An inaugural essay on the bilious typhus which prevailed in Bancker-Street and its vicinity, in the city of New York, in the summer and autumn of 1820 / [Richard Pennell].

AN

INAUGURAL ESSAY

ON

THE BILIOUS TYPHUS

WHICH

PREVAILED IN BANCKER-STREET AND ITS VICINITY,

IN THE CITY OF NEW-YORK,

IN

THE SUMMER AND AUTUMN OF 1820.

BY RICHARD PENNELL,

Honorary member of the Royal Jennerian Society, London; of the London Vaccine Institution; member of the Medico-Chirurgical Society of the University of the State of New-York, &c.

Le temps est le père de la vérité.—VOLTAIRE.

New-York:

PUBLISHED BY E. BLISS AND E. WHITE, 102 BROADWAY.

1821.

J. Seymour, printer.

This Inaugural Essay was submitted to the Honourable the Regents of the University of the State, and to the Trustees and Professors of the College of Physicians and Surgeons of the City of New-York, for the Degree of Doctor of Medicine. April, 1821.

TO

DAVID HOSACK, M. D. L. L. D.

FELLOW OF THE ROYAL SOCIETIES OF LONDON AND EDINBURGH;

Professor of the Theory and Practice of Physic and of the Institutes of Medicine, in the University of the State of New-York; President of the New-York Historical Society, &c. &c. &c.

SIR,

THE many disinterested proofs of friendship which you have manifested in my behalf, and the numerous acts of kindness and hospitality which I have received at your hands, will never be effaced from my mind.

The unwearied pains and solicitude which you have constantly evinced, to advance and facilitate your pupils in the progress of their studies; the eloquent and indefatigable zeal with which you are wont to impart to them the rich and ample store of your long experience and profound researches in Medicine; and, above all, the particular interest and care which you have condescended to bestow upon my own education, place me under additional and lasting obligations.

Permit me, Sir, to inscribe to you the following account of the Fever of Bancker-street, as an humble tribute of the exalted esteem which I entertain for your benevolence and your understanding, and as a feeble memorial of the laudable share which, in your official station as RESIDENT PHYSICIAN of this Port, you took in the controversy to which this subject gave rise.

I am, with the greatest respect,
Your obedient and humble servant,

RICHARD PENNELL.

TO

PETER S. TOWNSEND, M. D.

HONORARY MEMBER OF THE ROYAL JENNERIAN SOCIETY, LONDON, AND OF THE LONDON VACCINE INSTITUTION;

Fellow of the American Geological Society at New-Haven, and of the Literary and Philosophical Society of New-York; late HEALTH COMMISSIONER of this Port, &c.

SIR,

I KNOW of no person to whom I can, with more propriety, dedicate these pages, than to yourself. Exclusive of the regard in which I hold your talents, and of the particular attentions which you have shown towards me, there is a peculiar reason why this Dissertation should be inscribed with your name.

For it was by the exertions of yourself, and of your colleagues, as Commissioners of Health, that the character of the Bancker-street Fever was first placed before the public in its true light, divested of the errors and deceptions with which it was attempted to be obscured, and disarmed of those appalling features by which it was endeavoured to excite a panic among the people.

When I recall to mind your services, in protecting the reputation of this metropolis from the assaults by which it was threatened within; and when I remember, at the same time, the acknowledged zeal which, as Members of the Board of Health, you all exhibited in guarding us from foreign infection without, though it seemed to thicken around us in every quarter; I cannot but deprecate and lament that vindictive spirit of politics, which, regardless alike of talent and of the public good, has removed you from the situation which you filled with so much credit and ability.

I am,

With sentiments of respect and esteem,

Your Friend,

THE AUTHOR.

TO

JOHN W. FRANCIS, M. D.

Professor of Obstetrics and the Diseases of Women and Children, in the University of the State of New-York; Member of the Medical and Chirurgical Society of London; of the Medico-Physical Society of New-Orleans; of the Massachusetts Historical Society; of the Literary and Philosophical Society of New-York; of the Academy of Natural Sciences of Philadelphia; President of the Medico-Chirurgical Society of the University of the State of New-York, &c. &c.

THIS

INAUGURAL DISCOURSE

ON THE

Bilious Typhus

WHICH PREVAILED IN BANCKER-STREET AND ITS VICINITY,

DURING THE SUMMER AND AUTUMN OF 1820,

IS INSCRIBED,

AS A MEMENTO OF FRIENDSHIP AND A TRIBUTE OF RESPECT,

BY HIS SINCERE FRIEND,

AND LATE PUPIL,

THE AUTHOR.

INTRODUCTION.

It may be thought by some, that the subject of the following Dissertation has been already exhausted by the numerous writers who have preceded me in the controversy to which it has given rise. My intention is not to involve myself in the disputes of these writers; nor do I pretend to have had sufficient experience in medicine, or to be possessed of that depth of penetration, which would enable me to become an umpire in a case of this kind.

I have endeavoured only to collect and to arrange the materials, which this investigation has brought to light. In doing this, I have thought it not taking too great a liberty, to dispense with the irrelevant matters which are connected with this discussion, and to confine myself only to the broad and marked outlines of the subject, and to those facts and reasonings which appeared to me to be most important.

Unless the contributions of writers are occasionally booked up, it is difficult to know what has been done. Their labours will prove abortive, and our energies will be wasted on ground that has been perhaps already pre-occupied.

If I have devoted myself then to the humble task of a compiler, I hope I shall not be thought to have been engaged in a useless occupation; nor shall I be thought presumptuous, I trust, if in pursuing this

course, I have not hesitated sometimes to bring to my assistance those opinions or facts which I have conceived would throw additional light on the subject under consideration.

I hope I shall be pardoned also for the inferences or conclusions which I may have ventured to make, while having the whole ground of this controversy laid before me.

NOTICE.

I HAVE divided this Essay into three parts.

In the *first*, I have endeavoured to show,

1. That typhoid symptoms may either enter primarily into combination with other diseases, or be afterwards superadded to their symptoms.

2. That bilious symptoms, also, are frequently found blended with different diseases, more or less modifying their character, but not so far as to give to another disease a distinctive character, or one which is *essentially* different from the character which it would possess without them.

