of deep and most serious consideration, that the practice of depending on bleeding, as long as coagulable lymph is thrown up on the surface of the blood drawn, and digitalis, until the system labours under what has been called, “*morbus digitalis*.” or the stupor brought on by the influence of its poison too, too common, in many parts of Great Britain, for the cure of pulmonary inflammation, has so often failed, so often been followed by phthisis, and a lingering death, that it should be discarded from the physician’s mind, when the case is such as to give rise to just grounds of apprehension of fatal termination. It is, indeed, a dreadful and most lamentable misapplication of means. It has been, sometimes, my misfortune, to witness this most injurious practice, without possessing the power of preventing it, and the impression on my mind will be as durable, as it is painful.

The vicinity of marshes within the tropics and in countries, during the summer and autumn, subject to tropical heat, is always influential in the formation of the type and character of the disease. This is remarkably exemplified in dysentery and pneumonia. I have noticed it in dysentery already, (ch. 3). In pneumonia it gives the disease, originating in suspension or interruption of the functions of the cutaneous organization, a remittent or intermitent form. In fevers of an infectious nature, whether symptomatic or idiopathic, the same type is communicated by the reception of marsh miasmata into the system, without suspending or changing the original diathesis. Thus small-pox, measles and scarlatina, have, in such situations, a remittent, or even an intermitent form of symptomatic fever; and thus, from the same cause, idiopathic infectious fever, has often superadded the type of remittent fever. All these, therefore, under such circumstances of locality, are truly hybrid diseases, although, in their treatment, the original disease is alone to be regarded. In hybrid pneumonia, the pneumonic symptoms and fever are concomitant, and affect the patient according to the type of the latter, in paroxysms, if it is intermitent; in remissions and exacerbations, if it is remittent: that is, the pneumonic symptoms are always exasperated during the presence of the fever, and mitigated during its intermission or remission.—It is not unfrequent, that should the fever not be the product of marshes, but that of infection, and consequently be what may be named typhoid, a good deal of perplexity is experienced by those not acquainted with this combination of disease. But in every case of this nature, if the original disease is pneumonia, the medical treatment of it

must be regulated by a knowledge of the diathesis peculiar to it. The same means must be adopted, as if the disease was purely inflammatory, with this difference only, that, as the vital powers, in such combinations, are greatly depressed, and as, therefore, extreme debility or prostration of the vital powers must necessarily be the result of an unqualified antiphlogistic treatment of them, so must a course be pursued, which may tend to remove inflammation; whilst debility or prostration of the vital powers is provided against. This is, indeed, often necessary when no such combination exists; but when, with local inflammation, there is present great delicacy or debility of constitution, from natural conformation, or previous disease: in all such cases a balance must be observed, by which the system shall not sink under the antiphlogistic plan of treatment, nor shall the inflammation be exasperated by the undue admission of tonics. Such a balance may be thus obtained. Let some blood be drawn, either by leeches or cupping, (leeches indeed are not to be procured within the tropics\*), from the seat of inflammation, or generally, by the lancet, according to the circumstances of the constitution of the patient, and very cautiously repeated, if necessary; let the bowels be emptied; let mercury, antimony and nitre, in the form given above, be then exhibited; and let a large blister be applied to the side. When these have had their effect in reducing the local inflammation, but not to the full extent of removing it, let a wine glass full of the cold infusion of cinchona, made with magnesia, with the addition of some of the spirituous tincture of that medicine be given, immediately after each powder; and let a moderately generous diet, and a small quantity of spiced wine be used occasionally through the day. This plan must be pursued until moderate ptyalism is produced; then the mercury must be omitted in the powder, and the other ingredients continued, with the infusion of bark, nourishment and cordials: always observing to keep the bowels in a moderately open state. In this way I have happily carried many through this perplexing combination of disease; and very frequently obviated the consequences of hepatic inflammation under circumstances of enfeebled constitution. It is never to be

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\* In a country where topical bleeding is so useful, and so frequently necessary, and where it is impossible for the physician to avail himself for that purpose, of leeches, it may be useful to name a substitute for these animals. In the "Revue Encyclopedique ou Analyse Raisonnée," vol. iv. p. 469, this substitute is thus announced.—"Sang-sues Mecaniques—On remarque, dans les objets, qu'a exposés M. Lerebours, un instrument inventé par M. Salandière, medecin: il sert à remplacer les sang-sues. Les avantages sont: de mesurer à juste la quantité de sang qu'on veut soustraire; de faire affluer avec une promptitude ou une lenteur déterminées, le fluide; de produire un effet que les medecins appellent resolutif, supérieur à celui des sang-sues; de n'être point degoutant comme ces animaux, de ne faire presque de mal, de pouvoir être employé, en toute saison, et en tout pays. Cet instrument est fabriqué par Dumotier, ingenieur, rue Copeau, No 51. Paris.

lost sight of, and cannot be too often repeated, that a most important object, in the treatment of all those cases, is to render the system susceptible of the action of mercury; for it has been proved by innumerable instances, that that medicine cannot produce its specific action, if the system is below or above a certain degree of strength. If it is below, it must be supported; if above, reduced; whilst the exhibition of mercury is going on. There are cases of typhoid pneumonia, in which the system is so peculiarly circumstanced, either from the action of marsh miasmata, or the virus of infection, in combination with pulmonary inflammation, as to require the most powerful stimulants to elevate it to that degree of excitement, which renders it capable of being acted on by mercury, the most certain agent in resolving local inflammation wherever seated. My much valued and most estimable friend, Dr. Hossack of New York, in the American Philosophical and Medical Register, has given many instances of epidemics of this kind in the United States, and several have occurred to myself in South Carolina during the American revolutionary war, in the West Indies, and at Clifton in England. The cold infusion of cinchona which I have used, is prepared in this manner: ℞ pulv. cort. cinchon. ℥i. carb. magnes. ℥i. aq. fontan. ℔i. ℞ probé at macera per horas quatuor; dein cola per chartam bibulam—et colaturæ adde tinct. cinchonæ comp. ℥i. vel ij. ℞.

## PHTHISIS PULMONALIS.

Phthisis pulmonalis within the tropics, when, from neglect or injudicious treatment, pulmonary inflammation terminates in abscesss, as certainly follows, as it does in Great Britain;—but all the stages, of the disease run their course rapidly, and death soon closes the scene. It is, I imagine, owing to this latter circumstance, that an opinion prevails, that the frequency of pulmonary consumption is decidedly greater in cold than in hot climates. Those who have speculated on this subject, have probably theorized on a supposition that the gradual increase of temperature of climate lessens the disposition to pulmonary inflammation, and consequently to phthisis pulmonalis; and have given a scale of this supposed decreasing ratio, maintaining that in proportion to the approximation to the equator, so is the degree of exemption from the disease. Thus, taking London as the point from which we start, according to this theory, the disease will be found less frequent, in the south of England, still less in the south of Europe, the islands of the Mediterranean and Madeira, and within the tropics it will be scarcely met with. Were the space we pass over in this progress, so circumstanced as to permit an equable perflation, as well as a gradually augmenting temperature, the theory would be supported by fact; but as this is, by no means the case, the opinion cannot be considered in any other light than speculative, and therefore of no

value.—It is not latitude or approximation to the equator that determines the question ;—it is the peculiar localities of places and countries, and the degree of exposition to cold northerly winds, and the degree of prevalence of such winds, in all countries whatever their latitude may be, which constitute the liability to pulmonary inflammation. Thus the bise and mistral of the southern parts of Europe, the north-westwards of North America, and the norths of the West India Islands, are equally influential in the production of pulmonary inflammation, and, consequently, of a tendency to, or actual invasion of, pulmonary consumption. The sensation of cold, and its effects on the human system, are relative in all climates, so that the same cause will produce the same effect, whatever their natural temperature may be.—The cold of 65° or 70°. Fahrenheit has thus the same effect, within the tropics, if suddenly applied, whilst the body is heated by exertion, or enveloped in the usual atmospheric heat in the sun, of 100° or 120° as that of 32° in northern countries under the same circumstances.—The observations of Dr. Clarke, lately published on this subject, as it relates to the stations in Europe, France and Italy more especially, to which consumptive patients are sent from England, are most correct and valuable, and have been fully confirmed by those made by myself in many of those places. These observations are applicable to the point under consideration, and ought to be known by those who advise, too often indiscreetly the migration of the sick under this deplorable disease.\*

As far, indeed, as the supposed lessening disposition to phthisis pulmonalis relates to the most common predisposing cause of that disease in cold climates, viz. scrofula, the opinion is correct; for in tropical climates, scrofula is, I have reason to be assured, a disease unknown ;—but as to temperature, it is certainly unfounded.—My meaning as to the beneficial agency of equable perfation, joined to a gradual augmenting temperature, may be elucidated by what Dr. Young very justly states as the advantages resulting from a sea voyage. “The greatest possible equability of temperature seems to be obtained in a sea-voyage to a warm climate, in which the variation seldom amounts to half as much as in the most favourable situation on shore, even in a small island ;—and in pulmonary cases, the motion of a ship would probably, in general, be rather beneficial than otherwise, while the fatigue of travelling in bad roads, and the danger of sleeping in damp beds, present an alternative by no means favourable to a journey by land.” (Medical Literature). Within the tropics, but more especially in the West

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\* See at the end of the volume a sketch of the medical topography of Geneva, intended as an explanation of a most interesting table of the mortality in that city, and the proportion which the deaths by pulmonary consumption bear to that mortality. This seems to be a subject on which Dr. Clarke received imperfect information—for he says, p. 97, of Geneva, “pulmonary consumption is a frequent disease in this country.”

India islands, we have changes of temperature and perfusion in turning round every projection, and in receding into every hollow; profuse perspiration and corrugation and dryness of the skin succeed each other, as these projections and hollows do. If, therefore, means are not resorted to, to provide against these quick changes, the sympathy between the skin and the lungs, will be forcibly excited, and inflammation and congestion in the latter will follow. Pneumonia and phthisis will be, as certainly, (perhaps more certainly), the consequence, as in a cold climate, where such quick succession of inequality of surface, and such quick alternation of heat and cold, are not so frequent. I have already pointed out (part 1. ch. i and iv), how much the agency of this singular versatility contributes to the production of disease, and more especially of pulmonary and hepatic inflammation in the West India islands. It is, indeed, a most prolific cause, when not counteracted by temperance, and a care to preserve the skin from its peculiar and pernicious effect. I may venture, therefore, to say, that pneumonia and phthisis, as far as temperature and the vicissitudes of it are concerned, are, in proportion to the population at least, as frequent within the tropics, as in cold and temperate climates.

When purulent expectoration, laborious respiration, pain in the left side, emaciation, hectic flushings, and other symptoms of impending, or actually formed phthisis, are observed, there is no safety by remaining in the climate. It must be immediately changed, or measures must be adopted which, in their effect, may in some degree be equivalent, otherwise death is inevitable. A sea-voyage and a temperate or cold climate, present the only, or at least, the best chance of life. Medicine in this case, with a view to cure, is totally useless; and only tends to raise hopes which never can be realized, or to lull the unfortunate patient into a fatal security. If a voyage to any part of North America, Great Britain or Ireland, or to Bermudas, cannot be accomplished, from deficiency of means to defray the expence, the next best measure will be to cruise among the islands. To remain stationary is to wait the certain approach of death. The instances of the benefit derived from frequent change of climate are many. I have known life preserved and rendered comfortable for many years, by a plan of this kind. I shall mention only one instance—a gentleman who had often been my patient in Grenada, adopted it with complete success.—His phthisical constitution was formed, within the tropics in early life, by neglect and improper treatment of pulmonary inflammation.—He possessed the power of change, and was relieved in North America.—But after a few months residence there, the symptoms began again to develope, and he returned to Grenada. He was, again, apparently restored to health; but after two years residence, he became again unwell; and now changed to his native country, Scotland, where he recovered and remained some time. But his complaint then returned, and for relief he resorted to the tropics. In about six years, by thus constantly changing the climate, on the reappearance of the

symptoms of phthisis, this gentleman had his health perfectly well established; as a security, however, and being possessed of ample fortune, he continued to make a frequent interchange of climate. The fatal insurrection in Grenada in the year 1795, was, at length, the cause of his death; for having made great exertions in the cruel warfare consequent upon that calamitous event, which his constitution was not equal to, he sunk under them, after more than twenty years of well established health.

Temporary relief may be obtained in phthisis by bleeding, blistering, a seton, or perpetual blister; by hyoscyamus, hemlock, and other mild narcotics, with small doses of calomel. Opium should be used with great caution. I remember a case, in which the worst symptoms of phthisis had taken place, in which five grains of calomel alone, given thrice in the day, had a wonderful effect in mitigating every symptom, without exciting ptyalism or diarrhœa; the patient became impatient, and sunk under the consequence of imprudence.—Diarrhœa has been effectually checked, without any bad consequence, by the extracts of catechu and hæmatoxylon dissolved in draughts; and colliquative sweats have been rendered less distressing by the mineral acids.—But none of these, or any medicine whatever, is to be depended on in established phthisis;—they are merely palliatives.

Pneumonic inflammation being the most general, perhaps the only precursor of phthisis pulmonalis, within the tropics, it will be unnecessary to advert to any other species of the disease. It is highly probable, indeed, that all the other species, stated by authors, are merely symptomatic of some constitutional disease; so that, like this, if the precursory disease is not vigorously attacked, the same result may be expected,—nay, must inevitably happen. I cannot therefore instruct the young and unexperienced practitioner more usefully, than by requesting his attention to the observations on this subject, of that most able and enlightened physician, Dr. Hossack of New York. They are truly important and verified by the daily experience of every judicious physician. There is only one distinct path to be pursued;—it is, indeed, an obvious one to him who keeps his view fixed on the nature of the original disease. Dr. Hossack has on this, as on all other occasions, pursued the path of truth, when he thus remarks on phthisis. “ We have in many instances employed blood-letting with the most happy effect, in incipient phthisis, even where strong hereditary predisposition existed. Indeed, we are induced, from some late observations on this subject, to express the opinion, that in the commencement of phthisis, as in peripneumony, blood-letting is not sufficiently employed, but is too frequently neglected until the inflammation has so far extended, that suppuration becomes inevitable. Nor do physicians in general, appear to have been sufficiently attentive in describing the symptoms characteristic of the first or inflammatory stage of phthisis; and, consequently, have been regardless of that active antiphlogistic treatment which alone can



“ prevent the tuberculous or suppurative stage. In as much as  
“ suppuration, or a purulent secretion from the lungs necessarily  
“ implies preceding inflammation, we conceive too early atten-  
“ tion cannot be given to the premonitory symptoms which an-  
“ nounce the inflammatory stage, but which are frequently so  
“ inconsiderable, being seated in the less sensible, the cellular, por-  
“ tion of the lungs, that both physician and patient are alike re-  
“ gardless of the present symptoms, and of the consequences to  
“ which they lead. Instead, therefore, of trusting to syrups, ano-  
“ dynes, pectorals, ptisans, the Iceland Moss, or the divine alcon-  
“ noque, to allay the hacking cough and pains of the chest which  
“ indicate the first approach of the disease, we earnestly recom-  
“ mend the same active treatment by blood-letting, blisters and  
“ other means of diminishing excitement, as are employed in the  
“ treatment of a pleurisy, or any other acute inflammation; and we  
“ could add, in confirmation of this view of the subject, many re-  
“ cent cases in which the practice here recommended has been  
“ attended with the most beneficial results.” (See American Med  
and Philosoh Register.)

An active bustling occupation of time, with exposure to what may be called and deemed hardships, such as often occur in military service, during an active campaign, or in maritime service of any kind; have sometimes produced a most wonderful change in a constitution broken down by phthisis. I have known instances of officers in both services recover their health by such seemingly inconsistent means. One thing is most certain, that confinement to the atmosphere of a room, or even house, is most highly prejudicial; it renders the person infinitely more susceptible of the impression of cold, and thereby tends to augment the evil which it is supposed calculated to remedy. It is surely unnecessary to observe that when a certain degree of indifference to ease and comfort is recommended, as a means beneficial in phthisis, it is not meant that temperance should be neglected. It is, on the contrary, a rule of conduct never to be deviated from, without the most pernicious consequences. It should be observed as well in moral conduct as in diet. An officer of rank in the E. I. Company's service, several years ago, related to me a very remarkable instance of hardship and cruel treatment, proving in the highest degree curative in a constitution broken down by this disease. It occurred under his own eye. After the capture of the remains of the gallant detachment under the command of Colonel Baillie, by Hyder Ally, the utmost exertions were made to convey the prisoners, among whom was my informant, beyond the reach of rescue. A serjeant, one of these unfortunate men, then laboured under the worst symptoms of phthisis; and, at this time, suffered greatly from colliquative diarrhœa. The merciless enemy, regardless of his wretched situation, forced him, at the point of the bayonet, to keep up in the hurried march, for no kind of carriage was allowed. His captain, my informant, witnessed the poor man's misery, but being himself chained, he

could render him no assistance, nor dare to intercede for him. After the first two or three days, the serjeant became more able to march, and before his arrival at the place of destination, all the symptoms of his disease vanished. A scanty allowance of rice was his only food.

A method of cure of phthisis pulmonalis, different in the means, but not dissimilar in principle, to that mentioned in the last paragraph, has been for some time adopted, with very considerable success.—In one case, a youth of eighteen, a near relative of my own, the practice was used, certainly with great benefit.—The practice employed in this case, was begun by sponging the chest and arms with a mixture of one part of vinegar and two of water, made moderately warm; this was immediately followed by dry friction with a flesh brush, or a piece of flannel. After a short time this was done to the whole body, that is, the sponging and dry friction daily, gradually reducing the mixture to coldness.—When this was done so long as to produce an evident change for the better, in the symptoms, the vinegar was used alone at night, and cold water in the morning. The diet was nourishing, but simple, and consisted in equal but small proportions of animal and vegetable food.—A little wine diluted with water at first, was allowed, afterwards it was allowed plain. The only medicine given was the following. Two ounces of bark were boiled in a quart of water for ten minutes—it was strained, and two ounces of the tincture of bark, and a pint of port wine were then added. Of this a wine-glass full was taken every day.—Moderate and amusing exercise was enjoyed in the open air.—This plan adopted with great benefit in the case of my relative is pretty nearly the same as Dr. Stewart's M. D. minister of Bolton, as described in a letter, I believe, from himself, and published by Dr. Sutton. (See *Edin Med. and Surg. Journ.* vol. ix. p. 356.)

Before I conclude what I have to offer on the medical treatment of phthisis, I wish not to neglect to recommend the inhalation of the effluvia exhaled from raw Muscovado sugar. I have known this produce a wonderfully soothing effect, which has, in some instances, become permanent. The mode I have recommended is to place a small barrel, or even basin, filled with the coarsest and dampest Muscovado sugar, in a corner of the room occupied by the patient. A better mode within the tropics, would be to lodge the patient commodiously near the boiling house, on a sugar plantation:—and in changing the climate, certainly a sugar-laden ship is the best conveyance; and the cabin of the patient should be so circumstanced, as to have its atmosphere always saturated with the effluvia of the sugar.\*

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\*;The ingenious instrument invented by M. Laennec for the purpose of ascertaining the state of the respiration and of the heart, may be of considerable use in all diseases of the chest—and as it is extremely simple and

A very frequent cause of consumption, or rather of atrophy, within the tropics, is the most pernicious habit of drinking strong rum and water, or strong wine and water, for they are equally injurious in the excess. It is, indeed, an idle and unnecessary, as well as a pernicious habit, originating, almost always in the supposed necessity for compensating the exhaustion attributed to the profuse perspiration consequent upon labour, or exercise, in a hot climate. The necessity assigned as the reason for this habit, certainly does not exist. I daily, for many years, took, in the course of my professional duties, or in overlooking the agricultural operations of my property, during the hottest time of the day, such exercise as kept

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cheap, the medical practitioner cannot do wrong, by providing himself with one. M. Laennec has given several names to this instrument, viz. sonometre, pectoriloque, thoraciloque—but that which he latterly affixed to it, and which seems the most appropriate is stethoscope. He treats the subject in a very clear and satisfactory manner, in his work, entitled “L’Auscultation Medicale, 2 vols. 8vo.—Medical gentlemen of Geneva, particularly Dr. Coindet, the learned and ingenious author of a very valuable work on hydrocephalus, and the discoverer of the singular properties of iode, in removing goitres with safety, if prudently and skilfully administered, and also of curing scrofula, has had much experience of the utility of the stethoscope, and speaks most favourably of it, as a means of ascertaining with precision the power of action of the lungs and heart. I shall here transcribe what this able physician has said on the utility of iode in scrofula, because it is little, perhaps not at all known in England where the disease is so general, and so untractable.—“Sa puissante action sur le système absorbant in a encore engagé à l’employer dans des cas de scrophules sans fièvre, et où les glandes engorgées du cou étoient indolentes. L’en ai obtenu dans ces cas les sucies les plus satisfaisans. Le dernier fait, qui donne une importance de plus à ma decouverte, à été confirmé par un des mediciens les plus distingues de cette ville.” *Nouvelles Recherches sur les effets de l’iode*, p. 14.—In a letter accompanying a copy of his *Memoire*, which he did me the honour to write.—“Je vous prie, si vous l’en ecriverez à quelqu’un de vos amis, de signaler ce remede, comme un spécifique pour les scrophules—non qui on doive le prescrire à tout scrophuleux indistinctement—un état d’irritation lymphatique ou febrile s’y opposant le plus souvent, &c. Je vous laisse apprecier l’immense utilité d’une paraille decouverte,” 19th Mars, 1821. The preparation of this medicine is thus given by Dr. Coindet. “Pour préparer l’hydriodate de potasse ou de soude, on sature la base ou son carbonate avec l’acide hydriodique ; on peut se procurer cet acide par le procédé suivant. On fait passer, dans une suspension d’iode dans l’eau, ou mieux dans une solution alcoolique ; un courant d’hydrogene sulfuré, le soufre se precipite, et l’iode s’unit à l’hydrogene. On filtre et chauffe la liqueur pour enlever l’excès de l’hydrogene sulfuré et alcool ; l’acide hydriodique rest pur,” p. 8. The best way of using the acid is to diffuse four grains of it in six ounces of distilled water.—Of this one ounce is given twice or thrice in the day, until certain signs of its action on the system manifest themselves ; quickened pulse, uneasiness at the stomach, headach, &c.—it is then to be suspended for for a week or two, and again renewed, until a cure is effected. The dose is from gr. ss, to gr. ij. the proportion of the solution is however the safest average. There is no danger of decomposition of the medicine diluted in this way—but the alcoholic tincture is very apt to decompose.

me in the most profuse perspiration, but without perceiving any necessity for compensation by drinking. On the contrary, any indulgence in this way, never failed to produce uneasy feelings. The safest, and, therefore, the best mode of obtaining relief, when excessively heated, I have already mentioned (part 1. ch. iv, &c.) To this I always resorted, and consequently, never perceived the desire nor the need of taking into the stomach a quantity of fluid to make up for the loss by perspiration, which, in truth, is the means provided by nature for the maintenance of health within the tropics.—But to return;—the indulgence of the desire excited by the habit, always increases the propensity, as well as the quantity and strength of the liquor; and the usual and necessary consequences of this kind of intemperance follow: a loss of appetite, inability to perform the usual duties, without the application of the poisonous stimulus, tremors, squalid persons and complexion, sinking of the features, loss of sleep, a short irritating cough with frequent spitting of muco-purulent matter, torpor of the hepatic system, constipation, dry scaly skin, hectic heats, intolerable thirst, a peculiar offensive smell, a vacillating state of body and mind, and finally death, the immediate cause of which is frequently abscess in the liver, sometimes extending into and bursting into the lungs, conjoined with partial scirrhus of the liver. Grog drinkers, as these unfortunate men are generally denominated, are the most wretched as well as the most disgusting beings on earth. When the disease has reached its acmé, so that existence seems impossible without the stimulus, which thus continually augments the evil; nothing but a change in the mode of life, can prevent the fatal issue;—and, unhappily, this change of life cannot be accomplished without a change of climate, a change of society, and a conviction of the danger of life, and of every thing estimable in life. If the mind is capable of receiving the impression of this conviction, a cure may be effected without resorting to a change of climate. But this seldom happens;—all the best qualities of the mind are too much debased by the habit, to be capable of elevation by reasoning. The disease occurring, most frequently among military men, and the white servants on plantations, it must be evident, that the prevention, certainly, and even the cure, necessarily depend very much on the commanders of regiments, in the first, and the owners and agents of plantations, in the second. The very reprehensible, I may say, criminal, neglect of these, has, in many instances, I grieve to say, been the cause of the loss of many valuable lives, by this disease.—A little attention to their wants, a reasonable encouragement to their hopes, the promoting of industrious habits, and preventing low and sordid dissipation, by preserving such sentiments as tend to the elevation of the mind, would cost them little; and should they be men of generous feeling, would furnish them with the highest gratification, by the assurance of having done great and solid good. It is, in truth, only by what may be called physical and moral regimen, not by medicine, that a cure can be accomplished.—When the mis-

chievous and degrading habit has been subdued by a just and proper way of thinking and acting, then the medical treatment I have recommended in chronic hepatitis, may be adopted with advantage, if the hepatic system is that which has been chiefly deranged.—Pain and an almost undefinable feeling at the stomach is an almost constant symptom of this state of disorganization, if I may so express it, of the chylopoietic viscera. The remedy I have long and successfully advised for this, is a very simple one, a moderately sized tumbler of water, as warm as the patient can conveniently take it, on getting out of bed and dressing in the morning. This simple remedy has more efficacy than any other I ever tried;—it soothes the stomach, disposes the bowels to discharge their contents, encourages the secretion of bile and other fluids employed in digestion, occasions a warm glow on the surface, throws out a gentle perspiration, and finally gives a desire for breakfast.—If there is acid eructation, a small quantity of the infusion of camoile flowers, with magnesia, in the proportion of a small tea-spoon full of the latter to two or three wine-glasses full of the former, will be found a pleasant combination of a tonic and absorbent. Should the acidity prevail, and be attended with pyrosis, lime water is proper; but the most likely to allay these symptoms is the oxyd of bismuth rubbed up with a little sugar and powder of cinamon. The dose should not exceed four grains of the oxyd thrice in the day, at least that is the quantity I have found most beneficial to adults. I make use of the word allay, because, as all these symptoms, generally, if not always, depend on, and should be considered as indicating hepatic derangement, so should these means be resorted to, which mainly apply to the removal of that derangement. Thus, therefore, those absorbents should be employed as accessories, and mercury given, in the manner stated under chronic hepatitis as the principal agent. The oxygenated muriate of potash has done much good in chronic hepatitis brought on by habitual ebriety, or dram and grog drinking. As a tonic when those horrible feelings I have described, have yielded to moral and physical regimen and medical treatment, the following pill has answered better than any thing I have ever tried. ℞ extract gentian, ℥i. extract. colocynth. comp. gr. x, antim. tart. gr. i. ℥ optimé et divide in pilulas octo—sumat unam bis terve in die.

I have arranged this disease, under the head of pulmonary complaints, although for some of its circumstances, it would seem more appropriate to hepatic. Very much of the appearance of the patient suffering under it, however, has that of pulmonary consumption; and in very many instances, an abscess forms in the lungs; or, if it primarily forms in the liver, the matter makes its way into the lungs; and is discharged by expectoration, so that the disease, although originally more connected with the hepatic system, terminates in the pulmonary. When it arrives at this period, it is, indeed, of little consequence what organ we assign it to; but as far as the mind of the patient is concerned, in its nosological arrangement, it be-

comes of importance. When he is made to understand and believe it to be pulmonary, there is then, generally, less difficulty in persuading him to adopt that course of life, without which, recovery cannot be looked for: for although sunk into a dereliction of all the finer moral and social sensibilities, fear of death never fails to rouse the mind of the wretched subject of this species of consumption, to a wish to preserve life, and sometimes to actions whose tendency is to restore health.

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## CHAPTER XII.

### COUP DE SOLEIL, PHRENITIS AND HYDROCEPHALUS.

COUP de Soleil, frequently occurs in the hotter months, and seems evidently a species of apoplexy, the cause of which is the intense heat of the sun striking on the head, when the person is stationary, the head uncovered, or not sufficiently protected, and the air little agitated by wind. It more frequently happens in those situations which are screened from the prevailing wind, and in which the rays of the sun seem to converge as in a focus. The apoplexy thus caused by a stroke of the sun, is either sanguineous or serous, according to the temperament and habits of the patient; for it is highly probable, that there is a predisposition in the system to suffer by exposure to the direct rays of the sun, and it is generally observed, that those who live intemperately, those of a very irritable disposition, and adust temperament, are most liable to it. Creoles, whites, and negroes, too, are not, however, unfrequently the subjects of it, owing I apprehend, to their being more especially predisposed at those times than at others. In general, the person, suffering from this cause, is unassimilated to the climate, consequently unhabituated to excessive heat, thus concentrated as it were, and little careful, or little aware of the consequences of exposure to it. Nevertheless, it has sometimes happened to men, whose long residence in the climate would seem to exempt them from the morbid effects of the direct rays of an ardent sun.—In these instances the disease has occurred at unguarded moments, when the head has been exposed and without the necessary protection.—A very little attention to the precaution of keeping the head covered, even in the usual manner, may at all times, when there is no particular predisposition, prevent a coup de soleil.—Some men, more particularly timid, or more particularly sedulous in guarding against the effects of solar heat, have had their hats constructed in a pyramidal form, and perforated in such manner, as to permit a free perflation of air, and consequent evaporation of moisture from the head; others

have covered the outside of the hat with white paper, thereby preventing the absorption of heat, others place a white cambric handkerchief between the head and the hat, and others satisfy themselves with carrying a large spread umbrella over the head. There is a prevailing objection to these preservative means founded on the supposed unmanly delicacy of resorting to them. Such an objection is, however, extremely unwise, and certainly should not influence the conduct of the unassimilated to the climate. The person suffering from coup de soleil, suddenly falls down in a state of stupor and insensibility, and if assistance is not immediately procured, seldom recovers, but in the course of a very short time expires. Dissection has established the fact, that the disease is, as I have already said either sanguineous or serous apoplexy, when the former, the brain is gorged with blood, extravasated from numerous ruptured vessels. When the latter, the membranes of the brain bear strongly marked signs of intense inflammation, but the brain itself is seen in a manner floating in serous fluid, and sometimes exhibits a very singular appearance. It is considerably diminished in bulk, is of a whitish yellow colour, and, on being handled, communicates the renitent or elastic feel, experienced on pressing between the fingers moderately stuffed leather; all its convolutions are most distinctly marked by deep furrows, and its blood vessels are scarcely perceptible. On cutting into its substance, it possesses a more than usual degree of resistance. The ventricles are filled with serous fluid. In short, the appearance of the brain in this species of coup de soleil, or serous apoplexy, is such as would induce the belief, that all the stadia of the most active inflammation had so rapidly run their course, as to leave an almost undefinable space between its commencement and its termination, in an overwhelming effusion; so that we feel inclined to be impressed with the opinion, that what are denominated the sanguineous and serous forms of the disease are truly only varieties, varieties occasioned merely by a difference in the impelling force, which in the one gives time for the development of the steps of the disease;—in the other, hurries the whole, as it were, into one, in which life is extinguished. A case of this latter kind occurred to me in the year 1793, in Grenada, soon after the commencement of hostilities with France.—A master carpenter, who had exercised his trade many years in the island, had generally enjoyed good health, whose habits were always active and sober, but whose person was rather slender, was employed as a militia man on guard during excessive hot weather, and in a situation, where the rays of the sun were converged, as it were, into a focus, and where there was little or no current of air, fell down suddenly, and without any previous feeling of disease, speechless and motionless and insensible. I saw him in about half an hour, but life was gone. On examining the brain on the following morning, the appearances I have described were observed.—The sanguineous apoplexy, consequent upon coup de soleil, is, I believe, the only species that admits of any thing like cure. The serous is always fatal.

The mode of treatment must, from the nature of the circumstances of the case be more or less successful according to the period of the disease, at which it is commenced, for safety alone depends on lessening the accumulation and impetus of blood in the brain. If the patient is seen immediately after the disease has taken place, plentiful bleeding from the temporal artery, and cupping in the back of the neck, followed immediately by a strong dose of calomel and jalap, have been highly useful. General bleeding should not be neglected, if a sufficient quantity cannot be procured from the temporal arteries; but the latter is always preferable;—it relieves congestion, and acts directly in diminishing the impetus of the flow of blood into the head, the sole cause of the cerebral pressure in this case, without weakening the general system, a result most carefully to be avoided, because it is a result which must necessarily succeed, without this additional cause of debility, the diminished nervous energy always following the shock, the brain receives in coup de soleil, even under the most favourable circumstances. When the pressure on the brain, by these means, has in some degree been taken off, the calomel should be repeated, both as a purgative, and with a view of restoring the equilibrium of the system, by exciting its specific action. Cold applications to the head are particularly efficacious, as an auxiliary to the bleeding and purging. The hair should be cut off, so as directly to expose the whole head to the cold. The best application is a solution of the muriate of ammonia, or of nitrate of potass in water, absorbed by a soft towel, with which the head should be covered. This should be frequently renewed. A remedy, precisely the same in principle, but differing in the mode of application, is often resorted to by the negroes, for relieving the sanguineous apoplexy with great success. Among the negro nurses, by whom alone it is applied, some air of mystery is thrown over it, probably to impress the simple minds of their patients more forcibly, and probably too, because its effects may seem to their own apprehension, bordering on the miraculous. After bleeding and purging, a wide mouthed bottle is filled with the coldest water that can be procured, the mouth of the bottle is then covered with a piece of fine calico, sufficiently thick, however, to prevent the water from percolating readily through, and securely tied on. Thus prepared, the mouth of the bottle is applied to different parts of the forehead for about an hour. Large globules of air pass into the bottle, considered by the operator and patient, as the heat transpiring from the brain, by means of the remedy. Whether it is owing to the negro race, possessing less predisposition to the disease, and thereby suffering less congestion in the brain from coup de soleil, when it occurs among them, I shall not take upon me to say, but it is certain that recovery frequently takes place, without further means, except a few doses of some simple purgatives. But the principal, and indeed, only effectual means to take off the pressure on the brain, are, in the first instance, bleeding from the temporal arteries; cupping and general bleeding, if necessary,



followed by active purging: all external applications should be considered as only useful auxiliaries. It is very rare, that a person who has once suffered under this malady, ever recovers the perfect use of his physical and mental faculties; they both ever remain greatly paralysed, so as to render him an *imbicil* for the remainder of his life, and always, when exposed to the direct rays of the sun, extremely liable to apoplectic seizure. The eyes are at all times possessed of a peculiar wildness, and all his actions are remarked by absence and excentricity, sometimes by fatuity. It is well worthy of observation, that these consequences are certainly less, sometimes not at all observable, when mercurial ptyalism has been employed, as a means of restoring the equilibrium of the system, thus shaken to the centre by sanguineous apoplexy, consequent upon coup de soleil. The only true idiopathic phrenitis is, I believe, this sanguineous apoplexy, consequent upon coup de soleil. I therefore need offer nothing on that subject.

How far hydrocephalus acutus should be considered as an idiopathic disease in any case, seems to me extremely doubtful. Inflammation of the brain necessarily precedes the effusion; the circumstance which gives the disease the name it bears; and this is the result in all cases of cerebral inflammation, when its career is not checked or stopped by suitable means. Perhaps we may judge and act more correctly by always considering hydrocephalus acutus as symptomatic of cerebral inflammation, and in that view, we shall find it the same, as sanguineous or serous apoplexy, only less rapid in its course, and more obscure and insidious in its approach. Doubtless the same means of cure are applicable to both. It is certain, that, within the tropics, hydrocephalus acutus is never seen, but as symptomatic of fever, or rather as the sequela of cerebral inflammation, and the best descriptions of the disease as it appears in Europe, represent it as slow approaching but steadily destructive cerebral inflammation; and the best mode of treating it, is founded on an indication drawn from the inflamed state of the brain. In every case of apoplexy, as well as in every case of hydrocephalus acutus, the fatal termination is either extravasation of blood or effusion of lymph; for I am well convinced, both from my own experience, and much more from the experience of others, that recovery cannot happen in either, when the inflammation terminates in extravasation or effusion. The prevention of that event by active antiphlogistic practice can alone secure safety; hence it is only during the inflammatory stage, short indeed, in the one, but long in the other, that curative means can be employed with any prospect of success. Hydrocephalus acutus has from these considerations been denominated with appropriate correctness.\*

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\* Apoplexia hydrocephalica; the whole series of phenomena from the first attack to the close of the disease, proves the propriety of this denomination.

## CHAPTER XIII.

RHEUMATISM, OPHTHALMIA, AND OTHER LOCAL INFLAMMATIONS,  
NOT ALREADY ADVERTED TO.