In the *second*, I have, by comparing the phenomena and circumstances attending yellow fever, with those of the Bancker-street fever, proved that the two diseases are totally irreconcilable; and, in illustration of this disagreement, shown that similar fevers to that of Bancker-street, are by no means a novel occurrence, either in this, or other countries: and,

In the *third*, I have shown that the character of the Bancker-street fever was proved to be incom-

patible with that of yellow fever, not only by the simple method of contrasting those two diseases by themselves, but furthermore by comparing the Bancker-street fever with three remarkable instances of a similar fever which occurred in this city, and with one that made its appearance in Philadelphia.

DISSERTATION,

&c.

PART I.

1st. That typhoid symptoms do frequently traverse the path of other diseases, and become, as it were, engrafted upon them towards the termination of such diseases, is familiarly known. They are then said to give to such diseases a typhoid character or termination. The typhoid phenomena form a stage of the disease, and bear, under these circumstances, the same relation to the primary disease, as well as to the whole system, that the gangrenous stage of phlogosis does to the local inflammation, and to the part affected.

Almost every disease, of which we have any knowledge, may, and does, occasionally pass into the typhoid stage; preserving, however, for the most part, its diagnostic character to the last. We see this exemplified in dysenteria, puerperal fever, tonsillitis maligna, and in several cutaneous diseases, as rubeola nigra, scarlatina maligna, variola, &c.

As the phenomena of typhus are the same, though in a lesser degree, with those that attend the decomposition of animal matter, it is easily explained, why, under these circumstances, they more usually announce themselves towards the termination of a disease, rather than in the commencement. It is also the more readily understood from this fact why the typhoid stage of a disease is so often fatal.

The phenomena of typhus do, nevertheless, form, if we may be allowed the expression, *binary compounds* with

those of other diseases. The phenomena of both diseases are then allied together from the very commencement, although their co-existence might, a priori, have been thought incompatible. The disease, in such cases, derives its name from the elementary diseases which have united in its production. The phenomena of typhus associate in this manner with those diseases which affect particular organs, or particular sets of organs, and which are with propriety termed local affections. As the local diseases are limited to particular parts of the system, their phenomena are *fewer* and less complex. It is on that account, perhaps, that when associated with typhus, they become secondary or subordinate to this disease, so that the affection of the whole system, ought, in our opinion, to give the generic, and that of the part, the specific denomination to the disease.

Typhus puerperalis, (puerperal fever,) as it occurs in hospitals, and among the poor, typhus pneumonicus, (peripneumonia typhodes of Sauvages,) and typhus dysentericus, (the dysentery of camps,) are striking examples of this order of diseases; so also the inflammatory typhus of Armstrong*, in which, according to him, the cerebral, thoracic, and abdominal viscera, are respectively implicated.

But inasmuch as typhus, as well as all other fevers, are diseases of the whole system, and, therefore, have a common seat, it is not to be supposed, that the same functions could be under the influence of a different chain of morbid actions at the same time, and that the peculiar phenomena of these fevers would readily associate together, and, at the same time, preserve their distinctive character throughout their course. It is, on the other hand, more presumable, that one or the other set of phenomena, would take the precedence, or that they would succeed each other; but not co-exist at once. Accordingly we find that all fevers, not commencing as typhus, may take on the phenomena of ty-

* Practical Illustrations of Typhus Fever, &c. p. 24—68. London, 1819.

phus, but that this rarely or never happens until every vestige of the primary fever has been obliterated, and its course nearly terminated.

2dly. Bilious symptoms originate from a morbid condition of the biliary organs. They are, therefore, phenomena of local disorder, or derangement of those organs. The only affections in which they are idiopathic, and to which they peculiarly and essentially belong, are icterus and hepatitis. They are occasionally sympathetic in those local affections, which are not seated in the biliary organs; and also in fevers—especially in remittent fevers.

The remittent fever of the tropics is most usually distinguished from the ordinary remittent fever of colder latitudes by this feature, although it does not in any manner change the pathognomonic character of the disease.

It has been thought that an affection of the biliary organs was an essential part of the character of yellow fever; from which cause that disease has by some been considered a mere grade or sub-species of bilious remittent fever. It has been, however, satisfactorily proved, that the yellowness of the skin and eyes, in yellow fever, and which has been mistaken for bilious symptoms, does not come on until some days after the disease has been formed; and, in some instances, not until after death.

"The yellow colour of the skin, in yellow fever, seems to be more owing to this error loci of the globular part of the blood, than to the over absorption of bile. This colour does not appear first in the eye, as in jaundice. It may, indeed, be produced in this manner in the skin, without any suspicion of the presence of bile. This is exemplified in the case of chlorotic women, and other cases of chronic weakness. We have also a proof of it in the Ecchymosis which follows upon an external contusion. In this case, the red part of the blood is mechanically forced either into the smaller order of vessels, or into the cellular membrane, which occasions first a livid appearance, and,

in the course of the recovery, the same part becomes yellow; probably in consequence of the greater part of it being removed by absorption or otherwise; for, Sir Isaac Newton observes, that blood, reduced to thin lamina, assumes a yellow colour. It is observed, by Dr. Rush, that in some subjects, the yellow colour did not come on till a few minutes after death; which seems favourable to the opinion of its arising from something in the mass of blood, and not from bile. And as the yellow colour first shows itself about the neck, and sometimes in broad spots on the *trunk* of the body, it is hardly conceivable that such partial affections can be owing to an effusion of bile, which would necessarily act equally and generally*." Again, "Indeed the yellowness of the skin, like the black vomiting, is not an invariable symptom of this fever, [yellow fever.] Those who are so fortunate as to recover, seldom have it, and many die without its appearance. Besides, the yellowness alone leads to nothing certain. It may arise from an inoffensive suffusion of bile, as well as from a gangrenous state of the blood†." The yellowness does not appear on the skin and eyes until the second stage, (or that of metaptosis,) according to Mosely‡—according to Hosack, Towne, and Hillary, not until the third day§. And the following fact, stated on the authority of Sir Gilbert Blane, puts this matter to rest, and proves that this yellowness may be owing to an external cause. "Some instances occurred in which this symptom (yellowness) was *contagious*, without being attended with the other characters which distinguish this disease, [yellow fever.] It was observed, in men belonging to the Royal Oak, without any symptom of malignity, though evidently infectious; and at the hospital, it was known to spread from men affected with the fever, in its worst form, to

* Sir Gilbert Blane on the Diseases of Seamen—London, 1803, p. 411—12.

† Moseley on Tropical Diseases—London, 1795—p. 413.

‡ Ib. p. 420.

§ Hosack's Nosology, second edition, p. 191,—Towne, p. 23, and Hillary, p. 149.

others in the adjoining beds, without being accompanied with any malignant symptom*."

On the contrary, if the phenomena of yellow fever be primarily associated with any particular organ, there is every reason to think that, that organ is the stomach, and not the liver or gall bladder. "In the course of this disease there is not much bile in the intestines, and least of all, in those cases that are most violent, and prove the soonest fatal. In those whom I inspected after death, there was but little bile even in the gall bladder. Whether this is owing to a scanty secretion, or an excess of absorption, I will not pretend to determine, but I should rather think it owing to the latter cause. In cases that were more protracted and less desperate, there are frequent accumulations of it, as appears by the vomits and stools†." Again, "In the course of this disease, though there are some symptoms common to inflammations of the liver, yet there are more to inflammations of the stomach; and none of the invariable symptoms which distinguish inflammations of the liver from all other diseases‡."

Bilious symptoms also, are not unfrequently blended with the phenomena of typhus fever; but they do not, in any degree, obscure the character of the disease. Some have thought to have discovered in this association also, the component elements of yellow fever; from whence it has been called by them bilious malignant fever. By Hillary, Putrid Bilious Fever. The best authors, however, agree that yellow fever is far more of an inflammatory than a typhoid affection. We have already seen that certain symptoms of this disease, which have been supposed to be indicative of a morbid condition of the biliary organs, are not, in reality, connected with any derangement of those organs, but, in all probability, owe their origin to some other cause than that of the bile. Of the association of bilious symp-

* Diseases of Seamen, p. 406—7.

† Ib. p. 406.

‡ Moseley on Tropical Diseases, p. 426.

toms with typhus, we shall soon have occasion to speak more at large.

At present, we will illustrate the co-existence of typhoid and bilious symptoms, by instancing bilious remittent fever, which, from the unfavourable circumstances under which it sometimes exists, is apt to terminate in typhoid symptoms. "But in many of those [cases of bilious remittent fever] that arose at Jamaica, little or no remission was to be perceived; and it was distinguished from the ship fever, by the bilious vomitings and stools; more violent delirium and head ache; and by being attended by less debility. The greater tendency to the continued form at this time, was probably owing to this circumstance; that the men who were exposed to the land air, in wooding and watering, were then exposed also to such causes as naturally produce continued fevers; such as infection; the foul air of the French prizes; intemperance, and hard labour. There was, in some cases, a yellowness of the eye, and even of the whole skin, but without the other symptoms that characterize the yellow fever, properly so called, while others had every symptom of it.

"In cases that proved fatal, the symptoms, for some time before death, resembled very much those of the fever before described, [ship fever,] at the same stage. There was either coma or constant delirium; great seeming anguish; the mouth and tongue very dry, or with only a little ropy slime; a black crust on the teeth; picking of the bedclothes, and involuntary discharges of urine and fæces*." According to Dr. Moseley, an extraordinary putrid bilious fever, (thought by him to be a higher grade of the bilious remittent fever of the West Indies,) made its appearance among the troops quartered at Jamaica, in the West Indies, in the latter part of October, 1780. "This fever came on with sudden loss of strength; nausea, clamminess in the mouth; the eyes were dull and tinged with bile; they were also sunk in the head: there

* Diseases of Seamen, p. 393—4.

were besides in those who died, even from the first attack of the disease, several other marks of hippocratical face, particularly the sinking in of the temples; the pulse was low and quick; the skin was moist; with heaviness in the head; tension and uneasiness in the abdomen, and great anxiety; the skin soon became of a deep yellow colour; accompanied with coma, cold thin sweats, and deep laborious hickupping. It ended on the second, third, or fourth day, in death. Some of the gross and plethoric died soon after being attacked, in convulsions*." Even here Dr. Moseley considered the bile as "an effect, and an index of the state of the liver†," and not as the cause of the disease. The complete success which attended the use of manna and cream of tartar, in large quantities, together with the symptoms of the disease, shows that it cannot be confounded with yellow fever.

What is commonly called black jaundice, is another strong example of the association of bilious and typhous symptoms.

* Tropical Diseases, p. 183—4—7.

† Ib. p. 186. The remittent fever of Walcheren, (as described by Wright,) when fatal, terminated usually in typhoid symptoms. See Wright on the Walcheren Remittent, p. 10, &c.

PART II.

I SHALL now undertake to show, from a comparison of the phenomena which attended the Bancker-street fever with those of Yellow Fever, that those two diseases are essentially and radically different; and that the opinion which maintains their identity, is not only unsupported by facts, but even destitute of the semblance of probability.

There are many circumstances connected with the history of a disease, which have nothing to do with its symptoms, but which, nevertheless, are inseparable from its existence, and of the utmost consequence in determining its character: such, for example, as the climate, country, or locality in which a disease occurs—the season of the year at which it appears—the class or description of persons among whom it prevails—its cause, its duration, its fatality —and whether it be epidemical, endemial, sporadic, &c. &c.

These data may furnish analogical evidence enough to disclose to us the *general* character and complexion of a disease, without the aid of a practical acquaintance with its *specific* phenomena at the bedside of the sick. They constitute a body of information, which, for the most part, is obtained without difficulty, but which is not, on that account, the less desirable. And where a disease makes its appearance, which is suspected to be epidemical in its tendency, or endemical to the district in which it occurs, the data of which we are speaking, become of right the common property of the community, and the legitimate groundwork of those interesting and general inquiries in relation to the public health, in which it is the duty and province of

every citizen to participate, whether in or out of the profession.

But I do not confine myself to the light that I may derive from this source. My opportunities have enabled me to make a personal examination of the disease itself, and to become familiarly acquainted with its actual symptoms and treatment.

Although, therefore, I have the liberty of employing or not employing this assistance, I waive this privilege; and, in order that I may not subject myself to the imputation of proceeding upon ex parte evidence, will, in my reasonings, make use of all the proofs which have been put in my possession.

I shall first contrast the two diseases in those points in which they are at total variance, and in direct contradiction—furnishing demonstration as conclusive as can be arrived at by moral evidence, that the supposition which maintains their identity is totally unfounded.