ALL inflammations, being modifications of the same morbid action, what I have said on hepatitis, pneumonia, &c. may apply to rheumatism, ophthalmia, &c. The morbid action, constituting what is called inflammation, appears to me to be truly a disorganization of the structure of the blood, whereby a disunion of its constituent parts take place; or, in other words, its vitality is, in a greater or less degree, dangerously diminished. The gradation of this morbid action admits of the three processes in which it is universally allowed to terminate, when left to its natural course: a slighter degree ceases by resolution, or the spontaneous re-union of the constituent parts of the blood in the part inflamed; a more intense, by suppuration, or a salutary solution of those parts without privation of life, by which nature forcibly removes the obstruction occasioned by a disunion of those parts; and the most severe, by the absolute death of those parts, or gangrene. An old theory it must be confessed—and what is there new under the sun?—but a theory which appears to me the least objectionable, the most rational, and that by which all the phenomena of inflammation can be most readily explained.—A reference to the “*Précis Elementaire de Physiologie*” of Mons. Magendie, will greatly assist us in the conception of this theory. This eminent physiologist has proved, to my perception, that the coagulation of the blood is not owing to contact with air, or exposure to cold, but to its privation of life, and that its fluidity is owing to its enjoyment of life. (Tom. ii. 215, &c.) When we consider the power of absorption possessed by the veins, we shall be less disposed to doubt this, and to doubt the readiness and facility with which the disunion of the constituent parts of the blood, or the diminution of its vitality may take place, when cold may be generally, or partially applied to those parts of the system, in which we suppose rests the greater susceptibility of the influence of that cause, or in other words, in which the vascular system is least protected from it, viz. membraneous surfaces. Under the same consideration, we shall find, I presume, much less difficulty in accounting for the efficacy of mercury, and certain stimulating substances, in a solid or liquid form, in restoring the union, and consequently the vitality of the blood, in those surfaces, the veins of which are excited by these very substances themselves, to increased absorbent action. The very valuable work of Magendie, in which he presents us with facts proved by numerous conclusive

and excellently contrived experiments upon the living animal, throws, in my opinion, the clearest light on this subject. His definition of venous absorption I shall quote, as, probably, his work may not be in the hands of some of my young English readers.—“Toute espece de gaz ou de liquide mis en contact avec les diverses parties du corps (la peau excepté) passe aussitôt dans les petites veines. La même chose a lieu pour toutes les substances solides susceptibles de se laisser dissoudre par le sang ou par les fluides secretées, au bout de très peu de temps elles s'introduisent dans les veines, et sont transportées au cœur, et au peumon. Cette introduction est nommée absorption veineuse.”\* (P. 229, tom. ii.) He adds, (p. 231) that this absorption takes place more rapidly in serous membranes than in mucous, and much more rapidly in structures (tissus) abounding in blood-vessels. Corrosive liquids are absorbed by the veins more quickly than those which do not stimulate the membranes. The villous coat of the intestines, particularly of the small intestines formed partly “par les radicules veineuses,” absorbs all liquids and substances capable of absorption, except the chyle. This is discovered by introducing strong smelling substances, the smell of which appears in the blood of the different branches of the vena portæ, whilst in the lymph nothing of it is perceived. (Ibid.) Inflammation, or the disorganization or diminished vitality of the blood, is always local; whether attended with febrile heat and quick pulse or not; for we may readily enough perceive that those parts of the vascular system which are not thus affected, have the impetus of circulation or power of propulsion increased in the direct ratio of the degree of local obstruction, the effect of which is always manifested where the resistance is greatest. On the extent therefore of disorganization or diminished vitality depends the degree of tumultuous motion, and consequently we find that in hepatic, pneumonic and rheumatic inflammation, the phenomena of fever almost always take place; in less extended inflammations, these phenomena do not appear, or very slightly, as in ophthalmia, tonsillitis, &c. Nevertheless, the principle in which all these diseases originate, being the same, it necessarily follows, that the same means of treatment are applicable to all of them, in a degree proportioned to their extent and intensity, various agents possessing the same mode of action, an action which is capable of amalgamating, as it were, if I may so use the expression, or of restoring the component parts of the blood to their former state of union and homogeneity and vitality, have been employed, sometimes empirically, sometimes rationally. Of all these I know none better calculated to effect the object than mercury. Most

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\* Every kind of gas or fluid placed in contact with the different parts of the body (the skin excepted) passes presently into the small veins. The same happens to all solid substances capable of being dissolved by the blood, or by the secreted fluids—at the end of a very short time they introduce themselves into the veins, and are carried to the heart and to the lungs. This introduction is called venous absorption.

others are really only auxiliary, such as bleeding, more especially. We have already seen the almost exclusive efficacy of this medicine in hepatitis pneumonia, and some other local inflammations, more especially dysenteric. In acute rheumatism, the principle of morbid action to which I have called the attention of the writer, is more conspicuous, more remarkable than in any other local inflammation, and the operative effect of mercury is more decidedly illustrated.—Bleed to almost the extinction of life, still you will find the blood in the same state of disorganization, and the malady still unabated, still unchanged, the same excruciating pain, the same inability of exertion of the portion of the system affected, the same distortion of muscle. Give mercury to saturation, and assist its operation by moderate depletion, and these phenomena cease to exist. In the same manner, exhibit diaphoretics, keep the patient continually bathed in sweat, still the disease remains unchanged, the patient unrelieved—give mercury, and relief is immediately obtained. How this amalgamating operation is produced by mercury I know not. I am satisfied with knowing that it is produced; and under that satisfaction, confirmed by innumerable proofs, I wish to urge my reader to the adoption of the agent by which it is produced. In pneumonia, acute hepatitis, dysentery, and acute rheumatism and other acute local inflammations, mercury, judiciously administered, is the only truly efficacious remedy.\* In chronic hepatitis and chronic rheumatism, there are other remedies which may be considered, perhaps, as often more efficacious, as nitric acid and the

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\* I could prove this proposition by the adduction of many cases, were it necessary. The practitioner may rely on the truth of it. A very skilful and learned medical friend of Geneva, Dr. Prevost Moulton, has favoured me with a very interesting case, which I cannot deny myself the satisfaction of laying before the reader.

“ Marie Gerbet, 66 years old, a washer woman by trade, and of robust form and complexion, after exposure to cold, seized four years ago, with a severe attack of rheumatism in the lumbar region, hips and knees; bled and blistered, repeatedly at that epoch. Since that time she has experienced repeated returns of her complaint, which has at last left her in a chronic state, with occasional and pretty frequent exacerbations, of severe acuteness. For the last two years greatly distorted, and unable to walk without crutches. When I first saw the patient, in December last, both her knees were very much swelled and painful—she could not walk, scarcely move—every motion caused her severe and durable pain. She scarcely slept two hours in the night. Some cooling purgatives were given, and at bed time gr. vi. Dover's powder, followed by a drop of prussic acid in ℥i. of water, with some relief, after using them for a fortnight. But then she felt as it were a return of an acute paroxysm, preceded by much shivering, and at night much cutting through her bowels, followed by numerous scanty stools, consisting almost entirely of blood—twelve leeches were applied to the umbilical region, which was very painful and tender, and a bolus of gr. vi. of calomel and gr. ss. of opium was exhibited every third hour. Two scruples of calomel were taken in

chlorine bath, in the former; and spirit of turpentine, tincture of lytta, tincture of guaiacum and the vapour bath in the latter.\* In ophthalmia, however acute, if uncombined with any other form of disease, mercury, with the assistance of local bleeding, will certainly cure, and in a manner unexpectedly complete and quick. I have never seen

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thirty-six hours. The mouth became severely affected, and every symptom, not only of the bowel complaint but of the rheumatism, yielded, in a manner quite astonishing to me. In a few days the patient was able to get up and walk without the assistance of her crutches. The woman has been frequently out during the winter, which she has not been able to do for two years. She is now, indeed, perfectly well.—23d March, 1821.

\* The machine, of which the subjoined figure is a correct representation, is the invention of a most ingenious and learned physician of Geneva, Dr. Goss, whose father was the founder of the Helvetic Philosophical Society. It is employed for the purpose of exciting perspiration by vapour, in chronic rheumatism, or any disease in which that remedy may be found or deemed useful. It is in fact a most convenient portable vapour bath, adapted to all circumstances a patient, in such diseases, can be placed in. This very able physician had a patient suffering under a severe attack of chronic rheumatism, in the near vicinity of my house on St. Jean, near Geneva. The case being obstinate as well as severe, I recommended the use of mercury and opium, which had the desired effect of removing the disease—but Dr. Goss's mentioning the case to me, gave occasion to my receiving information respecting this simple portable and ingenious contrivance. It consists of a small tin boiler, (figure 1st) of nearly an oval form, seven inches long, and six inches broad, centering gradually, in the manner represented, into an opening c, about two inches, or rather one and a half wide; from which rises a kind of funnel d, e, also of tin, soldered to the edge of the opening c, square and open at top, seven inches by six. Under the boiler is a small tin spirit lamp f, with four or two lights—but two are sufficient, standing on the bottom board of a wooden frame, g, h, eight inches high, and seven broad and six deep, the front and top open. The whole of the inside of the same lined with tin. When the machine is prepared, and the boiler, filled with water, begins to emit vapour through the funnel, it is placed within the tilt, i, k, (fig. 2,) of the length, breadth and height required, but for an adult, six feet long, two or two and a half feet high, and three or four feet broad. The machine should be placed on one side of the feet of the patient, l, so as to be as little inconvenient as possible. The patient is wrapped in flannel, without shirt or any other covering immediately round his person.—He is placed in the bed he generally lies on, having his head properly supported by a bolster and pillow in the usual way; and the tilt is covered with a blanket in such manner as to prevent the escape of the vapour. If the quantity of water in the boiler should not be sufficient, it may be again renewed, with hot water, with scarce any inconvenience to the patient, by means of a common tea-kettle. The tilt may be made of cane or common wooden hoops fixed in a frame of deal, or even a common earthenware crate, of sufficient size may answer very well. The tilt, however, is neater, and may be so con-

what is called Egyptian ophthalmia, which seems, from the description we have of it, to be the most severe of all the forms of the disease. We are told that the effectual remedy is the most copious bleeding possible. I cannot negative the opinion; but I cannot relinquish the persuasion I feel, that less depletion with the active administration of mercury, would do infinitely more good. I have frequently taken occasion to recommend this practice to gentlemen who have had frequent opportunities of treating the disease, and I have reason to believe that where it has been pushed with energy it has been effectual.

The use and the utility of emetics, in pure ophthalmia, exhibits a satisfactory illustration of the theory of inflammation I have ventured to offer some general idea of. It may indeed be said, that the efficacy of the same remedy in the incipient or forming state of all fevers, as well as all local inflammations, furnishes the same kind of illustration—for in all these, the shock, and violent impulse given to the system, mechanically, perhaps, effects what mercury in the more advanced and completely formed state of these diseases produces by another principle of action. In this manner may the remedial operation of emetics be accounted for, in some species of cyanche, the malignant and tonsillary more especially. The various species of this most distressing genus of local inflammation may be discussed without laboured description, and without the enumeration of the many differing modes of treatment. The cyanche maligna and the cyanche laryngæa, the two most dangerous and most tremendous, may be cured by a correct adaptation of the means to the end. Thus, in the severest cyanche maligna, I am confident mercurial ptyalism will remove the disease, aided by a pungent local application in the form of gargle, the principal ingredient of which is Cayenne pepper. In cyanche laryngæa I can only speak from experience in two cases: these were cured by bleeding moderately and mercury.

In some countries where pure acute ophthalmia is often prevalent from local causes, such as the reflection of strong tropical solar light from a surface of fine white sand, Providence, maintaining its universal compensative system, by which the good and evil of this world are duly balanced, has presented to the inhabitants an indigenous remedy, which surprizingly accomplishes all that mercury and depletion can do. Some parts of the interior of Guiana, in

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structed as to take to pieces for the convenience of package or carriage. The funnel is made of the form directed, for the double purpose of preventing condensation, and promoting the more speedy diffusion of the vapour. The vapour may be easily medicated, if that should be wished. The advantages of this machine are obvious. It is small in bulk, and easily conveyed from one place to another; but it is more especially advantageous, inasmuch as the patient need not be moved from his bed, and as no risk of cold or increasing pain can be occasioned by moving him.

South America, are a country of this kind. This, which is often almost entirely composed of very fine white sand, from which an ardent heat is reflected, unbroken by the shade of trees, or the growth of herbage, produces a species of bignonia, which may be called ophthalmica,—a sure remedy in the pure ophthalmia, the endemic of the country. The pulpy part of the root of this plant contains a juice, which, when applied in the most minute quantity possible, a single drop once in the day for four or six days, to the surface of the inflamed eyes, most effectually cures. It is an Indian remedy, but might be naturalized every where within the tropics, adapting the soil to the wants, and the qualities of the plant. The mode of using this remedy is the following—a funnel is formed of a leaf of the plant, the spout of which is introduced between the eye-lids of the eye affected; a single drop of the juice, collected in a flock of cotton, passes into the eye through the funnel, and diffuses itself over the inflamed surface. Instantly a bitter sweet taste is perceived on the tongue and palate, and great relief immediately follows. The operation is performed in the same manner every morning; and four applications are generally sufficient with the fresh juice. Should the root become dry by carrying it from its native country to a considerable distance, a strong infusion, in a small proportion of boiling water, will contain its curative virtues, but in a diminished degree, so that in this case, six drops of the infusion are necessary for each application, and the cure is effected in a somewhat longer time, but with equal certainty. The Indian name of this excellent plant is acouceronee or warranee, and the British settlers in the country of its growth distinguish it by that of eye-root. Is this plant found in the sandy plains of other countries? Does Egypt, the native country of the most acute species of ophthalmia produce it? Enquiry should be made. This frightful disease, purulent ophthalmia, occurs with all its violence sometimes within the tropics.—A very interesting account of a remarkable and distressing instance of this has been published last year in the Bibliothèque Ophthalmologique of Mons. Guillié, the Director General of the Institution Royale des jeunes Aveugles of Paris. The case is that of a ship, the Rodeur, employed in the nefarious slave trade, carried on it seems to a great extent by private French adventurers, between the coast of Africa and the French West India islands. The crew and the negro slaves on board the Rodeur (p. 160) enjoyed good health till they reached the equator, when, from causes not specified, and perhaps unknown, the disease broke out among the negroes, (blepharoblénorrhæa contagiosa) and spread with such rapidity, that in a short time, it is said, all on board became infected. “The sufferings of the people and the number of the blind augmented every day, so that the crew was seized with the dread of not being able to make the West Indies, only one of them having escaped the contagion, on whom the whole hope rested. Thirty-nine of the negroes had become perfectly blind, twelve had lost an eye, and fourteen were afflicted with blemishes more or less consi-

derable. Of the crew, originally twenty-two, twelve lost their sight entirely, among whom was the surgeon, five lost one eye, and four were partially injured." See a pamphlet entitled Memoranda, respecting the French slave trade, p. 29—31.

In offering the foregoing imperfect hints of a theory which I think may give a clue to the investigation of the proximate cause of inflammation, my sole object has been to explain the principle, on which the remedy I employ and recommend acts. Its affinity to the doctrine of lentor and obstruction is obvious, but I do not combat in its defence, although I perceive its reasonableness, and its applicability to the explanation of the phenomena of inflammation, and the mode of curative action possessed by its most appropriate remedy, mercury. Can we on the same principle account for what we hear of the efficacy of cinchona bark in acute rheumatism? The tendency of this remedy is probably excitement; and we may therefore reasonably enough perceive its ultimate operation in this disease, is the renewal of the union of the disorganized constituent parts of the blood, or of its vitality to its healthy state. I do not mean however to recommend the use of the bark in acute rheumatism. I have tried it, and I have been disappointed—the tumultuous impulse given to the blood by it was infinitely too great to be salutary. My object in mentioning it is merely to suggest, that if bark merely possesses the efficacy which eminent physicians have attributed to it, it possesses it by exciting that salutary action which, from the want of a better name, I have called amalgamation. I have often been in the habit of giving bark combined with tartarized antimony, or nitre, in chronic local inflammatory affections, with great advantage. In acute rheumatism, should bark be preferred to mercury, this combination may considerably improve the practice, by diminishing the exciting power of the bark. In all cases of acute disease, it must necessarily be a doubtful remedy. Does the same reasoning apply to the cure of chronic rheumatism by sweating brought on by gradually increased exercise, and greatly and suddenly increased warm clothing? The fact is extremely interesting, as related by the patient himself, in a memoir communicated to the Medico-Chirurgical Society, by Dr. Marcet. If the fact proves nothing else, it is important by being a further addition to the extensive evidence we already possess, from the experience of Dr. Jackson, and other medical observers of our own country, and of M. Larrey (*Memoires Chirurgie Militaire*) surgeon-general of Bonaparte's armies, of the wonderful utility of exercise in circumstances which theory would lead us to believe totally inadmissible, and totally irremediable by such means. In this singular instance, I am inclined to believe that stimulation is the principle on which the efficacy of the remedy depends, not the mere evacuation by perspiration, so often found useless in rheumatism. (*Med. Chron. Trans*, p. 3.)



## CHAPTER XIV.

## ULCERS.

I HAVE in part 1st, chapter 4th, taken notice of ulcers, as an epidemic of the West India islands, at a certain season of the year, and apparently depending on a diathesis produced in the system by endemic causes, prevalent during that season. This applies to almost all the ulcers which appear within the tropics, at least, to those which have not for their cause a specific contagion. Most of these ulcers are met with in those situations which are marshy, and productive of remittent and intermittent fevers, hepatitis, and hepatic dysentery; consequently, it is fair to conclude, that the same diathesis in the system which accompanies these diseases also accompanies the ulcers. Those people who are most exposed to external injury, during the hot and wet season, are most subject to ulcers; and a moderate degree of caution in avoiding all those things which slightly wound, or even scratch the skin of the legs, is found generally sufficient to prevent them. It is therefore among soldiers, sailors, the lower orders of white servants on plantations, and more especially negroes, that ulcers are most prevalent. The diathesis which heat and marsh exhalation unite in producing, is attended or rather is productive of debility, or in other words, of a deficient energy in the system. This is remarkably observable in these ulcers; there is deficient excitement naturally in the part ulcerated, to a counteracting impulse, by which healthy habits may be produced in it. This evidently appears in the flabby, pale, indolent aspect of the ulcers. The negro nurses are perfectly aware of this peculiarity, and act accordingly empirically, or on a kind of instinctive knowledge of what is proper to do. In their treatment, stimulation is the principle which uniformly directs these people. It is consequently rough and painful, but it is the most effectual. Their great remedies, on this principle, are the bitter cassada, (*Jatropha manihist*) the root of which is grated and applied as a poultice, in its raw state, and full of its corroding and poisonous juice; the juice of ripe limes, with which the ulcers are smartly rubbed twice in the day; and they are afterwards covered with slices of the same fruit, divested of its rind, and secured by a compress soaked in the juice, and a bandage. Another excellent remedy is the American aloes, cut into thin slices, or pounded into a pulp, and applied in the same manner. All these remedies, being found in abundance every where within the tropics, as they are the most obvious, and the most easily procured, so are they really the best. Remedies, not in-

digenous, which I have often employed with complete success, are preparations of copper, but chiefly the metal itself, reduced to powder; calamine, or the ore of zinc—the sulphate of zinc in solution, and used as a lotion—and a combination of the volatile alkali and the sulphate of copper. Of these, the most useful and the most effectual I have ever employed, is the last. It is used in the following manner. The ulcer being first well cleansed with soap and water, it is then thoroughly washed with the solution of the alkali and sulphate of copper, but without any degree of violence; slips of soft old linen or lint are then well soaked in the solution, and applied over the whole of the ulcerated surface; compresses of soft old linen are then laid on, after being well soaked also, and the whole secured by a bandage. This should be repeated twice in the day. The effect is surprising; the ulcer soon assumes a healthy, florid firm appearance; its flaccid edges are absorbed; healthy granulations form; a new firm skin extends from the circumference to the centre, and in a very short time completely unites, without any danger of corroding into a new ulcer. This remedy I have constantly employed in England, in ill conditioned ulcers, and with uniform success. General remedies, during what may be called the epidemic season of ulcers are of no use. Nourishing diet is, however, highly necessary, and contributes much to the recovery of the patient.

The most troublesome and obstinate ulcer I have seen within the tropics, seems to be peculiar to the climate, and notwithstanding, I believe, never yields to the indigenous remedies. I shall here describe it. Negroes, more especially those lately or newly arrived from the coast of Guinea, are more subject to it than the Creole negroes, or the lower white inhabitants. This ulcer generally makes its first appearance either in the form of a pimple, or a small vesicle, which, bursting, discharges a sanious matter, or a limpid fluid, evidently possessed of a very irritating and corrosive quality; which shows itself by an intolerable itching, and a very speedy enlargement of morbid surface. In the short space of eight and forty hours, an ulcerated surface will be formed of more than two inches in diameter. In the further progress of this ulceration, some appearances take place which indicate an herpetic character; these are chiefly the corroding nature of the discharge, sometimes its colour and consistence, the creeping manner in which the ulcer spreads itself, and its leaving distinct portions of the skin of the natural colour, apparently unhurt:—thus, frequently, within the general compass of the ulcer, insulated portions of the sound skin may be perceived, and which may continue so during the existence of the disease. From the commencement of the disease, the portion of the limb near and around the ulcer, becomes tumid; and as it advances, the swelling enlarges; so that when the ulceration has gained a surface of six inches by three, that part of the leg will have increased fully three inches in its circumference. It is peculiar to this disease, that if its duration should be long, the limb never

loses the dimension it has acquired, the swelling consolidating, and becoming permanent. The ulceration is seldom deep; but I have known instances of its penetrating, occasioning a caries, and at length such a morbid state of the limb as to render amputation necessary. It frequently happens, but from what cause I know not, that the whole, or by much the greatest part of the ulcerated surface fills up and cicatrizes in a surprisingly short time. This however, is mere fallacy, for in the course of one night, the whole of the surface, thus seemingly whole, will be corroded in the same manner at first, and an ulcer larger than the former, and of a more unfavourable aspect will be formed. In proportion to the repetition of these attacks, as well as the duration of each, is the enlargement of the limb, so that limbs of an enormous size, from this cause, are not unfrequently seen, which, except the ulceration in which they have originated, have all the appearance of the glandular disease described by the late Dr. Hendy of Barbadoes. This ulcer differs considerably from all others within the tropics, not only in the features already described, but in its being always, whether superficial or penetrating, of a bright red colour, and without any collection of matter of any description; and when it extends itself in the surprisingly quick manner I have mentioned, no sloughing of morbid portions has been observed, but the sound and the ulcerated surface either imperceptibly unite, or the edges of the former look sharp and florid, and seem divided by a knife; and this, whether the ulceration extends or contracts, which, as I have already said, it will do in a very astonishing and rapid manner. The only ulceration it bears any affinity to is the mercurial, described so well by Mr. Mathias; and yet I can account for this in no other way, that I am aware of, than by supposing latent constitutional disease, which in this, as in the mercurial ulcer, is brought to light by irritation. What the constitutional disease may be within the tropics which gives rise to this ulceration, on being stimulated into an active state, I am ignorant of. It is extremely probable, nay almost certain, that scrofula does not exist in that climate, therefore some other cause for this singular ulcer must be sought for; and the most obvious is climate, or perhaps, we may say with more precision, hyperoxygenation, or a peculiar state of oxygenation of the human system within the tropics, during the hot and wet season. In this view, the ulcer may be considered as salutary, for if this species of drain did not take place, the superabundant oxygen in the system, during the hot and wet seasons, might be productive of the most dangerous consequences. The immediate causes of this ulcer, are the same as those of common ulcers, the stimulus of various irritating substances. With respect to its cure, I know of no means more effectual than the solution of sulphate of copper in the volatile alkali, already mentioned. Large quantities of bark and wine have been employed without the smallest benefit. I have also directed the use of bandaging, on the principle of strengthening, by supporting and compressing the parts, as used by my friend the late

Mr. Baynton of Clifton ; but great inconvenience and no benefit resulted. The best auxiliary to the local application of the solution, was nourishing simple diet, and scrupulous personal cleanliness. Moderate exercise on foot was by no means injurious whilst this mode of treatment was judiciously employed. The usual rule in cases of old, ill-conditioned ulcers is very different from this—but like constant confinement to the recumbent posture, so much and so pertinaciously recommended by some practitioners for some years past, to the irremediable injury of the unhappy patient, in spinal affections, it has been adopted without giving their due weight to the laws of the animal economy.

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## CHAPTER XV.

### REPUTED SPASMODIC DISEASES.

#### *Tetanus.*

THERE is no disease more involved in obscurity than Tetanus. It is a disease of all countries and climates ; but much more frequently occurs within the tropics, than in any other part of the world. The remote causes of tetanus within the tropics, are wounds or punctures, accidentally inflicted by thorns, rusty nails, broken glass, sharp-edged sea-shells, the spines of the sea-egg, the sting or horn of the sting-ray, in the more membranous or tendinous parts of the body ; the face, hands and feet more especially. Gun shot wounds, especially when complicated with fracture ; or the amputation of a limb, when the tenaculum has not been used in taking up the arteries ; or even, the simplest operation in surgery, when the system has been in a very irritable state, produce the disease ;—whilst such operations, in a contrary state of the system, have frequently prevented it. Escarotics, injudiciously employed, have sometimes brought on tetanus. The instances of this, which I have witnessed, were occasioned by the too long perseverance in the use of corrosive substances to ill-conditioned ulcers, near the principal joints, the knee more especially. Tetanus also proceeds, not unfrequently, from sudden exposure to the cold, especially in a state of ebriety.—(See *Il Giornale di Medicina Practica del Professor V. L. Brera—Osservazioni sul Tetano di Doct. Guiseppe Bergamaschi, &c.* for several remarkable cases of this nature),—or

bathing in, or rather plunging into cold water when the body has been excessively heated by violent exercise, and allowing evaporation to take place on the surface. Sleeping in a cold current of air has also, frequently, been a cause of the disease. Nay even fear acting on the imagination of a person easily excited by the presence of unusual and disagreeable objects, has produced tetanus.—Thus numerous, and seemingly differing, are the remote causes of this terrible disease.

As to the proximate or more immediate cause, it is scarcely possible to speak with any degree of certainty. It seems to be completely obscured; and perhaps, as much from the search of pathologists having been wrongly directed, as from the nature of the disease itself.—All we have known of it, until of late, has been purely conjectural. Whether the new light thrown on the subject, by well directed anatomical research, may open a more distinct view of its nature, and lead to a more rational and fixed principle of practice, it is, as yet, impossible to say, for it remains to be proved: but the subject being most highly interesting, I shall enter more fully, than the practical plan of this work generally permits, into the detail of facts which seem to elucidate it.—Until the spinal cord had undergone examination after death, nothing in the hitherto known morbid anatomy of tetanus, or any other of those called spasmodic diseases, presented itself, that could lead to any satisfactory conclusion respecting the immediate cause. The attention of pathologists to the spinal marrow, as the seat of spasmodic disease, was, I believe, first excited by Dr. John Frank of Vienna, by the publication of two cases of tetanus with the dissection of the spine, as early as 1791. The investigation has been assiduously pursued by many able men since; but I shall confine myself, principally, to the observations of a few of our own countrymen, who, as far as I know, are the latest writers on the subject. Of these, Dr. Saunders of Edinburgh appears justly entitled to the merit of having first thrown light on it, by a course of dissections begun as far back as 1808. This gentleman says, that “instructed by the comparison of accumulated facts, I affirmed in my lectures, that in all those cases on record, where anatomists had examined bodies, and declared that nothing could be discovered to account for the fatal event, if they had opened the spine they would have been undeceived: that, in short, all of them were instances in which the seat of the disease was within the spinal canal.” (*Med. and Chirurg. Journ. and Review*, vol v.—The latest writers, I believe, are Dr. Thomson of Jamaica, and Dr. Abercrombie of Edinburgh.—Dr. James Thomson describes the morbid appearances in the bodies of three infants who died of trismus nascentium, and of one adult who died of tetanus. In the first “the cerebellum and parts adjoining bore distinct marks of increased vascular action. The spine was completely opened, and the membranes and nerves, as far as the first dorsal vertebræ were considerably reddened; below that the spine was not materially altered.” In the second,

“increased redness, bearing all the appearance of inflammation, along the cervical portion of the spine. The membranes and exit of the nerves were particularly coloured.” In the third, “considerable effusion of water, rather turbid, on the back part of the brain, and along the whole course of the spine, which was carefully examined; there was no unusual redness, but the blood-vessels were more than ordinarily large.” In the adult case, the remote cause having been dreadful laceration of the scalp, &c. “the portion of the spinal marrow that sends off the cervical nerves, was of a very different appearance from the lower part; the inflammation was quite distinct.”—Dr. Abercrombie has given a number of cases and dissections, in which the medulla oblongata and spinalis, and their investing membranes, proved to be the seat of disease, having been marked with all the appearances of active inflammation, of the consequences of it, as gelatinous or purulent matter, or serous effusion, or the thickening of the membranes. Dr. Abercrombie has made observations on a review of these cases and dissections, pretty similar to those which occurred to Dr. Saunders, the general result of which is, that the phenomena of the disease correspond with the morbid changes in the spinal marrow in a remarkable manner. “In the parts connected with the head and neck, we find distortion of the eyes, convulsive affections of the face, difficulty and loss of speech, loss of voice, contraction of the jaws resembling trismus, and difficulty of swallowing, which is said, in some cases, to have nearly resembled hydrophobia. In the viscera of the thorax, there have been observed, palpitation and oppression of the heart, painful sense of stricture in the region of the diaphragm, &c.—In the organs of the abdomen and pelvis, we find vomiting, suppression and incontinence of urine, pain of the bowels resembling colic, diarrhoea and tenesmus. In the muscular parts, convulsion and paralysis, resembling chorea, and tetanus. In the intellectual functions, loss of memory, delirium and coma.”—But he adds that “in the present state of our knowledge we are, by no means, prepared to say, that all these diseases proceed from the affection of the spinal cord, especially we observe remarkable diversities, and considerable want of uniformity in the symptoms. The laws which regulate these diversities remain to be investigated by future observations.” In the very interesting collection of cases made by Dr. Abercromby, there is one of hydrophobia particularly remarkable, as it bears on the subject immediately under consideration. I shall give some detail of it in the following section. (See Edin. Med. and Surg. Journ. for Nov. 1818). These facts, in conjunction with those published by many other respectable physicians,\* seem to point out the proximate cause of

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\* The physiologists most actively employed in the investigation of the morbid anatomy of the spinal marrow as the proximate cause of tetanus,

tetanus, and other reputed spasmodic diseases; but the practical application of them will prove how far they are useful.—They open a new source of information, however, on one of the most obscure subjects of pathology; and, although indefinite, as all pathological investigation of this nature must be, yet let us hope that they also tend to direct to a mode of treatment founded on more certain and obvious principles, than have hitherto existed in the circle of the curative means of tetanus.

Some ingenious and very able French pathologists have presented to us another source of enquiry into the proximate cause of tetanus, highly interesting and extremely curious. We are informed by them, that certain vegetable poisons, given internally to animals, and even to the human race, and galvanism raised to sufficient power, produce those phenomena which constitute the symptoms of tetanus, and operate those morbid changes in the brain and spinal marrow, which we have just seen, are observed to result from the fatal action of that disease in the human body.—M. Majendie by a series of experiments made with strychnine, (*nux vomica*) was, I believe the first French pathologist who demonstrated this singular fact. He has been followed by several others, particularly Messrs. Desporte, Raffeneau, Delile, Dupuy and Fouquier. What are we to infer from these experiments, and from the result of M. Fouquier's practice with *nux vomica* in paralytic patients, compared with the facts stated or referred to?—Is it that a peculiar irritant externally applied to, or internally generated in the system, and acting on the origin of the nerves, and through them on the circulating vessels produces tetanus? Should we view the cause of tetanus in this light, we should be disposed to consider the pathology of the disease as similar to all other inflammations, in principle, but differing in danger, from its seat being in the source of sensation and motion.—If the quantum of cause or of the irritant applied, whatever it may be, be such as to overwhelm the energy of the nervous system, by the intensity of inflammation produced, no means can prevent death—the disease then becomes acute tetanus;—if the quantum be less, so that its action on the brain and spinal marrow be less intense and rapid, means should be employed to remove the inflammation and consequently to save the patient; the disease may then be said to be subacute;—if the quantum be still less, the inflammation may spontaneously cease, or cease by a less vigorous application of the same means.—An attempt to investigate the theory of this pathology would be fruitless, since the mode of action of irritants in producing tetanus is hid from us, how does it happen, for instance, that a piece of broken glass, a rusty nail, a pin or needle, a thorn, or even the spine or bone of a fish, inflicting an almost im-

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are Frank, Harles, Brera, Rachetti, Esquirol, Saunders, Copeland, Abercromby, Reid, Thomson, Bergamaschi. *Med. and physical Jour. of London*, vol 41, &c.

perceptible wound at the extremity of a finger or toe; or the alternation of heat and cold, do so peculiarly affect the brain and spinal marrow with inflammation as to give rise to all the phenomena of tetanus? I feel it impossible to answer the question in a satisfactory manner. Therefore, instead of wandering in a labyrinth, out of which we have no clew to guide us, I shall proceed to consider tetanus in a practical view.\*

Tetanus has been divided into species, according to the nature of the remote cause, and thence called idiopathic or symptomatic, or more properly traumatic; or according the form, and thence called trismus, emprostothonos, opisthonthonos, or tetanus. These divisions, I imagine, are of no practical use, since they are no more than modifications of one and the same disease, the nature of which may be now believed, on good grounds, to be inflammatory, of a pecu-

\* Giuseppe Bargamaschi gives the following theory of this obscure pathological point —“ Dalle qui esposte considerazioni risulta, che il tetano di qualunque forma ei siasi da ferita procede, consiste in una neurostenia, che dalle parte ferita si propaga per le estremità nervose alla midolla spinale, ed al cervello, o viceversa, da questo alla midolla spinale, ai principali nervi, e quin di alle parté, che servono specialmente alla locomozione.” He sums up his curative plan in the following manner. “ Il male dee invece (instead of the stimulating treatment) vincersi coi salassi universali e locali, colle fredde immersione, cogli antiflogistici, coi cataplasmi emollienti, col tagliare la gingiva al fanciullo preso dal trismo per difficile dentizione, on de sbucci il dente, col recidere nella località le briglie nerveo-muscolari, e non col sovrapporvi l'oppio, come indistintamente fecero con Michaelis molti medici, &c.”—Of mercury as a principal remedy in tetanus, he says, “ il biasimo, e le lodi a lui prodigalizzate sono però un forte argomento a credere, che non sempre a dovere venne applicato, che anzi non si determinò il vero tempo di amministrarlo.” (Osservazioni medico-pratiche sul Tetano.—Estratto dal Fascicolo XXIX, p. 177, del Giornale di medicina pratica del Sig. Cons. e Profess. Cav V. L. Brera—a most interesting work, in which, by the adaptation of means to the end, he has proved the utility, to say the least of it, of the depletory mode of treatment of tetanus.

The result of the foregoing considerations is, that tetanus, proceeding from wounds, of whatever form it may be, consists in a neurostenia, or inflammatory affection of the nerves, extending itself from the wounded part by the nervous extremities, to the spinal marrow and the brain, or viceversa, from the brain to the spinal marrow and principal nerves, and from thence to the parts which are subservient to locomotion.—Instead of which, the stimulating plan, the malady should be overcome by general and local bleedings, by cold immersions, antiphlogistics, softening cataplasms, by lancing the gums of children afflicted with difficult dentition, and by the application of opium, a practice too common.—The blame and the praise, which have been lavished on mercury, are, however, powerful arguments for believing, that it has not always been properly employed, and also that the proper time for administering it, has not been determined.



liar diathesis and peculiar site ; and it may, therefore, be more consistent with this view of it, to consider the disease, as always essentially the same, whatever the early form of it may be, and always terminating in a general spasm of the whole frame, properly called tetanus. I would propose, in conformity with this view, to divide the disease into species, according to the intensity of the inflammation, and to denominate them acute, subacute, and chronic. The acute is almost always, if not always, fatal, running its course in a very short space of time, sometimes, only a few hours, and never more than three days, and producing sudden disorganization of the investing membrane of the spinal cord, and more especially of the medulla oblongata, to which this species seems peculiarly confined. Saunders, therefore, seems justly to have observed, that “ there is “ *one part*, till which fail, death never occurs, that is, the medulla “ oblongata. No matter where the disease appears to commence, “ whether in the extremities, or any intermediate situation ; whether “ in the brain or spinal marrow ; the nearer to this part, the greater “ the danger.” The subacute and chronic seem to depend on a less active inflammation ; and, probably, adopting the sentiments of Mr. Saunders, to be confined to the medulla spinalis, and increasing in fatal tendency, according to its proximity to the medulla oblongata. The subacute and chronic are, on this account, less dangerous than the acute, and may, by the use of active depletory means, during their earlier stages, be removed ; or in later periods, when, in consequence of the inflammation, a thickening, or a tendency only to disorganization of the investing membrane exists, may be cured by exciting the absorbents to greater activity by stimulants. The chronic, indeed, may, sometimes, spontaneously cease by natural efforts. The success attending modes of treatment, founded on no fixed pathological principle, and varying according to the unsettled opinions entertained by practitioners, can alone be accounted for in this way.

Taking this as the actual state of things in the three species of tetanus, a prognostic may be formed with some degree of certainty—a cure in the acute may, then, appear hopeless. The circumstances are, undoubtedly, desperate ; but what is desperate should not be deemed lost ; and the attempt must not be relinquished. The great desideratum, is the difficulty in obtaining information of the precursory or monitory symptoms before the acute inflammation can have time to establish itself. Assuredly it is the want of this information, as well as of the knowledge of the nature of the proximate or immediate cause of tetanus, which have hitherto rendered the disease so tremendously fatal. Let us hope that the new light thrown on it, may enable us to act with more certainty, and more consistency in the treatment of it.

The best description of tetanus, is, I believe, that given by Dr. Chalmers, of South Carolina, to Dr. John Fothergill, and published in the first volume of *Medical Observations and Inquiries of London*, in the year 1754. Every practitioner at all acquainted with

the diseases of hot climates, must have seen the disease; at any rate, its symptoms, when the form is completely established, are so strongly marked, that it is impossible to mistake them. It is very possible, however, to mistake the premonitory symptoms, or what Dr. Chalmers calls the first stage, unless the remote cause has been obvious wounds or injuries received, when suspicion cannot fail to arise of the nature of the premonitory symptoms. These I shall, therefore, copy from Dr. Chalmers's paper, because it is impossible to state them more correctly, and because they are precisely such as I have myself often witnessed within the tropics. "The opisthotonos," says he, "contrary to what Bontius asserts, often comes on gradually, and by slighter approaches, the patient complaining at first rather of an uneasy stiffness in the back of the neck, and about the shoulders, than of any acute pain, with some degree of a general lassitude. These increase, and become so troublesome when he attempts to turn his head, or to bend it forward, as to oblige him to walk very erect, for he can, by no means, look downward, nor to either side, without turning his whole body. He cannot open his jaws without pain, and has some difficulty in swallowing, which discourages him from attempting to eat. *At times he feels a sudden and painful traction under the cartilago ensiformis, which strikes through to the back, and instantly increases the rigidity about the neck and shoulders, draws the head backward a little, and shuts the jaws closer.* The pain under the sternum returns more frequently, and with greater violence; and the other contractions become so strong, that the head, from this time, continues much retracted, and he now refuses nourishment, as swallowing is attended with great pain, and occasions a return of the spasm, which extends along the spine quite to the lower extremities, so that they will no longer support him, and he is under the necessity of going to bed." (p. 91.)

When these symptoms are accompanied by pain at the root of the tongue, and by a peculiar cast of the features, which an American physician calls "false smiles," and constipated bowels, no hesitation should exist in declaring them premonitory of tetanus; and the certainty of their being so, will be confirmed, if, on enquiry, it is found the patient has received, any time within the ninth day before the accession of the symptoms, any of those injuries mentioned above, however apparently trifling they may be. Indeed, tetanus is so common an occurrence from these injuries, among the negroes more especially, that the managers of plantations, if they are attentive to the discharge of their duty, endeavour to prevent it, by first giving a full aperient, and afterwards a grain or two of opium, three or four times in the day; and dilate, and then dress the wound with lint soaked in equal parts of laudanum and spirit of turpentine, daily, until the dangerous period, the ninth day, is past. I have particularly distinguished the passage in italics, in the foregoing extract, because it contains the true pathognomonic symptoms of approaching or forming tetanus. It cannot be mistaken for the

pain in hepatalgia calculosa, because the latter is not marked by rigidity about the neck and shoulders, &c. or by difficulty of swallowing and pain at the root of the tongue, &c. as incipient tetanus is. When these symptoms, therefore, are observed, and if suspicion from any previous accident exists, not a moment should be lost in putting in force the following treatment.

Let a brisk purge of calomel and jalap, with a minute quantity of tartarized antimony be given, immediately, and when it has operated, or even before it has taken effect, or even before it has been administered, to avoid unnecessary delay, let the whole length of the spine, from the nape of the neck to the sacrum, be cupped. After these operations have taken place, let the patient be placed in a hot bath for about twenty minutes, and whilst in it, let the scarifications already made on the spine, be rubbed with a flesh brush or the hand, in order that they may bleed freely.—When all this has been effected, let a sufficient number of men be employed to rub in the strongest mercurial ointment, incessantly and ad libitum, until ptyalism takes place. The men should be so employed as to relieve each other at the expiration of every hour. If while these measures are proceeding, the symptoms of tetanus advance and develope themselves more, let it be considered only as a cause for more energetic application of the means; and, in addition, if they become more urgent, let strong blisters be applied to the different parts of the spine, and more especially to the sacrum. These are the means which reason and experience suggest as the most suitable to the nature of the disease, and consequently the most likely to prove successful in the treatment of it, in the early stage, or within forty-eight hours from the developement of the symptoms, or seventy-two from the accession of the premonitory signs. The case is desperate—assiduity of exertion should be proportionally urgent: if it is, a chance of life is given under Providence;—if it is not, death must follow. Those unacquainted with what may be done by the introduction of mercury into the system, so as to excite ptyalism within the time I have mentioned, may start objections to this plan of treatment, founded on the supposed impossibility of effecting it. That it may be done, however, there is ample proof, both in the mercurial treatment of yellow, remittent, and malignant pestilential fever, and in that of tetanus itself. I shall mention one instance only, communicated to me about two years ago, because it is precisely in point, and because it occurred to a physician in Jamaica, of twenty-four years experience in extensive practice in that island. This gentleman informed me, that out of a great number of cases of tetanus, in his own practice, only three recovered. He attributed this excessive mortality to the lateness of the period or stage of the disease, at which he was applied to, when all the usual remedies, particularly opium, used to an incredible extent, failed. In the three cases in which the patients recovered, he attributed his success to the early notice given him. In them the notice was given forty-eight hours from the commencement of the disease. He

ordered six stout negro men to be employed exclusively in rubbing in the strongest mercurial ointment on every part of the trunk and limbs, without attending to the quantity. Two of these men were employed at a time, and relieved by two others, when fatigued; and they were urged to exertion by the assurance of reward. Ptyalism took place by this management, in about thirty hours. Amendment was the immediate consequence of its appearance; and when established, complete recovery. This mode of proceeding applies to the acute and sub-acute tetanus. In the first, indeed, it may be doubtful whether any mode of treatment can be successful. In the second, the mode I have described, assiduously employed, may, under Providence, with certainty cure, if early enough commenced. For I apprehend, want of success has been, in most cases, more owing, in the first place, as I have already observed, to the late exhibition of mercury, or in the second, to want of sufficient energy in the introduction of it into the system. With both these advantages, however, if the local bleeding, the warm bath, and the counter-irritation are not employed, we should not be disappointed, if this excellent medicine should fail of producing its salutary effects. Let me recal to the mind of the reader, what I have more than once before endeavoured to inculcate, that, in all topical inflammations, in which mercury may be considered as specific, mercurial ptyalism cannot be established, without that preparation of the system, by bleeding and purging in one case, and tonics and stimulants in another, which produces a just balance of its powers. The same, doubtless, must be the fact in inflammation of the spinal cord, immediately causing the phenomena of tetanus.

It is the third species of tetanus, the chronic, in which opium, with or without the cold bath, brandy, wine, bark, petroleum, &c. are useful. When they are employed in the acute and sub-acute, it is not possible they can have beneficial effect, because they are totally inconsistent with the nature of these species. It may be useful to offer some observations on the more important of these remedies separately. Before I proceed to some notice of them, however, it may be proper to remark, that the immediate cause of the chronic, being the same as that of the acute and sub-acute tetanus, only differing in degree of intensity, and of proximity, perhaps, to the medulla oblongata, so may the same mode of treatment be adopted in it, taking care to proportion the administration of the means, to the lessened exigency of the case. This precaution has not been often observed, and a disease, in itself tractable, has been rendered fatal, by mismanagement, or rather by the premature use of stimulants. Under this view of the disease, therefore, it will occur to the practitioner, that some depletory means, in the way of preparation, must be necessary, before he decides on the employment of stimulants, such as purging and cupping the spine more especially.—General bleeding seems in no case of this species to be admissible.

*Opium.*—A medical gentleman of Grenada, of twenty years residence, and the greater part of that time, in extensive practice, after trying, in a great many cases of this terrible disease, the usual means of cure, particularly opium, alone or combined with camphor, ineffectually; at last decided on the following plan. The first case was a negro, who, in consequence of a small wound in the foot, was seized with the symptoms of tetanus. He gave him two scruples of solid opium in the twenty-four hours. He ordered, at the same time, two pailsfull of the coldest water that could be procured, to be thrown from a height on his head and shoulders every two hours; and after wiping the body dry, he directed that the neck, shoulders, and spine, should be well embrocated with spirit of turpentine; and then the whole body, wrapped up in a blanket, to be laid near a pretty strong fire. In this manner he proceeded for several days, and at length, had the satisfaction to see his patient perfectly recovered. He has assured me that he has often since been successful, by the same means. My own experience has been, by no means, so favourable to the practice. My informant from Jamaica already quoted, had the misfortune to lose all his tetanic patients, to whom opium was given as the principal remedy. But on the other hand, Dr. Morrison, who practised in Demerary eight years, thus speaks of the advantages he experienced from opium. “This substance, either in the solid form, or in that of tincture, will be found, of all others, the most valuable in this horrible disease. I have not met with more than a dozen instances where I could fairly attribute the cure to this remedy alone; and I have met with no instance of recovery, in which I did not conceive that it bore a very principal part. It must be given, however, in much larger doses than usually practised. A practitioner, for whose acuteness and discernment I have great respect, gave to an old man, in my presence, who was in an incipient stage of the disease, about half an ounce of tincture of opium, in four ounces of rum, as a first dose, directing at the same time, the spirit to be frequently repeated, and the man got perfectly over the complaint in a few days.” (Treatise on Tetanus, p. 56—59.) I may here observe that there are cases on record which seem to prove that if the intensity of inflammation is lessened in the earliest possible period of the disease, by bleeding and purging, then, the spasm is more readily and easily subdued by opium. Those which immediately occur to me, are two in the first volume of Medical Observations and Enquiries of London, in which recovery seems to have resulted from this mode of treatment. There are others, however, equally well authenticated, in which from four to five ounces of tincture of opium have been given, without effect, but without any preceding depletion.

*Brandy and Rum.*—I have never made free use of ardent spirits in tetanus; but the extraordinary benefit I have seen produced by brandy in general torpid states of the system, has given me reason

to believe that in large quantity, it may be productive of similar benefit in chronic tetanus. A very singular case of this kind occurred to me, in Demerary, in the year 1800. A gentleman of the name of Postlethwaite, had, for some weeks, laboured under an unaccountable debility, with frequent syncope, extreme depression of mind, and a disposition in his lower extremities to paralysis. This state had gradually arrived to a degree which seemed irrecoverable, without being ushered in, or attended in its course by any marked symptom on which to found a probable plan of treatment. Under the idea that local visceral derangement might have been the cause, although not indicated by any prominent feature, mercury had been given without relief; purgatives were given with the same view, but were equally inefficacious; bark and wine had been resorted to without greater advantage. In short, the patient's state seemed as hopeless as it was inexplicable. Dr. Orde, the attending physician, advised that I should be consulted, although not then in practice. I found the patient in the undefined, and apparently undefinable state I have described. I considered the disease, however brought on, as one demanding the aid of the most powerful stimuli. I advised, therefore, the use of Madeira wine in large quantity, at least two bottles in the day. At the end of two days I saw him again, and found that, although he had exceeded the quantity of wine mentioned, no sensible effect followed. Equal parts of madeira and brandy were ordered to be given with the same freedom. At the end of two days more, although two bottles of brandy and two of wine had been taken, the remedy was still inert. Brandy was, now, given alone. During ten days this plan was pursued, adding daily a pint to the quantity ordered the preceding day; so that at the end of that time more than six gallons of unmixed genuine French brandy had been taken. At this time great amendment had taken place. The patient's mind became cheerful, no syncope, the limbs stronger, able to walk round the room without assistance, appetite improved, digestion good. At the end of a month, the quantity of brandy being daily rapidly diminished, he came to my house in his carriage, a distance of ten miles. I have been thus particular in stating this extraordinary case, to shew how much the system, under certain circumstances of disease, can bear of this powerful stimulus, with the greatest advantage; and how applicable it may be to certain stages of chronic tetanus. There are indeed cases of tetanus on record, in which brandy has been employed with great success. The latest I am aware of, are three very interesting cases given by Mr. Grimstone, in the 11th vol. of the Edinburgh Medical and Surgical Journal, in which large quantities of brandy with opium were administered successfully; in one of them more than thirty pints were given. The ingenious writer observes, "whether may we attribute the success of the cases to the stimulus kept up by the spirits, or to the anti-spasmodic effects of the opium; I am at a loss to know. I should rather

“conclude it was the combined action of both; and, although “deserving of further trial, it would be dangerous to depend on the “spirits alone” (p. 428.) Dr. Morrison exhibited opium with large quantities of rum;—so that we may conclude with Mr. Grimstone, that it was the combined action of both that produced the cure. The case recorded by my excellent, learned, and experienced friend, Dr. Hossak, of New York, in which the cure was effected by Madeira wine, in very large quantity, seems confirmative of the opinion that the stimulus of wine and ardent spirits is alone, or principally efficient; and certainly, if a due comparison of the result of cases treated with opium and spirits is made, it will appear that the balance is in favour of the latter.

*Bark and Wine.*—The late justly celebrated Dr. Rush, of Philadelphia, is the only physician, I believe, who experienced success, in the treatment of tetanus, by the employment of these; but the authority is most respectable. I find a case in my Grenada case book, which, so far as it goes, gives support to this practice. It occurred in a corps of North American black pioneers, and Mr. Bulkeley, the surgeon of the corps, furnished me with a state of it, the outlines of which are the following. “William Hamilton, a “North American negro, aged 25, after sleeping on the grass, in a “cool current of air, was seized with locked jaw, and contraction “of the muscles of the loins. Three days after he was brought to “the hospital, October 8, 1788.—Ordered as follows:—Sol. sal. “cathart. amar. coch. ij. mag. 2d q. q. hora donec purgat. h. vesp. “pulv. jacob. gr. x. cum tinct. opii, gtt. xxx.—9th, pulv. cort. “peruv. ʒi. vin. chalybeat. gtt. xxx. ex aquæ ʒij. quâque horâ— “11th, pergat. et sumat. vin. rubr. oport. per se ad libitum in die. “15th, contraction of the muscles of the jaws and loins much di- “minished. Pergat—19th, perfect motion restored to the jaws, and “affection of the loins entirely gone.—21st, began to walk tolera- “bly well.—24th, complains of only a trifling weakness of his “knees, otherwise well. Discharged. About fourteen bottles of “port wine, and five pounds of bark were taken.”

*Petroleum Barbadosense.*—This is, most certainly, a valuable remedy in chronic tetanus. Of six cases in which it was used alone, only preceding it with purgatives, five were restored to health.—The case which terminated fatally was one of sub-acute tetanus. The mode in which it was administered was this, a teaspoonful was given every two or three hours, internally, whilst every joint, and the whole length of the spine was annointed with it, frequently in the day, near a pretty strong fire. The immediate sensible effect was a profuse diaphoresis, followed sometime after by relaxation of the muscles. Should this remedy be resorted to, it should be preceded by topical bleeding as well as purging.

*Counter-irritation by Nux Vomica and other Agents in Tetanus,  
employed as means of Cure.*

How far diseases, depending on irritants applied, indirectly, to the origin of the nerves, and producing those appearances of inflammation in the brain and spinal marrow, observed to result from them, and which are supposed, on good grounds, to constitute the immediate cause of tetanus, &c. may be removed by counter-irritation, excited by the safe internal and external use of nux vomica, for instance, I do not know from my own experience; but there is not only considerable probability that they may, but facts are given, which, if we can depend on them, go far to establish the certainty that they have been, removed by it. Various trials and experiments have been made by French physicians, of distinguished ability and name to ascertain—1st, the practicability, and 2dly, the utility of introducing into the system the powder, tincture, or alkaline basis, called strychnine, of nux vomica, as a means of cure of tetanus and paralysis. The result appears, on the whole, favourable to the judicious use of it, externally applied, after detaching the cuticle by a blister, or internally by injection into the rectum. The following extract from Dr. F. M. Coze's "Remarques sur la Nux Vomique, considérée comme Medicament," contains a kind of summary of the experience of the French physicians on the subject.—"As according to the experiments of Messrs. Pelletier and Caventore, the strychnine is the only part of nux vomica which possesses any active property; and as all the other parts of this vegetable are inert, it is possible perhaps to employ this new alkali alone, more especially in the external application of it; and this is the more desirable, because it acts with energy in a dose of a quarter, a third, or even half a grain, taken internally, as has been proved by N. Magendie in his essay on this subject—at any rate, if used in the way of injection, the same minute quantities in solution, could not, I think, produce any danger."—"The tetanus produced by nux vomica, is not precisely like common sporadic tetanus. In the one, the spasms and contractions of the muscles return in fits, which we can re-produce or excite at pleasure, whilst in the other, the contractions are permanent, and obey no external power. Might not this difference direct us to modify sporadic tetanus, by uniting to it, if I may so speak, artificial tetanus? This idea, however whimsical it may appear at first sight, merits consideration. For it is probable that nux vomica, administered by the rectum, or applied to the vertebral column, by means of blistering, or taken internally, may have sufficient power to change the continual contractions of the one, into the contractions by fits of the other, in such manner as to diminish the violence of the sporadic, so as to have no more than the attacks produced by nux vomica, which may be pushed to a high degree, without occasioning the death of the patient. We



“ should not, indeed, run much risk in attempting this in a tetanic patient, who is almost always considered as devoted to certain death. It will be necessary, however, to give stronger doses of the medicine in tetanus than in paralysis, because we know that medicines cannot act powerfully whilst the system is under the influence of sporadic tetanus.”\* I have subjoined in the note a very interesting case, published by Dr. Coze in the same memoir, in which the most safe method of administering this active and dangerous substance is stated. With the precautions recommended by M. Husson, there can be no doubt the nux vomica may be administered safely and successfully, but in the hands of the unexperienced, or of the rash, it is most highly dangerous.†

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\* Comme, d'après les expériences de M. M. Pelletier et Caventore, il n'y a dans la noix vomique que la seule strychnine qui jouisse de propriétés actives, et que tous les autres principes constituans de ce végétal sont inertes, on pourrait peut-être employer ce nouveau alcali tout seul (surtout dans les applications extérieures,) s'il était possible de se le procurer avec facilité; et d'autant plus qu'il agit déjà avec énergie à la dose d'un quart de grain pris intérieurement, comme un essai de M. Magendie le démontre. Pour s'assurer de la susceptibilité du malade, ne serait-il pas prudent d'en commencer l'usage à la dose d'un sixième ou d'un cinquième de grain pris par la bouche? mais par la voie des injections, une solution d'un quart ou d'un tiers, ou même d'un demi-grain ne pourrait pas, ce me semble, entraîner d'accidens.”—“ Le tetanos, provoqué par la noix vomique, n'est pas en tout semblable au tetanos ordinaire: dans l'un, les secousses et les contractions des muscles, reviennent par accès, que l'on peut reproduire à volonté; tandis que dans l'autre, les contractions sont permanentes et n'obeissent à aucune puissance extérieure. Cette différence ne pourrait-elle pas nous conduire à modifier le tetanos sporadique, en y joignant, si on peut parler ainsi, le tetanos artificiel? Cette idée, toute bizarre qu'elle pourrait paraître au premier abord, mérite cependant, d'être prise en considération. Peut-être la noix vomique, donnée par le rectum, ou appliquée sur la colonne vertébrale au moyen de vésicatoire, ou enfin prise par la bouche, aurait-elle assez de force pour changer les contractions continuelles en contractions par accès pour par attaques, de manière à diminuer la gravité de la première pour n'avoir plus que les attaques de la noix vomique, qui peuvent être portées à un haut degré, comme on l'a vu ci-dessus, sans causer la mort des malades. Cependant il n'y aurait peut-être pas de danger à courir en essayant ce moyen sur un tetanique, qui est presque toujours voué à une mort certaine. On aurait soin toutefois de donner des doses plus fortes que dans le cas de paralysie, parce que l'on sait que les médicamens agissent peu durant le tetanos.”

† The case referred to—“ Actuellement ce medecin distingué (M. Husson) trait à l'Hotel-Dieu, un homme âgé de quarante neuf ans, d'une bonne constitution et assez replet, qui est devenu parlytique des membres inférieurs et supérieurs, sans qu'il puisse en accuser la cause principale. Cependant il dit être tombé dans une rue, à la suite d'une indigestion, et c'est à dater de cette époque qu'il a senti ses membres

Counter-irritation, we shall presently see, was successfully put in practice by other means, indeed, nearly a hundred years ago, within the tropics, in tetanus. I shall only further observe on the administration of the nux vomica, as a kind of corroboration of the facts related by Dr. Coze, and other French physicians, that I have myself witnessed several interesting experiments, made at my request, by my learned and ingenious friend, Dr. P. Provost Moulton, of Geneva, formerly a pupil of M. Magendie of Paris, with the strychnine, and other irritating poisons, particularly the fluoric acid, which it appears is more effectual than any other, on rabbits, dogs, cats, ducks, &c. in which the phenomena of tetanus, par accès, or paroxysms, were completely developed; and, in which we discovered, after death, that the organs, sensibly affected, were the brain and spinal marrow, in both which there were the most marked inflammation of the investing membranes, and turgescence of the blood vessels. In one instance only, did we try the effect of depletion in preventing death. A small young lively rabbit, in

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s'affaiblir. Six semaines après, il entra à l'hôpital, le 12 Août 1819; alors il marchait avec la plus grande difficulté, ses membres étaient insensibles, l'estomac paresseux ne pouvait presque rien digérer. On commença par administrer cinq à six gouttes de teinture alcoolique dans un lavement. Le malade en ressentit bientôt l'action. D'abord tous les jours, et ensuite tous les deux jours, on donna la même quantité; des les premières injections, il ressentit des picotemens et des fourmillemens dans les membres, et même de légères secousses dont l'action se prolongea plus d'un jour. Les doses suivantes causèrent des phénomènes plus marqués; le malade éprouva des soubresauts dans les tendons, qu'il comparait aux touches d'un clavecin mis en mouvement. Cette sensation dura un ou deux jours, et quelquefois plus, ce qui détermina le médecin à ne donner les lavemens que tous les deux ou trois jours; à peine le malade en eut-il pris huit qu'il sentit renaître l'énergie de ses membres; déjà leur sensibilité était en partie revenue; peu à peu les bras redevinrent libres, il put s'habiller et écrire vers le quinzième ou le dix-huitième jour. A cette époque, il pouvait marcher à l'aide d'un bâton, et après la troisième semaine ses bras étaient forts et tout-à-fait libres, ses jambes soutenaient parfaitement son corps et le transportaient partout sans le secours d'aucun appui. Maintenant (le trente-quatrième jour) cet homme est parfaitement bien. Il marche avec facilité et assurance; il n'éprouve aucune douleur, pas même pendant l'action du médicament; ce qui prouve que les muscles reprennent leur état de santé, puisque la noix vomique, pris à dose modérée (six à huit gouttes en lavement) ne cause plus la moindre souffrance aux muscles qui jadis étaient paralysés. Les douleurs qui se faisaient d'abord sentir avec force dans ces muscles, ont diminué à mesure que la sensibilité est revenue et que la paralysie a perdu de son intensité."

"Tous les jours de l'injection du remède, le malade prenait un lavement purgatif afin d'éviter la constipation, et un autre lavement émollient pour calmer l'intestin. Il est essentiel de ne mettre dans le lavement purgatif que des substances végétales." *Journal Universel des Sciences Médicales*, for November, 1819.

which the phenomena of tetanus, *par accés*, were fully produced by the *nux vomica*, we endeavoured to check their progress by taking rather more than a teaspoonful of blood from the jugular vein. At half-past ten A. M. the poison was injected into the rectum; at half past eleven several attacks of tetanus took place. The animal was then bled, at half-past twelve the attacks entirely ceased, and the animal was able to stand on its feet. In the evening it was perfectly well. Another rabbit, equally young and lively, took the *nux vomica* at the same time, but was not bled. It died in violent tetanic paroxysms.

These considerations furnish encouragement to proceed in the enquiry, how far tetanus and other repeated spasmodic diseases derive their immediate origin from inflammation of the investing membranes of the brain, and medulla oblongata and spinalis; and how far, consequently, depletory means, such as local bleeding and purging, mercurial ptyalism, and counter-irritation, at the earliest possible period of the disease, may be effectual in curing it. There are, certainly, many facts, direct and collateral, which go far to prove that such a mode of treatment is the most rational, and may I add, the most successful, hitherto suggested. The extreme importance of the subject warrants some further detail.

If we may rely on the authority of some respectable French physicians, who practised within the tropics, and there appears no reason why we should not, depletory and counter-irritating means have been employed nearly a hundred years ago most successfully. M. Pouppé Desportes, who practised at St. Domingo from 1732 to 1747, thus writes on the treatment of “*spasme*,” tetanus—“other practitioners scarify deeply, especially in *opisthotonos*, from the nape of the neck to the sacrum, sometimes with an instrument made red hot, and sometimes with one not heated. This method is practised by a surgeon of great experience, who has assured me that he has cured a great many cases of tetanus by it—and even one man who was seized with the disease in consequence of amputation. The Spanish surgeons bleed in the upper and lower extremities, when the patient is plethoric—and afterwards make deep incisions along the whole spine, from the nape of the neck even to the thighs; and then rub the incised parts with the heated juice of the species of aloe called *Karratas* or *Penguin*, (*Bromelia Penguin*).—If the incisions cicatrize, they open them again.”—Dr. Philip Fermin, who practised in Surinam, during several years, anterior to 1764, when he wrote, gives a case of tetanus, called by the Dutch of Surinam, *Klem*, in which he was successful by abstracting blood from the arm almost immediately after the commencement of the disease, by the exhibition of strong purgative medicines, and by the application of five large blisters, one extending from the nape of the neck to the sacrum, two to the thighs, and two to the legs. At the end of ten hours, the patient began to speak, which he could not before, and fell into profuse perspiration. After this he kept up a discharge from the bowels, and completed

the cure by nourishing diet. He subjoins a very singular method of cure practised by a negro woman, which, as he witnessed it himself, as it is unique, and as it bears so directly on the view we now have of the pathology of tetanus, I shall give in his own words.—  
 “ She began by scarifying the patient with an old blunt razor, and  
 “ after making about fifty incisions, she placed over them small  
 “ gourds or calabasses, by way of cupping glasses, to draw an  
 “ abundant quantity of blood. After this operation, which lasted  
 “ a full hour, she washed the patient from head to foot, with a very  
 “ hot decoction of herbs of the country. She then covered him,  
 “ and laid him before a very strong fire, rubbing him at the same  
 “ time with palm oil. The patient was then allowed to rest till the  
 “ following morning, when the same operations were re-commenced,  
 “ to which were now joined purgative injections.” The patient recovered.\*

Of collateral facts I shall mention one only, which occurred in my practice at Clifton, in 1811—A case of hemiplegia. A delicate married lady, aged 25, was seized with hemiplegia, consequent upon her fourth accouchement. I was called to see her with Mr. Baynton, who was the accoucheur—the cause unknown. Depletory practice had been adopted for a few days by Mr. Baynton, before I saw the patient; and the point in doubt, considering the singular circumstances of the case, was, how far bleeding might be further carried, so as to secure a successful result. The patient, al-

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\* D'autres scarifient profondement, surtout dans le spasme que attaque les parties posterieures, depuis la nuque du cou jusqu'à l'os sacrum, tantôt avec un instrument presque rouge, tantôt avec un qui n'est pas echauffé c'est la methode d'un chirurgien fort experimenté, qui inassure en avoir gueri un grande nombre, et même un à qu'il avoit coupé la cuisse. Les Espagnols saignent aux quatre membres, lorsqu'il y a une grande plethore. On fait le lendemain des incisions depuis la nuque du cou jusqu' au gras des jambes, et on frotte de deux en deux heures, nuit et jour, la partie incisée avec du karatas, cuit sous les cendres chaudes, qu'on pile, et dont on exprime le suc. Si les incisions se cicatrisent, il faut les renouveler." *Malad. de St. Domingue, Tom. ii, p. 162.*)

Elle commençoit par scarifier le malade avec un vieux rasoir tout émoussé; et après avoir fait une cinquantaine de scarifications, elle appliquoit dessus de petites calabasses, en forme de ventouses pour tirer une abondante quantité de sang. Après cette operation qui duroit au moins une bonne heure, elle lavoit son malade bien chaudement avec une decoction des plantes du país, depuis les pieds jusqu'à la tête, puis elle le couvroit, et le mettoit auprès d'un très grand feu, le frottant ensuite avec de l'huile de dattes. Le malade demouroit en repos jusqu'au lendemain; la negresse recommençoit alors tout ce qu'elle avoit fait la veille, et y joignoit des lavements," &c. (*Malad. de Surinam, p. 93—97.*) The same mode of treatment was practised by Aretæus, probably 1800 years ago.—Bergamaschi, who mentions this, recommends in addition, leeches to the hæmorrhoidal veins.—(*Observations, p. 35.*)

though very delicate and of a slender frame, not only bore the loss of three pounds of blood from the arm, but of a considerable quantity by leeches and cupping. This practice was adopted on account of an evident and violent cerebral compression, proceeding, it was conceived, from a determination of blood to the head; but how occasioned, we knew not, for there had been no suppression of the uterine discharges. The whole of the left side, including the upper and lower extremities, had lost all power of motion, and all sensibility; and on the fourth day after I saw her, the bladder and rectum were affected with paralysis. The depletion I have mentioned, joined to plentiful purging, evidently relieved the head, but the other symptoms remained unchanged. She now seemed so weak, indeed, that further bleeding did not appear justifiable. I therefore advised the application of a large blister to the sacrum, as low as possible. No effect resulting from this, on the following day a fresh blister was applied to the same surface. Slight strangury was the only sensible effect of both these. On the sixth day of my attendance, a third blister was applied to the same surface. The effect of this was very remarkable; for she could move the hand and foot of the paralyzed side.—On the eighth day the use of the hand and foot was still more perfect, insomuch that she could raise her hand to her mouth, and was conscious to the call to make urine and to stool. From this time she daily became better; and at the end of a month was able to go out in a wheel-chair. A more minute detail of the circumstances of this very interesting case does not seem necessary to establish the probability, if not the certainty, that the hemiplegia owed its origin, I mean as to its proximate, cause to inflammation, and most probably of the investing membrane of the spinal marrow. In this respect it proves, as far as it goes, the correctness of the new pathology of supposed or reputed spasmodic diseases by the result of practice; in the cases of Dr. Thomson and Dr. Armstrong, it has been proved by the result of dissection;—or in other words, the pathological principle is practically applied.—Giuseppe Bergamaschi of Padua, in his “*Osservazione sul Tetano*, lately published at Padua, gives the case of a woman almost precisely similar in cause, symptoms, and cure.—(p. 27).

### *Hydrophobia.*

I shall here take occasion to offer some remarks on a disease which has no small affinity to tetanus, and which the investigation of that has opened a view of, hitherto little attended to, perhaps, indeed, little thought of. Hydrophobia, as a tropical disease, is, by no means, unfrequent, and almost always fatal. In India, particularly Bengal, it appears to be very common indeed, if we may draw that inference from the number of popular remedies for, and from the accounts we have of the disease in that country, from me-

dical writers. Thus, Dr. Shoolbred, who possessed the most favourable opportunities of knowing it, informs us that in eighteen years, he had eighteen cases of the disease under his care. In the West Indies, instances of dog-madness occur almost every year. In both countries the termination seems to have been pretty uniformly fatal. It is, therefore, doubtless of high importance to take a view of the disease as it is now presented to us, divested in some degree of the deep obscurity in which it has been enveloped.

Hydrophobia has generally been believed to be an inflammatory disease, but on vague or undefined grounds;—and, consequently, the practice in the treatment of it has been discordant with this belief; or, more properly speaking, has been regulated by no fixed pathological principle. The similarity, in this respect, between hydrophobia and tetanus is very remarkable. But the similarity holds in many other points. Thus hydrophobia, as well as tetanus, may be a symptom of another disease, as hysteria, mania, vermes, dentition, &c. both may be caused by bites of animals, and even of men, particularly circumstanced at the time. (See Dr. Lazzaretto's Case of Tetanus. *Edin. Med. and Surg. Journ.* Oct. 1817.) We have, indeed, no instance clearly ascertained, I believe, of the alternation of heat and cold causing hydrophobia; but it has been believed on good grounds, that spontaneous hydrophobia may exist; that is, the disease may exist, without our possessing a distinct knowledge of its cause. The point, however, in which the most close affinity appears, is the pathology of both diseases. This is seen in the dissection of the spine in a case of hydrophobia, published by Mr. Webster, and quoted by Dr. Abercromby. (See *Med. Chirurg. Journ. and Review* for Oct. 1817.) The case was well marked, violent, and speedily fatal. The membranes of the brain were found highly vascular, with considerable serous effusion: but the greatest marks of disease were in the coverings of the pons varolii, medulla oblongata, and the upper part of the spinal marrow. These parts are said to have formed one crust of intense inflammation. On the spinal marrow this crust was more intense than on any of the other parts. This is, I believe, the only instance in which the morbid anatomy of the spinal cord has been investigated in hydrophobia.—Doubtless, further demonstration of the fact is required to establish the opinion which results from this solitary instance of it;—but as far as it goes, it must be allowed to be most interesting; and more especially so, when it is compared with the morbid changes which have been observed in the same organs in tetanus. Thus, in both diseases, the difficult deglutition evinces the deranged state of the tuber annulare and medulla oblongata; the spasmodic state of the diaphragm, that of the dorsal portion of the medulla spinalis;—thus, too, the pain at the pit of the stomach, or rather under the lower portion of the sternum, and the pain at the upper part of the œsophagus, attended with a sense of suffocation that seems to threaten instant death, the risus cynicus, the rigid contraction of the muscles of the abdomen, (all which parts are supplied with nerves from the spinal

marrow);—all show that a common immediate cause produces all these phenomena in both tetanus and hydrophobia, and seem to compel us to the conclusion that inflammation of the spinal cord from the cerebellum downwards, is that common immediate cause. The inflammation, thickening and contraction of the glottis and part of the trachea, as well as the spots of inflammation on the stomach, observed in the dissections made by Dr. Rush and Dr. Parry do not, I apprehend, militate against this conclusion; for all these appearances may be readily accounted for by the violent exertions the spasmodic state of these organs gives rise to, which itself is the immediate effect of the inflammatory state of the spinal cord. The cases of hydrophobia treated in the depletory and mercurial way, in which success has accompanied the early employment of it, is a further proof of the correctness of the conclusion. This holds good in both hydrophobia and tetanus. When bleeding and mercury are employed at a later period of these diseases, they have uniformly failed;—for it is only during the forming or developing stage of both, that any plan of treatment can be effectual.

Under this view of the disease, I see no just reason why hydrophobia may not be divided into species corresponding to those of tetanus, viz. the acute, subacute and chronic; the two first occasioned by wounds inflicted by various agents, but more especially by rabid animals, conveying into the system a peculiar poison, and acting in the same manner on the nervous system, as we suppose and believe, indeed, on good grounds to take place in tetanus;—the last, perhaps, by alternations of heat and cold, and other causes, not traumatic, with which we are acquainted. The treatment should be conformable. This view of hydrophobia appears to me rational, and perhaps, the only one, the tendency of which is to reconcile the jarring opinions which have been hitherto entertained of its pathology and treatment.—I shall finish this imperfect and rapid sketch, by requesting the reader's attention to the result of the depletory treatment in those published cases in which it has been employed.

Dr. Christopher Nugent, formerly a physician of Bath, is the first I know of, who succeeded by the adoption of the depletory method. He published his case in 1753, as “a narrative of facts with the severest eye to truth as far as he was able to trace it.” The principal facts are the following. Patient, a woman of Bath, 22 years old, bit by a mad dog 24th June, 1751. At the end of three weeks sent to the sea-side and dipped, “until she could bear it no longer.” On 16th July, bled in the hand that was bit. The surgeon who bled her, gave her four doses of the pulv. antilyssus, according to Dr. Mead's directions, and perceiving a numbness and pain in the arm and shoulder of the arm of the bit hand, Sir George Cobb's medicine, brought by that gentleman from India, composed of native and factitious cinnabar, each 24 grains, and of musk 16 grains was given two nights; 24th July had the cold bath administered for four mornings.—Finding herself relieved nothing more was done till the 27th, July, thirty-two days after the accident, when hydro-

phobia came on. She was taken ill at half-past 9 A. M. at 11 A. M. bled to 15 ounces—better. 28th bled to 20 ounces. 29th bled to 12 ounces. She took, at the same time, the musk and cinnabar in honey every three hours. Every way better. No further depletion was made. This practice manifests a belief in Dr. Nugent, that the disease was inflammatory. It is said, however, (Edin. Med. and Surg. Journ. vol ix, p. 45), that he thought differently. Dr. Nugent's sentiments are not so. Let him speak for himself. "This distemper is acute, and for the most part dispatches its affair so quickly, there is no time to be lost. The spasms must be allayed soon; at least their violence must, *or they bring on an inflammation; and if that once happens, the case that at first was very difficult, now becomes, in all probability, deplorable; for the first spasms and the new inflammation, play a new game of mischief into one another's hands. The inflammation, though itself but an effect now becomes a cause, acting in concert with the first, and multiplying new symptoms and dangers, perhaps beyond all hope of recovery.*" Again. "In all cases where an inflammation is threatened, particularly in all violent spasmodic diseases, is not bleeding advisable? and if bleeding is at all necessary, should it not be our first attempt in so headlong an occasion as the hydrophobia, where, generally speaking, there is a real or a spurious plethora? &c." It would appear from this passage that the doctor had formed the same rationale, the same series or catenation of cause and effect, as I have attempted to delineate under this section, and that of tetanus, viz. that the exciting cause of hydrophobia, for instance, is an irritation producing spasm; by a kind of nervous reaction, give rise to inflammation of more or less acuteness; and that, finally, this inflammation is the proximate or immediate cause, from which spring all the phenomena, and the extreme danger of hydrophobia. Dr. Nugent's case, I therefore consider, as proving the utility of early depletion in hydrophobia.

The rapidity of hydrophobic inflammation is most wonderfully great; and, owing to its peculiar seat, brings on a state of exhaustion inevitably fatal, if those remedies, which there seems reason to believe, are the only useful ones, bleeding and mercury are not employed with assiduity and boldness, at the very accession of the disease.—It is for this reason, that late depletion does no good; and it is for this reason, that early depletion was successful in the preceding case, and in those of Mr. Tymon and Dr. Shoobred of Bengal. In the case detailed by the former of these gentlemen, the patient, Mason, was bled until scarcely a pulsation could be felt in either arm, about an hour after he was taken ill. In Dr. Shoobred's case the same thing was done with equal success. His remarks on the case are very valuable. The principle he wishes to establish by this bold and decided practice, is to diminish the violent peculiar inflammatory action in hydrophobia, before the powers of life are so exhausted, as to render recovery impossible; and



thereby to admit the action of medicine, particularly mercury, which in all former experience had uniformly failed. The latter clause is, indeed, quoted from the observations made by Dr. Berry, on the successful result of Mr. Tymon's case. Hydrophobic inflammations, like all other tropical inflammations, must be diminished, in order to give effect to mercury which, with this preparation, may really be considered specific—a remark I have repeatedly laid before the reader, but which cannot be too frequently called to his attention. (See *Edin. Med. and Surg. Journ.* vol. ix.)

The next instance recorded of successful depletion in hydrophobia, is that given by Dr. Burton of Virginia, in a letter to Dr. Rush of Philadelphia, published in the *American Repository*, and dated August, 1803. Twenty ounces of blood were drawn from the patient at nine P.M. the 4th July, almost immediately after the hydrophobic symptoms had appeared: at four A.M. of the 5th, 16 ounces; two large blisters applied to the legs, and copious purging; at one P.M. 18 ounces: at 8 A.M. of the 6th, 24 ounces: at 12 M. 16 ounces and purging: on 7th, 28 ounces and mercurial frictions, and pills:—on 9th gums sore;—on 15th well, ptyalism, and weak.

Mr. Marshal's case, although not a successful one, is yet very interesting. It occurred at Colombo, in the island of Ceylon. On the 14th January, 1812, symptoms of hydrophobia were evident; but Mr. Marshal was not called to see the patient till the 16th. The patient, a woman, was then bled by a large orifice, until faintness came on, 24 ounces.—She expressed herself as being generally relieved; exhaustion, however, rapidly followed. Bled at eight, and died a quarter past nine A.M.—Had the remedy been adopted even on the 15th, the patient probably might have been saved. (*Edin. Med. and Surg. Journ.* vol x, p. 26—29.)

In the same volume, there is a review of a pamphlet written by Mr. Wynne of Shrewsbury, containing a case of hydrophobia. It appears that 20 ounces of blood were drawn in six minutes, at as early a period of the disease as possible. The pulse could scarcely be felt for an hour after. When the patient recovered from the syncope occasioned by this sudden depletion, "his first request was "to be allowed to indulge in that which the bare idea of, but an "hour before seemed to be a source of the greatest suffering. He "drank some water, and was refreshed by it." The patient was some hours after again bled, from there being some reason for apprehending a recurrence of the disease. He recovered. (p. 495.)

The case related by Mr. Ballingal, furnishes a proof that bleeding too long delayed is inefficacious. The patient had hydrophobia on the morning of 22nd February, 1813, but was not bled till seven A.M. of the 23d.—On this case Mr. Wynne observes, that the first bleeding was incomplete; for although 40 ounces were drawn, the patient did not faint, and that he was weakened, and the disease too far advanced, for the second bleeding to have a chance of success.

In the 13th vol. of the same journal, there is some notice of a case of hydrophobia successfully treated by bleeding, given by Mr. Steddy in a letter to Mr. Hay, surgeon of the E. I. Madras Artillery. (p. 255.)

The inferences which may be drawn from the foregoing statement of facts, are, I apprehend—1. That the more acute species of hydrophobia, like the more acute species of tetanus, possesses such an intensity of peculiar inflammatory action, as to be capable of extinguishing life in a few hours, and to render all human means unavailing in arresting its progress.—2. That in the subacute, possessing the same peculiar diathesis, and the same propensity to extinguish life, but a less rapid course, bleeding ad deliquium, and the excitement of mercurial ptyalism, subdue the inflammation, if the employment is begun within an hour, or at the utmost, 70 or 80 minutes after the accession of the symptoms, and consequently before its propensity to destroy life, can have developed itself; or, as Dr. Nugent strongly and aptly expressed himself, before “the inflammation, though in itself but an effect, becomes a cause, acting in concert with the spasms, and multiplying new symptoms and dangers beyond all hope of recovery.”—3. That all other means of effecting this must be unavailing, because inconsistent with the pathology of the disease—And 4. That in the employment of bleeding, the rule observed by Dr. Shoolbred, should always be kept in view, viz. “that the merely opening a vein and drawing a considerable quantity of blood, is *not* the practice. The vein must be opened with a large orifice, the blood quickly evacuated, and allowed to flow without regard to measurement, ad animi deliquium. Nothing less than this is capable of at once arresting the progress of the disease, relieving the spasmodic affection of the heart and arteries, suppressing excessive sensibility and irritability; and, in short, of admitting the restoration of the due balance of action and influence, both in the circulating and nervous systems, on which the continuance of life and health seems to depend.”—I have known two cases of hydrophobia during my residence in Bristol, in which the depletory plan to the utmost possible extent, and the first appearance of hydrophobic symptoms, were, in a manner simultaneous, without effect—the patients, after losing ten or twelve pounds of blood from a large orifice, but without deliquium, died within thirty hours. These cases were, in fact, examples of the more acute species of hydrophobia, and, therefore, should not, as they were at the time they occurred, 1817, be deemed as at all disproving the efficacy of the depletory plan, when any human means can be employed with a hope of success.