1. The fever of Bancker-street was confined almost exclusively *to blacks*.—"From the documents obtained by your Committee, it appears, the number of blacks affected by the epidemic in Bancker-street and its vicinity, to the whites, is in the proportion of *three* of the former to one of the latter; and among the blacks, the disease has certainly exhibited a greater degree of intense malignity and fatality*."

This fact is also confirmed by the statement of the Commissioners of Health, in the following, which is one among the numerous and argumentative reasons which they assign to prove that this fever was not Yellow Fever:—"Because, notwithstanding the white population was three times the number of coloured persons in the district where this dis-

* Extract from the Report of the Committee appointed by the Medical Society of the City and County of New-York, to investigate the character and causes of the Fever which prevailed in Bancker-street, p. 17—published December, 1820.

ease occurred, yet was the disease almost entirely confined to blacks. While, on the contrary, in yellow fever, blacks have always been considered to be less susceptible of the infection than the whites, insomuch that coloured persons have, for this very reason, been employed in nursing the sick, and in the interment of the dead*." In addition to the testimony of the Commissioners of Health, concerning the insusceptibility of negroes to yellow fever, we will quote the authority of Sir Gilbert Blane, in his work on the Diseases of Seamen. "It has been said that it [yellow fever] never attacks either the female sex or blacks. This is, in general, though not absolutely true, for I knew a black woman, who acted as nurse to some men ill of this disease, at the hospital at Barbadoes, who died with every symptom of it†."

The committee of the Medical Society, by whom we have been informed, that the blacks were the principal victims to the Bancker-street fever, in summing up their opinions on this disease, positively affirm that they believe it to have been the *identical* yellow fever of tropical climates. "We do not hesitate to declare our conviction of the *identity of Bancker-street fever*, with the malignant fever of authors, from Hippocrates to the present day, and the *yellow fever of tropical climates, and our own harbours*‡." Seeing the obvious difficulty of reconciling the character which they impute to this fever, with the description of persons among whom it prevailed, they seem to have imagined that they might make their escape from this dilemma, by asserting that the blacks constituted by far, the greater part of the

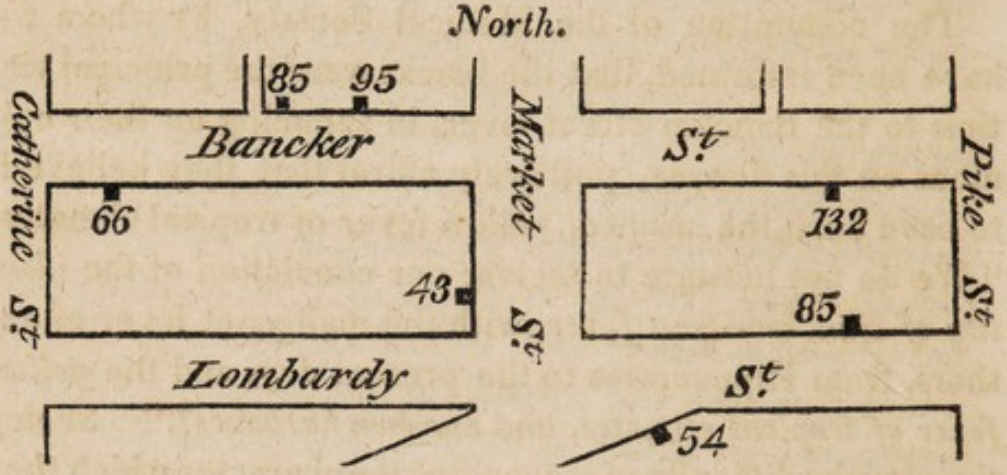
* Statement of Facts relating to the late Fever which appeared in Bancker-street and its vicinity, by Drs. HOSACK, TOWNSEND, and BAYLEY, *Commissioners of Health.* January 22d, 1821. Approved of and published by order of the Board of Health, page 8.

† Page 404—5.

‡ Page 30—Report of the Medical Society Committee.

inhabitants of the district, in which most of the cases of this disease occurred. "This remarkable circumstance has induced many persons to believe, that the Bancker-street fever, having stricken those, *who were, in fact, by far the most numerous inhabitants of that district*, was nothing more than an ordinary fever, as it occurs in jails, camps, or hospitals; or else being a distemper peculiar to the African race, and people of colour, it could bear no resemblance to the ordinary bilious remittents of our cities, and much less to the yellow fever*." But the actual census of every house in this district, as given by the Commissioners of Health, furnishes us with results widely different from those of the Committee of the Medical Society.

"SKETCH OF BANCKER-STREET AND ITS VICINITY.



Population of the District, from the first of August to the first of November, 1820†.

	Whites.	Blacks.
On the northernmost side of Lombardy-street, contiguous to the lots of Bancker-street, between Catharine and Pike-streets	482	125
On the southernmost side of Bancker-street, between Pike and Catharine-streets,	491	254
On the northernmost side of Bancker, between the before-mentioned streets,	513	162

* Report of the Medical Society, p. 17.

† This period commences before any cases occurred.

On the east side of Catharine, and west of Pike-street, and that part of Market-street, between Lombardy and Bancker-streets,	246	21
Total,	1732	562
	562	
Majority of whites,	1170*	

2. This fever was unaccompanied by black vomit. The exceptions are so doubtful that we have not thought proper to qualify this expression.

"Out of 237 cases, the total number which occurred of this disease, no symptom presented itself different from those which usually attend typhus fever under similar circumstances. As it is not even pretended that out of all this number more than eight cases have occurred of black vomit, some of which are stated to have been ascertained after the death of the patient! † This is on the supposition that the aforesaid black vomit consisted of the flaky or coffee ground matter, which characterizes yellow fever; but of this there is no evidence given‡."

It is so well established, and so familiarly known to every person who has ever heard of yellow fever, that this disease is peculiarly distinguished by this dreadful symptom, that it would be useless to enumerate authorities in support of it. So characteristic is black vomit considered by the Spaniards of this disease, that they call it vomito priéto, after this symptom.

3. Emetics were the most successful remedies employed in this disease. "The Bancker-street fever was treat-

* Statement of the Commissioners of Health p. 13, 14.

† See Report of the Medical Society, p. 12, 13—26.