In a very respectable and valuable periodical work, the first numbers of which have appeared this year, 1821, published at Vienna, called “Nouvelle Bibliotheque Germanique, Medico Chirurgicale,” there is a memoire from the pen of M. I. Michel Axter, first surgeon to the general hospital at Vienna on hydrophobia. In this memoire, the powder of cantharides is recommended

as a certain cure of the disease, if administered before the patient is deprived of the power of swallowing liquids. The description of the first or forming stage of hydrophobia, and of the manner in which the cantharides should be administered, during it, are so clear, and the method of cure is so new, and at the same time so well authenticated, that I imagine my insertion of the following translation requires no apology. I subjoin the original French in a note.—“For 32 years I have been in the practice of treating persons bit by mad dogs. After employing unsuccessfully all the remedies recommended in hydrophobia, such as belladonna, musk, mercury, opium, camphor and other medicines, immersion or plunging head foremost in water, and the anointing the whole body with oil, and giving it internally; I, at length, 27 years ago, determined on giving the powder of cartharides—but in the first or forming stage of the disease only; for if the disease had passed this, and difficulty of swallowing and repugnance to liquids had taken place, it was no longer useful, except in mitigating in some degree, the violence of the fits. In order to ascertain the period of hydrophobia, in which the cantharides is given successfully, I have attended with scrupulous exactness to the symptoms which mark it. I have uniformly seen the establishment of the disease, preceded by slight shiverings, which many patients paid no attention to until closely questioned respecting it. This is followed by excruciating pain in the part bit; the pulse becomes quick, the skin dry, violent flushings of heat, (*bouffées de chaleur*) and headach follow—the disease soon becomes more rapid, the countenance melancholy and the features changed. In this state the patient continues from ten to eighteen hours. At the end of that time, the pulse is hard and is very rapid, such as it is observed to be in violent inflammatory affections; the whole aspect of the countenance becomes wild, and excessive anxiety follows;—the patient is still, however, able to drink, although there is an evident dislike to liquids. In this state he continues only for a few hours.—He then is no longer able to swallow any kind of fluid; the very appearance of it produces convulsions, which, indeed, are now almost incessant.—The pulse continues to indicate the presence of inflammation—the eyes and whole countenance express ferocity and despair.—He spits on every thing around him, and his mouth is filled with froth.—Many at this period have a desire to bite.”—M. Axter’s method of administering the powder of cantharides, as a preventive, before the symptoms enumerated above come on is the following.—He gives internally once in the day, a grain of the powder rubbed up with sugar and the powder of crabs eyes, of each six grains—and continues to do so for three or six days. At the same time he directs a blister to be applied to the part bit, and has it kept open for five or six weeks, by sprinkling the blistered surface with the powder of cantharides, or sometimes by washing it with a solution of the caustic alkali (*potasse caustique*)—When the disease became manifest, or when the first or forming stage developed itself, the dose

was increased in quantity and frequency. Thus, in four patients whose cases are clearly and distinctly stated in the memoir as examples, and in whom the first stage was well marked, he gave the powder of cantharides, morning and evening, in doses of from half a grain to two grains, prepared as before, and washed it down with a cup-full of the decoction of the root of marsh mallow, whilst the same applications, as before, were made to the bit parts.—If the patients had been brought into the hospital, after the disease had been completely established, they rarely outlived 48 hours. In such cases he endeavoured to save them by doses of 10 to 12 grains. The convulsions were, indeed, rendered milder, but death was never prevented.—He always advised the cured patients to avoid for a long time, every thing stimulating, and every kind of excess. He had often witnessed the sad consequences of imprudence of this kind —“ l'acte de generation,” is most particularly dangerous.—The spine was not inspected by M. Axter in his dissections of hydrophobic subjects. He discovered nothing but slight traces of inflammation in the œsophagus and larynx.\* Is this Dr. Nugent's idea

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\* “ J'ai traité, pendant 32 ans, des personnes qui avaient été mordues par des chiens enragés. J'ai employé, pendant ce tems, tous les remedes, que recommandent, dans cette maladie, les auteurs qui s'en sont specialement occupés, tels que la belladone, le musc, le mercure, l'opium, le camphre, d'autres encore, et tous ont echoué. J'ai fait bander les yeux à une fille de 18 ans, hydrophobe, et l'ai fait precipiter dans l'eau ; j'ai fait enduire d'huile tout le corps d'un hydrophobe ; je lu ai donné, en même tems, ce medicament à l'interieur, et n'ai pas obtenu plus de succès.—J'ai commencé alors à traiter les hydrophobes avec la poudre de cantharides. Cette poudre n'est plus d'aucune utilité, lorsque la maladie est arrivée à ce degré où le malade repousse toute espece de fluide ; cependant j'ai vu encore alors cette poudre diminuer la violence des accès. J'ai observé, avec une scrupuleuse exactitude, les premiers accès. Je les ai constamment vus precedés d'un leger frisson, dont plusieurs malades ne rendaient compte, que lorsqu'on les pressait de questions à ce sujet. Il survenait ensuite une douleur déchirante dans la partie mordue, le pouls devenait plus accéléré, la peau seche, des bouffées de chaleur montaient vers la tête, il y avait céphalagie. Le pouls est ordinairement précipité, le regard devient sombre, les traits du visage s'alterent ; le malade rest dans cet état, de 10 à 18 heures ; c'est alors que le pouls devient dur et plus frequent, comme dans l'état inflammatoire ; le regard et toute la physionomie deviennent farouches ; de fort angoisses se succèdent avec rapidité le malade boit cependant encore, quoi-qu'il montre déjà de la repugnance pour les boissons ; mais il ne reste que quelques heures dans cet état, et bientôt il ne peu plus avaler aucun liquide : leur aspect lui cause des convulsions qui cessent et se renouvellent souvent. Le pouls annonce toujours l'état inflammatoire, les yeux et la physionome experiment la férocité et le desespoir. Il erachate autour de lui. Sa bouche est remplie d'ecume. Plusieurs ont envie de mordre. Les angoisses et les convulsions se succedent

practically applied, viz. "the spasms must be allayed soon, at least their violence must, or they bring on inflammation, &c.—M. Axter's mode of treatment is highly deserving attention—and may thus, doubtless, be reconciled with what is conceived, on good grounds, to be the true pathology of hydrophobia.

The prevention of hydrophobia is infinitely more in our power than the cure;—and so simple, that the means may be stated in a few words. As a prophylactic, there cannot be the least hesitation in giving preference to excision, if the situation of the wound admits of it. This should be complete, so as to leave no particle of the

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"presque sans intermittence.—J'ai donné la poudre de cantharides pendant 27 ans, à tous les malades qui avaient été mordus par des animaux enragés, et qu'on avait apportés à l'hôpital. J'en administrais chaque jour intérieurement un grain mêlé avec du sucre, et six grains de poudre des yeux d'écrevisses. J'en continuais l'usage pendant trois et même jusqu'à six jours. Je faisais appliquer, sur les parties mordues des vésicatoires que j'entretenais pendant cinq à six semaines, tantôt en les saupoudrant de cantharides, tantôt en les arrosant avec une dissolution de potasse caustique. Les registres de l'hôpital attestent qu'il n'y est rentré aucun des malades qui y avaient été guéris, excepté un.

"Je dois faire observer ici que j'ai conseillé à tous ceux qui sortaient de l'hôpital, de se soustraire pendant long-tems à toute espèce de cause de stimulation, pour que j'avais été à même d'en apprécier les tristes effets, non seulement dans une observation déjà citée, mais encore dans la suivante."—The patient in this case was discharged well on the 31st Oct. 1783. "Le 13me, Novembre suivant, il s'enivra, et exerça l'acte de la generation avec sa femme. Immédiatement après il ressentit de vives douleurs dans les parties qui avaient mordues, et les plus douloureuses angoisses. On l'apporta le 14 au matin à la clinique du Professeur Stoll, et il mourut le 16"—(Nouvelle Bibliothèque Germanique, Medico-Chirurgicale, ou Extraits des Meilleurs Ouvrages de Médecine et de Chirurgie, publiés en Allemagne—tom. premier.—1821.—Paris.—p. 12—25.)

I quote the following notice from the Journal of Science, Literature and the Arts. "Dr. Lyman Spalding, one of the most eminent physicians of New York, announces in a small pamphlet, that for above these 50 years, the *scutellaria laterifolia*, has proved to be an infallible means for the prevention and cure of hydrophobia, after the bite of mad animals. It is better applied as a dry powder than fresh. According to the testimonies of several American physicians, this plant, not yet received as a remedy in any European Materia Medica, afforded perfect relief in above a thousand cases, as well in the human species as in the brute creation, (dogs, swine and oxen.) The first discoverer of this remedy is not known. Drs. Derocer, father and son first brought it into general use."—Journal of Sci. Lit. and Arts.—No xix p. 194.—It appears to be taken from Philosoph. Magazine vol. lvi. p. 151, which I have not by me at present.—The pamphlet is also reviewed in the *Reveu Encyclopedique*, vol vi, p. 351 under this title—"A History of the Introduction and Use of *Scutillari Laterifolia* (scull cape) as a remedy for preventing and curing hydrophobia occasioned by the bite of rabid animals, with cases accompanying a plate of the plant. By Lyman Spalding, D.M. of New York."

virus to remain, nor a vestige of the animal's teeth. After this, the application of caustic, or even of the actual cautery is necessary. Mr. Orfila, indeed, recommends washing the part with chlorine, and applying pledgets soaked in it to the wound—and a physician of Milan, Sig. Doll. Luigi Sacco Medico Ordinario nell' Ospedale Maggiore di Milano, published a work last year, (1720) in which he speaks of the infallibility of hydro-chlorine, (l'idro-cloro) as a prophylactic in hydrophobia. Nothing of this kind, however, should be trusted to. No internal means, are in the least useful—at least, they should not be depended on, notwithstanding the authority of M. Axter for the cantharides.—In a word, every other means but excision, and the complete destruction of the virus, afterwards by caustic or burning are worse than futile, because experience has proved their total inefficacy, and because they tend to impress the patient's mind with a fatal confidence.

*Catalepsy, Cataleptic, Maniacal, and Hepatic Hysteria, &c.*

These diseases seldom, indeed, occur within the tropics; nor should I have introduced them into a work confined to the history and treatment of tropical diseases, had I not experienced the beneficial effects of the depletory and mercurial treatment of them since my return to England; and had they not thereby furnished additional illustration of the propriety of that treatment, in the two important diseases which constitute the subject of the two preceding sections of this chapter. Catalepsy and cataleptic, maniacal and hepatic hysteria have been cured by a similar but much less rigid process. Only one case of the first, six of cataleptic-maniacal, two of maniacal, and, at least, forty of hepatic hysteria, having been cured by moderate bleeding and purging in the first instance, and afterwards by mercurial ptyalism. These diseases, which there is every reason to believe depend on a similar but less intense inflammatory diathesis, and a similar locality of that diathesis, as that observed in tetanus and hydrophobia, are arrested in their progress by these means, and the cure has been completed by mild tonics combined with antispasmodics, in the following form. ℞ oxyd. zinci, gr.  $\frac{1}{4}$  ad gr. iss, assa-fœtidæ.—extract. rad. valerian.—Hyosciami āā gr. iss. ℞ ft. pilulæ duæ pro dosi sumendæ 3 vel 4 in die.—How far maniacal epilepsy may have its march stopped by this mode I cannot say. I tried it in one case without success.—It is equally unsuccessful in epilepsy.

The following cases may be useful—they are certainly interesting.—Case 1.—Miss H—, aged 18, from the age of 14, had been subject to anomalous complaints of an almost undefinable nature. Various parts of the body seem to suffer under them; but so irregular and uncertain were the attacks, that no plan of cure could be adopted with a reasonable hope of success, until the summer of 1811, when the symptoms assumed a more decided form, and seemed to justify the opinion that the liver was chiefly in fault.—

In August, 1811, I first saw her, when the prominent disease appeared to be hepatitis, but so mingled with several extraordinary symptoms of hysteria, as to occasion much embarrassment in deciding on the means of relief. I put the patient on a course of mercury; and after the subsistence of ptyalism, her recovery was so rapid, that in about a month she could walk four miles without inconvenience. About the beginning of December she began again to complain of pain in the right hypochondrium, of difficult respiration, and of slight spasmodic twitchings of the muscles, of the extremities more especially—with a sense of suffocation, the globus hystericus, &c. All these symptoms, except the pain in the right hypochondrium, were disposed to observe a periodical recurrence about the middle of the month, this disposition became more fixed, the spasmodic symptoms uniformly returning in the evening, and continuing during the night.—I viewed the disease as hepatic hysteria, and advised moderate bleeding and mild mercurial ptyalism. But the patient and her friend expressed an unconquerable dislike to mercury, so that the bleeding and purging alone could be adopted.—Soon after the 20th, the disease became not only regularly intermittent, but during the paroxysm, which lasted 21 of the 24 hours, the patient was thrown into a most extraordinary state. The fit began with violent convulsions, insomuch, that the attendants could with difficulty confine her to her bed. The approach of these convulsions was always indicated by flushing of the face, and most acute pain in the head, and a sensation of cold and creeping, originating where the sagittal projects from the lambdoidal suture, and descending on each side below the temples, together with a wildness of expression, or rather ferocity of features, and staring of eyes, truly frightful.—These were immediately followed by the convulsion, during which she was perfectly insensible.—The pulse feeble and about 120. At the end of half an hour, the flushing of the face, pain in the head, sense of cold, &c. disappeared, and the convulsions ceased; but were instantly succeeded by dispositions to mania. The pulse 100. When the short intermission took place, her face became again flushed, the headach returned, but the sensation of cold and creeping were reversed;—now originating below the temples, and ascending on each side along the lamboi-dal to their intersection by the sagittal. The commencement and subsidence of the paroxysm were also marked by general profuse clammy sweat; but these periods were alone thus distinguished.—During the paroxysm, the animal functions were not at all disturbed; the evacuations were abundant, and appetite good; but during the short intermission, the latter ceased altogether, she became sunk and exhausted, but perfectly aware of the situation she had just recovered from, and spoke rationally and feelingly of it. The character of the convulsive state was rather singular. At first a violent effort was made to respire;—it seemed indeed the agony of suffocation—universal convulsion followed. This state lasted about two minutes, when the patient became still, but insensible—at the end of two minutes more, the same series of phenomena again took

place. This alternate state of apparent strangulation and consequent convulsion and death-like insensibility continued for half an hour; then the state which may be called maniacal followed. Viewing all the circumstances of the case, and observing that whatever variety of appearances might have been assumed during the paroxysm and intermission, the pain in the right hypochondrium remained constant, I considered myself justified in believing that diseased liver was the principal immediate cause of them. My practice was founded on this belief. The patient was freely bled and purged, and put on a mercurial course on the 20th December. At 10 P.M. of the 29th, the mouth became affected and the symptoms ceased to recur as usual. On the 31st, a purgative medicine was imprudently given, and soon after the ptyalism suddenly disappeared. The symptoms then returned as before. The mercury was again given with more caution; and it merits remark, that the patient and her friends, who, at first, most reluctantly consented to the use of mercury, now, seeing the remarkable effect of it, anxiously urged the recommencement of it. From the 4th, January, when the renewal of ptyalism took place, the paroxysm became moderate in the ratio of the mercurial action; thus, on the 5th, the paroxysm lasted only six hours;—on the 6th, only four;—on the 8th, only a quarter of an hour; on the 9th, when the ptyalism amounted to a quart, no symptom of disease.—In this freedom from disease, with signs of rapidly returning health, the patient continued till the 22nd.—At this time a sudden change of atmospheric temperature took place. On the 21st, ther. at noon  $40^{\circ}$  at night  $28^{\circ}$  and on the morning of 22d,  $24^{\circ}$  with the wind at E.—An unfortunate neglect in guarding the patient against this sudden accession of cold, gave rise to a new train of symptoms, in addition to a recurrence of those already described. For an hour before the accession of the paroxysm, a great degree of languor and oppressive weight in the chest came on;—the last, indeed, was so urgent as almost to deprive her entirely of the power of respiration; the pulse at the wrist 100, in the carotids 80; the surface of these extremities, and the lower part of the trunk had a heat of  $100^{\circ}$  the face and neck only  $94^{\circ}$ —The convulsions followed as before. On this occasion I tried the effect of compression on the carotids, found so beneficial by Dr. Parry of Bath. (*Elements of Physiology and Therap.* p. 811—813.) As soon as the suffocative spasm came on, I made sufficient pressure on the carotids to check the flow of blood into the head; in an instant the spasm ceased, and the patient fell back in a state of complete syncope. In this she remained for about three minutes, when the spasm again came on; the pressure was again made, and instantly she again fell back into syncope. The spasm did not return; but, instead of it, a most complete rigidity of the whole frame took place. So perfect was the rigidity that not a single joint could be bent, nor a single muscular fibre relaxed. The whole seemed as if dead or congealed; for, on attempting to raise her from the pillow, there was the same stiffness as is observed in a dead body—whilst in this cataleptic state, (for I know not a more appropriate appella-



tion), she was devoid of all consciousness and sensibility, and seemed not even to breathe. The state of the pulse was reversed—for whilst at the wrist it was scarcely perceptible, in the carotids it was strong, bounding and fully 110. The heat also underwent the same reverse. On using pressure now, no interruption of the cataleptic symptoms could be perceived. At the end of ten minutes, the patient suddenly started up in bed, the muscles became at once relaxed, but maniacal distraction of mind instantly succeeded. During the maniacal state, now, it was particularly singular, that, although she could not articulate a single word, and was, evidently unconscious of what she did, yet she sung some very beautiful airs with a sweetness of tone and correctness of measure, extremely interesting and affecting. At the end of ten minutes more, her head suddenly and unexpectedly drooped, and she fell back into the state of catalepsy. During the maniacal intervals, the pulse was uniform in the neck and wrist; but the moment the catalepsy came on, it was indistinct at the wrist, and strong, quick and bounding in the neck. The only intimation of the return of catalepsy, was a fixedness and absence of lustre in the balls of the eyes, which, on its ceasing and her starting up, vanished, and they assumed an uncommon degree of brilliancy and vivacity, mixed with a peculiar wildness and uncertainty of direction. This alternation of catalepsy and mania, continued exactly an hour and ten minutes. She then recovered her reason, but remained for some time quite exhausted and languid; and seemed as if just awoke from deep sleep, having no knowledge or recollection of what had passed. In this new and extraordinary state of the patient, it was difficult to decide on the means of relief.—Bleeding and purging were indicated; but the result of their employment, in the preceding part of the case, was not encouraging; for bleeding, although carried to a great extent generally and locally, had, in no instance given relief; and on one occasion, when ten ounces of blood had been abstracted by cupping in the forenoon, the paroxysm in the evening was more violent, and of longer duration than on the four preceding days; and with respect to purging, although, from two to four evacuations had been daily obtained, the paroxysms increased, until ptyalism had been established. After giving due consideration to all these circumstances, I resolved on renewing the action of mercury.—I had soon the pleasure of seeing the happy effects of this. On the 26th January ptyalism very moderate—duration of the symptoms described only forty-five minutes, and catalepsy much less rigid; and now being urged to sing, for the purpose of ascertaining the degree of consciousness, she could not articulate, but wrote, “I cannot sing unless you help me.” On the 31st, ptyalism very considerable, and she was perfectly freed from complaint. On the 1st of March, appetite and strength greatly improved, so that she could walk with perfect ease for half an hour at a time in her room. This improving state daily augmented. About the middle of March, the patient, on a sudden change of weather, with piercing easterly wind, had another attack. The former fits

of convulsion, catalepsy and mania, returned in precisely the same form and succession as before, but their duration did not exceed four hours, although the mania was attended with more violent action. The same means were recurred to with the same result. The suffocative spasm was stopped by pressure, and ptyalism put a complete end to the fit.—This last attack was chiefly treated by Mr. Yeo the surgeon.—He informed me that he had endeavoured to prevent the accession of the paroxysm by cupping the nucha.—This had only the effect of preventing the suffocative and convulsive part—the cataleptic and maniacal came on as before. A curious circumstance occurred on this occasion. The cupping, being a preventive measure, was performed before the fit came on. No blood flowed at first—at length the fit came on.—Instantly the stream of blood to the head was so great and rapid, that the cups overflowed; and it was with the utmost difficulty he could restrain the discharge until the cessation of the fit, when at once no more blood came away. This was the last attack. She had no more, and I have often since seen her in good health.

The action of mercury in this case, and in those I shall state below, furnishes, I imagine, the fullest and most satisfactory illustration of the power which that medicine seems, perhaps, exclusively, to possess of restoring the natural distribution of the fluids, or in other words, re-establishing the due balance of the system, on which certainly health depends.

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Case 2.—Mrs. S——, the wife of a respectable tradesman, æt. 50, anno 1812. About six years ago, she began to feel wandering pains, which, not being then able to account for, she attributed to cold. They assumed, generally, a periodical form, leaving her, during the intermissions, easy. She has since recollected that the origin of these pains, may be attributed to her getting wet feet, during an inundation of the lower part of Bristol, where she resided. Her house was so circumstanced, that the part she and her family occupied, had a considerable quantity of water in it, in which she remained several hours, engaged in saving her effects. Almost immediately after this the pains came on, and at the commencement of each attack she was sensible of a rushing of blood into her head, with throbbing of the arteries of the neck, or a beating in the neck, as she termed it. Some weeks after this, the glands of one side of the neck swelled; and ever since, this has been occasionally troublesome to her, sometimes swelling into a large tumour, and soon subsiding, and afterwards returning. These changes always observed the periodical returns of the pains. In this state she continued till about two years ago. At that time, being in the third month of her pregnancy, she had the misfortune to fall on her right side. This accident was followed by excessive pain; but it did not prevent her proceeding to the full period, and being delivered of a healthy

child, now living. Ever since, however, the wandering pains have become more fixed, more constant, and more violent; often attended with syncope, and a peculiar faintness or sinking, constipated bowels, &c. About six weeks ago, she was suddenly seized with excessive pain in the head, with vertigo, accompanied by increased determination of blood to the head, dimness of sight, palpitation, and stricture across the body at the scrobiculus cordis; great heat of skin, and quick strong pulse. These symptoms were ushered in by a sense of suffocation, and consequent convulsion. These symptoms, after continuing for some hours, terminated in those of mania. The paroxysm was completed in about twelve hours, when she recovered the use of her reason, and became tolerably tranquil and easy. The disease returned daily in this form, often attended with violent emotion and action during the maniacal state. On the first of June I was requested to visit her, when I received the foregoing history, and found her pretty nearly in the same state I have described. I put her on a purgative course, which for a few days seemed to have the effect of relieving her. But on the sixth the symptoms came on with almost unconquerable violence; and such were the efforts she made during the period of insanity, that recourse was had to means of coercion, such as a straight-waistcoat, and binding her with strong straps to the bed. A continual talking on subjects totally foreign to her present circumstances and situation of life, a continual vibrating motion of the head, of a singular nature, as if with earnestness to seek out some object; with protrusion of the eye-balls, dilatation and insensibility of the pupils, and a total want of sight, marked the insane part of the paroxysm. This state, now, indeed, continued the whole of the twenty-four hours. The general debility of the patient deterred me from employing bleeding, in this case, although indicated by many of the symptoms. My success in the case of Miss H——, induced me to substitute a mercurial course. I ordered ʒiiss. of the strongest mercurial ointment to be well rubbed in every night. On the thirteenth, her mouth became slightly affected.—On this, her reason was in a great measure restored to her; and during the 14th and 15th, no paroxysm came on. Having been confined in her bowels, an aperient medicine was imprudently, and without my knowledge, given to her on the 15th. The effect of this was a considerable abatement of ptyalism—she was in consequence threatened with a recurrence of disease. Frictions were again employed, and the ptyalism more completely established. The result was a perfect removal of all symptoms of disease, so that on the 20th, nothing remained but a very great degree of debility. I saw her in September, when she was strong and well.—I have occasionally seen her during six years after this, in perfect health of body and mind.

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Case 3.—Mary Finally, an Irish woman, æt. 33, received into the Clifton Dispensary about the beginning of March, 1815, labour-

ing under distress of mind, occasioned by the loss of her husband, and having two helpless infants to maintain, without possessing the means of doing so; but robust, and apparently healthy. Just before she became a patient in the Dispensary, she was suddenly seized with violent convulsions, and brought to me in a state of total insensibility. The convulsions at the end of ten minutes, terminated in a complete rigidity of the whole body; stretched out limbs, deadly coldness of surface, and every joint so inflexible, as not to be bent by using very considerable force. This state continued for nearly two hours, when she recovered her recollection; but the fit soon returned, and for several days, it thus returned with very short intervals of freedom from it. She was bled freely, and had a solution of salts and tartarized antimony. At the end of four days, her state having continued nearly the same, notwithstanding a second bleeding, and copious evacuations, I determined on putting her on a mercurial course. A very considerable ptyalism was excited.—On the 22d of March, ptyalism had subsided, and she had no other complaint but weakness.

Four other cases of what may be called, I think, with great propriety, cataleptic hysteria, conjoined with symptoms of mania, occurred during the four years I was senior physician to the Clifton Dispensary.—They were all treated in the same way, and completely recovered.

Two cases occurred in the Clifton Dispensary of catalepsy, without any combination—one of them I did not see—it terminated fatally—the other was my patient, was treated with mercury, and recovered.

Another combination with hysteria I have denominated hepatic. Of this twenty-three cases occurred in the Clifton Dispensary, during four years, and about seventeen in my private practice—all recovered by the means described above. This combination cannot, from the number of cases which have fallen under my notice, be considered an uncommon disease; and yet I am ignorant of its having been thus distinguished before hepatic hysteria. But the disease has the symptoms of hepatitis and of hysteria, so well marked—they are so obvious, and the treatment which they have directed to the adoption of, has been so efficacious, that I feel myself completely borne out in thus distinguishing it. In every instance recovery took place, so that it can be only by the symptoms, and the successful treatment, I can form this belief of the nature and seat of the inflammatory action. Those pathologists who have had opportunities of observing the phenomena of the diseases of the abdominal viscera in combination with spasmodic symptoms, such as those of catalepsy, mania and hysteria, and of comparing them with the morbid anatomy of the spinal marrow after death, do not specify those of the combinations I have described in the foregoing cases among them. It is very possible, however, that chronic inflammation of the investing membranes of that organ, may in some cases of these extraordinary combinations

give origin, "by a kind of nervous re-action," to all their anomalous appearances. In them, the most probable conjecture must regulate the opinion and the practice. The practice, indeed, must be the same, if we hope for success, whether the inflammatory action rests in the abdominal viscera or the spinal marrow.—Any other, I am persuaded, will be followed by disappointment. In the first number of a new work edited by Dr. F. Magendie, of Paris, there is a very interesting memoir from Dr. M. Pinel, the son of the celebrated Pinel, on the inflammation of the the spinal marrow (sur l'Inflammation de la Moelle Epinière) in which two cases are detailed, almost precisely proving what the foregoing cases only suggest, viz. inflammation either acute or chronic of the investing membranes of the spinal marrow, being the proximate cause of those extraordinary combinations of visceral diseases, with those reputed spasmodic.—I must refer to the work for a detail of the cases, but the general results, M. Pinel draws from them and other pathological considerations connected with them, I shall here state in his own words—"Il semble resulter de ce qui vient d'être dit sur l'inflammation de la moelle épinière, que cette phlegmasie à l'état aigu, est caractérisée.

"1<sup>o</sup>. Par de secousses convulsives et continues du trone ;

"2<sup>o</sup>. Par l'anéantissement presque complet des fonctions du système nerveux ;

"3<sup>o</sup>. Par un état febrile general, marqué par l'excitation de toutes les fonctions ;

"4<sup>o</sup>. Enfin, par la désorganisation pultacée de la substance medullaire du rachis."

He adds, however, "un grand nombre d'observations pourrant seules faire deduire des conclusions définitives." (*Journal de Physiologie Experimentale*, par F. Magendie, D. M. &c. Tome 1, 1<sup>er</sup> numero—Janvier 1821, p. 54—64.

I shall conclude this chapter by a translation of a very curious and important experiment made by D. Magendie himself, on a mad dog, and which he presents us in the same valuable periodical work. After stating several general observations on the total inutility of all the internal means hitherto employed in the treatment of hydrophobia, he thus proceeds, "if such active substances as I have mentioned, are without any effect, (such as the injection of a solution of opium in water, and of the prussic acid into the veins of rabid dogs) what reasonable hope can we found on vegetables (alluding to the seutellarea of the American and others, so much boasted of by Russian, German, and Italian physicians) which probably have no sensible effect when received into the stomach, of even a healthy person? Should I conclude from these reflections, that we must despair of finding a remedy for hydrophobia? No, certainly—but I am inclined to think, that in order to find it, we must direct our search in a different—a new way. It was with this view, I made, in the month of October last, the experiment which I am going to relate.

"The proprietor of an establishment in Paris, called *Le Combat des Animaux*, informed me, that a strong dog, of the mastiff kind, had been brought to him, which seemed to him to be quite furious (en pleine rage.)—I went to his house in the course of the day, and in fact I found the animal actually mad. Being alone, I could not attempt any thing; but I returned early the following morning accompanied by some of my pupils of approved courage, coolness and dexterity, of which I availed myself on this occasion; for it is easy to conceive how much danger experiments of this kind are attended with, and how the least inattention may be followed by melancholy consequences, at any rate of a nature extremely disagreeable. The animal, still more furious than on the preceding evening, and which darted at every thing presented to him, was carefully muzzled, and had his feet tied, and then laid on a table. After he was well secured, I laid bare the left jugular vein. I began by taking away about a pound of blood; after which, by means of a syringe, I injected about sixty ounces of warm water. When half this quantity was introduced, the vessels became very much distended—therefore, I continued the injection of water, and a discharge of blood, alternately, until the whole was introduced—(vers le milieu de cette injection les vaisseaux etaient fort-distendus; aussi, à dater de ce moment jusqu'à la fin de l'injection, je laissais couler le sang par le bout superieur de la veine, tandis que je continuais à introduire de l'eau par le bout inferieur; il s'echappa de cette manière à peu près 10 à 12 onces de sang mêlé d'eau.) The injection being completed, I had the dog put in his place, still with the greatest precaution, but this was now become unnecessary; the animal was calm, and he disposed himself to sleep, as soon as he was left to himself, a circumstance which had not happened since the commencement of his disease.—He no longer barked, his eyes were placid—in short, there was now nothing threatening about him; unless a little snarling when they endeavoured to make smooth the straw on which he lay, with a long pole. I continued to observe the dog for an hour, after which I left him in charge of one of my assistants. When I had finished the experiment, and had time to reflect on the probable result—regret was mingled with the pleasure I enjoyed at seeing the symptoms of madness thus completely calmed—for I feared that the injection of water had been carried too far, and that consequently an engorgement (engouement) of the lungs would take place, and a bursting of their bloodvessels.—The size of the dog however, seemed to justify what I done. This, however, did not prove to be the case, by the event; for my assistant informed me that at the expiration of five hours after the injection, the dog began to suffer difficulty of breathing, which momentarily increasing, he died in half an hour. The symptoms of madness had completely ceased. Although the result in this instance was not successful, yet it was far from being discouraging." The inspection of the animal's body, produced no

appearance of inflammation in the brain or spinal marrow—was this in consequence of the treatment? The lungs were engoué, i. e. filled with bloody water—the probable cause of the animal's death.

Inoculating with the saliva of a hydrophobic patient, a dog—the dog became hydrophobic at the end of a month—and two dogs that were bit by this one, became hydrophobic in forty days.—These last bit several other dogs, but without producing the disease. By “these experiments then, it appears, that dog madness ceases of itself in the third generation.” (Dans cette suite d'expériences, la rage s'arrêta donc d'elle même à la troisième génération.)—Ibid. p. 40—46. M. M. was induced to try this experiment for this reason. “J'avais souvent observé dans mes expériences sur la plethore aqueuse artificielle, que toutes les fonctions des animaux qui l'éprouvent sont très-sensiblement affaiblies, et particulièrement celles du système nerveux. Il pouvait donc résulter quelque bien d'un pareil affaiblissement, dans une maladie où l'activité du système nerveux est portée à son comble. D'ailleurs des l'instant, qu'un animal est atteint par la rage, il ne boit plus—le sang, est si épais qu'il sembloit être privé de sérum, &c.” p. 44. What light is thus thrown on the subject?

### PART III.

#### MALIGNANT PESTILENTIAL FEVER, COMMONLY, BUT IMPROPERLY, CALLED YELLOW FEVER.

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##### *Introductory Remarks.*

IT must be kept in mind, that this, the most tremendous of all the tropical diseases, wherever it appears, is the typhus of Europe, grafted on the yellow remittent fever of the torrid zone, or of countries whose climate, during part of summer and autumn, possesses the temperature of the torrid zone. We ought not, therefore, to be surprized, that the unexperienced practitioner, contemplating the former, should conceive he saw only the latter, or contemplating the latter, he should imagine he saw only the former; or in other words, that the malignant pestilential should be often mistaken for the yellow remittent, and the yellow remittent, for the malignant pestilential. The symptoms of typhus and yellow remittent fever are so surprizingly combined, in forming the malignant pestilential fever, that, "tertium quid," as a physician of New York happily termed it, as very readily to give rise to mis-conception of its cause and nature; but a moderate share of attention will, I am persuaded, clear up the doubt, and manifest the real distinction, which exists between the endemic fever of hot climates, and that formed by the superinduction on it, of the native of temperate and cold climates. I have no doubt, in my own mind, as I have elsewhere said (*Edin. Med and Surg. Journ.* July 1817) that typhus, plague, and the malignant pestilential fever, derive their origin from a specific virus, generated always in the same way, whatever that may be, and uniformly regulated by the same laws, but modified by climate. The affinity of the symptoms, the morbid changes produced in the organs of the body by them, as well as the conformity observed in the mode of treating them, which experience has proved to be the most judicious, serve to give stability to this opinion. The series of temperature in which they are generated, and may be propagated, seems to be this;—typhus in cold, plague in warm, and malignant pestilential fever, in tropical;—but all connected with each other in



a regular gradation of violence or intensity, as well as affinity of symptoms. Thus typhus is a native of Great Britain; plague is not a native, but may be extensively propagated in it; the malignant pestilential fever differs from both, inasmuch as, although the virus of the infection is generated in a cold and temperate, yet it acquires its peculiar features in a tropical climate, or in a temperature equal to a tropical, and in that only can it be propagated. It fell to my lot to witness the truth of this general observation, in the fullest and most manifest extent, in the spring of the year 1793. A fever, originally typhus, the infection of which, there are solid grounds for believing, was received, prior to their departure from England, by the persons and clothes, and bedding, of many of the adventurers who were embarked, and who perished in the attempt to colonize the Island of Bulama, on the coast of Africa, was introduced into the island of Grenada, in February 1793, by the ship Hankey, one of the ships employed in that attempt. This fever possessed the peculiarity I have mentioned, of having the symptoms of yellow remittent fever superinduced on those of typhus. The latter gave it infection, and the former augmented that quality to a most destructive degree of capability of dissemination; whilst, at the same time, it cast over it that dubious character, which, at first, prevented the detection of its nature, and which the frequent presentation of the disease to the senses and the understanding of medical men, alone produced the conviction of the fatal contagion, thus, apparently hid under the guise of some of the prominent symptoms of the endemic of the country. This singularly mixed character of fever was unknown to me, and to all the medical gentlemen of the island with whom I communicated on the subject. It was, indeed, to our perception, a *novæ pestis*; it was to us that "destructive monster," a name by which Dr. Parr so happily afterwards designated it, and which it so well upheld on this most fatal occasion, and in all its subsequent visitations. It is quite unnecessary to occupy the reader's time and attention here, with a detail of the history of the origin and propagation of this fever. For that, I shall rather refer him to Captain Philip Beaver's African Memoranda, to my letter to Dr. Haggarth, to the Second Edition of my Essay, and to the ninth Vol. of the Edinburgh Medical and Surgical Journal. I shall only, generally observe, that in this melancholy history, are to be found the remote causes of the dreadful fever which has devastated the West India islands, the British army and navy stationed at those islands, the principal cities and towns of the North American United States, and some of the more populous sea-ports and towns of Spain, for some years subsequent to its fatal introduction into Grenada, on the 19th of February 1793. It is not to be doubted, however, that the importation of similar infection may have, at different periods, since, re-produced the same terrible disease; and we possess facts which establish the certainty of its introduction at different periods before.

I should here close my introductory remarks on this most im-

portant subject—but a new view of the origin and cause of the malignant pestilential fever, having been laid before the public, a few months ago, by a most respectable and intelligent French writer, I think it necessary to communicate to my readers a slight outline and examination of it, before I proceed to the consideration of the fever itself, as appeared in my own practice.

M. Al. Morreau de Jonnés, in his very ingenious, learned, and elaborate work, lately published, *Monographie Historique et Medicale de la Fièvre Jaune des Antilles, &c.* carries the origin of that malady back to an unknown and undefinable antiquity among the aborigines of the Antilles.—“ Among the most dangerous diseases, there are, says he, many, the knowledge of whose origin eludes all possible investigation. These are they, which, although subject in their progress to the action of external agents, and to the influence of individual idiosyncrasy, owe, nevertheless, their existence neither to the accidental circumstances of the first, nor to the natural ones of the second. The diseases I allude to, are perpetuated by themselves, as animals and plants are;—they have had their existence, like them, from time immemorial, in insulated spots of each region of the globe; from whence they are disseminated in different directions, by those migrations of men, which commerce or war have given rise to. It is thus the leprosy of the Greeks, and the plague of the Levant, were brought into Europe by the Croisaders, and the commercial intercourse with the shores of the Mediterranean;—and thus were introduced by the companions of Columbus, syphilis and the yellow fever.” P. 7.—Ignorance of the true origin of the last of these, he adds, has proceeded from our not, hitherto, penetrating into the true source in which it has been concealed; and from the observations made on the disease, having been confined to the bed-side of the sick, or to the limits of one place, or to those of one invasion of the disease. To prove his proposition, he proceeds to a short sketch of the transactions during the first and second voyages of Columbus, as they are related by Herrera, Oviedo, and Gomara. The first was of too short duration, and to islands in which no unhealthy exhalations existed, to produce any morbid effect from the country the Spaniards now for the first time visited. It took place also in the dry season. During the second voyage, however, all the circumstances were changed. In the month of December 1493, Columbus landed 1500 Spaniards on the island of St. Domingo. These men were, immediately after their landing, occupied in the construction of a town, called by Columbus, in honour of his Queen, Isabella; the situation of which, according to the description given by Herrera, “ united all the local circumstances favourable to the *propagation*\* of the yellow fever in the Antilles”—(réunissait

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*Propagation*.—I have marked this word, because it is probable the historian, Herrera, conceived that the existing local and endemic causes, rendered the persons of the Spaniards more susceptible of the

toutes les circonstances locales, favorables dans les Antilles, à la propagation de la fièvre jaune.)—But the circumstance which M. Jonnés appears to attach the greatest importance in this situation, is, that the town was built closely adjoining a village of the Indians; and in contact with their persons and their endemic and contagious diseases, (à proximité de la demeure des indigènes, c'est à dire en contact avec eux et avec leur maladies endemiques et contagieuses.) It is difficult to reconcile the copious endemic causes of disease and contagion on this occasion. The first colonists thus received, in his opinion, the seeds of infection of a fever, which has ever since, from time to time appeared in the different European settlements in the West Indies, and even in Europe, as trade or war has been the cause of migration, and consequently of its propagation. It hence appears, that the author wishes to establish as a truth that the infection of the “yellow fever,” existed among the Indians of St. Domingo before they were visited by Europeans—inherent in their persons, and attached to their huts and clothes, and communicated from these sources to the Spaniards, in consequence of their close intercourse with them. This opinion is most certainly ingenious, and would be sufficiently probable, if not satisfactory, had there been any facts to support it.—Any other proofs but the vague expressions and descriptions of the historians of those voyages, and of the settlements which were made by the Spaniards at that period. But, unfortunately, these very authorities furnish evidence that the probability is altogether in favour of the origin of the fever at Isabella, having been marsh exhalation. If contagion did actually exist among the Spanish settlers of Isabella, it was most probably introduced by themselves, and propagated by them to the harmless aborigenes of the country. We have, indeed, the authority of Herrera, for the healthy state of the ships which transported the Spaniards—“ses equipages n'avaient fait aucune perte; et conséquemment n'avaient emporté d'Espagne le germ d'aucune maladie,” &c. but we also know the tenacity with which typhous infection adheres to those substances which imbibe it; and the great length of time it may be dormant in the system of those people, who have been exposed to it. At Isabella, abundance of irritants existed for the excitement of it into activity, when it probably combined with the

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action of infection, which he imagined or believed, inhered or pre-existed in the persons of the natives. If such infection did really pre-exist, a most extraordinary circumstance, it must be confessed, then, no doubt, these endemic and local causes, marsh miasmata, great humidity, excessive heat, &c. would *propagate* it more readily, by augmenting the susceptibility of the European constitution. This happened at Martinico, and other places, where imported infection was rendered more deleterious by the pre-disposing influence of marshy exhalations, which abound at Fort Royal. The original Spanish word used by Herrera, translated by M. Jonnés, propagation, I am not acquainted with.

causes of yellow remittent fever, in the production of typhoid yellow fever. In expressing my doubt respecting the primordial existence of the infection of "yellow fever" among the aboriginal Indians of St. Domingo, I do not wish to combat the opinion of M. Jonnés—which, I repeat it, were it supported by facts and proofs, would be most highly satisfactory. The probability of imported typhous infection, as the cause of typhoid yellow fever (malig. pest.) if not on this, certainly on many other subsequent occasions, is demonstrated by the accounts given us of the state of the ships employed, during the sixteenth century, in the transport of troops and colonists, by Du Tertre. "When we consider the excessive crowd of passengers, composed chiefly of *pauvres engagées pour trois ans, qui n'ont pour l'ordinaire qu'une ou deux chemises,*" in the ships of those days; and the still more excessive filth with which they were incommoded, even to a degree we can scarcely give credit to—"la vermine s'en trouve enfin une si prodigieuse quantité que les cordages mêmes en font remplis, et on les voit monter à milliers comme des matelots," our astonishment will be justly excited, that pestilence should not be an almost constant attendant on their voyages. (Essay on Malig. Pest. Fever, Vol. ii, p. 103.)

On M. Jonnés principle, and, indeed, from the nature of things, the more extended the foreign intercourse of a country may be, so much the more will that country be exposed to imported contagion; and therefore, the instances given by this ingenious and learned writer, of countries naturally marshy and possessing all the other supposed causes of "yellow fever," and yet exempt from it, because they have little or no communication with those places which are a prey to it; do not prove any thing, unless this, that imported infection, typhous for instance, in combination with marsh miasmata, is the true cause of malignant pestilential, or typhoid yellow remittant fever within the tropics, or in tropical temperatures. The natives of many parts of Africa, the coast of Guinea more especially, are continually exposed with impunity, to the marshy exhalations which destroy thousands of Europeans, who are chiefly confined to the limits of their own factories; the same would doubtless happen to strangers resorting to Chili. One of the instances stated by M. Jonnés on the authority of Molina the natural historian of that country, although the natives suffer not from their marshes, (p. 200) and from the same cause, there is just reason to believe, the innocent natives of St Domingo were exposed with equal impunity, to the exhalations of their marshes, until European typhus, imported by the Spaniards, a cause unknown to them before, united with these exhalations to destroy them, as well as their cruel invaders. How much nearer the truth is the testimony of, I believe an eye witness, the historian of the expedition, Gonzalo Oviedo.—"En 1494, il na quit, parmi les Espagnols, une peste et une grande corruption. Elle fut causée par l'extreme humidité du pays; les hommes qui survécurent demeurèrent affligés d'infirmiétés incurables; et parmi

ceux qui retournèrent en Espagne, il y en avait dont le visage était devenu d'une couleur jaune de safran. Ils ne tardèrent pas à mourir des maladies qu'ils avaient rapportées, et qui leur donnaient *la couleur de l'or*, qu'ils avaient été demander à ces pays éloignés." (Monograph. 17) Indeed the principal means employed to combat the malady, dispersing the sick among the villages of the Indians, is a sufficient proof that there did not exist a primordial infection among these people. (P. 22.) Another curious proof, the following may be considered. A circumstance apparently trifling, but essentially important, is the name given by the native Indians of St. Domingo and other parts of South America to the "yellow fever," viz. *chapetona*; it appears by our author's explanation of it, (p. 8,) that it was commonly employed by the Indians to signify brigands or robbers, and applied to the Spanish invaders; and to the disease to which they gave origin, totally unknown before to the aborigines.

Although I am, for the reasons I have stated, disposed to think that M. Jonnés has not been successful in establishing his very ingenious speculation of primordial infection existing among the natives of St. Domingo at the time of the first settlement of the Spaniards at Isabella in 1494, and its propagation from thence to other parts of America and Europe; yet he has decidedly proved another most important point, viz. the infectious nature of "yellow fever," (Malig. Pest.) on many occasions.—He, indeed, by indulging in the belief of the aboriginality of the infection of this fever, on every occasion, in which it has appeared, unhappily falls into the error so common since the year 1793, of confounding endemic and local, with imported and foreign causes—or the effects of marsh miasmata with contagion.—He has thus adopted the extreme of contagionism, if I may so express myself, whilst the anticontagionists, maintain that of endemicism.—The truth lies between;—and that truth is found in the combination of typhous infection, and yellow remittent fever, a combination variously denominated, but always signifying the same thing.

The industry and learning of M. Jonnés are most clearly and usefully displayed in every part, indeed, of his excellent work: but they are brought to our view in a more summary, obvious and interesting way in his "Resultats," (p. 293). It appears from his 17th result that during 325 years, that is, from 1494 to 1820, there have been at least 274 irruptions of the "yellow fever," remarkable for their pestilential character, and the extent of their fatal consequences. He thinks, indeed, that with more extensive sources of information, than he has been able to resort to, the number might be nearly doubled.—Of these, three occurred in the last years of the 15th, century.—5 in the 16th—24 in the 17th—140 in the 18th—102 in the 19th.—The disease has been confined in its ravages, between the 8° and 46° north latitude; and between the 8° and 29° west longitude. It appears also from authentic and officia

documents that about 1 in about  $3\frac{1}{2}$  have perished by this dreadful scourge, from the first appearance of it at St. Domingo to the last year (1820.)

To guard the young and unexperienced medical gentlemen of the army and navy, against the insidious nature and appearance of this fever, and to point out to them the means I had found best suited to prevent and cure it, I was induced to publish my Essay on the Malignant Pestilential Fever, at two critical periods of the late war, 1795 and 1801. The same motives impel me now to a republication of that work, in a more compressed, and, perhaps, a more useful form.—Let me add, that, in thus again offering my observations to the public, I am directed, not only by the persuasion of a highly valued and respected friend, at the head of the medical board, but by the consciousness of the most perfect rectitude of intention, and by the innumerable demonstrations of their truth. These observations have been supported and confirmed by the reiterated experience of men of our own and other countries, who could have no motive for the publication of the result of their experience, but the public good;—by the solemn and matured decisions of the army medical board, now so well constituted;—and by the wise and salutary measures adopted by our own and other governments, in consequence of a thorough and deep conviction of the necessity for them.—I may then, with M. Berthe, appeal to my readers in the following forcible language. “Les faits que je viens de rapporter ne sont-ils pas suffisans pour confirmer l’opinion qui a été emise relativement à la véritable origine de la maladie, au temps de son invasion, dans les principaux lieux qu’elle a parcourus, ainsi qu’un mode de sa propagation? Je ne les ai point puisés dans des bruits populaires. Ils ont été recueillis dans un moment où les hommes encore épouvantés des scènes de malheur dont ils venaient d’être les temoins ne pouvaient être inspirés par d’autres considerations que par le besoin de faire connaître toute la vérité. L’opinion publique est alors véritablement pure; les intérêts particuliers, les passions ne l’ont alterée; *elle est le cri du sentiment.*”\* (Précis Historique de la Maladie qui a regné dans l’Andalousie en, 1800, p. 75.)

I have given in the first part, all the means of preventing infection within the tropics, which I have myself practised and found

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\* The facts which I have related, are they not sufficient to confirm the opinion, which has been stated relative to the true origin of the disease, at time of its invasion, in the principal places it has passed through, as well as to the manner of its propagation? I have not derived them from popular rumour. They have been collected at the moment in which men still terrified by the frightful and unhappy scenes they have witnessed, could not be influenced by other considerations, but the necessity which existed of making the whole truth known. At such a moment, the public opinion is pure and imbiassed—private interests and passions have no power over it. It is the expression of feeling.

useful, and which I have since collected from other sources. The necessity for resorting to them has been most justly appreciated in the United States of America, and in Spain, more especially Gibraltar;—but in the West Indies, there has been a languor in this respect quite unaccountable. The consequence has been a frequent recurrence of the pestilence, and great destruction of human life.

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## CHAPTER I.

### DESCRIPTION OF THE MALIGNANT PESTILENTIAL FEVER.

THE subjects of the malignant pestilential fever may be divided into three classes, differing from each other only in the degree of violence of the symptoms. The first class comprises—1. Sailors, more especially the robust and young, those least accustomed to the climate, and those most given to drinking new rum; 2. Soldiers, more especially recruits lately from Europe, and the most intemperate;—and 3. White males, in general, lately arrived, more especially young men from Europe.—The second class comprises, 1. All other white males, more especially the lower classes, and of them the most intemperate, and those debilitated by recent sickness; and 2. White females, more especially those connected with the shipping and the military, and those lately from Europe. The third class comprises, 1. People of colour, from Mustees to Cabres; 2. Negro men, more especially sailors and porters; 3. Negro women, more especially domestic servants; and 4. Children, more especially white and those of colour. In this classification, it will be remarked that women are much less susceptible than men; their proportion of immunity was as three to one. At Cadiz it was as 3 to 5.—It was also remarked in the United States, but the proportion was not stated. It will also be observed how much the approach to black in the complexion of those exposed to the infection, determined its violence, and its degree of capacity of propagation. The influence of colour, or more properly speaking, of idiosyncrasy in the negro constitution was so great at Grenada, that, in my practice, at least, only 1 in 4 had the fever, of those exposed to it, and only 1 in 83 died of it. The very trifling disposition of children to be acted on by the infection is another obvious remark. In all the West India islands, Antigua, I believe, alone exhibited

an exception ; and there, I have been informed, that children were, if possible, more liable to receive the contagion and to suffer by it, than adults.

To avoid repetition, I shall first describe the disease in its more violent form, and afterwards treat particularly of its most remarkable symptoms.

The patient, without any previous complaint, suddenly becomes giddy ; he loses his eye-sight ; every thing seems to move round him with inconceivable velocity ; he falls down almost insensible, and in that state remains half an hour or more. During this paroxysm, the body feels cold, and is overspread with cold sweat, which issues from every pore in astonishing abundance. On his recovery, the cold goes off, and is instantly succeeded by intense heat, and quick, small, hard pulse ; the head aches dreadfully, particularly the forehead and sinciput, which is generally accompanied with pain in the right-side, and at the præcordia. The last, however, has never been acute, and may rather be called oppression than pain. The eyes are much inflamed, watery, protruded, and wildly rolling ; the face much flushed ; much heat is felt at the pit of the stomach, and that organ seems to be considerably affected by nausea, frequent retching and vomiting, which then come on. The patient soon after complains of intolerable pain in the small of the back, and in the calves of his legs, but the last appears to be the most violent. During twelve, eighteen, twenty-four, or thirty-six hours, these symptoms continue increasing, except the quickness and hardness of the pulse, which do not change materially during that time, and are then succeeded by general coldness, cold sweat, a greater or less degree of coma and delirium, or a state very much resembling intoxication. Life, in this state, is lengthened out to sixty or ninety hours from the first attack. A short interval of reason then takes place ; the patient considers himself better, and is for a moment flattered with the prospect of recovery ; but a fit, as sudden and unexpected as the first, comes on, during which he foams at the mouth, rolls his eyes dreadfully, and throws out and pulls back his extremities in violent and quick alternate succession. The patient, in general, expires in this fit ; but some have recovered from it, and continued rational for a few hours longer, when a second fit has carried them off. This has been the general progress of the disease in its worst form ; and, indeed, there have not been many deviations from it. The principal of these, were the general symptoms coming on, without any preceding convulsion ; the patient has been comatose from the very commencement of the disease in some instances ; others have had the disease ushered in by a frequent succession of short convulsive fits, and it has, afterwards, been marked with constant delirium and cold clammy sweat, &c. the disease too, in a few cases, has seized the patient in the manner most fevers come on, that is, with shivering and a sense of cold. The most constant symptoms, and consequently those which dis-



tinguished the disease, were the uncommon suddenness of the attack; the remarkably acute pain in the calves of the legs and the loins; the watery, inflamed and rolling eye; the flushing of the face; the tendency to coma from the very onset; the peculiarity of the delirium, and the pain confined to the forehead seldom extending to the temples, or even to the sinciput. However mild cases might be, in other respects, these were always present. In no disease I have ever met with, is the physician more liable to be deceived; for often, every symptom indicating danger, has been apparently removed, the skin has become cool, the pulse seemingly natural, and the stomach so retentive as to receive and retain a large quantity of bark; when convulsions have suddenly seized the patient, and in less than half an hour deprived him of life; or delirium and cold clammy sweats have superseded these favourable appearances and forerun dissolution.

The *delirium* attending the malignant pestilential fever is, I have said, of a peculiar cast.—During it, the countenance, the eyes, and the actions of the patient resemble very much those of a drunken man; and, thus, bears a near affinity to delirium in the plague. It is almost always mild, and never furious; but is accompanied constantly with restlessness and efforts to get out of bed. In a few instances, these efforts rose so high as to render the endeavours of the assistants of no avail; the patients dressed themselves, went out, and walked a considerable way before they could be overpowered. The mind seems agitated by the objects which were most its pursuit during health. But in all cases of delirium, whatever the object may be which the patient raves about, he is evidently and strongly actuated by fear; and a word from the physician immediately reduces him to the most implicit obedience, however restless he might have been before. No pain is complained of during this state; the irritation of blisters have no effect in rousing the patient; and the operation of medicines that prove laxative, although not administered with that intention, passes without observation, and without sensibility. The patient, on being questioned, respecting his situation, seems to recognize the person who speaks, but never complains of any thing, his answer being constantly that he is very well. Indeed, during the low state of the fever, whether delirium is present or not, the sensations of the patient seem exceedingly imperfect; and, instead of referring to any symptom which the bystanders perceive evidently, his answer invariably is, that he is very well, and sensible of no pain. During delirium the patient's lips are in continual motion; he is continually muttering, and continually attempting to reach to some object which his deranged imagination presents to him. The strength, during delirium, appears to be surprisingly great, for it is frequently necessary to use the united efforts of two or three men to keep the patient in bed. This, however, is no more than a spasmodic affection of the muscles, for in reality, the powers of the sick, in this disease, are reduced to the

extreme of debility, as is seen in the convalescent state. The delirium comes on, generally, at the commencement of the low state, but is frequently present during the whole of the disease.

Coma is the next most remarkable symptom in this fever. After the first two days, there is always more or less tendency to it; but after the third day, if the patient survives it, it has been in almost every instance present. He appears drowsy, and is insensible of pain or irritation of any kind; he moans and sighs much, but is immoveable, unless called on; he generally lies on his back, with his eyes half open, the balls of which do not appear to be capable of motion; if there is any, it is extremely languid; their lustre is also much diminished. For some time I could not account for the supervention of this state at a certain stage of the disease; anxious to discover whether it depended on any peculiar affection of the sensorium, I examined the brain of two men who died on the fifth day. These patients became comatose on the third day, in which state they continued till a convulsion put a period to their existence on the fifth day. In the first I examined, the upper part of the cranium, on being sawed and prized up by a chissel, was so pressed from within by the distension of the cerebrum as to fly off, or separate in such a manner as if a spring from within acted upon it.—On cutting into the cerebrum, the quantity of serous fluid was surprisingly great, but it was impossible precisely to ascertain it. In the brain of the second the quantity of serous fluid was also considerable. After observing these appearances, I was induced to examine more attentively the state of the eyes, and I have not the smallest hesitation in declaring, that in all those who became comatose, there was a very considerable and permanent dilatation of the pupils, an appearance which left no room to doubt respecting the state of the brain, and the nature of the symptom it gave rise to. This very singular appearance, I believe, had very generally escaped the notice of physicians in malignant and pestilential fevers, before the publication of Dr. Rush's account of the Philadelphia fever, and the first edition of my *Essay on that of Grenada of 1793*. Many medical practitioners of eminence in the West Indies have since assured me, that after their attention was directed to the state of the brain, they found this dilatation of the pupils so remarkable as almost to distinguish the fever.

The appearance which marked the character of the fever very unequivocally was a species of efflorescence, which is said to be peculiar to malignant and pestilential fevers. This efflorescence resembled more patches of red or livid spots, than what is generally understood by the word *petechiæ*; and appeared sometimes at the commencement of the low comatose state; but oftener a few hours before death. It was a very fatal symptom, for I do not recollect a single instance of recovery when it took place. The neck, shoulders and breast were, generally, the parts of the body the eruption broke out on; but in a very few very violent cases, almost the whole body has become of a deep livid or black colour three hours before death. In one instance, a young and beautiful married woman

just arrived from England, petechiæ appeared on her neck, breasts and arms; and it was the only one in which I observed any thing of the kind. It is worthy of remark that petechiæ were by no means common in the plague of Aleppo, but that wales or vibices were, on the contrary, very frequent; and that the state of these eruptions, as it is described by Dr. Russel, as well as the nature of the prognostic to be drawn from them, resembled very much indeed what took place in the malignant pestilential fever. (Russel's Treatise p. 132—137.) The same physician takes notice of two other species of eruption, which he observed at Aleppo, and which seem to be peculiar to malignant and pestilential fevers. These not unfrequently appeared in the fever before us. One of them was very remarkable, and is thus described by him, "a certain marbled appearance of the skin, sometimes visible in different parts in the height of the disease, or some hours before death."

The pains complained of in this fever, particularly those of the head and legs, are, in many respects, peculiar to it. The first is confined to the forehead, and shoots inwardly towards the bottom of the orbits, where it is generally exquisite; it also sometimes, extends to the temples, where, indeed, there is always a throbbing. In no case has there been pain in any other part of the head. The eyes are always inflamed at the same time, the balls are generally protruded, or seem ready to start from their orbits, and the patient is sensible of a pain in them, which renders the admission of light intolerable. It has sometimes happened that the right eye is the most affected; and when it is so, the pain has been chiefly confined to the right side of the head. The other pain, which seems almost peculiar to this fever, has been uniformly felt immediately below the calf, where the gastrocnemii and soleus muscles unite and form the great tendon. A considerable involuntary contraction of the legs takes place in consequence of it; and in the point where it is chiefly felt, it communicates a sensation similar to gnawing, which, from time to time, occasions great torture. Upon the whole this pain resembles very much the cramp, with this difference only, that it is, during the continuance of the fever, more permanent.

I have already observed, that, at the commencement of this fever, the pulse is quick, hard and small, and it is always so in the more violent cases. It is not unfrequently, however, very full at this period, and when it is so, it affords a favorable prognostic. But in no disease is the state of the pulse more subject to variation. It has oftentimes happened, especially with the robust, that, during the stage immediately succeeding the febrile one, flushing heats and cold shivering have alternated in less than a minute; and that, although the skin felt considerably warm, the pulse has been no more than 52; but that, even, when the low state came on, in which there is always a disagreeable coldness of the surface, it has been as quick and nearly as full as during the preceding febrile stage, although unaccompanied with thirst, or any other evident symptom of the presence of fever. A remarkable circumstance of the pulse

in this disease is, that it never intermits; even at the approach of death it has not intermitted, but has been, generally, remarkably tremulous, and so slow as to beat no more than 30 times in the minute. Upon the whole I have never found it quicker than 130, nor slower than 30 in a minute. It is remarkable that the slightest pressure, in several cases, could produce a cessation of pulse.

Subsultus tendinum is, by no means, a common symptom in the advanced stage; but tremor of the hands and of the lips, and violent spasmodic contraction of the legs and arms are very common, and always prognosticate much danger. Dr. Russel observes that in the plague, "convulsive motions in the limbs were frequently observed in the course of the disease. The subsultus tendinum appeared to me to be less frequent than in ordinary malignant fever, but a continual trembling of the hands, without startings, was very common." (Treatise, p. 90.)

The appearance of the tongue was very various; in some cases continuing white, with florid edges to the very last; in others, becoming dark-coloured very early, and changing to black a little before death; but, in general, the change of colour of the fur with which the tongue, teeth, and even the fauces are covered is gradual. Thus, during the first two days it is white or of a clay colour; it afterwards becomes buffy; then of a deep orange; about the fifth day brownish; and when the case terminates in death, black. The thickness of the fur increases with the disease, and seems latterly to impede much the speech of the patient. The edges of the tongue are generally florid, exactly resembling its appearance in chronic apthæ. Sometimes I have observed it to have the appearance of having been exposed to soot, or rather what is commonly understood by the expression, smoke-dried.

Apthæ sometimes occurred, and were, generally, a bad symptom. Those I observed were always of the white kind, resembling curd, and have been accompanied with a thick fur, of the same consistence and colour, on the teeth and gums. There are, however, two kinds of eruption about the lips, of a very opposite nature; one such as frequently appears at the termination of common remittents, and indicating a favourable change; the other, consisting of black spots or specks, such as might be made by the point of a painter's fine pencil, all round the mouth, but especially on the upper lip, and near the edge of the prolabium, and indicating with certainty a fatal termination. The first generally appears about the fifth day; the second about the beginning of the third.

Hæmorrhage has appeared in this disease more frequently and more profusely, and has been attended with more dangerous consequences, than in any other, the scurvy, perhaps, excepted, I have met with. In several instances, the quantity of blood discharged has been so immense, as evidently to have been the immediate cause of death. Robust, plethoric and gross habits have been the most subject to it. It has taken place from the nostrils, mouth, anus and urethra; some-

times from the canthi of the eyes ; and less frequently from the ears and pores of the skin ; but the most profuse discharge has been from the nostrils and anus, and has frequently amounted to three or four pounds at a time ; the stools on those occasions having been composed entirely of pure blood. Towards the close of life, the blood, thus discharged, has appeared granulous, or ichorous, and has deposited a sediment of a black gritty substance ; and has been so extremely offensive, as to oblige all the attendants to keep at a considerable distance till the hæmorrhage ceased. Hæmorrhage, however, has never been critical, nor has it, in any instance, permanently relieved the head-ach, or pain in the breast or side. I have, sometimes, been induced to think, that the patient experienced benefit from it, by his declaring that the head-ach had abated in consequence of it ; but cold clammy sweats, an almost imperceptible pulse, and delirium or coma, supervening soon after evinced the imperfect state of the patient's feelings, and the fallacy of the prognostic. Nearly about the period these profuse discharges of blood came on, a rawness was perceived on the whole of the interior surface of the nose ; and on several parts of it, little ulcers formed, on others small eschars which were excessively itchy ; but on being touched, or an attempt made by the patient to detach them, they became painful and bled. These disappeared in proportion to the patient's recovery ; or, when the case terminated fatally, they became gangrenous.

About the same time another symptom appeared in many instances, which, were it not for its singularity, might be considered too minute to be mentioned among those which distinguish the disease. Its singularity arises, chiefly, from the silence of modern writers on the malignant, hospital, or jail fever, with respect to it ; and from its appearing to be critical in the present instance when it has occurred. About the end of the second day, the patient begins to complain of a violent pain in his testicles ; on questioning him, he says, he perceives a contraction of the spermatic cord, and is sensible of a drawing up of the testicles towards the abdominal ring. On examination, they appear very much lessened in size, are drawn up very considerably towards the abdomen, and the scrotum appears, at the same time remarkably flaccid and empty. The surface of the scrotum becomes, soon after, very painful, and an excoriation takes place, principally at the most depending part, from which a considerable quantity of very offensive purulent matter issues ; at the same time a similar discharge from the urethra takes place, which ceases with the disease when the event is favorable, or becomes ichory or bloody, and insufferably fetid when death is the consequence. In cases which terminate favorably, the discharge seems to be critical :—in such, the whole of the scrotum, in a few days, is covered with a coat of hardened pus, which, in the convalescent state, comes away very easily by means of a warm bath. The thickness of this coat may be about the fourth of a line,

and when separated very much resembles moistened parchment. In fatal cases, when this symptom appears, the whole scrotum and penis mortify, with exquisite suffering.\*

\* Something of this kind is mentioned by Thucydides, in his celebrated account of the plague of Athens. In Dr. Clifton's translation of this part of Thucydides' history, there is the following passage: "for the disease went through the whole body, beginning first in the head; and if any escaped, where the case was very desperate, this was denoted by the *extremities* being affected; for it broke out upon the *private parts*, the fingers and toes, &c. (Clifton's Translation of Hippocrates, upon Air, Water, and Situation, &c. Edin. 1739, p. 97.) In thus rendering the expression "των γε ακρωτηριων αντιβησις αηθς επεσημαινε," of the original, Dr. Clifton has followed the example and authority of his predecessors; and the general formation of the passage, and the probable meaning of the author, seem to give stability to this explication; for the word ακρωτηριων, although it cannot be said to apply to the *private* or genital parts, but in a very general and loose sense, yet figuratively it may, and thus, were we to consider the scrotum and penis as comprehended under the appellation of extremities of the body, which ακρωτηριων properly signifies, then the propriety of its use here would be manifest. That this is the sense of Thucydides appears more clearly from Lucretius adopting it, and from the universal coincidence of the commentators. This opinion appears still more proper from the sentence immediately following, in which the gangrenous affections of the *hands* and *feet* are mentioned, "κατεσκηπσε γαρ και ακρας χειρας και ποδας." On the style and language of Thucydides, the Abbé Barthelemy makes the following observation. "If this estimable author, Thucydides, employs obsolete expressions or novel words, it is because a mind like his can rarely accommodate itself to a language which is spoken by every body." (Travels of Anacharsis, &c. vol. iii, p. 390, 3d. Ed.) In the subjoined case, had the patient recovered, there is a probability, that the operation, which Lucretius says was sometimes resorted to in the plague of Athens, would have been necessary, viz. emasculation, or amputation of the penis, at least. The case occurred in May, 1794. Mr. O'Hara, an officer of his Majesty's 56th regiment, uncommonly robust, aged about 20, having been seized with all the symptoms in the more violent degree of the malignant pestilential fever, had on the fourth day a very large discharge of purulent matter from the urethra, attended with very considerable swelling of the scrotum. The discharge continued to increase all the fifth, and I began to form a favorable prognostic from it. On the sixth it became ichorous; the penis swelled to a monstrous size, as did the scrotum; and both began to change to a black colour. These unfavourable appearances increased rapidly the seventh and eighth, and the discharge became then a putrid sanies, excessively offensive. On the day of his death, the ninth, the scrotum was fully nine inches diameter, and the penis three, and both completely mortified and black. During the latter days of his illness, he lost a prodigious quantity of blood, from the nose, mouth, ears, eyes, and even the pores of the skin.

I may here take occasion to notice a very curious fact quoted by Dr. Robertson, (History of Atmosphere, &c. p. 390—393) respecting the means of preventing the action of pestilential virus in the system. "In the plague that appeared at Leyden, 1564, Platerus perceived that those who had issues were not affected by it, and that, during its prevalence, a monk went about practising this method of prevention, which was then regarded as a charm, on account of the manner he used to bring on the suppuration; his method was to perforate the scrotum and then to introduce a bit of black hellebore into the wound, which brought on a plentiful suppuration in a short time." If we compare this with the critical deposition in the scrotum of coagulable lymph and pus, observed in many cases

The change of voice is very remarkable in this fever; for, from a strong tenor or manly sound, it sinks to a treble, or a sound much softer, lower and shriller than the natural one; the syllables are more distinguished, and the words are strangely lengthened out in a drawling or whining manner. When patients have sunk under the disease, the change of voice happens much earlier, and more remarkably than in others. It has, therefore, always afforded me a pretty certain prognostic of the event; for any alteration of the sound towards the natural one, is an almost certain sign of a favourable change.

A suppression of urine is by no means an uncommon symptom in the bilious remittents of hot climates; and, in general, it is a circumstance which often occurs in fevers of a synochus or typhus character; but in the malignant pestilential, it is particularly remarkable for its coming on early, its duration, and the cause which seems to produce it. In the third volume of the *Edinburgh Literary Essays*, there is a very ingenious and useful paper on the affection of the urinary bladder, which Dr. Gilchrist, the author, has called a "thickening of the bladder." To this I might refer for a description of the state of the bladder occasioning urinary suppression in this fever, for on inspection after death it appears exactly similar. Here I shall only observe, that the suppression is accompanied by a violent pain above the os pubis; a scalding in the urethra, a sense of fulness, without any visible turgescence of the region of the pubis; a considerable contraction and contorsion of the penis; and the urine is generally of a very deep red colour, sometimes brownish, sometimes green, very frequently bloody; and in a few instances, much inclining to black, and of an oily consistence. The smell of the urine was generally offensive in the highest degree.

Constipation almost universally prevailed; a circumstance extremely unfavourable, as the means used to obviate it always increased the tendency to gangrene, by bringing on debility proportioned to their effect. This appeared to proceed from a suspension of tone in the intestinal canal; for, on exciting it to action, a redundant evacuation was generally the consequence. The *fæces* at the commencement of the disease were seldom very fetid; but during its progress, became excessively so; and a little before death, when they were discharged insensibly—the smell was intolerable. The colour and consistence of this discharge varied much, from yellow, or a yellowish white to black, and from a considerable degree of solidity, to the exact appearance of coffee grounds. The discharge

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of the malignant pestilential fever, and particularly noticed in the foregoing note, we shall be struck with the propriety of this preventive remedy, and with its close affinity with the process of nature in throwing off the matter containing the seeds of the pestilence, if I may so speak.—In the preventive method employed by the monk, at Leyden, these seeds are discharged before they can vegetate and produce their kind; in the critical, the stock is concentrated, and then thrown out of the system in the form of coagulable lymph, or purulent matter.

by vomiting, which became a most dangerous symptom at the commencement of the low state, also varied much, although for the most part poracious; but towards the fatal crisis, always black, and like coffee badly boiled. It came on, in most instances, about the end of the second day, and was concomitant with the other more dangerous symptoms, such as cold skin, coma, &c. The thirst was not very considerable in general, and no very useful indication could be drawn from the state of it. It was, however, a bad sign when the thirst ceased, especially, if at the same time, the tongue appeared parched, cracked and black.

A symptom of the plague described by Dr. Russel (p. 84.) was pain at the heart. "The patients, he says, often complained, my heart, my heart, or, my heart pains me, or my heart is on fire."—Similar sensations were perceived by the patients afflicted with the malignant pestilential fever. During the years 1793 and 1794, I did not remark this so distinctly as to consider it peculiar to, or in any manner diagnostic of, the fever which then prevailed in the island of Grenada; but after my return to the West Indies, in 1796, I met with it frequently, but more particularly among the natives of Ireland, labouring under a fever distinguished by the prominent symptoms of the malignant pestilential. These people in very many instances complained of their heart at a certain period of the fever; and their doing so, with certainty, indicated a fatal termination. When desired to mention the symptoms which most distressed them, "my heart, my heart," was always the answer; and this accompanied by a countenance singularly agitated, and marked with the deepest traces of despair.

A principal distinction between the malignant pestilential fever and the yellow remittent, is the suffusion which takes place. This in the former, never exceeded a dinginess, or a peculiar mixture of livid and dirty yellow.

In negroes the manner in which this disease came on, was, in some respects, different from that in whites. Although the pulse was often 116 in the minute, yet the skin was cold, and anointed with oily sweat; the headach and pain in the back, and at the præcordia, were very violent; and the oppression and anxiety were apparently very considerable, for the patient's sighs and melancholy aspect indicated much internal perturbation; yet with all this appearance of violence, the disease most readily yielded to simple evacuation. Seldom was it necessary to bleed, or to administer mercury, and seldomer bark, unless to please the patient, or to remove the apprehension of his master.

Idiotism or fatuity took place, in some instances. It occurred when the febrile heat, and other ardent symptoms of the first stage had ceased, and continued for four or five days. The body, during this state, was remarkably cool and moist; the tongue and gums were covered with a dark-coloured fur; and the eyes had an uncommon, unmeaning stare. When idiotism or fatuity occurred, it was remarkable that the mercury had not hitherto acted; and as the tendency to coma, with cold sweats, and dingy suffusion on the



surface, had come on, I entertained very faint hopes of the patient's recovery. The mercury was pushed, and at length excited salivation; from that moment the mind was restored to a rational state.

If the eruption of buboes, carbuncles, and other swellings of the lymphatic glands, is considered as a necessary condition in fixing a pestilential character, they have not been unfrequent in the disease before us. Buboes in the groins and arm-pits have occurred in several cases, but they have been uniformly the prognostic of death. Parotids have been more frequent, but, in general, were not more favourable than the buboes. Dr. Russel observed that "where the case terminated fatally, the parotids never became soft, though sometimes inflamed externally; but, increasing to a large size, the patient perished as if by suffocation." Cases occurred at Grenada precisely in point. I have not seen carbuncles in any case which terminated fatally; but in many who recovered, they were numerous, large, and very troublesome. They occurred chiefly in the young and robust; and always about the period at which the dangerous symptoms disappeared; and, indeed, so exactly did the appearance of the carbuncles fall in with the favourable change in the disease, that I have always considered them as a critical discharge; the only thing of the kind, except the purulent discharge from the scrotum and urethra, I have been able to observe in this fever. There was indeed, one other species of eruption in this fever, which must not be overlooked, because it seemed also critical; pustules similar to those of the distinct small pox, filled with thin purulent matter, appeared about the fifth, seventh, or ninth day; these and resolution of the fever were concomitant.

Most other diseases degenerated into, or partook very much of, the nature of this.—Dysenteries suddenly stopped, and were immediately succeeded by the symptoms of the pestilential fever. A remarkable instance of this, occurred in the month of July, 1793. About the beginning of the month, twenty-seven recruits joined the detachment of Royal Artillery, at Grenada. These men, immediately after their arrival from England, formed part of the artillery of the army under Major-General Bruce, employed in the fruitless attempt to reduce Martinico in the month of June. During the three days they remained on shore, they were encamped, and almost the whole time exposed to heavy rain. Dysenteries were the consequence; and most of them, on their arrival at Grenada, were admitted into the royal artillery hospital, where, at that time, there were many cases of the pestilential fever. The apparent effect of the medicines they took very much surprized me, but in a few hours after the symptoms of dysentery disappeared, those of the pestilential fever came on. Catarrhal complaints, simple at first, soon changed their nature. Convalescents from other diseases, were sure to be seized with this, if imprudently exposed to its contagion; but in them it generally proved mild. Those labouring under chronic complaints, particularly chronic rheumatism and hepatitis, were also very subject to it. The puerperal fever became malignant,

and, of course, fatal. And even among pregnant negro women, who otherwise might have had the disease in the usual mild degree, peculiar to that description of people, were brought into great danger by it. In short, every disease, in which the patient happened to be exposed to infection, sooner or later assumed the appearance, and acquired the nature and danger of the malignant pestilential fever. This conversion of disease to the nature of the prevailing pestilence, has been always observed in such epidemics.

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## CHAPTER II.

### DISSECTIONS.

THE danger attending the opening of bodies in the malignant pestilential fever, prevented me from extending my enquiries this way so far as I, otherwise, would have done. I opened only five, the appearances of which I shall here describe. Three of the five were sailors, who died on the fifth day, and laboured under the worst symptoms of the disease. In one of them it began and terminated with convulsive paroxysms. The intestines were much inflated, inflamed, and sphacelated, particularly the duodenum, a little beyond the pylorus; the liver had shrunk to less than one half its natural size, was uncommonly flaccid, and of a colour nearly approaching to buff, or a mixture of yellow and a sky; the gall-bladder was flaccid and greyish, and contained a small quantity of very dark-coloured ropy bile; the spleen and pancreas were in a natural state; but the lungs were highly inflamed, and of a livery texture and hue; a circumstance the more extraordinary, as no symptom of marked pulmonary affection could be perceived during the existence of the disease. The urinary bladder contained near three quarts of urine, and was dilated to considerably above the os pubis, and its coats were much thickened. This patient had been constantly tormented with pain through the whole region of the pelvis, and almost a total suppression of urine. The second body was remarkably robust and athletic, and had been seized with the disease in the form of an aguish fit, but died strongly convulsed. The viscera were generally in the same state, particularly the liver. All the blood-vessels of the intestines were uncommonly turgid; the right kidney was mortified, although no symptom, during his illness, of inflammation of that organ, was perceived. The quantity of urine was small, although the suppression had been considerable; and the bladder, a good deal enlarged, felt much like an elastic gum syringe; the coats were much thickened, but renitent.

The principal morbid appearances in the bodies of the third and fourth, I have already described. These were the only subjects in which I examined the state of the brain. To what I have already said of the dissection of these bodies, I have only to add, that the viscera of the abdomen and thorax were precisely in the same state as the others; and that one was a young man of the royal artillery, about 18, who arrived with his master, Captain Irwin, of that corps, from England, about six weeks before; was remarkably florid, robust and lively, and obstinately refused to avail himself of medical assistance during the whole of his illness. In the brain of this young man, the quantity of blood was surprisingly great, for exclusive of what was lost in opening the cranium, fully two pounds were collected. In the left ventricle the quantity of water was also very considerable, but there was none in the right. The fourth ventricle contained a larger quantity than ordinary; and the plexus choroides was almost obliterated. There was no polypous concretion in the heart. In the fifth, a young man of the royal artillery, just arrived from England, who died in twenty-nine hours from the commencement of the fever, the appearance of the viscera was precisely the same. This young man's fever abated considerably on the breaking out of a copious diaphoresis; his stomach was remarkably retentive, which enabled him to take at least two ounces of bark in a very short time. As he was preparing to take a dose of this medicine, he felt a little uneasiness at his stomach, which induced him to defer it; but on laying himself down, he expired without a struggle.

Several bodies of the soldiers of the 45th regiment, then, (1793,) in garrison at Grenada, were examined by the medical officer of the regiment, and in all, the same appearances were remarked. The brain was not examined in any instance, but from the symptoms, particularly the coma, delirium, and dilatation of the pupils, being precisely similar, little doubt can remain with respect to the state of it.

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### CHAPTER III.

#### PROGNOSTIC—CRITICAL DAYS, &c.—RE-INFECTION.

FROM the circumstances of the malignant pestilential fever, related in the preceding chapter, it will readily appear that the mode of termination could not with certainty be foretold by any of them singly. The particular state of any of the excretions, or the morbid appearance of any organ, unless the changes which took place in the other symptoms were attended to, could not afford any precise

prognostic. It was, in truth, only from attention to the general state of the patient, or the result of a combination of all the signs, any idea could be formed of the probable event. Thus the state of the eyes, the change of voice, the general aspect of the countenance, and the degree of torpor or insensibility of the system, and the consequent and obstinate inactivity of the mercury already exhibited, afforded the worst, and the reverse of these, the most favourable prognostic; and, certainly, from them much useful information might be obtained. Thus, also, I generally observed, that the longer the symptoms of inflammatory diathesis continued, provided their violence was not progressive, the event became more favourable; and, on the contrary, that when the sudden disappearance of these was immediately succeeded by a seeming state of apyrexia, the worst symptoms, such as coma, delirium, clammy cold sweats, vibices and death, might be soon expected. In the first case, the patient was gradually thrown into an agreeably warm and universal diaphoresis; irritability of the stomach ceased; the eyes became more lively; and soon after, the signs of returning health were evident. The prognostic in the plague was drawn from the general state of the patient, and could not be ascertained by the state of any one function, nor the appearance of any one organ; and, indeed, Dr. Russel's opinion relative to this part of his subject, exhibits and manifests a wonderful coincidence of the nature of both diseases. (Treatise, p. 85—89.)