‡ Statement of the Commissioners of Health, p. 8, 9.

ed most powerfully and successfully by emetics. Here is another unheard of anomaly.—Emetics, as far as experience has gone, are precisely the very things that we are most cautiously to avoid. They produce the most disastrous consequences, aggravate the irritation, and retching at the stomach; bring on the dreadful black vomiting, and soon hurry the unhappy sufferer out of existence. On the other hand, in fevers of a bilious character, the very reverse is the truth. Emetics are the surest and the most rapid means of cure*." In answer also to some inquiries on this subject, made to Professor HOSACK, we have had the satisfaction of receiving, from him, the following interesting account of the treatment, which he adopted in the numerous cases of the disease brought to the New-York Hospital:

"The treatment which I found most useful in the cases of the bilious typhus, which fell under my care during my attendance, last autumn, at the New-York Hospital, consisted,

"1st, In the early use of *emetics*, to cleanse the stomach, and disgorge the biliary organs which were overloaded by an inordinate secretion of bile. This being effected,

"2dly, The bowels were emptied by cathartics of salts; or of rhubarb and magnesia, which were afterwards occasionally administered throughout the disease.

"3dly, Attention was also given to preserve a relaxed state of the surface of the body by the use of the spiritus mindereri; the saline draught of Riverius, or by the antimonial solution: these were aided in their operation by frequently washing the body with tepid vinegar and water, and the liberal use of the ordinary diluent drinks; but, in cases showing the typhoid character in its most formidable

* REMARKS on the Report of the Committee of the Medical Society of this city, on "The Epidemic Fever of Bancker-street and its Vicinity, in the Summer and Autumn of 1820," p. 14—15. Published January, 1821.

shape, drinks composed of the vegetable acids, as lemonade, tamarind water, vinegar whey, were prepared; and in those cases, whose system exhibited great exhaustion, a preference was given to porter, ale, wine whey, and vegetable nourishments, viz. tapioca, sago, arrow-root; rendered grateful by the addition of wine. Snake root and chamomile tea were also freely given, as soon as the febrile symptoms abated. Anodynes were also prescribed with great benefit in those cases where delirium and watchfulness occurred.

"In cases of local congestion of the brain, lungs, or abdominal viscera, or where the fever continued with unusual obstinacy, blisters were prescribed with the most beneficial effects.

"When a perfect apyrexia was obtained, bark, bitters, and the mineral acids, were had recourse to; animal food was also then allowed, but during the progress of the fever, this was altogether *inadmissible;* even in the form of soup, so commonly, but improperly given in the typhoid form of fever.

"In some cases where the disease occurred in a full habit of body, attended with symptoms indicating local inflammation of the thoracic, or abdominal viscera, or exhibiting an inordinate pressure on the brain, bloodletting was employed in the commencement, but, in the latter stages, the lancet was, in no instance, called for*."

"How often," (says Moseley,) "have I seen and lamented, the effects of emetic tartar, given to remove the supposed cause of the treacherous symptom of vomiting! Even in slight degrees of fever, [yellow fever,] in the West Indies, in young plethoric subjects, newly arrived, the stomach has been sometimes destroyed by it. Instead of removing the irritating sickness of this fever, or exciting diaphoresis, a spasm has been produced in the stomach; incessant vomiting, and inflammation; the vessels of the thorax and head

* Extract of a letter from Dr. Hosack to the author.

have been stifled with blood; and the patient has vomited away his life."

Again, "Vomits are never to be given, though strongly advised by Towne; no, not so much as warm water, recommended by Hillary*."

It is admitted that gentle emetics have now and then been given on the first attack of yellow fever, but, as a general practice, they are universally discountenanced.

4. "Notwithstanding the white population so much exceeded that of the blacks, yet the disease has been almost exclusively confined to coloured persons, and particularly to that description of blacks who lived in crowded apartments, especially in cellars, and who were depraved in their habits, and indigent in their circumstances: inasmuch as the black population of that district is almost exclusively composed of persons of that description, and that the indigent and worthless class of whites bear but a very small ratio to the whole number of white inhabitants.

"Out of the whole number of blacks in this district, viz. 562,—119 lived in cellars, of whom 54 were sick of the prevailing fever, 24 of whom died at their homes; while, out of the remaining number of black inhabitants, viz. 443, 101 were sick, of whom 46 died at their homes. From which it appears that out of 443 who were better lodged, only 101 were sick of this disease; while out of 119 living in unwholesome *cellars*, that *nearly one half* were *taken down with the disease*, and that nearly one half of that number died at their places of dwelling.

"Out of the whole number of white inhabitants in this district, viz. 1732, only 11 whites died out of 82 sick.

"Those persons who fell victims to this disease, were scattered over the district, for the most part, in insulated places, and the disease did not spread from one side to the other side of the same street, nor from one house to the ad-

* Ib. p. 434.

joining house, nor even, from the cellars to the other parts of the same house; by which it is apparent that this fever was not entitled to the appellation of an epidemic; which is furthermore confirmed by the fact, that those persons, whether black or white, who lived a becoming and regular life, and did not associate with the dissolute and intemperate, almost always escaped, although inhabiting an adjoining house, and, in some instances, living under the same roof with those who were the victims to it.

"The total number of sick in the whole district appears to have been, as nearly as we can ascertain, about 237; of which the greatest number sick on particular lots, was—(*See Sketch.*)

"At No. 66 Bancker-street, which is on the southernmost side of the street, and at the western extremity of the district, and near Catharine-street—sick, 8 blacks.

"At No. 95 Bancker-street—sick, 34 blacks and 9 whites;

"At No. 85 Bancker-street—sick, 8 whites; which numbers are on the opposite side of the street to No. 66, and near the middle of the district.

"At No. 132 Bancker-street—sick, 22 blacks and 2 whites; which is at the eastern extremity of the district, and near Pike-street.

"At No. 43 Market-street, between Lombardy and Bancker-streets, 6 whites were sick, the only persons sick in the street.

"At No. 85 Lombardy-street, which is at the easternmost extremity of the district, and remote from all the other places mentioned—here 9 blacks were sick, and 1 white.

"By which it appears, that notwithstanding there are 148 lots in this district, 100 cases (nearly one *half* the whole number of cases) occurred on 6 lots, situated in *different* parts of the district, and *remote* from each other; each place constituting a distinct focus for the generation of disease.

"In that section of Market-street, embraced between Lombardy and Bancker-streets, and which is the centre of this district, containing 127 whites and 4 blacks, living on 13 lots, there were sick 6 whites, who all lived an irregular life in confined and filthy apartments, in the back building of No. 43; while *no other person* in that street had the disease.