It is a general observation, that in malignant fevers, the critical periods are more distinctly marked than in any other; the disease before us furnished an additional proof of this. In no disease within the tropics, are these periods more distinctly marked. The cessation of the disease, and the death of the patient, always happened on the odd days; but the change in the state of the symptoms which preceded either event, took place on the even days. Thus, if the patient was worse on the evening of the second day, he would die on the third; if worse, on the fourth, he would die on the fifth; and so on as far as the fourteenth day. Beyond that period, I have not seen an instance of the disease ending fatally, although it has been protracted, in a few cases, to the twenty-first day. In the same manner, if the patient felt better, or if there was an evident abatement of the symptoms, on the second, fourth, sixth, &c. days, the resolution or cessation of the disease would happen on the following days. The accuracy of the critical days was observed by Dr. Rush, in the fever of Philadelphia.

A very satisfying illustration of this proceeds from the result of my practice in the malignant pestilential fever, in the royal artillery hospital, in Grenada, in the year 1793. One died twenty-nine hours from the first attack, six on the third day, eleven on the fifth day, three on the seventh day, five on the ninth day; thirteen began to recover from the thirty-sixth hour to the fifth day, thirty-one from the seventh to the ninth day.

The history of the malignant pestilential fever, exhibits a very

distinguishing character. We see in it a disease dispossessed of alternate paroxysms and remissions; and having in its progress three distinct periods or stages:—the first characterising an inflammatory diathesis of a peculiar nature, ushered in, generally, by a convulsive affection of the frame or a sudden morbid excitement of the nervous system; the second, a kind of suspension of all the animal functions, accompanied with a more or less imperfect exercise of the mental faculties—and the third, a general sphacelus of the vital organs, and a fatal compression of that more immediately employed in the support of life. In the first two periods nothing like a remission can be observed; in the third there is sometimes seen an alternation of delirium and convulsion; and short intervals of reason and freedom from pain, which only serve to mark more strongly the insidious nature of the disease. But it is necessary, more particularly, to point out the diagnostic symptoms of the disease.

A slight attention to the detail of the symptoms as they rise, will satisfy us that a principal distinction between the malignant pestilential, and yellow remitting fevers, is the supervention, in the former, of a state, at a certain invariable period of the disease, in which a total absence of external, but an accession of a most pungent internal heat, with a singular change of pulse, take place. In the less violent cases of the fever, this state is not marked with much deficiency of recollection and sensibility, although there is always some tendency to coma, to drowsiness, and an uncommon degree of debility; but in those of a higher degree of malignity, sensibility and recollection are lost: and fatuity, deep coma, accompanied with a deadly coldness of the surface, clammy sweats, and permanent dilatation of the pupils, suddenly succeed them. The supervention of this state has no connexion whatever with apyrexia, nor with that abatement of the symptoms distinguished by the name of remission; for the pulse fully evinces the latent fever which then preys, literally, on the vitals of the patient. It constantly and uniformly happens on the evening of the second, or morning of the third day of the disease; and continues invariably till the change prognosticating recovery or death appears. Then signs of the former are perceived, or convulsions precede the latter.

Besides this general and obvious distinction, there are other circumstances of the malignant pestilential fever, which manifest a character of a nature different from that of yellow remittent fever; different, it is to be understood, inasmuch as can be, in a disease, the features of which, the yellow remittent fever partly contributed to form. In all those features, we see the participation of a foreign agent, in the typhoid or pestilential type; and of the endemic, in the ardour of the inflammatory diathesis in the first attack. The delirium of the malignant pestilential fever, resembles that in typhus and plague, being marked with the fatuity, silliness, and the stammering and faltering of the voice, peculiar to those maladies. In some cases, it approached to the wild furious delirium of yellow

remittent fever, in the early appearance of it, although it soon sunk into that of typhus and plague. The pains differed essentially. In the fever before us, the pain across the forehead also shoots inwardly, and seems to arise principally from an affection of the optic nerves. Exquisite torture is produced at the bottom of the orbits; and, not unfrequently, a temporary privation of sight is one of its consequences. This is by no means generally observed in the yellow remittent fever, for in it, the pain is perceived in every part of the head; is as violent in the occiput as in the sinciput; and is not particularly felt at the bottom of the orbits. The singular affection of the pupils, so universally a symptom of the malignant pestilential fever, cannot be perceived in the yellow remittent; for although a turgescence of the blood-vessels, and a filmy exudation on the surface of the ball, are never absent in the latter, yet dilatation of the pupils is not concomitant. I may safely add, that wherever the last symptom has been remarked, something more than the miasmata of marshes has been the cause of the disease. The pain confined to that part of the leg where the gastrocnemii and soleus muscles unite and form the tendo achillis, is peculiar to the malignant pestilential fever. The pains in the lower extremities, in the yellow remittent fever are general, and are felt in the thigh as much as in the leg; which I have never found to happen in the former. The state of the pulse furnishes a remarkable diagnostic—variable; slow, with evident external heat; quick, with absence of heat at the surface; not intermitting at any period of the disease, but tremulous. The frequency and extent of hæmorrhage in the malignant pestilential fever, seem to constitute a remarkable distinction; for although hæmorrhage does sometimes take place in yellow remittent fever, it is by no means alarming; and much more frequently it does not at any period of the disease happen.—The change of voice, which uniformly occurs about the commencement of the second period of the malignant pestilential fever, demonstrated a peculiarity in the nature of the disease.—Constipation is a constant attendant on the malignant pestilential fever; but it is far from being remarkable in the yellow remittent fever. The debility and oppression—the extreme despondency—the insensibility and want of apprehension—the self-deception, and suspension of memory—all tend to evince a peculiar character; or, at least, one differing essentially from that of the yellow remittent fever.

Another very important circumstance which presents itself as a distinguishing symptom between these fevers, is the discolouration of the skin at a certain period. In the malignant pestilential fever, the discolouration is not yellow but dingy, and such as is frequently produced on the extravasation of blood in consequence of contusion. In the yellow remittent fever, it is a deep yellow; and such as bile tinges linen with. Dissection discovers the cause of this diversity; in the former the biliary ducts are open and permeable; in the latter, almost always obstructed. It is hence that a mixture of bile in the fluid, vomited in the course of the yellow remittent fever, is considered as

a very favourable sign, furnishing a proof of the obstruction of the biliary ducts being removed, and consequently of the dangerous state of the disease having terminated.

But the most remarkable distinction between the malignant pestilential fever, and the yellow remitting, is contagion. Many well authenticated facts, observed in situations totally unconnected with Grenada, except in the circumstance of infection having been derived from that island, render this matter evident. In a work such as this, it is not necessary to enter into an argumentative discussion to prove the proposition.—For public safety, however, *it is necessary that it should be firmly believed*, so that the proper measures of prevention of so terrible an evil, may be early and sedulously instituted. I shall satisfy myself here with the adduction of two contemporary authorities, the respectability of which will more than compensate a multiplicity of facts tending to the same object. The ingenious, experienced and venerable Dr. Wright, physician on the staff of the West India Army in 1793—98, thus supported my opinion, without having seen my Essay, and without having any personal acquaintance with me, for it was not till towards the end of the year 1797, I was gratified with several interesting conversations with the doctor on this subject at Barbadoes.—“Some late authors, says he, who have written on West India diseases, have roundly asserted, that in tropical countries fevers are not contagious; but whoever has had the care of crowded hospitals, of jails, of ships of war, or of transports full of troops, must have seen numerous and fatal instances of contagion in the West Indies; more especially where cleanliness and free ventilation have been neglected. From causes of this sort, a most fatal and destructive disorder broke out in the West Indies in 1793, and soon after in Philadelphia, viz. the yellow fever. Dr. Rush has classed this disorder with remittents; but every one who has practised in the West Indies, knows for certain, that the remitting fevers of warm countries are not contagious. From Dr. Rush’s book, and from the numerous letters of my correspondents, there remains not a doubt in my mind, of the yellow fever being typhus, exalted to a great degree of virulence from climate, situation, and other adventitious circumstances.” (Med. Facts and Observ. vol vii.) This paper is dated Dec. 10th, 1794, fully two months before the publication of the first edition of my Essay on the malignant pestilential fever.—The second authority is very important from its arising entirely from a conviction founded on actual experience, and from its complete coincidence with my opinion, without any personal knowledge of me, and without any acquaintance with my Essay, which, indeed, at that time was only very recently published. It is equally important on another account—it furnishes an additional evidence of the fact of imported infection into the West India Islands. By referring to the 2nd volume of my Essay, 2nd ed. p. 314, it will be found that I have stated the origin of the malignant pestilential fever at Tortola; if any thing can tend to the establishment of truth, it must be the undesigned

unpremeditated correspondence of observation of the same fact in the following letter from Sir James Mac Grigor, director general of the medical board, at that time (1796) surgeon to the 88th regiment of foot.

Portsmouth, 3d Jan. 1808.

“ Sir,—Without any communication of views or of opinions, I find that I have been concurring with you in a very important and much disputed point, viz. the contagious nature of fever in the West Indies. I myself entertain no doubt that the fever which I saw in Grenada in the year 1796, and which proved so destructive to the army there, was communicated by contagion. I understand contagion in the sense in which Dr. Adams explains it in the second edition of his work on morbid poisons. The strong circumstances which led me to conclude that the fever which I saw at Grenada and Tortola was contagious, I have detailed in the Appendix to the Sketches of the Expedition from India to Egypt. A very recent reference to my notes and case books, written in the West Indies, confirms me in the opinion which I had formed of this fever. I have likewise lately corresponded with my friend Mr. Bruce, surgeon of the 88th regiment on this subject. Mr. Bruce is well qualified to speak on the subject; he was my assistant in the 88th regiment, and was with me in the Betsy transport at Grenada and Tortola. In his letter, Mr. Bruce offers some remarks and corrections of the account of the fever, which I have appended to the Sketches. He says that ‘ the fever which prevailed among the 88th regiment, in the Betsy transport, in the West Indies, in the year 1796, was manifestly contagious and very fatal. A large proportion of the officers of other regiments, particularly of the 8th, were ill of it at the same time,’ &c. By a singular coincidence, which I think forms the strongest corroboration of your statement, without the most distant knowledge of me or of my opinions, occurs in p. 314 of the 2d vol. 2d ed. of your work, in which you allude to the melancholy situation which Mr. Bruce and myself witnessed at Tortola, and of which I have given some account in the Appendix to my Sketches.”

“ I am, &c.

“ JAMES M·GRIGOR.”

It has been observed by physicians who have witnessed typhus, plague, and the malignant pestilential fever, that the latter disease manifests a remarkable affinity to the two former, not only in its contagious nature, but in many of its symptoms—in a word, in its general character. This I have already taken occasion to remark in the prefatory observations prefixed to this part of the work.—Were it necessary, or were this the proper place, I could with ease and with effect, demonstrate this affinity between the malignant pestilential fever and typhus on one hand, and with plague on the other, by a colation of their distinguishing symptoms. Such a colation would certainly be most instructive and useful, by throwing a luminous light on the proposition, which every view of the sub-



ject obliges me to maintain, viz. the contagious nature of the malignant pestilential fever. The excessive tendency to disordered organization, and more especially to congestion in the fever before us, whilst it constitutes a considerable portion of its affinity to the diseases it is allied to, yet it also clearly points out wherein it essentially differs from them; and this difference arises from the modifying influence of climate—were we, in the treatment of the malignant pestilential fever, to wait for and watch the progress of Nature in the development of its periods, as in typhus, so strongly and wisely insisted on by Hildebrand, life would certainly be extinguished—for in the former, although its type is so much like that of the latter—yet the whole is often hurried through its stages, more especially that of inflammation, with a vehemence which Nature alone, is totally incapable of resisting. As I have already said however, a mere practical work, such as this, is not the proper place—a reference to Dr. Armstrong's and Dr. Hildebrand's most valuable works on typhus, the best on the subject that, I believe, have ever appeared; and to Dr. P. Russel's work on the plague, which I have often had occasion to quote in the 2d ed. of my Essay, and to Sir James M'Grigor's Medical Sketches of the Expedition from India to Egypt, will I trust be sufficient. I shall only add, what I have already said in my letter to Dr. Haggarth, (p. 149,) that the "Sketches" of this gentleman, constitute a manifest proof how accurately he observed, and how judiciously he applied his observations. He gives without comment, what he himself or his medical brethren of the army had observed. He leads the reader from fact to fact without embarrassment, and with considerable elucidation of the causes of diseases chiefly prevailing. In short, that the author is disinterested and has the public good for his object, appears evident from the manner and matter of his narrative. Among the various objects of public utility they tend to establish, this is a very prominent one, that a clear distinction is marked between typhus and "yellow fever" on one hand, and "yellow fever" and plague on the other; thus, from actual experience, giving the gradation of infection which these diseases observe, and thus placing "yellow fever" in that middle state which is natural to it, and impressing on it that mixed, that monstrous character it is certainly possessed of. (See letter to Dr. Haggarth, p. 149—157.)

One point of affinity between the malignant pestilential fever and plague is so remarkable as to demand special notice. I mean the extraordinary unaptness manifested by both to appear in the same person a second time—or in other words, the extremely rare occurrence of reinfection. Although the Army Medical Board, in their Report upon Dr. Pym's publication, consider that gentleman as the first Englishman who promulgated the opinion that the Bulam fever (the malignant pestilential) is capable of attacking the human frame but once, yet it is evident, that this promulgation is attributable to me, for it will be found in my Essay vol. i. p. 233, many years before Dr. Pym's book was published, and several years, at least three, before the epidemic of 1804 at Gibraltar. This peculi-

arity in the malignant pestilential fever has been proved by so many well established facts in the West Indies, North America, Spain and Gibraltar, that no doubt can, or at least, should exist respecting it. Its existence in plague, the authority of Dr. P. Russel is sufficient to establish. We are informed by him, that in four thousand four hundred pestilential cases, he only met with twenty-eight of re-infection well ascertained; a proportion, he adds, much under what he expected, and which may account for some practitioners not having met with them at all. (Treatise p. 190.)—I am well aware that it is a general observation, that the yellow remitting fever of the West Indies attacks only once; but this observation extends only to those persons who uninterruptedly reside in the climate, and whose tenor of life is uniform; for an interval of a few months spent in a cold climate, or, even, in some instances, in another island, the local circumstances of which are different, renews the disposition to be acted on by the causes, and, consequently, creates an aptness, unless the utmost prudence is observed, to the recurrence of yellow fever. This exhibits a strongly marked distinction between the yellow remittent and the fever before us.

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## CHAPTER IV.

### SECTION I.

*What Constitution of the Air is necessary to give Activity to Pestilential Infection.*

THE observations of Dr. P. Russel on this subject are valuable. After stating those causes which were generally believed to have checked the plague at Marseilles in the month of December, he informs us, that “ a more powerful and general cause had begun long before to restrain the havock of the pestilence, which had declined visibly in September, and in the course of the three subsequent months, decreased with a rapidity not ascribable to the exertions of the most vigorous police. This cause is generally supposed to be some change in the constitution of the air; but which hitherto has been defined with no better success, than that peculiar state of the atmosphere, which, in conjunction with contagion, is indispensably necessary to render the plague epidemical. In what this particular constitution of the air consists, which in one case favours

“ the spreading of the distemper, and in the other checks or extin-  
 “ guishes it ; whether it operates by heightening the powers of the  
 “ infectious effluvia, or by inducing an epidemical change in the hu-  
 “ man body, whereby it is rendered more or less susceptible of, or  
 “ enabled to resist their influence, the effluvia remaining the same,  
 “ are points involved in much obscurity. It seems in the mean  
 “ while incontestible, that without a concurrent state of the air, the  
 “ plague will not become epidemic ; and without a certain disposi-  
 “ tion of the body, the infection will not take effect. ‘ Although  
 “ the air be in a right state, says Mead, yet a sick person may infect  
 “ those that are very near him,’ which is true, supposing them pre-  
 “ disposed to receive the infection ; but on the other hand, even in a  
 “ corrupted state of the air, or rather that state, whatever it be, which  
 “ favors the propagation of contagion, *some persons, from a pecu-  
 “ liar insusceptibility, are often known to approach the sick without  
 “ being injured.* Were I to adopt one of several in this region of  
 “ conjecture, I should be inclined, for the following reasons, to  
 “ that which supposes the constitution of the air acting on human  
 “ bodies, by heightening or lessening their susceptibility of conta-  
 “ gion, rather than by heightening or abating the malignity of the  
 “ pestilential effluvia. First, in the beginning of a pestilence, the  
 “ disease, though less contagious, appears in its most fatal form.  
 “ Secondly, in its increase and height, though manifestly more in-  
 “ fectious, the malignity of the effluvia does not seem to be exacer-  
 “ bated, because milder forms of the disease are then more common.  
 “ Thirdly, several persons infected from the same subject, are vari-  
 “ ously afflicted, some in a greater, some in a less degree, the disease  
 “ being modified by difference in constitution. And, lastly, per-  
 “ sons in constant communication with the sick, who have resisted  
 “ infection in the most contagious stages of pestilence, are sometimes  
 “ attacked in its declining state, which seems to indicate some  
 “ change in the habit of the individual, not the increased activity of  
 “ the contagious effluvia.” (Treatise, p. 260.)

From the known power which great heat, as well as great cold  
 possesses, to stop the progress of the infectious diseases, particularly  
 those of a pestilential nature, it is highly probable, that had the in-  
 fectious matter attached to the bedding, clothes, &c. so carefully  
 and pertinaciously preserved on board the Hankey, been imported  
 in July, August or September, instead of the month of February,  
 1793, the danger might have been prevented by the destruction of  
 its principle by heat. Thus at New York, the hottest seasons have  
 been the healthiest—as remarked by that most judicious and en-  
 lightened observer, Dr. Hossack, in the year 1808, which was the  
 hottest ever known, and proverbially one of the healthiest.—The  
 year 1778, I myself experienced on Staten Island in the neighbour-  
 hood of that city, in the months of July, August and September, a  
 heat equal to 92° of Fahrenheit’s thermometer, and yet that was the  
 healthiest season the army enjoyed during the revolutionary war.  
 The same we are informed happened at Cadiz in the year 1811,

which was the hottest, and the healthiest remembered by its inhabitants.—A comparison of the state of the atmosphere, at the period when the malignant pestilential fever ceased at Grenada, in 1793, with the tables given by Dr. Russel, shewing the increase and abatement of the plague at London, Aleppo, and Dantzick, and with the increase and decline of the plague at Marseilles; will, by demonstrating the influence which heat had in extinguishing altogether, or suspending the action of contagion, present to us an unquestionable proof of the nature of that fever, and of the probability of such an event—and consequently point out unequivocally, what constitution of the air is necessary to give activity to pestilential infection. In the climates of London, Marseilles, and Dantzick, we find that the plague advanced rapidly in August, and raged through that month and September; and that in London and Dantzick, gradually, in Marseilles it rapidly declined in the months of October, November, and December. A different constitution of the atmosphere prevailing at Aleppo and Grenada, we find that the virulence of the infection was greatest in June, whilst the temperature of the air was moderate; and that it rapidly diminished in August, when the greatest heat existed. Dr. Russel states, that the plague had disappeared at Aleppo, in the year 1760, about the 20th of August, when the medium heat by Farenheit's thermometer was,  $85^{\circ}$ ; the malignant pestilential fever of 1793, at Grenada, disappeared about the middle of September, when the medium heat was  $88^{\circ}$ . It appears that nearly the same similarity holds with respect to the temperature of the air, when the plague appeared at Aleppo, and the malignant pestilential fever at Grenada. At Aleppo it appeared in May, when the medium heat was  $71^{\circ}$ . At Grenada, the fever broke out early in March, when the medium heat was about  $81^{\circ}$ —a difference of only nine or ten degrees—allowing for the difference of the climates throughout the whole year, the one being almost uniform, the other subject to the vicissitudes experienced in the middle and southern parts of Europe, the effect of a medium heat of  $71^{\circ}$  on the inhabitants of Aleppo, in the month of March, may be as great as that of  $81^{\circ}$  on those of Grenada, in the same season. The temperature of the atmosphere in the reappearance of the plague at Aleppo, in 1761, bears a closer resemblance to that of the same event of the fever at Grenada, in February, 1794.

Heat seems to operate on the infection of pestilence in a manner considerably different in climates subject to great heat in summer, and great cold in winter, as that of Philadelphia. The greatest heat during the year 1793, in that city, occurred on the twenty-third of July, viz.  $91^{\circ}$ ; the importation of the infection probably took place in that month, and the first cases of the pestilential fever were observed about the beginning of August. During the month of August, the medium heat was about  $80^{\circ}$ —in September the medium heat was the same. It was during this month that the fever raged with most violence, and proved most fatal. The medium

heat of October was about  $58^{\circ}$ , and of November,  $54^{\circ}$ , when the fever disappeared. Thus, it appears, that whilst cold evidently checked, and at length made to cease, the rage of pestilence at Philadelphia, the sudden increase of heat seemed to produce the same effect at Grenada and Aleppo.

It appears then, upon the whole, therefore, that a temperature of a degree not higher than  $86^{\circ}$ , and not lower than perhaps  $60^{\circ}$ , is necessary for the development of malignant pestilential fever, or rather for the production of the combination of typhoid infection and yellow remittent fever, I have so denominated. A higher or a lower temperature destroys the combination, leaving the endemic in its natural form and character, and rendering inert the imported virus.

I have observed a curious fact, which seems to constitute a further proof of a certain state or temperament of the atmosphere being necessary to dispose the human body to be more readily acted on by the poison of infection. In situations which are themselves swampy, a humidity prevails in the air which gives rise to a cooler temperature than others, not so circumstanced, possess. In such situations, the infection of the malignant pestilential fever, has been observed to act with greater violence on the persons of men exposed to it, than where less moisture, and consequently heat, was generated. Fort Royal, Martinico, presented a remarkable instance of this in 1796. The medium heat of its atmosphere, during the twenty-four hours, is not more than about  $77^{\circ}$ ; and during the pestilential season, if I may so call it, of 1796, the infection was uncommonly virulent, and required a much bolder exhibition of mercury to conquer it, than was found necessary at Grenada, in 1793—4.

The action of heat on the poison which constitutes the cause of the yellow remittent fever, exhibits a series of events, in every respect different. A moderate heat, and a season mild with respect to the general state of the weather, when there is no pestilential infection present, secure health to the inhabitants of tropical countries; great heats alternating with frequent showers of rain, constitute that state of the air which is most favourable to the production of yellow remittent fever.—Why this should be so, becomes sufficiently obvious, from attention to the effects on marshes and stagnant water, which agitation, succeeded or accompanied by great atmospheric heat, produces; immediately the disengagement of a more abundant volume of hydro-carbonic gas; or whatever aërial fluid constitutes the basis of the miasmata of such places, takes place. A remarkable illustration of this took place at Fort Royal, in the month of May, 1798, which, I shall insert here, although its proper place is the chapter on yellow remittent fever of that year, occurred in the corps of artillery stationed in Fort Edward, situated on the peninsular rocky eminence which separates the bay or road of Fort Royal, from the Carenage. A soldier and his wife, who were the first attacked, were lodged in a quarter of the fort allotted to the accom-

modation of the royal military artificers, called the red barrack, which, except in having two open tanks or reservoirs of mason work, built by the French, for the reception of rain water, and being somewhat more confined, and consequently hotter, differs in no respect from any other part of that fortress. It has, however, been uniformly remarked as the most unhealthy quarter, and this want of health has been observed to be in proportion to the proximity of the tanks. On a minute enquiry and examination of the place, I found that the tanks had never been cleaned out since the island has been in the possession of the British, and probably not for a considerable time before; that the rain-water, which is conveyed into them by spouts has no outlet whatever; that after a tract of dry weather, the surface of the water is covered with green vegetable matter; and that when it is agitated by any thing falling into it, a most offensive smell instantly arises, and continues to do so for a considerable time after. The unhealthy vapour, or effluvia, is most abundant, after long-continued dry weather, interrupted only by slight showers, when the rain serves to agitate the stagnant water. The houses immediately adjoining proved fatal to many, particularly women, whose residence was more uninterrupted than that of the men. (See *Essay on the Malignant Pestilential Fever*, Vol. ii. p. 121.)

## SECTION II.

I PROPOSE in this section to offer a few observations—1st, on those circumstances which seemed to predispose the persons of those exposed to the infection to be more readily acted on by its poison—2d, on the time the contagion took to act on the system; and 3d, on the distance at which it is possible to communicate it.

1. I have already observed, that during what may be called the pestilential season at Grenada, the contagious effluvia, more powerful than other morbid causes reigned alone, having reduced all other diseases to its own peculiar nature. It is, therefore, highly probable, that, although the contagion seemed to vary much in different descriptions of persons, the virus of the contagion itself was uniformly the same, only variously modified by peculiar constitutions, habits, and modes of living. It is highly probable, too, that such as had the good fortune to escape the disease, although exposed to its contagion, were indebted to a peculiar temperament for their exemption. This exemption was enjoyed by few, indeed, but its having existed at all, can be accounted for on no other principle. On this principle can it be alone accounted for, that many who escaped the fever in 1793, were attacked in 1794; and that some, whose idiosyncrasy enabled them to resist the contagion in both these years, fell sacrifices to it in 1795. It is not, however, in the malignant pestilential fever alone that this singularity is observed;—it

has sometimes been remarked in other infectious fevers, and has frequently happened in the plague itself.

A variety of pre-disposing causes existed, and were obvious; and the activity of the contagion, or the malignity of the disease, was proportional to the degree of pre-disposition. The extremes of pre-disposition, and unaptness to be infected, were found in sailors and negroes. Among the former, a scorbutic taint, perhaps, certainly extreme irregularity and imprudence, rendered the disease infinitely more fatal, than among any other class of men: on the other hand, among negroes, who certainly possess a peculiar idiosyncrasy and whose mode of living is generally temperate and regular in a remarkable degree, the virus of the contagion was so blunted, as to act in the mildest form. In general, the opinion of Celsus was fully verified in relation to the pre-disposition of men to this fever: "*Si plenior aliquis et speciosior, et coloratior factus est, suspecta habere sua bona debet.*" It was hence that the newly arrived from Great Britain and Ireland, the plethoric, the robust, and the intemperate suffered most. Every thing, debilitating fear, above all other circumstances; an hypochondriacal disposition; excesses of any kind, fasting, or visiting the sick with an empty stomach; great fatigue; entering the chamber of the sick and approaching within the radius of infection in full perspiration, pre-disposed the body to be acted on by this contagion.

2. But whatever were the pre-disposing causes, the contagion always acted within four days from its application to the body. I am aware of the difficulty of ascertaining the time which contagion takes to act on the system after its admission into it; but my situation afforded me many opportunities of knowing it with sufficient exactness. In some instances, signs of its action have appeared in six hours; in others in twenty-four hours; in others in forty-eight hours; and in others not before the expiration of the fourth day; so that in general, we may consider the medium space of time required for the production of the disease, consequent upon the introduction of contagion, as about two days. The signs by which it might be known that infection was received into the system, when the circumstances of the situation for the reception of it were pretty certain, as the bed-side of the sick, the being almost in contact with a person lately recovered from the disease, but wearing the clothes he had on him during its presence, &c. were nausea, slight rigor, and a vertiginous affection of the head. The person felt as if a blow had been inflicted—and the common expression used on such an occasion, was truly applicable to the feeling—he felt as if "knocked down." The medical gentlemen of Grenada, who treated this pestilence, all experienced this; were all, with few exceptions, indeed, infected, and several fell victims to it. In my own case, wherein the pre-disposition was debility, the consequence of hepatitis and salivation excited for its cure, which I had recovered from only ten days before, the contagion was applied in the morning, before I had eaten any thing. Anxious to examine the body of a

sailor who died of the disease the preceding night, I continued too long engaged in the dissection, which the examination of the brain lengthened out to an hour and a half. I was then sensible of the introduction of the infection, but remained apparently well till about two o'clock of the following morning, about eighteen hours after the reception of the infection, when I was suddenly awoke by rigor, chilliness, and some degree of spasmodic affection of my lower extremities. From that moment the disease proceeded in its usual progress—the medical gentlemen who attended me, and my other friends, conceived that life had ceased, such was the state the fever had reduced me to in three days; at the expiration of that time, the mercury which I had, during that short time, copiously taken, began to act on my mouth; a salivation was thus fortunately established, and I rapidly recovered. Of four more who attended the dissection, two were immediately after seized with the fever—my partner, Mr. Campbell, was one of the four, but escaped then. Some days after, however, having visited a patient in the disease, whilst violently heated by riding, the contagion was admitted into his system, the fever took place in nearly its worst form; but a salivation being happily excited, he recovered.

The importance of ascertaining the time which contagious effluvia take to produce the fever they are the remote cause of, is evident, prevention almost altogether depending upon it—some are inclined to fix the time of action of pestilential contagion at the fourth day: others at the expiration of a few hours; others carry the latent period even to the thirty-fifth day. Dr. Lind has made a most useful observation on this point—"If a person perceives no symptom of an infection till many days after having been wet with rain, exposed to cold or damp, or having been guilty of intemperance and excesses, it is probable that, these causes have excited this dormant poison into action, and that without their influence, it would have never affected their constitutions." A very singular illustration of Dr. Lind's observation was communicated to me some years ago, by an officer of high military rank and respectability, who was himself the subject of it. This gentleman had been frequently, during the years 1794-5, in different islands of the West Indies, where the malignant pestilential fever raged, exposed to its contagion, and even in contact with friends labouring under a fatal attack of it, without once perceiving in himself the change of health, or tendency to the disease, except an unaccountable dinginess in the colour of his skin. At length, at a gentleman's house near Sandy Point, St. Kitts, he happened to eat at dinner some poisonous fish, which, during the following night, produced the most excruciating convulsive affection of his stomach and bowels—this affection was removed by proper remedies; but three days after, it gave activity to the pestilential poison, long since lurking in his system, and to a train of symptoms of the malignant pestilential fever of the most distressing nature, from which a change of climate alone enabled



him perfectly to recover. Dr. Rush found the contagion of the fever of 1793, at Philadelphia, to act sometimes in one day, sometimes in a few hours, and never later than sixteen days from the time of its being received into the body. (Account of fever p. 27.) Thus, so variable is the time which intervenes between the reception of contagion, and the actual appearance of the symptoms of fever consequent upon it, in all climates, that no period can be fixed, at which it becomes active. Under this uncertainty, it may be a judicious measure, to have recourse to the means of prevention, in cases, where contagion is suspected, immediately after the exposition of the person to the effluvia from the sick, or to the fomites of infection, whatever they may be.

3. Another point subject to much uncertainty, but no less important, is the distance at which it is possible to communicate the contagion. The result of my enquiry and observation on this important subject, amounts to the following conclusions.—1. That those who most carefully avoid houses where the infection is, are the most certain to escape it.—2. That although the disease may be in the same house, avoiding the chamber of the sick, prevents infection.—3. That the merely entering the chamber of the sick, without nearly approaching the diseased person, has never communicated infection.—4. That approaching too near the diseased person, so as to be sensible of the fœtor of his breath, or if the peculiar smell which is always emitted from the bodies of the sick in malignant pestilential fever, or to touch the bed-clothes he lies on, generally occasions nausea, slight rigors, and headache, at the moment, and some hours or days after the disease itself.—5. That actual contact, so that the perspired fluid of the sick person, may adhere to the hands, &c. of the healthy person, more certainly produces this disease.—6. That touching the wearing apparel of a person who is actually diseased, or has just recovered from it, as certainly communicates the infection to the healthy person—and 7. That merely passing a person infected, or who wears the clothes he had on during the existence of the disease, in such manner as that the effluvia, proceeding from him, may be blown on the healthy person, has produced the disease. From these conclusions, it is evident, that the infectious effluvia do not extend themselves beyond a limited distance from the person or thing from which they are emitted, and that that distance may be fixed, at the utmost, at six or ten feet. Whatever the basis of contagious effluvia may be, it has been long ago ascertained that it may, and actually does, attach itself to every thing surrounding the sick, their bed-clothes and wearing apparel more especially, and may be conveyed from one country to another. Indeed, so remarkable and so well established is this fact, that most physicians consider this mode of communicating pestilential infection, as the most certain. The bedding and clothes of the unfortunate people who perished on board the *Hankey*, to which the basis of the morbid effluvia attached itself, were the fomites of the malignant pestilential fever.

Similar means frequently afterwards produced the disease. It is a curious and important fact, although, perhaps, not so generally known, that pestilential infection may be communicated from a healthy person, wearing clothes to which the basis of that infection has been attached, to another person, by the latter passing sufficiently near the former to leeward, or in such manner as that the effluvia may be blown upon him. Several remarkable instances of this occurred at Grenada—so true it is, as Dr. Russel observed on another occasion, that “the most cautious man upon earth, if not sequestered, could not declare with equal confidence, that he was sure of having had no dangerous communication.” (Treatise, p. 252.)

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## CHAPTER V.

### TREATMENT.

THE sudden manner in which the malignant pestilential fever attacked in almost every case, rendered it impossible to administer any thing in the way of prevention. Had the sick, indeed, been always sensible of the infection, the instant it was applied, no doubt much might have been done in this way; but unfortunately this happened in few instances, comparatively speaking; and when it did, none were willing to believe that any dangerous consequence would ensue. In the cure, therefore, of the disease, I was always obliged to begin, at, or soon after, its actual invasion: but as the symptoms very seldom directed to a correct knowledge of its true nature; and as the fatal termination often happened at a very early period, and unexpectedly, I found it a most difficult, as well as painful task, for some time after the disease broke out, to form a plan of treatment. Finding, at length, the total inefficacy of the usual method recommended in treating malignant fevers; and becoming, by constant observation on a multitude of cases, in its most violent form, better acquainted with the disease, I founded my plan on the following reasoning.

An adequate attention to the circumstances of the disease, rendered it sufficiently evident, however indirectly marked by the symptoms, that the first stage of the fever was an inflammatory diathesis, peculiar in this respect, that its tendency to terminate in gangrene was infinitely greater than in any other disease I ever met with. It was no less evident, that this stage was succeeded by one, wherein nervous excitement, and general debility, with phenomena indicating the presence of internal fever, arising from

the gangrenous disposition superinduced, was equally remarkable, and equally tended, with uncommon rapidity, to the dissolution of the patient. It was further evident, that these diatheses, or states, had an extraordinary aptness to run into each other, without shewing any distinct termination of the one, or accession of the other; and it appeared, that the imprudent use, or anticipation of the means of obviating either of them, inevitably hastened the progress of the other to its peculiar termination. Having these facts before me, it was demonstrable, that if I at once went on an unqualified antiphlogistic plan, I should, with certainty, anticipate the fatal issue of the disease, by inducing an extreme degree of debility; and that, on the other hand, if I adopted, at the commencement of the treatment, an unmixed antiseptic plan, I should, with equal certainty, increase the tendency of the existing inflammation to terminate in gangrene. Many proofs of both these fatal errors occurred daily, for some time after the introduction of the disease; and surely the practitioner could not be blamed, when it is considered that the disease was then new and unknown in the climate; when, however, a conviction took place, of the disease being dispossessed of the distinguishing phenomena of fevers of the country, a blind pursuit of the means, till then, generally employed in these fevers, or suggested by a seeming parity of circumstances, and an ignorance of those peculiar to the malignant pestilential fever, became, in the highest degree unworthy of a rational physician, and marked his conduct as, in no small degree, criminal. Viewing the disease, therefore, in this manner, I formed a plan of treatment directed to what I conceived to be the true nature of the disease; adopted it with confidence; and have never since found cause to deviate from it. On the principle on which this treatment rested, were founded the following indications, viz.

1. To discharge from the stomach and intestines acrid and offensive matters.
2. To obviate inflammatory diathesis, without producing a tendency to extreme debility, or the peculiar termination of this inflammatory diathesis.
3. To moderate the tendency of these states should they arise—and
4. To restore the system to its natural tone and energy.

## SECTION I.

### *First Indication.*

TOWARDS the fulfilment of this indication, I had recourse to the solution of sulphate of soda and tartarized antimony—of this a large wine glass full was given every hour to the patient, until a sufficient effect was produced. The two first glass-fulls generally operated as an emetic; the medicine afterwards acted on the bowels,

and excited a copious discharge of their contents. If, at the same time, a diaphoresis broke out, the patient found himself considerably relieved. In most cases of the third class, and in a few of the second, in which assistance was called for, early in the fever, I had the satisfaction of seeing a speedy and complete termination put to the complaint by this remedy alone. This, indeed, was doing what has been recommended by Sir John Pringle, preventing the disease, or rather carrying off its fomites, before they can enter and act generally on the system. When the disease first appeared at Grenada, fear of anticipating the irritability of the stomach, induced some practitioners, and myself, indeed, before I became fully acquainted with the disease, to give a pill of opium, and after an hour or two allowed for its solution and tranquillizing effect, to administer the solution. But, although this had, very often, an excellent effect in remittent fevers, yet in the malignant pestilential, we very soon discovered the impropriety of it. The loss of time could not be compensated by any advantage to be expected from the opium; and it was, besides, highly probable, from the manner in which the contagion acted, that it was carried into the system by means of the stomach and intestines; hence the great importance of administering, at the first onset, a medicine, which in the shortest time possible, may freely evacuate them. I have never found it necessary to excite a larger discharge from the bowels, than has been sufficient to fulfil literally the first indication: and from the wonderful aptness, in this fever, to sink into an irremediable state of debility, under alvine evacuation carried beyond this, I have carefully avoided such practice.

After employing the means I have described, for some time, with various success, I perceived that the uncertainty of the period at which the morbid poison entered into, and began its action on, the system, together with the variable changes produced by it, afterwards, sometimes extremely violent when least expected, and sometimes moderate, although circumstances led to the formation of a different prognostic, rendered the use of a remedy, which might cleanse the first passages, and with more certainty counteract the operation of the morbid cause at the same time, extremely desirable. It was not, however, till the disease reappeared, in consequence of a second importation of the infection by a brig from New London in North America, in February, 1794, (Essay, vol. 1, p. 137) that I thus endeavoured to combine the two first indications; and I found it a more simple, a more judicious, and a much more successful method. I gave now, the first dose of calomel alone, the moment I saw the patient; and repeated it, in the same manner, every one, two, or three hours, according to the exigency of the case, till the intestinal canal was cleared of its contents. This object being effected, I added opium to restrain its action on the bowels, if greater than necessary. I, afterwards, was induced, on account of the costiveness which obtains in the malignant pestilential fever, as well as on account of the greater certainty there is, of the

mercury being taken up by the absorbents of the intestines when unclogged by fœculent matter, to increase the purgative effect of the calomel by the addition of jalap. The advantage of this is obvious; but it is equally so, that when the indication is fulfilled, no more evacuation should be attempted. The great rule, in short, is to empty the bowels as speedily and completely as possible, without exciting a debilitating purging, so as to prepare them for the reception and absorption of mercury: and, I believe, the mode I recommend, is the safest.

It is very remarkable, that a striking coincidence prevails between the first curative indication of this fever, and that of the plague—Dr. Russel observes that “The neglect of purging at the beginning was not followed by the consequences which might rationally have been expected; and I never saw any acute distemper where costiveness was attended with so little inconvenience. Nevertheless, I think it rational, by gentle means, to clear the bowels, at the beginning, from any colluvies that might happen to be lodged there.” (p. 151.)

## SECTION II.

### *Second and Third Indications.*

THE stage of the fever to which the indications apply, is most important, indeed, success depending altogether on the manner in which it is treated; and yet it is the most difficult; for the danger in making an improper choice of the means of conducting the treatment is such, that life or death may be said to be the result. The fate of the patient entirely depends on the judicious selection of means in removing the inflammatory diathesis, without producing a tendency to the consequential gangrenous disposition. There are cases in which the best concerted human means are unavailing; and, therefore, I speak only of those in which medical treatment has a chance of saving the patient's life. As the means are various, although the principle must be always the same, and as the subject is so highly important, I wish to be as explicit as possible in the detail of them, without being tedious—I shall therefore treat of each separately.