"On the southernmost side of Bancker-street, between Pike and Market-streets, occupied by 303 inhabitants, there occurred 58 cases; while in the houses *directly opposite*, on the northernmost side of the street, and not more than 60 feet distant, occupied by *two hundred and forty inhabitants*, of whom one only was a coloured person; out of this number *four persons only*, (whites,) who had led a very intemperate life, sickened and died. Two of them lived at No. 135, a neat wooden building, occupied altogether by only five persons, situated in the rear of the lot, with a clean yard of at least 80 feet in front.

"Out of 48 blacks, living in 10 cellars, (viz. No. 138, 98, 96, 89, 87, 79, 84, and 78 Bancker-street, at No. 53 Lombardy-street, and No. 36 Pike-street,) 33 were sick, of whom 14 died; while out of 120 *whites*, living *immediately over their heads*, in *the apartments of the same houses*, *not one* even had the fever!

"On the lot 95 Bancker-street, 34 blacks and 9 whites were sick of the fever; on the lot 66 Bancker-street, 8 blacks were sick; and on the lot 85 Lombardy-street, 9 blacks: while in the *houses immediately adjoining these lots* lived *sixty-one whites and twenty-three blacks*, who *being all of good character*, and *having no intercourse with the intermediate buildings*, *all escaped the disease.*

"On the side of Lombardy-street, next to Bancker-street, and between Pike and Catharine-streets, and where the lots are contiguous to, and much lower than those of Bancker-street, receiving of course no small part of their putrefying animal and vegetable filth, there were 607 inha-

bitants, (of whom 125 were blacks,) and 19 only sick; while on the contiguous lots of Bancker-street there resided 740 inhabitants, of whom 248 were blacks. Out of the 740, 115 were sick of the fever, of whom 23 were whites.

"After the most diligent inquiries, we have not been enabled to discover that one reputable white person died of this disease, with the exception of a girl recently arrived from the country, who died of fever in the latter part of October, at No. 130 Bancker-street. But on the other hand, have satisfactorily ascertained that such whites only have fallen victims to it as were in extreme poverty, crowded in small fifthy apartments, and who led a profligate life, or associated, or lived with the worthless class of coloured persons.

"As at the back building of No. 43 Market-street, already spoken of, where there were 28 whites of low character crowded into small apartments, living in the most filthy condition. Out of this number, 6 were sick.

"At No. 85 Lombardy-street, in the third story, were 5 white females, and a black man, husband to one of them, all of whom were sick of the fever.

"At No. 58 Bancker-street, where a drunken white woman with one child, lived in the same cellar with a black woman, all of whom had the fever.

"At No. 88 Bancker-street, where a poor distressed family of 10 whites, occupied the same small room, and were all sick with the fever.

"At No. 89 Bancker-street, in the front cellar, where a white woman and her black husband lived as boarders in a black family consisting of 6 persons, all of whom had the fever, and 4 of the blacks died.

"At No. 95 Bancker-street, where 30 blacks and 6 whites lived in the same back building, and all were sick of the fever.

"At No. 102 Bancker-street, where 4 white women kept a brothel in the *cellar*, and had constant intercourse

with negro men. Two of these women had the fever, and one died.

"At No. 124 Bancker-street, where a white woman and her black husband lived together in the front cellar, and the black man died of the fever.

"Out of the numerous respectable white inhabitants who have continued to reside in this district, since May last, only one family of nine persons, (viz. Mr. Gifford's, at No. 139 Bancker-street,) removed into the country from fear, but returned again as early as the 30th of September. And not an instance of the disease took place in any of these families.

"Out of 148 lots in this district, 45 lots were occupied by 359 respectable white persons, of whom not one individual was sick with this fever*."

With these imposing facts before them, the COMMISSIONERS justly conclude, that the disease which prevailed in Bancker-street and its vicinity, bore the unequivocal features of a genuine typhus. "Because," say they, in recapilating, "the disease prevailed almost without an exception, among those persons who were excessively intemperate, in extreme poverty; and who were crowded together in filthy and confined apartments; especially in low, damp, and ill-ventilated cellars: a combination of circumstances which, it is universally admitted, produces fever of a putrid or typhoid character. Which is furthermore confirmed by the fact, that where this combination of circumstances existed in other parts of the city, the disease made its appearance there also. Whereas yellow fever makes no distinction of persons, and is equally fatal to the rich and the poor.

"Because those persons who were comfortably accomdated, who were regular in their lives, and did not enter into the infected apartments or dwellings, escaped the disease; which is diametrically opposed to the known laws of

* Statement of the Commissioners of Health, p. 4, 5, 7, 14, 15, 16, 17.

epidemical diseases: and it is well known to every inhabitant of this place, that no such exceptions were observed in those portions of our city where yellow fever has prevailed."

So also the author of the REMARKS on the Report of the Medical Society Committee, and who appears to have been familiarly versed with this subject: "The fever of Bancker-street commenced with, and was almost exclusively confined to, the black population of that street, though this population are, according to their own topographical description, 'mingled promiscuously in the same apartments with whites, and both sexes, of all ages.' Where yellow fever prevails to great extent, all fall victims to it, black and white; but whoever heard before of its commencing its attacks upon negroes, and confining its depredations to that particular class? On the contrary, the blacks are notoriously less subject to it; 'but in this fever,' say the Committee, 'three-fourths of the patients' were of this class.

"Moreover, the description of blacks whom it seized were of the most profligate sort, with constitutions vitiated and broken down by drunkenness and other low sensualities; for it is such persons chiefly who inhabit this tainted district, and who annually become the victims to the disease which still prevails there. But yellow fever not only first attacks the whites, but those of them who are most plethoric and robust, of rigid fibre, and to whom the common wants of life are easily accessible. This the Committee themselves admit, saying, that 'the most robust, and seldom the infirm,' are liable to it*."

Now it is well known that yellow fever is most obnoxious to those who are of firm and robust fibre, of sanguine temperament, of inflammatory diathesis, and of a plethoric habit. Hence it is notorious that the European or northern man,

* Page 16.

newly arrived in the tropics, is the common victim to this disease. We will quote a respectable authority on this subject, and one of the latest which occurs to us. "D'ou il suit, et l'expérience le confirme chaque jour, que les hommes robustes et plethoriques seront plutôt victimes de cette maladie que les hommes faibles et cachectiques, les jeunes gens plutôt que les adults et les vieillards: les peuples du Nord plutôt que ceux du Midi*." M. Gerardin is speaking here of what he calls the *sporadic non-contagious yellow fever*, in contradistinction to *epidemic contagious yellow fever*. Those, however, who have pronounced the fever of Bancker-street the identical fever of the tropics will not object to the validity of M. G's testimony on this point. Again, "Subjects most likely to be attacked by the endemial causus, are the florid, the gross, the plethoric;—that sort of strong, full, youthful people, with tense fibres, who, in England, (to use a vulgarism,) are said to resemble the picture of health. In short, so are all persons, who are of an inflammatory diathesis, and do not perspire freely†." "Hence, it is not strange," says the same author, "that sailors who eat, drink, and sleep, so much at sea, and use no exercise, being always of a gross habit of body, should be attacked with it more than other new comers to the West Indies." Therefore, says he, the French call this disease *La fièvre matelotte*.†

If it be said that all habits and constitutions are equally subject to yellow fever, the question still remains unanswered, why out of a population only one-third negroes, the fever of Bancker-street selected more especially for its victims people of colour, and those almost exclusively, whose constitutions were shattered and broken down by intemperance, and other irregularities.

* Page 51—Mémoires sur la Fivère jaune Par. N. V. A. Gerardin, now of Paris, late Physician at New-Orleans—Paris, 1820.

† Moseley on Tropical Diseases, p. 417.

5th. The disease continued to prevail in Bancker-street and its vicinity, after the occurrence of repeated frosts and snows. "The disease has continued to prevail in this same district, and among the same class of people, notwithstanding the prevalence of constant cold, and of repeated frosts and snows: cases having been received into the New-York hospital as late as the last day of December, 1820, and attended with the same symptoms and circumstances; whereas, in yellow fever, it is established beyond a doubt, that frost invariably and effectually extinguishes the disease*."

6. This fever became contagious in freezing weather, and during the recurrence of frosts and snows. So that it not only prevailed after the cold had set in, but actually became contagious under this change of season. If any proof were wanting to show the dissimilarity of this disease and yellow fever, or if we were deprived of every other proof but this, it would, of itself, resist all the reasonings which ingenuity and sophistry combined, could bring against it. After breaking down one of the strongest barriers which separate yellow fever from all other diseases, this fever of Bancker-street, as if to throw its character in yet bolder relief, mocks and counterfeits the very disease whose laws it had trampled under its feet.

"Cases of this disease have not only been brought to the New-York Hospital, since the commencement of freezing weather, but when the severity of the cold would not admit of free ventilation in the wards of the house, the disease has, in conformity to the laws of typhus, been in many instances communicated to the nurses and patients of that institution."† As appears by the Report of the Visiting Committee to the Governors, communicated to the Board of Health.

"During the months of September, October, and November, 131 patients, ill of fever, have been admitted into

* Statement of the Commissioners of Health, p. 9, 10. † Ib.

the Hospital; of this number 23 have died, 89 have been cured, and 19 remain in the house at the present time. Of the above number 5 died within 24 hours of the time of their admission, and three others within 48 hours of the said time, having been several days sick previous to their admission.

"So great was the desire of the Committee to comply as much as possible with the wishes of this Board, as expressed in their former communication to the Board of Health, that after having filled all the medical wards as much as the Physician deemed prudent, they were induced to allow some of the medical patients to be removed to such of the surgical wards as could receive them. In consequence of this, eight of the surgical patients, and a nurse in one of the surgical wards took the disease, of whom three have died; one of their best nurses also has for some time been in a very critical situation, but is now considered as convalescent.

"In the medical wards also, two of the nurses caught the disease from their patients, but are also convalescent.

"While the weather remained pleasant, so as to enable the nurses and attendants freely to ventilate the different apartments, the Committee continued to admit all fever patients that were brought to the Hospital; but at the commencement of the present month, when it was improper to ventilate the wards as freely as had been previously done, fully convinced that the fever prevailing in the Hospital was of a highly malignant and infectious kind, the Committee thought that they could not conscientiously allow any more patents labouring under typhus fever, to be admitted into the Hospital, and exercised the authority vested in them, by rejecting them.

"In stating to the Board that they think the fever which has prevailed in the Hospital is of an infectious kind, they have only to state, in support of the opinion, that in addition to its being communicated to the nurses, several of the

surgical patients who caught the disease, had not, for a considerable time, been out of their wards; and until the removal of the medical patients into them, the surgical wards were free from fever of any kind. The Attending and House Surgeon also agree in opinion, that their patients took the disease from the medical side of the house.

"All which is respectfully submitted,

"B. W. Rogers,

"John B. Lawrence,

"Jonathan Little,

"*Visiting Committee.*

"*New-York, December* 8, 1820*."

When proof after proof crowd thus upon our senses, we are unable to withstand their force, and feel lost in amazement, that persons, possessing ordinary powers of intellect, could have possibly distorted or misconceived their meaning.

There is, however, a certain obliquity of mind, which, like the optician's glass, represents objects through a false medium, tinging the richest and most brilliant colours of the landscape with a pale and jaundiced hue, and converting the noblest proportions of figure into confusion and deformity.

I shall now proceed to examine those more unimportant and minor phenomena, which, regarded by themselves, might lead those who do not take a comprehensive view of this subject, to suppose that a certain resemblance or agreement existed between the fever of Bancker-street and yellow fever; but which, when contrasted with the prominent and bolder outlines of those two diseases, are shown to be utterly fallacious, and not entitled to the least consideration.

1. The bilious symptoms which accompanied this fever.

* Statement of the Commissioners of Health, p. 10, 26, 27, 28.

a And first the bilious vomitings. The invasion of this disease was usually accompanied by bilious vomitings, showing a redundance of bile in the stomach and biliary organs. This vomiting occurs sometimes in yellow fever. Many contend, however, that there is a deficiency of bile in yellow fever, and Moseley, who is an advocate for the non-contagiousness of this disease, positively says, that the vomiting is from irritation, and not from plenitude: "the sickness of the stomach, and disagreeable taste in the mouth, indicate the quality and not the quantity of the offending secretions: the vomiting is from irritation in the stomach, and not from plenitude*." But we relinquish the right of making use of this opinion, and shall go on to watch the progress of this symptom. Why did the vomitings succumb to the influence of emetics, and why did they decrease, and finally become entirely suspended, as the disease advanced, and for a day or two before death? This almost invariably happened in every one of the numerous patients that fell under our observation, and is directly the reverse of what occurs in yellow fever. In yellow fever the irritation of the stomach is sometimes not distinctly perceptible for the first two days; but it universally increases as the disease goes on, until it ends in black vomiting, and destroys the patient. Hence the distinction adopted by Professor Hosack, in his Nosology, between bilious remitting and yellow fever: "Remittens Biliosa. Generally preceded by, and, in the first stage, attended with, great derangement of the digestive organs, and an inordinate secretion of bile—the skin and eyes yellow, urine turbid—the tongue loaded with a yellow sordes; breath offensive; when fatal, terminating in typhus.