### BLEEDING.

It has been the usual practice, at the beginning of malignant and pestilential fevers, to draw some blood, before other means are used. In the present instance, the ardent heat of the surface, the oppressed hard pulse, the pain in the side, the oppression at the præcordia, the headach, and the throbbing at the temples, seemed strongly to indicate bleeding. Very little experience, however, was sufficient, to shew the impropriety of it; and, instructed by

repeated examples of its hurtful effects, I very early laid aside all thoughts of lessening the inflammatory state by means of it. Although the blood drawn, in the cases wherein this remedy was employed, was remarkably florid, and always threw up an inflammatory crust, of greater or less thickness; and although the pains seemed to undergo a temporary mitigation, yet the consequence, at the expiration of a few hours, was always fatal. I was the more surprised at this event, because the patients were remarkably robust, florid, and generally in the vigour of life.

This was my opinion of bleeding, in this fever, at Grenada, in 1794, when I quitted that island for England. With a trifling modification, it was the opinion I held, after again seeing a multitude of cases of the fever at Martinico, and other islands, on my return to the West Indies, in 1796; and after becoming acquainted more generally, with the sentiments on it, of the most judicious West India practitioners. After a lapse of more than twenty years, and after consulting generally the writers on the malignant pestilential fever, commonly, but most indiscreetly; called "Yellow fever," since the publication of the first edition of my Essay in 1795, I am more and more persuaded of the truth of the observations I again present to the public. I am satisfied that when it is possible to see the sick in this disease, at the period of its accession; that when these are young, robust men, immediately from England, or any other country possessing a similar climate; that when the temperature of the weather is such as seems most to favour the propagation of the disease; and that when the predisposing causes have been such as have a tendency to accelerate the motion of the blood, and to give rise to other unequivocal signs of an inflammatory disposition; then one plentiful bleeding may, undoubtedly, be of infinite service. But when most of these circumstances are wanting, and when, consequently, no just indication for the employment of this most powerful remedy, can be formed, I consider the use of it as a wanton abuse of confidence, and as inevitable destruction to the patient—a survey of the nature and peculiarities of the disease, explains how readily depletion tends to sink the sufferer under it. I have frequently remarked and called the attention of the reader to the excessive disposition manifested by the malignant pestilential fever to terminate rapidly in gangrene. This is most true: and therefore the employment of bleeding, except at the very beginning, or what may be called the forming stage of the disease, when the remedy acts rather as a preventive than a curative means, must be dangerous, if not destructive. A fact communicated to me by Dr. Felix, the superintending surgeon of the depôt of prisoners of war at Stapleton, near Bristol, is very illustrative of what I now advance. During the year 1809, a typhoid fever appeared very extensively among the prisoners. The principal remedy employed by this skilful observer, was depletion, by opening the temporal artery, and abstracting a large quantity of blood, at once. This, he assured me, removed the disease, often, without any other remedy

of importance, at the end of twenty-four hours, if adopted immediately at the accession of the symptoms. He observed, however, that from the peculiar circumstances of the situation of the prisoners, there was more inflammatory diathesis at the commencement of this fever, than usually occurs. The circumstances alluded to, rendered the situation of the prisoners necessarily crowded, and generated in their rooms, during the night, when all were shut up, a degree of heat fully equal to  $100^{\circ}$  (Fahrenheit's), which, in the morning, on opening the doors and windows, was suddenly followed by a considerable degree of cold: want of sufficient ventilation, joined to this cause, gave rise, he supposed, to typhus, with organic, chiefly cerebral congestion. (Edin. Med. and Surg. Journ. vol. 8, p. 293.)

The foregoing observations derive great importance from another source; they remarkably distinguish the disease before us, from the yellow remittent fever, with which it has been so often and so fatally confounded. In treating of yellow remittent fever, (part 2, ch. 1.) I have stated the necessity which exists in the higher grades of that disease, for early, copious, and repeated bleeding. This most certainly holds true in that disease; but in the typhoid yellow remittent, or malignant pestilential fever, a different practice must be resorted to, otherwise the result will inevitably prove fatal. The result in the fever of Brimstone-hill of 1812, stated in the same chapter, seems to furnish a very important illustration of this. It appears that 118 of 422 died, and the remedy principally depended on was bleeding to a very considerable extent—the fever was evidently typhoid. The successful practice of Dr. M'Cabe at Trinidad, certainly proves the extreme caution to be observed in fevers of a character so typhoid, as that was—a character which indisputably ranks it under malignant pestilential.

In a climate, where the circumstances I have stated, as rendering bleeding, at least, not an injudicious remedy, in this fever, at the onset, may exist separately or combined, it may be employed, I have no doubt, with more freedom; and if the tendency of the inflammatory stage to affect particular organs, should be great, the indications becomes, proportionally, more direct. It must have been the concurrence of these symptoms, in a very considerable extent, which rendered the astonishing freedom Dr. Rush employed it with, necessary. A boldness such as his, however, must not even be thought of, in malignant pestilential fever, in a tropical climate, unless the practitioner feels himself inclined to be accessory to the death of his patient; for I repeat it, again and again, it is an observation founded on a multiplicity of facts, that not a single case, in which bleeding has been employed as a principal remedy, has terminated favourably. Dr. Wright thought with great correctness on the use of bleeding in malignant pestilential fever. “The use of the lancet we judged unnecessary, and dangerous in the extreme. Perhaps in some ardent fevers, where the symptoms run high, bleeding may be necessary; but such cases did no occur here (Barbadoes.)

“ In every case of fever, of whatever kind, where bleeding had been practised, the fever, sometimes was removed, but the patient often fell into ill-health, or remained long in a convalescent state.” The same sentiments have been cherished and promulgated by many other long experienced and judicious physicians within the tropics; so that, in truth, there is not a better or more firmly established fact in medicine.

One of the latest, if not the latest, writers on the typhoid yellow fever (malignant pestilential,) M. Moreau de Jonnés, gives forcible testimony against the practice of bleeding—“ Un Médecin Anglais qui arriva à la Martinique au moment où la fièvre jaune de 1802 redoublait ses ravages, prétendit qu’il possédait un moyen sûr et prompt de sauver ceux qu’elle attaquait-le moyen n’était autre que la saignée; il le mit en usage avec une telle activité, qu’il avait perdu vingt malades en huit jours, et que j’allais demander son interdiction, lorsqu’atteint-lui-même de la maladie qu’il prétendait guérir, il mourut de ses effets ou de ceux de son propre remède.” And again—“ Quand les saignées réitérées ne tuent pas le malade, elles le conduisent à une anasarque passive, ou à une fièvre hectique dont le terme est communément la mort.”\* (Monograph Historique et Médicale de la Fièvre Jaune des Antilles, 1820, p. 130-133.)

#### SWEATING.

Having thoroughly cleansed the primæ viæ, my next object, before I became sufficiently acquainted with the proper method of treating the malignant pestilential fever, was to encourage a diaphoresis, which I have observed above, sometimes happened, in consequence of the use of the evacuating solution, in fulfilling the first indication. For this purpose, I made use of various means, such as the saline draughts of Riverius, with or without the ætherial spirit of nitre or vitriol; and I generally preferred this addition on account of the suppression of urine. In all mild cases, this was a most useful medicine; with this, I generally gave a powder, every two hours, composed of nitre, camphor and the antimonial powder; and, in order to give these medicines a greater tendency to action

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\* An English physician who arrived at Martinico at the time when the yellow fever raged with greatest violence, pretended that he possessed a sure and speedy means of saving those who might be attacked with it. These means were no other than bleeding, and he employed it with such activity, that he lost twenty patients in eight days: so that I was on the point of forbidding his interference, when he himself was seized with the disease, he so confidently asserted he had the means of curing, and died either of its effects, or of those of his own remedy. When repeated bleedings do not destroy the patient, they bring on anasarca swellings, or a hectic fever, the termination of which is death.



the skin, a few drops of laudanum were occasionally added to the draught. This plan in mild cases was sometimes attended with success. But the insidious nature of the disease rendered it highly dangerous to trust to it. This I soon discovered, on knowing the disease better; and therefore I do not think myself warranted in recommending it.

#### MERCURY.

I soon discovered that the success attending the operation of evacuates and diaphoretics, as I have already said, was confined exclusively to the third class of patients. The more violent cases of the disease, including almost the whole of the first and second classes, demanded a treatment, in which the most vigorous, and prompt decision, the boldest perseverance in the adopted plan, and the closest attention became absolutely necessary. In these cases, the inflammatory stage was much more manifest, and the tendency to local congestion more decided; but bleeding, except at the very onset, was, if possible, a more dangerous remedy. I had recourse, therefore, under these difficult and distressing circumstances, to a remedy, which, on several former occasions of violently rapid inflammatory congestion, had proved the best, the appropriate one was further encouraged, in the present instance, to avail myself of it, by the morbid appearances in the bodies I opened. These demonstrated the existence of local inflammatory congestion in the head and liver. I accordingly administered calomel, either combined with nitre, camphor, and the antimonial powder, or alone, in the form of a pill—after many trials of both, I preferred the last. The pill was generally composed of five grains of calomel, and repeated four times in the day, or rather eight times in the twenty-four hours, adding opium or not, according to the state of the bowels. If salivation was speedily raised, the danger was removed, and the patient soon recovered. But in order to effect this, it was frequently necessary to increase the quantity and number of the doses; and in very many instances, I have pushed the calomel to what, I then considered, an almost incredible length, with astonishing success. This was my practice in 1793, when, both the disease, and in some respects the remedy, as a febrifuge, were new to me. On the reappearance of the disease in February 1794, I was determined to give calomel earlier, and with much more freedom, than the preceding year. Accordingly, instead of preceding the administration of it, by the usual evacuating medicines, I began with it, and continued without the interposition of any other, except such auxiliaries as promoted its action, till salivation took place. The success attending this practice exceeded my most sanguine expectation; so great, indeed, was it, that I did not lose a single patient, in whose case it was pushed to the full extent. I therefore feel not the smallest hesitation, in recommending it, with all the fervour, which an earnest wish to save the lives of men, and the fullest con-

viction of what, I am almost inclined to say, its infallibility, can give rise to. My mode of giving calomel, after the reappearance of the malignant pestilential fever in 1794, was to give ten grains, either alone, or with an equal quantity of jalap, to an adult patient, as soon as possible after I saw him. This generally acts as an evacuant in the degree required, about an hour or two after it is given. At the end of three hours, after the first, the dose of calomel only was repeated—at the end of three hours more the same quantity was given, adding opium or not, as the preceding doses had acted. In this manner I proceeded, giving ten grains of calomel every three hours, till the salivary glands became affected, which generally happened in less than twenty-four hours, from the commencement of the treatment, if faithfully conducted. The effect of the calomel, given in this way, may be perceived after the third dose in general; the patient becoming calmer, less restless, less anxious; his skin being softer, and possessed of an agreeable heat; the stomach being perfectly retentive; and the eyes recovering their former lustre and sensibility. When, at length, salivation takes place, the patient is left free from disease, with a moderate warm moisture on the skin; and very soon after, signs of returning health are indicated by calls for food, &c. The recovery of strength is proportionally rapid to that from disease; nor is it at all necessary to have recourse to bark, or any other medicine whatsoever; a circumstance truly gratifying to the patient and physician; in a disease wherein nature revolts at the very idea of bark. There are circumstances, however, in which the utmost difficulty is experienced in obtaining this effect from calomel; and others in which the candid practitioner must acknowledge its insufficiency. The necessary adjuncts in such circumstances, I shall presently proceed to detail.

For a long time after the adoption of the mercurial treatment, and, indeed, to this hour, the question respecting the propriety and impropriety of the practice, has been much agitated. I decline entering into any controversial discussion of the subject, satisfied, as I most certainly and unalterably am, that the affirmative of the question will always be upheld and maintained by those who are most capable of judging; those who have had most experience, and whose minds have been least diverted from a right way of thinking, by prejudice or “supine scepticism.” The latest writer on the “yellow fever,” M. Moreau de Jonnés, furnishes a pattern of fair unbiased observation, on detailing the means of cure, when giving his sentiments on the use of mercury. “In the French Colonies, it was not till the year 1815, that D. Amie employed calomel internally, in the hospitals; but the result of its administration, not having been published, the experience of this physician has been lost to the colonies. My observation of some patients to whom calomel was given, has given me room to believe, that the salutary effects expected from it, consist, not in the evacuation by purging it sometimes produces, but much more certainly in the increased urinary and salivary secretion it gives rise to, and in the

influence which it exerts on the abdominal viscera, the lymphatic system, and the skin." The learned and ingenious author afterwards quotes a case, which occurred in the colony of Demerary, and which I shall give the outlines of in the subsequent part of this article, from Dr. Warren of Boston, as having occurred in that gentleman's practice. If Dr. Warren has published this case, as occurring in his own practice, it must be considered as singularly important, as well as singularly curious, that precisely the same circumstances should have taken place in two distant countries—nay the same quantity of mercury exhibited in the same way, by the mouth, by clyster, and by friction.\*

The important question, "Is salivation a necessary condition in the mercurial treatment of the malignant pestilential and yellow remittent fever?" has been often agitated. I shall not take up the time of the reader in an enquiry respecting the principle, on which the doubt implied by the question, rests; but I may safely lay it down as a maxim, resulting from incontrovertible facts, that, in general, no cure has been completely effected in the malignant pestilential fever, in which mercury did not affect the salivary glands. The only exceptions may have been those slight cases of the disease which, as I have already remarked, Nature, unassisted, might have cured. Other cases, whose symptoms were more violent, and which, although mercury had been exhibited, apparently terminated favourably without salivation, cannot be considered as exceptions, because, in them the morbid action was evidently only suspended, not superseded. When, in such cases, patients have recovered, it has not been till after the expiration of much time, and the co-operation of change of situation and air. In such cases, too, the removal of the original disease, has, sometimes, been dearly purchased by the sacrifice of some one important organ, as the liver or lungs, in which abscesses have taken place, or from whose disordered state, cachexical affections of the

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\* "Dans les colonies françaises, c'est seulement en 1815 que le docteur Amie a employé intérieurement le calomel, dans le clinique des hopitaux; et les resultats de l'administration de ce proto-muriate de mercure n'ayant point été publiés, l'expérience en est perdue pour la pratique de nos colonies. L'observation de quelques-uns des malades soumis à l'action de ce médicament, ni a donné lieu de croire que les effets salutaires qu'on en attendait; consistaient, non dans la purgation qu'il produit quelquefois, mais bien dans l'augmentation de la secretion urinaire et salivare, et dans l'influence qu'il exerce sur les viscères abdominaux, le système lymphatique et l'organe cutané." "En 1799, à la Jamaïque, un homme attaqué de la fièvre jaune, prit, au rapport du docteur Warren, 64 grains de mercure par la bouche, 2,040 en lavement, et 3,600 en frictions, faisant en tout 5,704 grains, en l'espace de cinq jours. On ajoute que cet homme guérit rapidement." Compare this with the case I have published in *Essay*, vol. 2, p. 478-484, (*Monographie, &c.* p. 134-135,) and of which the leading circumstances are detailed below, p. 209.

general system, have been superinduced. That salivation may be considered as a necessary condition in the mercurial treatment of the malignant pestilential fever, as well as the yellow remittent, derives no small share of confirmation from facts which prove that morbid action in the system, is undiminished as long as mercury, after being introduced into it, remains without discovering any external sign of operative effect on the body; but when, owing to some stimulus, often accidentally applied, salivation takes place, the disease instantly ceases. Many remarkable instances have occurred to me, both within the tropics and in England, of the activity of a morbid cause in the system, and the indolence, until roused by accidental stimuli, of the counteracting agent, being exactly proportional to each other. Dr. Muttlebury, now a physician at Bath, in the year 1798, when surgeon to the 59th regiment at Antigua, related to me, at that time, the following interesting particulars, highly confirmatory of the point before us. This gentleman went out to the West Indies, in 1796, as surgeon of a battalion of grenadiers, in the Valentine East Indiaman. Some grenadiers of the 88th regiment brought the infection of the malignant pestilential fever on board; the disease spread with extraordinary rapidity, taking its course from that part of the ship which the soldiers of the 88th regiment occupied, round the ship, in regular succession. A great many died, because, as he ingenuously, and much to his honour, confessed, he knew not the disease, nor the proper mode of treating it. At length an officer on board, put my Essay into Dr. Muttlebury's hands, which he carefully studied. He immediately adopted the treatment recommended, and, afterwards, scarce any died, salivation always effecting a cure. The success experienced by Dr. Bishop at Fort Royal, Martinico, during part of the time he served as surgeon to the first West India Regiment, 1796, exhibits a proof, if possible, still more decisive of the efficacy of mercurial salivation in the fevers I have mentioned. This gentleman, out of forty-five cases of the malignant pestilential fever, lost only two. This remarkable success was in a great measure owing, however, to the persevering care and unwearied attention of Dr. Bishop, who, not only administered the calomel himself, till a salivation was excited, but watched the changes of the disease, and prevented any improper interposition of medicine, diet, or advice.

The following narrative will be found particularly interesting for two reasons—it exhibits the most satisfactory proof of the infectious nature of the malignant pestilential fever—and most clearly manifests the superiority of the mercurial treatment, when pushed to salivation. The writer, Mr. Ronaldson, was then (April, 1796,) assistant surgeon to the 99th regiment, commanded by my much valued and lamented friend Lt-Colonel James Smith Baillie, who, unhappily, fell a victim to this pestilence on the passage from Cork to Barbadoes, on the 13th of March, 1796, before it was possible for me to see him.

Flora Transport, Carlisle Bay, 10th April, 1796.

DEAR SIR.—I should esteem myself most ungrateful if I did not take this opportunity, before I leave Barbadoes, of returning you thanks for the kind assistance and advice you gave me in regard to the sick on board this transport, when at sea; and of informing you of the result of the practice you recommended to me.

From the beginning of this expedition, the Flora seems to have been tainted with the infection of the malignant pestilential fever; for I have very lately understood, that only fourteen days before we embarked in her, she had landed some French prisoners from the West Indies, who had, probably, brought the infection with them. We embarked in her in the month of November, 1795, I believe the 15th, and sailed on the 10th of February for the West Indies, and were put back to Cove (the place we had left) four days after. Two days after our return, we had fifteen men attacked in one night; and in the course of the two following days, forty-eight more. The ship was immediately reported to Dr. Jackson, inspector of hospitals, who applied to General White, who ordered the sick to be landed at the hospital on Spike Island, and the men who had escaped, on Hawlbowl Island, where they were encamped three days. During that time the ship was cleaned, fumigated, and all the berths taken down, and new hammocs and blankets given to the troops, when we embarked again on the 22d. The number of troops was then 144; ship's company 22; women and children 11; and officers six; in all 183, without one sick person on board, when we sailed on the 25th. On the 26th and 27th seven men were taken ill, which I treated in the ordinary way. From this time till the 8th of March, on which day one of the seven died, the number of the sick increased to 23, and unfortunately your friend Colonel Baillie, was taken ill on the 7th. I mention the circumstance of the Colonel's illness, because it was his great desire of seeing you, (and which, owing to the calms which most unfortunately prevailed from the 8th to the 11th, we could not accomplish till the 12th,) that gave rise to my using calomel to the troops on board, by your direction. I began with ten grains of calomel every three hours to the whole of the 23 I had on board sick, and continued it till their mouths were affected. The effect was soon conspicuous; for in thirty-six hours after I had begun the medicine, I had the pleasure of finding no less than 18 convalescent. I have had since then in all about 50 sick, and have lost only three men during the passage. I must observe that the mercury in these three men who died, never affected the mouth;" (it appears, however, that one of the three had not taken any mercury, having died before Mr. Ronaldson knew of the mercurial treatment) "their breath had, indeed, the mercurial factor, but I could not produce ptyalism. I likewise observed that the men cured by mercury never relapsed, and others who had been ill before I began with the mercury, relapsed, and were cured by it. The women on board were affected by the same disease, and one, a serjeant's wife, who had her catamenia at the

same time, was perfectly cured by mercury, and every thing went on, as if she had not been under the influence of the medicine, although the salivary glands were thoroughly affected. I attributed my losing so few men, to my pushing the mercury in the vigorous manner I have mentioned, for in the other ships of our regiment, the Clarendon and Isabella, in particular, the mortality was much greater; one lost eight, and the other nine men, under circumstances, except the bold exhibition of the mercury, precisely similar. The mercury in these ships was exhibited only until the pain in the head abated, and then it was laid aside entirely.

“ I am, &c.

“ *Dr. Chisholm, &c.*”

“ JOSEPH RONALDSON.”

Colonel Baillie, mentioned in the above interesting statement, assured me that the first appearance of the fever on board his ship, the *Flora*, was about four days after four men of his regiment had returned to the ship, after having been detained a whole night, by tempestuous weather, in a ship called the *Generous Planter*, the focus of the infection of the fever which destroyed 1099 of 5000 infantry, composing the army destined for *St. Domingo*, under the command of General White. (See *Essay on Malig. Pest. Fever*, 2d Ed. vol. 1, p. 206.)

For further proofs of the absolute necessity of pushing mercury to salivation, in order to secure its certain efficacy in malignant pestilential fever and yellow remittent, I beg leave to refer to my *Essay*, vol. i. p. 350-361, and vol. ii. p. 136, 141, 184, 187, 237, 292, 303. Dr. James Johnson in his truly excellent work on tropical climates will furnish most ample and valuable information.

As there is thus every reason to be assured that salivation is a necessary condition in the mercurial treatment of the malignant pestilential fever, it becomes an object of the greatest importance to ascertain the means of accelerating the action of mercury on the salivary glands, when, from a peculiarity of constitution, the debility induced by the disease itself, or the spasmodic state of the stomach, it remains inactive in the body, or is rejected before the effect expected from it can be produced.

1. When this proceeds from a constitutional cause, the application of mercury must be varied in every possible manner. It often happens that, although a large quantity of calomel has been received into and retained by the stomach, without any visible effect, a smaller quantity of mercury, introduced by means of friction, has excited a salivation. When, therefore, from the information of the patient himself, or from the inefficacy of the first day's exhibition of calomel, there is an early apprehension entertained of an unsuccessful issue of this mode of using it, frictions to every part of the body, where there is a chance of absorption, should be recurred to, and from this much advantage may be obtained, if assiduously and carefully employed. In such cir-

circumstances it has been recommended to rub the gums and the inside of the cheeks with calomel, moistened with saliva; but I can safely aver, that I never experienced the smallest advantage from this practice; on the contrary, troublesome ulcerations have been produced, without exciting any increase of salivary secretion. When the unaptness of the constitution to be affected by calomel is accompanied by a costive habit, either consequent upon the disease, or also constitutional, much benefit has been derived from the addition to the calomel of a medicine capable of quickly and strongly stimulating the intestinal canal. Thus, jalap has frequently given the calomel a tendency to excite the secretion of saliva. That stimulants possess the power of rousing the constitution from this habitual indolence, in cases where mercurial action is necessary, has been frequently experienced in other diseases.

2. When the tardy action of mercury proceeds from debility, induced by the disease, the danger is infinitely augmented, and demands the combination of every means which may communicate tone to the system. For this purpose, I have had recourse to a variety of medicines and applications; but the system, reduced to this state, is raised with the utmost difficulty; and the most powerful tonics have, in by far the greatest number of cases, proved totally useless. Those I have chiefly depended on in such circumstances, are injections of a mixture of bark and port-wine, with a small portion of a watery solution of opium; the vitriolic ether, in small doses, but unremittingly persevered in—the application of blisters, and of strong mercurial ointment to the blistered part—the cold bath, or rather cold affusion, made use of every third or fourth hour, with a glass of spiced wine, warm, after every application of it—the liquor arsenicalis—and the decoction of tobacco, exhibited by injection. During the exhibition of any of these means, the calomel, and mercurial frictions are to be persevered in, and their quantity increased, as the danger of the patient becomes more imminent. If this is not done, little benefit can be expected from the whole tribe of tonics administered, without it. Accidental cures sometimes occur, which go further to prove the necessity of adopting this rule of practice, than any reasoning, any precept without fact. A young gentleman of Fort Royal, labouring under the yellow remittent fever, after evacuation by jalap and calomel, was put on the mercurial treatment, aided by the assiduous use of the cold affusion, which reduced the pulse, every time it was applied, from 120 to 90, and the febrile heat from 103° to 98°. His fever gained ground, however; and, together with petechiæ, excessive irritability of the stomach, and other bad symptoms, a soreness of the throat was complained of. Although no morbid appearance could be perceived, on examination, it was judged proper to employ the volatile liniment externally to the throat. On the fifth day of the fever, the nurse, by mistake, instead of applying the volatile liniment, as usual, to the throat,

had applied more than an ounce of the strong mercurial ointment to a surface which was now, in a state of excoriation by the liniment. The consequence was, the mercurial action, was almost immediately brought on, and every bad symptom ceased, and he recovered rapidly. This case is the more important because, previous to the accident which brought on the favourable change, large quantities of calomel had been swallowed, had been rubbed in on the gums and inside of the cheeks, and had been administered by injection; and mercurial ointment had been used by friction, without effect. Let it never be forgotten that at whatever period of the disease salivation is excited, whether the supposed signs of putrefaction have appeared or not, the accession of it is the certain signal of cessation of disease, and of returning health. If, therefore, the practitioner has a wish to benefit his patient, he will not listen to that advice which forbids perseverance in the use of mercury in this most dangerous disease—an advice so ill-founded and so destructive in its consequences.

The practice in yellow remittent, and malignant pestilential fever, (for that exists too in some parts of India,) in India, is precisely that which I have endeavoured to inculcate and impress on the mind of my unexperienced reader. Dr. James Johnson has conferred on society the highest benefit by shewing, in the most energetic manner, the necessity there is for adopting it, and by laying down the rules by which it should be regulated. Another gentleman, Mr. Gibson, of the Bombay medical establishment, has also exerted himself in the cause of humanity, in a manner which does him equal credit and honour, by distinctly and clearly delineating the character and nature of the fevers he met with in the province of Guzzerat, and the practice which he found alone useful in them. In the excellent paper drawn up by Mr. Gibson, and published in the *Edin. Med. Surg. Journal*, Vol. xi. he draws the distinctive symptoms between the yellow remittent, and the malignant pestilential fever, without specifying any cause of the distinction, he marks obviously the difference. “The species of fever, which I have seen prevailing in the province of Guzzerat, partakes chiefly of the typhoid character, though commonly denominated, I presume incorrectly, bilious. It differs from the latter form of fever in requiring less evacuation; and from the former, in the remission being such as to admit of stimuli being administered. The effects of stimuli are what one would look for in an inflammatory diathesis; yet excessive evacuations of any kind seem only to hasten the fatal termination. In reasoning on this fever, which is the most perplexing and vexatious that a medical practitioner meets with in India, from the difficulty there often is in introducing mercury into the system, I have been led to conclude, in a majority of cases, first, that a chronic inflammatory state of the lymphatic, glandular, and secreting systems, has been gradually excited by a slow febrile action, thereby preventing the transmission of the mercury into the



“ system at large ; and secondly, that unless the mercury was got  
“ to act so as to dissolve this state, if I may be allowed the ex-  
“ pression, *in salivation, a criterion of these systems being free and*  
“ *unobstructed*, the fever might, for the time, be accidentally sub-  
“ dued, but the patient will be left a prey to lingering chronic  
“ obstructions, till death, long wished for, at length puts a period  
“ to ten thousand indescribable sufferings. This hypothesis of  
“ inflammatory lymphatic glandular action existing, however slow  
“ it may have been in its progress, seems more consonant to reason,  
“ and is more easily reconciled with the febrile state of the general  
“ system, under a tropical sun, than torpor, which has been so  
“ universally and undefinedly applied. Torpor presupposes a  
“ want of stimuli ; but any other stimulus than mercury given  
“ at the commencement of the fever, and till mercury acts to the  
“ full extent on the system, and exerts its own peculiar specific  
“ power, would only bring about the sooner what we wish to  
“ avert. But in virulence and phænomena, perhaps the plague  
“ bears a closer analogy to the fever in question, and affords a  
“ more convincing illustration. In better climates, the phlogistic  
“ state of the system is adverse to the introduction of mercury ;  
“ but the prudent abstraction of blood happily reduces it to that  
“ standard which is most favourable for its action. In India,  
“ however, in fever, the disease in which this is most speedily to  
“ be desired, the same means would, but in very few cases, be  
“ admissible ; for the debility is so great and instantaneous, as well  
“ as the tendency to putridity, that only in the robust new-comer,  
“ is it, if ever, to be hazarded. It would seem that debility, as  
“ well as the plethoric system, are qually inimical to the specific  
“ mercurial action. If the patient is fortunately invigorated suffi-  
“ ciently to give the mercury influence, and before any organ  
“ essential to life is injured, by the strictest nursing and attention  
“ afterwards, the recovery is almost certain, all morbid action  
“ yielding from the moment ptyalism is brought on.” The  
frequent inactivity of mercury, he experienced, after the intro-  
duction of a large quantity, induces Mr. Gibson to remark that  
“ it is a desideratum, the greatest in the treatment of this fever,  
“ to know a criterion by which to judge that you have pushed  
“ the mercury to the necessary extent, and no further.” The  
desideratum, I am most confident, in such cases, is not to desist  
from the use of mercury, but to support and stimulate the system  
so as to bring it to that state, that “ standard,” favourable to  
mercurial action, when salivation will be excited, and, when, that  
having taken place, nothing but the employment of the means of  
restoring the system to its natural state of tone, will be required.  
The sentiments of Mr. Gibson are so rational, and correspond  
with such precision with my own, on this most important subject ;  
and are so generally illustrative of it, that I have been led to quote  
largely from his paper ; and I trust to the advantage of the young

and unexperienced practitioner, who may be placed in such puzzling and untoward circumstances.

But although mercury, "the Sampson of the materia medica," is possessed of virtues which induced Fracastorius to assign it a divine origin; although it is, in truth, as safe as well as a most powerful and beneficial medicine, and may be given in quantities far exceeding those thought justifiable in Europe, with the best effects; yet, notwithstanding this, the exhibition of it should not be left to the discretion of unskilful persons—of those who have not had experience themselves, or who have not availed themselves of the advice and instruction of those who have had: for the "ne quid nimis" of Sosia, is as applicable to the administration of the safest medicine, as it is to the conduct of life. I repeat, however, that in those cases of malignant pestilential and yellow remittent fevers, in which the danger is momentarily increasing, whilst a torpor, or an unaptness of the system to the influence of mercury, induced by the disease itself, or by constitutional or other causes, is perceived, there should be no limitation to the exhibition of the medicine; for on that alone, properly and judiciously modified and assisted, does all chance of success depend. The circumstances of the patient, the intensity and ungovernable nature of the symptoms, and consequently the little hope held out of succeeding by any other means, must regulate the practitioner. To lay down precise rules, in such a case, is impossible. The practice, to give a reasonable chance to the patient, must be regulated by a precept arising out of boldness, decision and judgment united—nor must the practitioner forget that although these diseases, in more violent forms, are most desperate, yet they should not be deemed lost, to the very last. I have found in the management of the mercurial treatment, a small quantity of mercury sufficient to excite salivation, and to secure safety; and I have known instances of both fevers, in which nearly 6000 grains were required to effect the same object—such is the uncertainty on one hand—such the necessity of the precept I have recommended, on the other. The subject is too important to render an apology necessary for introducing here, some of the more interesting particulars of two or three cases which occurred to me in the West Indies, in which the necessity for the observation of the precept is strongly manifested. The first is fully detailed in the second volume of my Essay, p. 396. John Richardson, Serjeant Major of the Royal Artillery at Fort Royal, Martinico, was seized with the symptoms of the highest grade of the yellow remittent fever, on the 1st of July, 1798. On the 5th, notwithstanding the free use of calomel, bleeding freely at the onset, and ether to allay the incessant vomiting, the pulse was 106, skin cold and covered with cold clammy sweat, without inflammation or redness of the eyes, and without any particular pain; lying constantly on his back, vomiting of black matter like coffee grounds, but perfectly collected. He took 60 grains of calomel on the 4th without any sensible effect—ten grains were

given every two hours—ether was persevered in, and with the same intention, blisters were applied to the inside of the thighs, and the blistered surfaces were dressed with mercurial ointment—alternate suffusions of yellow and dingy hue, overspread the surface—they succeeded each other in quick change. On the 6th, pulse 110 and feeble—vomiting continues; a variety of remedies had been employed to check it, without effect. Under these circumstances, it was determined to administer mercury by injection, in this form—℞ calomel, ℥ss. tinct. opii. ℥ij mucilag. g. s. aq. tepid ℔ss. ℥. This was repeated every fourth hour, day and night—7th, pulse 88, fuller and stronger—after the third injection the vomiting ceased—had much tranquil sleep, which relieved him much; and he was more lively, and without despondence, which hitherto had been most distressing. His mouth moderately affected—in the evening vomiting returned, and had very troublesome hiccup—the following clyster was administered, and the calomel injections discontinued. ℞ assafœtid. ℥ss. solve in aq. bullient. ℔ss, et adde mur. sodæ ℥ij. ol. ricini ℥iss. ℥ ft. enema—a repetition of this, and a little magnesia taken into the stomach, removed the vomiting and hiccup—8th, salivation increasing, and considerable discharge of blood from the gums—has taken some boiled milk and bread—has no inclination for wine or porter—9th, much bloody spitting—takes some bark on account of debility, proceeding partly from discharge of blood from the mouth, which has been very considerable—some days after this he was discharged well. Another case equally extraordinary and no less instructive occurred in Demerary, in the year 1799.

William Gow, aged 22, robust and florid, by trade a carpenter, a native of Scotland, and only five months in Demerary, was seized on the 29th of July with the usual symptoms of yellow remittent fever—“August 1st,” this morning his skin natural, but pulse quick; began to give him bark. After giving him three doses, stopped, as he vomited each dose. At eleven A. M. pulse 101—animal heat 104° Faren. At one P. M. pulse and heat the same; poured over him about six gallons of water, in which a pint of salt was dissolving. He was afterwards wrapped in a blanket; pulse 100, heat 102°—a copious perspiration immediately followed, which, however, was checked in about two hours, by moving him from the blanket into a hammock. At six P. M. being very restless, pulse 100, and heat 100°, two pailfuls of water, with salt in the act of solution, were again, thrown on him, by which he was much relieved, and perspired copiously until ten P. M. Frequent and copious stools attended with griping—2d. very restless all night; had about a dozen stools, with much griping. At six A. M. heat 100°, pulse 101, five large pailfuls of sea water were dashed on him, sitting in a tub; when returned to bed, pulse fell to 98, and heat 99°, copious perspiration ensued; slept a little. At noon, heat 102° and pulse 100—the same quantity of sea-water was again used, as in the morning; heat fell to

98°, and pulse remained at 100; copious perspiration as before, for three hours. At six P. M. pulse 101, and heat 102°; the same quantity of water poured on him as before; immediately after, heat 96°, but soon rose to, and continued at, 98°; pulse 98; perspiration as before, slept a little, and felt his headach, of which he had before complained, a little relieved.—3d. Slept much in the night; head easier, and generally refreshed. At six A. M., heat 100°, and pulse 99; the same quantity of water dashed over him, and remained a few seconds immersed in the water; immediately after being taken out, heat only 92°, but in ten minutes rose to 98° and remained so; pulse 92. His feet continued cold for near an hour, and the application of bottles of hot water to the soles required to restore the natural heat to them; nor did perspiration commence for near two hours: it then became copious, and did not cease till eleven A. M.; he then slept, and head very considerably relieved. At one P. M. pulse 116 to 120, heat 102°; bathed as before; after bathing, heat 101°, pulse 105. At six P. M. heat 101°; bathed; after bathing, pulse 100, heat 94° when taken out of the water, but in ten minutes, rose to 98°, and remained stationary. At bed-time, twenty grains of calomel and two grains of opium, in two pills, taken; a blister applied to the back of the neck; and mercurial frictions employed for the first time; stools not so frequent as yesterday.—4th. Slept a great part of the night; head relieved, no stools. At six A. M. heat 101°, pulse 92, bathed; after which remained stationary at 98°, and pulse 86; mercurial frictions before bathing, and in the afternoon two P. M. heat 101°, pulse 100; bathed—after which, heat 99°, pulse 98—six P. M., heat 102°, pulse 108—bathed, heat 98°, pulse 100; mercurial frictions used repeatedly between the periods of bathing; four stools; at bed-time, twenty grains of calomel and two of opium.—5th. Had much refreshing sleep. Six A. M., heat 103°, pulse 114; bathed, heat 100°, pulse 110 and fluttering; had a glass of Madeira wine; tongue dry, and much thirst—eight A. M., pulse 124; took four grains of James's powder with a few drops of laudanum, which were retained. It is to be understood, that after each bathing the perspiration has been copious, and has continued for two or three hours—ten A. M. tongue slightly moist, and pulse 120—ordered a glyster of bark and Port-wine every third hour—two P. M., heat 102°, pulse 120 and feeble; the bath as before; after which heat 100°, pulse 110, but very indistinct; immediately after the bath, a glyster of bark and Port-wine, but it occasioned great pain, and was instantly rejected; P. M. began to give small doses of yellow bark and wine, and retained eight. At six P. M. heat 100°, pulse feeble and indistinct, the bath omitted, as he seemed unable to bear it.—6th. Six, A. M., heat 98°, pulse 100—bath still omitted; had three doses of yellow bark and wine; at noon very low; pulse feeble and indistinct, and skin rather clammy. Two P. M., pulse feeble, heat 98°, bathed; after which pulse 104, heat 100°, ordered spiced wine

after bathing, and as often as he can take it; and every third hour a glyster, composed of two table spoonfuls of bark, two teaspoonfuls of laudanum, and two drachms of calomel, mixed with as much starch of arrow-root, as might make the whole sufficiently liquid—blisters applied to the inside of each thigh—six P. M., pulse 104, heat  $100^{\circ}$ , bath repeated—after which, pulse 98, heat  $100^{\circ}$ —glysters repeated every third hour regularly, and retained—mercurial frictions to every absorbing surface—spiced wine continued.—7th, Retained all the glysters; and blisters dressed with mercurial ointment—six A. M., pulse 104, heat  $100^{\circ}$ , bathed, pulse 104, heat  $100^{\circ}$ —appears more lively, and feels himself easier—at noon pulse 108, heat  $101^{\circ}$ , bathed, pulse 98, heat  $100^{\circ}$ —six P. M., heat  $99^{\circ}$ , pulse 96—bathed, heat  $99^{\circ}$ , pulse 96—glysters having been uniformly retained, a laxative glyster administered at nine P. M. which procured two stools; after which the mercurial glysters continued as before.—8th. Six A. M., pulse 88, heat  $100^{\circ}$ , bathed, heat  $99^{\circ}$ , pulse 84—appears much more lively, and feels himself better—glysters and bath to be continued every fourth hour—heat  $99^{\circ}$  before, and  $98^{\circ}$  after each bath, and pulse regularly 88—at nine P. M. the laxative glyster repeated.—9th. Rested well all night, and perceived for the first time, this morning, the sensation of hunger—pulse from 86 to 88, heat  $98^{\circ}$ . The bath, and bark glysters, without calomel, continued—mercurial frictions discontinued. His mouth does not appear to be at all affected by the mercury.—10th. Bathed three times in the course of the day, a bark glyster after each time—appetite good—convalescent.—13th. Walked out, and bathed in canal—recovery rapid. The temperature of the water used in bathing was about  $76^{\circ}$ . Dr. Ord, who conducted the treatment, under my direction, has stated the quantity of mercury employed, as follows. Took into the stomach 64 grains—took by glyster and retained 2040 grains of calomel—employed in frictions sixteen ounces of the strongest mercurial ointment, which, according to the London Pharmacopœia, may be equal to 4448 grains of triturated mercury. In all 6552 grains. It may be difficult in this case to determine whether the cure was effected by cold bathing or mercury or bark, or by the combination of the three. The first and the last, it appears, however, from the changes which took place after the bold administration of mercury, would have proved precarious remedies, without the powerful aid of the second. The recovery of the patient was astonishingly rapid, after this change was effected. The case most evidently demonstrates that the human system is capable of bearing—not only of bearing, but of being most essentially benefited and improved, by the prudent administration of a quantity of mercury, far beyond, what the boldest practitioner has judged safe. In the year 1793, I considered] 400 grains as an immense quantity; and, I believe, at that time, that quantity had not been exceeded. In the year 1794, I found it necessary in some cases, to go considerably beyond it—and Mr. John Bouie, a gentleman

of Grenada, constituted, in his person, the first proof of the utility, as well as safety, of limiting the exhibition of mercury in the malignant pestilential fever, only by the sensible and salutary effects produced by it. In this singular case, (Mr. Bouie's) I gave doses of twenty grains of calomel, five times in the day; and at length, the situation of the patient becoming truly desperate. I twice gave 60 grains at a dose. The symptoms were alarming in the highest degree, but I felt a confidence in the mercury, which gave me courage and resolution to persevere in it. Mr. Ferguson, the governor and gallant defender of Tobago in 1779, and at this time Collector of the Customs at Grenada, who felt a very warm interest in Mr. Bouie, attended him almost as I did myself. To Mr. Ferguson, I uniformly returned the same answer, that if Mr. Bouie's mouth became affected by the calomel, he would certainly recover. This fortunately happened about the 9th or 10th day of the fever, after more than 800 grains of the medicine had been taken into the stomach; and Mr. Ferguson acknowledged that the justness of the prognostic was only equalled by his astonishment at the efficacy of the remedy.

An argument not unfrequently brought against the use of mercury, in the malignant pestilential and yellow remittent fevers, is founded on the uncertainty of its operative effect. Thus, it is said, that a few grains of this medicine will excite salivation under certain circumstances; whilst a thousand are not sufficient to produce that effect in cases of the fevers before us; and that therefore a medicine of so variable an action should not be relied on in circumstances so dangerous. I admit the fact, because I have seen it happen; but I deny the inference. The best answer to such objections, is drawn from experience under the use of every other mode of treatment, that I have myself employed, or that I have been acquainted with through other sources, the mortality in the malignant pestilential fever, has been dreadful. If we adopt the calculation of M. Jonnés, (see Introductory Remarks) the average loss by this scourge of tropical climates, has been 1 in  $3\frac{1}{2}$ , since it has been first known to Europeans. Are we, then, from any vain or unfounded apprehensions of this kind; from reasoning drawn from false premises; or from the suggestions of uninformed or prejudiced minds; to yield up the result of our own frequently reiterated experience—to relinquish the best aid we can bring to the support and relief of our fellow creatures, suffering under so direful a malady?—forbid it humanity—forbid it truth—forbid it heaven!

But to return to the auxiliaries of mercury, or those means which render the system susceptible of its influence in these fevers—of all these, the best I know of is cold affusion. When I first began the use of the cold affusion, which was not till my return to the West Indies in 1796, I conceived that the only periods at which it exhibited its beneficial powers, were the commencement, or rather before the fever is properly formed, and the low state, when the

mercury, already given, has had no effect, and when the gangrenous disposition has begun its approaches. Whilst this was my idea, I confess I could not satisfy myself with any good reason why its operative effects should be confined to these periods. My much respected friend, the late ingenious and penetrating Dr. James Currie of Liverpool, first drew the veil aside, and demonstrated the nature and cause of this deficiency. Defective observation, and a very limited information relative to animal heat, in a healthy and in a morbid state, I was convinced, with him, were the true causes that cold bathing and cold affusion, had hitherto produced but very partial effects in the West Indies, during the inflammatory stage of fevers in general. During the inflammatory stage, although, hitherto, no attempt, on rational principle, had been made to counteract the prevailing diathesis, yet particular symptoms were considerably alleviated by the application of cold. Thus then, as a preventive, and as a tonic, cold was generally, as a palliative of some distressing symptoms, it was partially applied. Since that time, chiefly through the recommendation of Dr. Currie and Dr. Jackson, the practice of cold immersion and cold affusion have become very general. But, within the tropics, I have reason to believe, that when trusted to, as a principal remedy, their success has been very equivocal, unless employed as a preventive, or rather as a means of obviating morbid action, before it has been established, by the production of a new action. As an auxiliary to mercury, in the malignant pestilential and yellow remittent fevers, I know of no tonic, equal to the cold affusion. The employment of it in these fevers, with the intention of giving strength and tone to the system, or raising it to that state, which renders it susceptible of the influence of mercury, when that medicine has been given largely without effect, was originally suggested by the total unaptness of bark, wine and other tonics and stimulants, to produce that effect, whilst the rapid advance of a gangrenous disposition, so peculiar to the malignant pestilential fever, gave little or rather no hope of a happy termination of the disease, without a salivation. Of late indeed, through the important communication of Dr. M'Cabe, respecting the great utility of brandy in the fever he had occasion to treat at Trinidad, which was in truth, the malignant pestilential, we have in our power a stimulant of still greater activity, to assist us in exciting the specific action of mercury. The practice of Dr. M'Cabe I have already adverted to with the high commendation it so justly merits; and I now again, recommend it, as admirably adapted to that state of the malignant pestilential fever, I am now treating of, in which life is suspended by the most delicate thread, and from which, mercurial salivation presents to us the surest means of raising it, providing we have a stimulating agent sufficient to restore the just balance of the system. But to return to cold affusion—every one acquainted with the doctrine of the *modus operandi* of mercury, formerly received, and with the prejudices which have always existed against the application of cold to the

body, in any form, during the exhibition of that medicine, will, doubtless acknowledge that no small share of fortitude, and disregard of popular opinion, distinguished the practitioner who first adopted this practice. Dr. Armstrong of St. Kitts, has, I believe, the merit of this startling innovation in the treatment of malignant pestilential fever. On my return to the West Indies in 1796, I had always recourse to the cold affusion as an aid to mercury, in both the malignant pestilential and yellow remittent fevers, with the best effects—I have sometimes had recourse to it, with the same intention, in diseases in which I have employed mercury, as a principal remedy, during my practice in Bristol and Clifton, and most certainly it has not disappointed me. The first case in which I dared to employ it, in this way, may be, perhaps, worthy the reader's attention. A young man, by profession, a gardener, and assistant to his father, in an extensive nursery in the neighbourhood of Bristol, was, by exposure to intense solar heat, *knocked down by a stroke of the sun*. Prompt bleeding, purging, &c. relieved him from the immediate consequence of such a calamity; but the use of his mental faculties he was unhappily deprived of, to such a degree, as to leave him fatuitous, and nearly insensible to every mental, and, almost, to every physical impression. In this unhappy state he remained for several months. I was then consulted. I found him in the situation described, and with the additional misfortune of considerable emaciation and debility. Further bleeding to any extent was evidently improper, and every local application had been tried in vain—what remained to be done?—I resolved on mercury, (See Part 2d ch. 12) and proposed it to his friends, as well as to the very able and judicious medical gentleman, Mr. Swayne, who had attended the patient before I saw him. I gave him calomel in doses of five grains, at first; but soon increased them to ten, fifteen, and at last twenty grains, thrice in the day; and employed mercurial frictions at the same time, morning and evening. The medicine, although thus pushed to a very great extent, being inert, bark and wine were liberally given, without effect. Seeing the case a desperate one, I then determined on the tropical practice. He was made to sit in a large tub, and three pail-fulls of very cold water, were thrown on his head and shoulders; he was as quickly as possible, wiped dry, and put in between two blankets; and a large glass-ful of spiced wine, warm, given to him. For the first time he was sensible of impression. The shock was considerable. This was repeated every second day, and the calomel only continued—at the end of ten days a salivation took place. Two days after this, I was astonished to find him sitting at a table, reading very attentively his bible; and when I conversed with him, I was delighted to find the state of his intellects conformable to those appearances of returned reason. In about a month he was able to attend to the business of the nursery, with every prospect of a tolerably complete re-establishment of mental and bodily health. Whether this happy change has been perma-



hent or not, I do not know; but the case serves to show most evidently that this tropical practice is safely and beneficially applicable to other morbid states, accompanied with that reduction of physical strength which deprives mercury of its specific influence; and that too, in other very different climates.

Attempts have been made, and, generally, successful ones, to relieve the headach, to obviate irritability of the stomach, to lessen the sensation of the internal heat, to stimulate the intestinal canal, and to derivatè from the vital organs, by the partial application of cold. A solution of the muriate of ammonia in water, applied to the forehead by means of linen cloths soaked in it, and frequently renewed, has often given considerable ease to the patient. The same application to the gastric region relieves the stomach. Glysters of cold water with some salt dissolved in it, have been frequently used with good effect—and immersing the feet in cold water has had the agreeable effect of relieving the head, the oppression at the præcordia, and the internal heat.

Before I conclude what I propose to offer on the use of cold affusion, I must again repeat, that employed as a principal remedy, in the malignant pestilential, and yellow remittent fevers, it will seldom, perhaps never, accomplish the cure, unless as a preventive, during the forming stage of these fevers. My own experience has fully satisfied me of the truth of this observation; and there are many instances of the fact, on record. One which more immediately occurs to me, is contained in Dr. Irvine's Observations on the diseases of Sicily. It is deserving of our best attention, that although topical bleeding and cold affusion were considered by Dr. Irvine, as the best means of cure of a fever which bears no small affinity to the malignant pestilential of the tropical climate, yet the tediousness of convalescence was very remarkable.—Sometimes several months elapsed before even a moderate degree of strength was restored. Had Dr. Irvine given Mercury, and used the cold affusion as an auxiliary, after the cerebral congestion had been diminished by bleeding from the temporal artery, I think, no doubt can exist that the fever he had occasion to treat, and which he has so ably described, would not only have been completely cut short, but restoration of strength would have rapidly followed.

2. When, together with extreme debility, there is a spasmodic state of the stomach, whilst the mercury, hitherto given, remains inactive, recourse may be had, with more or less advantage, according to their adaptation to the end, to a variety of means—I shall mention a few of the more useful. The venerable and amiable Dr. Wright, physician on the Medical Staff of the Army in 1796-98, thus speaks of capsicum. "Where calomel failed, danger was apprehended, yet we did not despair. Capsicum or cayenne pepper pills were given with the most marked success; and even where the melæna or black vomit had taken place, capsicum has snatched the patient from the most imminent danger." (MSS.) Under this state of the stomach, I have already mentioned the great benefit derived

from calomel and bark injections. I shall here further observe, with respect to this mode of introducing calomel, that the patient's strength must not be too far sunk, for should that be the case, no absorption taking place, the medicine will be necessarily inert—it must not, therefore, be too long delayed. Another caution must be attended to, to secure the efficacy of these injections; considerable pressure, with a rolled-up towel, against the anus, after the administration, must be employed for fully half an hour. Ether, assiduously persevered in, will often quiet the stomach when other stimulants have failed—this should be given in teaspoonfuls every two hours, or even oftener, in a small glass of water—the medicine should be poured into the water as close to the patient's mouth as possible, to prevent its evaporation. But the most certain method I know of restoring tone to the stomach, is glysters of a watery solution of assafœtida—these, administered three or four times, seldom fail—I first made use of assafœtida, with this intention, in the case of Lieut. Colonel, now General J. S—h of the Royal Artillery, at Fort Royal, Martinico, in September, 1796—and he, undoubtedly, under Heaven, owed his life to it, as it enabled him to take calomel to saturation. Each glyster should contain three or four drachms of assafœtida—it is not to be imagined, however, that this medicine can effect a cure. It is, on the contrary, obvious, that it is directed against a symptom only—with the view to render the admission of mercury more certain; and to suspend the spasm of the stomach and intestinal canal, so that the action of the absorbents may become more perfect. Further than this, should not be expected from it. It is to be remembered that, in giving ether, with the intention of tranquillizing the stomach, no other medicine, no other substance of any kind, indeed, should be given, until, by perseverance in the assiduous administration of it, its efficacy is secured—one or two exhibitions are not sufficient, reiterated trials can alone effect the object.

#### PURGING.

It may be proper to offer a few observations on this remedy, although from what has been said, it may appear quite unnecessary. The principal advocate for this practice was the late highly respected and amiable Dr. Rush. Calomel and jalap were the medicines he employed in this practice; and these he said “cured a greater proportion than 99 out of 100 of all who applied to him on the first day of the disorder, before the 15th day of September.” His success after that day was much more limited; but at no period of the disease did he lose more than one in twenty, under this practice, of those whom he saw on the first day, and attended regularly through every stage of the fever. This wonderful success, I believe, was peculiar to Dr. Rush. Certain it is, I was early deterred from

the practice, to an extent beyond what was necessary to cleanse the first passages, by finding extreme debility uniformly proceeding from it. In the year 1796, at Fort Royal, where the malignant pestilential fever raged extensively, many practitioners, on Dr. Rush's authority, and induced by the simplicity of the practice, gave calomel and jalap in the manner recommended by him. The event, however, was different from his statement; for among the inhabitants and the crews of merchantmen, who were attended by private practitioners five out of six perished. Nor does the practice appear to be more successful in yellow remittent fever. In the year 1798, it was employed by the same gentlemen, but the mortality was still greater, scarcely one recovering in their practice—upon the whole, therefore, I can, without hesitation, affirm, that in the West India climate, the extent of alvine evacuation should never be pushed beyond the limits which secure a free passage through the intestinal canal, and a cleansing of it at the commencement of the disease. Whatever is excited beyond this, necessarily increases the tendency to debility, already greater than the system can bear—and, by carrying off the mercury, which should accumulate till the habit is fully affected by it, must deprive the patient of the only chance of recovery he can, in all human probability, have.

It is unnecessary to occupy the time of the reader with a detail of the other means I adopted to fulfil the second and third indications; for none of them were useful, in the more violent cases of the fever, as principal remedies—I shall therefore proceed to the fourth and last indication.

### SECTION III.

#### *The Fourth Indication.*

IN discussing this Indication, I shall, almost verbatim, transcribe the observations which I have placed under this head in my Essay on the Malignant Pestilential Fever, for the twenty years which have elapsed since the publication of that work, have only strengthened, and brought into clearer light, the truth of them.

The second and third indications having been accomplished, to restore tone and energy to the system, is the object of the fourth and last. This was obtained more effectually by change of air and situation, and suitable diet, than by medicine; for, contrary to most febrile diseases, and other maladies, whose sequel is debility and depression, bark and tonics in general, were in this, either useless or hurtful; and the patient in every instance, seemed instinctively to loath and reject it.

## CHANGE OF AIR AND SITUATION.

As long as the patient remained in the infected room or house, but more especially the first, although all symptoms of the disease had ceased, the progress of his recovery was remarkably slow. And here I wish it to be particularly noticed as a practical observation of great importance, that the restoration to health seemed to bear, nay did bear, a pretty exact proportion to the means used in subduing the disease. Headach, a heavy dull eye, with considerable protrusion from the orbits, low spirits, or hypochondriasm, thirst, and a total want of appetite; were the general consequences of the treatment with bark. None of these unpleasant feelings attended convalescence when the disease had been removed by mercury; and I had, fr equently, reason to believe that a serous accumulation, a kind of chronic hydrocephalus continued in the brain a considerable time, after the appearance of the disease, when treated in any other way; nor in this observation, have I been singular. Dr. Rush has confirmed the justness of it, by judiciously remarking that, "should the immediate success of tonic and depleting remedies in destroying the fever be equal, the effects of the former upon the constitution cannot fail of being less safe than the latter remedies. They cure by overstraining the powers of life. There is the same difference, therefore, between the two modes of practice, that there is between gently lifting the latch of a door, and breaking it open, in order to get into the house." (Inq. and Obs. v. 4, p. 100,) Although nothing of the kind I have mentioned, as following the tonic plan, followed the mercurial one, extreme debility was the immediate consequence of the disease, in all cases. But this distinction was most manifest, that convalescent debility was of much shorter duration after the mercurial than the tonic treatment. It appeared, indeed, that the infected air of the room, in which the patient continued to reside, although it could never renew the disease, yet acted on his system, in such a manner as to produce an effect extremely injurious. To obviate this evil, a change of air and situation became absolutely necessary, the instant signs of convalescence appeared; and, indeed, of all the means of recovery, I know, from this state of debility, it is the most efficacious. Even the moment the patient was carried into the open air, he was sensible of a wonderful degree of refreshment; and the purer the atmosphere, and the higher the situation, provided there was no dampness, the speedier was his acquisition of strength. Instances of this were very frequent, as were those of a contrary management.

Under circumstances which did not admit of a change of this nature, much benefit to the patient occurred from moving him from the infected chamber to one adjoining. In the hospitals this was frequently done, and always with the best consequences. I have

extended this removal, even to that state of the disease which immediately succeeds the inflammatory, and frequently with evident advantage. Something of this kind was done on ship-board. In a few ships, the Captains had the humanity to give up their cabins, altogether, to the sick; and in these, the sick, enjoying sufficient room, good air, and better ventilation, than between decks, the mortality was very much less. The following fact, furnishes a favourable example of what may be done on ship-board, in difficult circumstances, to prevent the spread of the infection of this dreadful disease. "About the end of March, 1793, the ship "Herberts, Captain Brown, sailed from the port of St. George, "Grenada, for Glasgow. In working the ship out of the harbour, "Captain Brown was obliged to send five of his men on board "the *Defiance* of Blythe Port, to fasten a warping line. At this "time the malignant pestilential fever raged on board the *Defiance*. "The day after the Herberts sailed the five men were seized with "the disease, and three of them died. Captain Brown attributed "the recovery of the remaining two, to their getting into a colder "climate before the disease had completed its course. By the "following means, the disease was prevented from spreading on "board. Captain Brown had the long-boat fitted up for the accommodation of the rest of the crew, and took the mates into "the cabin with himself; he strictly prohibited all intercourse with "the infected, he himself attending them, and using the precaution "of changing part of his dress on visiting them; and on the recovery of the two survivors, he had the steerage, which the sick "had occupied, well washed, and frequently fumigated with "moistened gun-powder, boiling tar, &c. and he was particularly "careful to destroy the bedding and wearing apparel of the five "men who had been infected. These particulars Captain Brown, "obligingly favoured me with on his return to Grenada." (Essay, vol. i. p. 202) I may remark here, the employment of ships, for the accommodation of the sick, as hospitals, in such a disease as the malignant pestilential fever, should never be resorted to, but in cases of great emergency: they become so many centres of infection, from which, diverge emanations fraught with death to all who approach sufficiently near; and they are destructive to the unfortunate sick themselves, for whose benefit they are adopted. I have known hospital ships so offensive as to render them literally nuisances, even in a fleet at sea, to the ships which happened to pass to leeward of them. The very nature of such vessels deprives the medical and other officers, who have the arrangement and regulation of them, of the power of making them more wholesome, if the number of sick is great. In fleets of transports carrying large bodies of troops on distant expeditions, hospital ships are an evil unavoidable; but it may be rendered less injurious, by proportioning the number of them to the number of troops. Thus every thousand should have an hospital ship; not one to 5000, an allotment which has too often been inconsiderately made, to the great destruction of human life—

or an arrangement, such as the following, might be advantageously made without incurring any additional expence for an Hospital Staff. Let each brigade of an army, embarked in transports, have a ship exclusively appointed for the reception of their sick, during the voyage; and let the ships carrying each brigade, and their hospital ship, have a distinguishing vane: let two surgeons and four assistants belonging to the regiments composing the brigade, appointed, either by choice or lot, embark in the hospital ship, with an adequate proportion of hospital stores, and medicines; and let two or more steady women belonging to the brigade, be employed as nurses, on a moderate pay, together with a careful serjeant as steward, and a few soldiers, as orderlies, each allowed a small addition to his pay; and an ample, economical, and safe hospital establishment will be formed, to exist during the continuance of the voyage. The advantages of such an arrangement are too obvyious to dwell upon. The same objections, most certainly attach to general hospitals on shore. They are great, and enormously expensive evils—and ought, on all occasions, to be superseded by regimental hospitals.

As I considered cleanliness and free ventilation, as two principal agents in destroying contagion I always enjoined, the most scrupulous attention to them. In the Royal Artillery hospitals, when the disease was at its greatest degree of violence, I had all the wards, successively white-washed, port fires afterwards burnt in them, and the smoke confined for several hours, and then well washed with vinegar. Twice or thrice in the week, moistened gun-powder was burnt in each ward; and thrice in the day, the floor and beadsteads were either washed or sprinkled with vinegar—fumigation, latterly, with the vapour arising from the solution of nitre in the sulphuric acid, was constantly employed. But in order to destroy the seeds of infection, as completely as possible, all the blankets, sheets, shirts, flannels, and other wearing apparel of those who died, were burnt immediately after death—and the dead bodies carried away to a dead house and buried soon after, by the negroe attendants. This duty was exclusively assigned to them, on account of their peculiar unsusceptibility to receive the infection—sheets and shirts used by those who recovered, were first plunged into cold water, afterwards suspended in the smoke of sulphur, or gun-powder, and then washed, before the patient was discharged. In the years 1793-4, the foregoing precautions were uniformly adopted and enforced, where I possessed authority or influence. The benefit resulting was particularly conspicuous in many of the merchant ships in the harbour of Grenada. The Captains of these had the hold and lower decks daily well fumigated, with burning moistened gunpowder, or boiling tar, during which the hatches were kept close shut. All the under decks were also frequently washed with hot vinegar, and fires were occasionally lit below in iron pots, or stoves. The beneficial consequences of this attention, as I have said, were most gratifying; their men recovered their strength surprizingly fast, and suffered no

relapse; and new men, who were taken on board to replace those who had fallen victims to the disease, continued well. It was otherwise with ships, on board which these precautions were not observed; relapses, or rather a prolongation of the disease, were not uncommon, and new men became immediately infected. A letter of marque belonging to Liverpool, brought into the port of St. George, during the prevalence of the pestilence, on the 19th of May, 1793, the crew, thirty in number, of a French vessel she had captured on her passage from England. These men, on account of the scarcity of sailors, were distributed among the merchantmen most in want. The whole of these unfortunate men perished, it having been their lot to be put on board the least cleanly, and consequently the most infected ships. An object so highly important as the prevention of infection, or its destruction, when it has been admitted into a body of men confined to the limits of a ship, or barrack, cannot be too earnestly and frequently inculcated and exemplified. The following instances of the consequences of neglect on one hand, and of attention on the other, are too remarkable to be omitted. The Letter of Marque I have already mentioned, of twenty-six guns and about eighty men, arrived at the port of St. George, Grenada, on the 19th of May, 1793. The crew were chiefly young men, and in the full enjoyment of health and vigour—but the master was unfortunately one of those men, who, with intrepid bravery, possess a sovereign contempt of all those measures which prudence dictates for the preservation of health, and prevention of infection, and of those too, who, having never heard of the possibility of pestilential or contagious diseases existing within the tropics, had an unconquerable incredulity on that subject. Soon after the arrival of this ship, no care having been taken to prevent a communication with infected places, the infection of the malignant pestilential fever was received on board. No means whatever were taken to extirpate, or even to check the progress of the infection; consequently it spread with unrestrained fury, and acquiring strength as it extended itself, almost the whole crew perished before the month of August. Such was the fatal consequence of incredulity, founded on ignorance and obstinacy. The next instance presents a very different picture. In the month of February, 1794, the ship *Mary*, of Liverpool, of the same strength of guns and men, received the infection after her arrival in the same port. I advised the Captain, a sensible well informed and humane man, to separate the sick from the healthy, and, if possible, to procure accommodation for them on shore; and afterwards to have all the decks washed with vinegar, to light fires between decks and in the hold, and to fumigate the whole with burning moistened gunpowder or boiling tar. He thankfully complied with these directions, and the result was most happy; for after the four men, in whom the disease appeared, were sent on shore, and the means of eradication, I have stated, assiduously employed, the disease entirely ceased.

A remarkable proof of the efficacy of change of air and situation, even when the circumstances of the new air and situation are extremely unfavourable, occurred in Grenada in the year 1793. The sick soldiers of the 45th regiment, as soon as they were able to bear any degree of motion, were sent to Hospital Hill, where they were kept till they acquired their former health, which happened in a surprizingly short time. It may be useful to observe here, that when the malignant pestilential fever appeared in this regiment, which was a short time after the arrival of the Hankey, and her anchoring in the Carenage, nearly opposite to the barracks of the regiment, the curiosity of some of the officers of which was excited by her situation, to visit her, the disease being new, its symptoms very insidious and puzzling, and the mortality occasioned by it very uncommon, Mr. White who attended the sick, in the absence of the surgeon, Dr. Lindsay, consulted me. I mentioned to him, the difficulties I for some time laboured under, from the same causes, the result of my observations, and the treatment I had found alone useful in the more violent cases, and recommended it to him, as the most likely to be successful. He immediately adopted it, and frequently afterwards declared to me he did not lose a man in whom salivation had been excited. The number of deaths after this was very small; and no doubt the adoption of the mercurial treatment, was a main cause of the short convalescence in circumstances of air and situation, which, in common cases, or in health, had often before been found extremely prejudicial. The distance of Hospital Hill from Fort George, where the 45th regiment was stationed, is fully a mile, and the ascent for the most part, considerably steep—although the convalescents at the time they began their walk or ride, from the fort, were so weak and languid, as scarcely to be able to bear any kind of exercise, however gentle, yet before they reached the barracks prepared for them, instead of being exhausted by fatigue, were sensibly better and stronger. Their speedy recovery in this situation was rendered still more remarkable by their accommodation being cold and exposed to the weather; the barracks on Hospital Hill, at the time, being so much decayed as to admit the rain and wind almost every where. It was rendered remarkable by another circumstance peculiar to the situation, which, indeed, was the cause of the barracks being neglected, for many years, by Government. Close by the foot of Hospital Hill, and between it and Morne d'Elloi, where the River St. Jean disembogues itself into the sea, is an extensive and pernicious marsh, the exhalations from which have at all times rendered this station, and the immediate neighbourhood extremely unhealthy. One general remark appears to be the fair result of this observation, and many others which have since occurred, that a change of situation, to one unfavourably circumstanced, with respect to marshes, does not prevent the re-establishment of the health of convalescents from the malignant pestilential fever, unless the residence is so lengthened as to give time to a new cause



to excite a new morbid action in the system ; but a similar change will inevitably and immediately renew the morbid action of marsh effluvia in convalescents from the yellow remittent fever, and consequently reproduce the disease.

#### DIET.

Suitable diet is the next means of restoring tone and energy to the system. During the existence of the disease, it is of little importance whether the patient take nourishment or not ; and, indeed from the circumstances, under which the sick generally labour, it is evident that nothing material in this way can be administered. It is otherwise, however, the moment signs of recovery take place. The great object is to select such articles of food as are most palatable, most simple, most nourishing, and of smallest bulk ; for nausea is readily excited, the general debility is very great, and the digestive powers are very imperfect. Most kinds of liquid aliment are very disagreeable, especially soups, and readily excited sickness ; animal food is sometimes acceptable, but very few kinds are admissible. Sago, panada, tapioca, and Indian arrow root, with a large proportion of Madeira wine, well spiced and pleasantly sweetened, are, by far, the most agreeable, the lightest, and the most nourishing, in the early stage of convalescence, or when signs of returning health are first observed. A little after a fresh egg, chicken, or other light meats, may be added ; and when convalescence is completely established, no restriction, except in quantity, is necessary. The rule of Celsus should be then, fully adopted : “ *Cibus non multus quidem, sed sæpe tamen nocte ac die dandus est, ut nutreat necque oneret.*” It is remarkable, that wine, in general, is extremely disagreeable to convalescents from this fever, and it is with much persuasion and difficulty they can be prevailed on to use it. Madeira and the richer sweet wines, I have found the most unpalatable ; Hock and Rhenish wines are often taken with pleasure ; but Port wine is the least unpleasant of any. I must except, however, from the richer wines, Malmsy Madeira. In my own case, this wine was particularly agreeable, and the moderate use of it contributed greatly to the re-establishment of my health, during the early part of convalescence. All convalescents from the malignant pestilential fever, are uncommonly fond of porter and small beer, and, when permitted, greedily indulge in them. Small beer, such as is made for table use in England, only pretty strongly hopped to prepare it for the tropic climate, is a most grateful drink, but generally too expensive for patients in the lower ranks of life. Cider and perry are equally agreeable—and spruce beer, whilst it is very easily procured, is also the most agreeable. Riding and moderate exercise of any kind, contribute greatly to the restoration of health.

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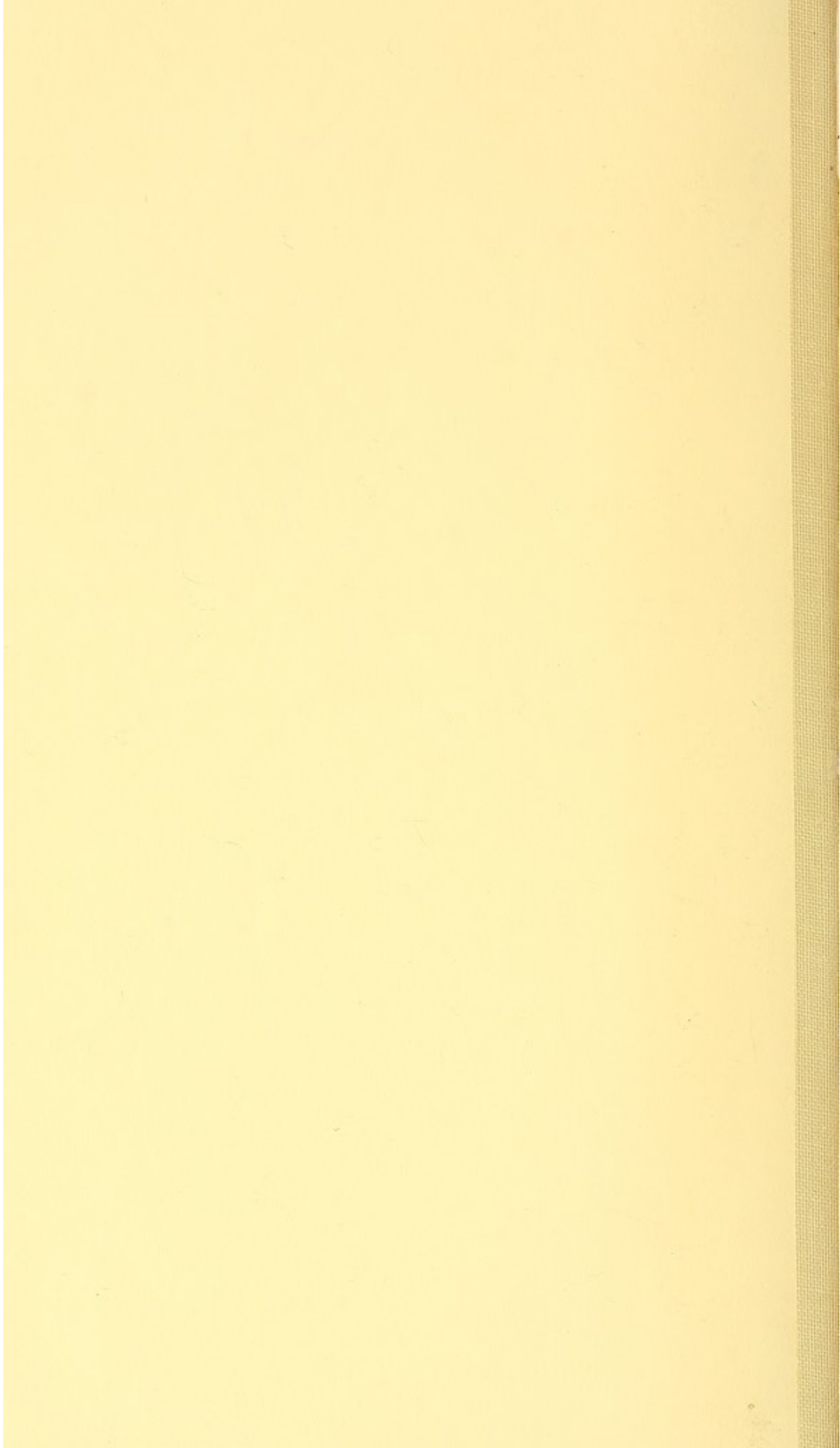
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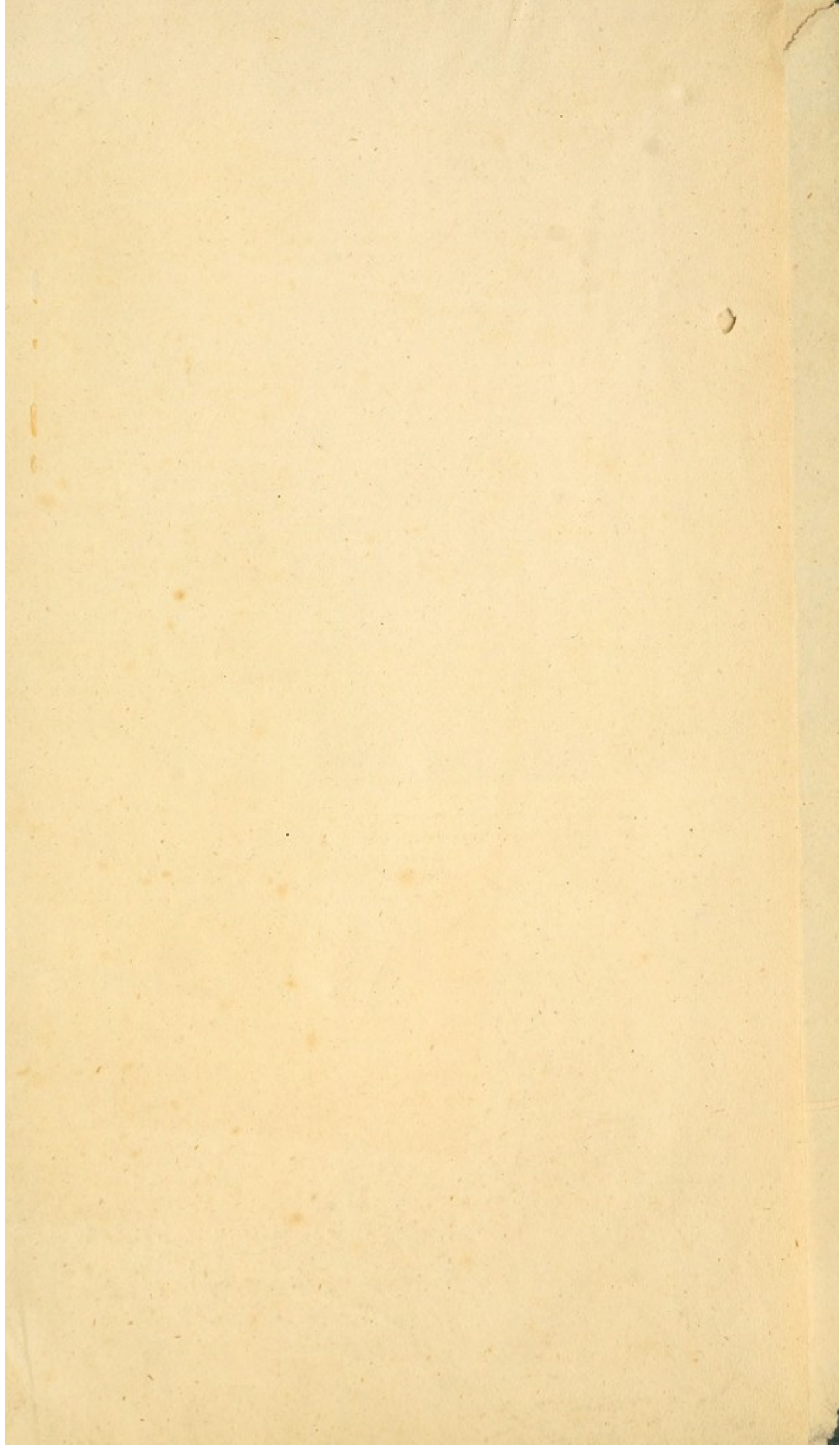
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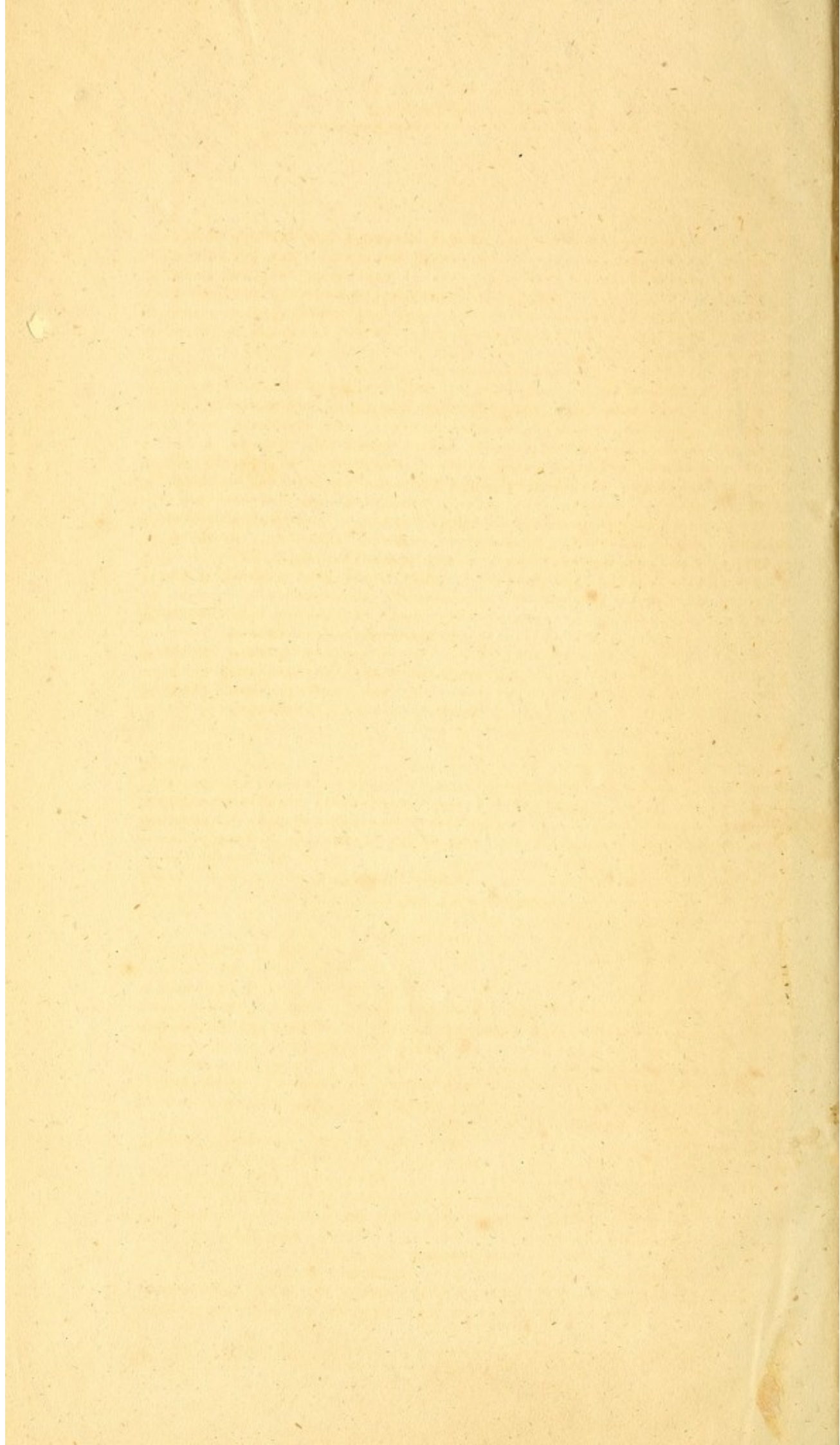


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