"Pestis tropicus. A fever commencing suddenly, with severe pain in the head, back, and limbs; remarkable redness of the eyes; unless relieved frequently about the third day, succeeded by a yellowness of the skin; accompanied with

* Tropical Diseases, p. 434.

great anxiety, and distress in the region of the stomach, which generally terminates in the vomiting of black matter resembling coffee grounds; when fatal, usually proves so within seven days; in a foul atmosphere contagious."*

b. The yellowness of the skin and adnata. These symptoms too were simultaneous in their appearance and movements, with the bilious vomitings. All showing that their source and seat was intimately connected with the condition of the biliary organs. Moreover, the colour of the eyes, which was so distinctly marked, was the bright golden hue of jaundice, and not the dark muddy tinge of yellow fever. Nor does the yellowness in yellow fever, usually appear as we have already seen, until the disease is formed and half through its course, and, in some instances, according to Dr. Rush, not until after the death of the patient†. In yellow fever it is obviously, as the best writers remark, an effect, and not a cause of the disease.

And Towne has gone so far as to say that the yellowness is even indicative of a *favourable crisis*. "The regular crisis, therefore, of this fever, generally discovers itself by a suffusion of the bile all over the surface of the body, about the third day. The saffron tincture is frequently observed in the space of twelve hours after the attack, if you carefully inspect the coats of the eyes, and the sooner it appears the more encouraging is the prognostic, if the intention of nature be not prevented by the preposterous use of cordials and alexipharmics‡."

c. The yellow fur on the tongue constantly attended the other bilious symptoms. Now it is well established that the state of the tongue is by no means an infallible symptom in yellow fever, and that in one half the cases at least, it is destitute of any colour, and, in many, without the slightest fur upon it. In the fever of Bancker-street, however, it was

* Hosack's Nosology, second edition—New-York, 1821, p. 186, 191.

† See also Burnet on the Mediterranean Fever, p. 19 and 492.

‡ Towne on the Diseases of the West Indies—London, 1726, p. 23, 24.

not only yellow, but from the beginning, covered in the middle and towards its base, with a yellowish brown sordes. As the disease advanced it became dry and chapped; which, taken in connexion with the sunken, soft, and unresisting pulse, and the other symptoms, were quite sufficient to establish the typhoid character of the disease. I saw this exemplified in six or seven remarkable instances of the disease, in which every symptom was clearly and boldly developed. The hectic flush on the cheeks, which I have always observed to be one of the most faithful attendants upon the parched and scaly tongue of typhus, was also present in these cases.

It is obvious, therefore, that although bilious symptoms were present in this disease, they cannot, when taken in connexion with the circumstances which attended them, be at all explained on the supposition that the fever of Bancker-street was yellow fever. If the disease, however, be considered to have been typhus, all the difficulties and anomalies which perplex us in this part of our inquiry, immediately vanish. Bilious symptoms do frequently, we shall find, become blended with typhus fever, particularly in the tropics, or during the hot season of temperate climates, and in the most malignant form of this disease, or that which is seen in ships, jails, hospitals, camps, manufactories, and other places where great numbers are crowded together in ill-ventilated apartments.

Sir Gilbert Blane, in describing the infectious ship fever, enumerates bilious symptoms as a *characteristic modification* of this low form of typhus, as it appears in the tropics. "The fever we are treating of differs also from the sporadic nervous fever of England, and from most others of the continued kind, in being attended with a *more copious secretion of bile*, which, when thrown up, is generally green, or as it is otherwise called, of a porraceous colour. This symptom takes place in all climates; but it is more remarkable in a hot climate as might be expected*." Again, "It some-

* Diseases of Seamen, p. 349.

times happens that men under the influence of this infection, [ship fever,] are more apt than others to be affected with symptoms peculiar to the climate, upon their first arrival*."

Thus "the increase [in 1783] of fever in the old squadron, was owing to two causes. One was the importation of new raised recruits, brought from England by some ships that arrived in the beginning of January. These were distributed to such ships as stood in most need of men; and being very dirty and ill clothed, were likely to harbour infection. They were evidently the cause of sickness in the Warrior and Royal Oak, for these ships were before that time healthy, and the fever began with these strangers, and spread amongst the former crew. It is remarkable that the ships that brought them from England were not affected by them. It was caught in the Royal Oak from six men that came from England in the Anson, which men, though first put on board the Namur, communicated no fever there, having been kept separate from the rest of the men; but being sent to the Royal Oak, they were themselves first taken ill with a fever, which afterwards spread to about thirty of the other men. What was singular in this fever was, that the eyes and skin of all that were affected by it, became *yellow*, though without any particular malignancy, for only two died on board and one in the hospital. There was one whose complaint was so slight as never to confine him to his bed†."

This gradation in the violence of the disease was particularly noticed also in the Bancker-street fever. The same particular laws of contagion seem also to have belonged to both diseases, judging by the numerous facts which have been already stated in the previous part of this essay in illustration of the circumstances under which the fever of Bancker-street became communicable.

As I have so often had recourse to the writings of Sir Gil-

* Ib. p. 350. † Ib. p. 147—8.

bert Blane, it may not be thought irrelevant to mention, that he was physician of a fleet of upwards of 40 sail of the line, under the command of Admiral Lord Rodney, and containing more than 22,000 seamen and marines. This fleet was employed in cruising in the West Indies, in 1780, 1, 2, and 3, and there never, perhaps, has occurred a similar opportunity of testing the effects of climate upon the human constitution, on so grand a scale, and where the experiment was so completely under the control of the individual who surperintended it. Sir Gilbert did not neglect to avail himself of these advantages, and his authority on Sea Epidemics, and on the modifying influence of climate, upon these, as well as other diseases, is of the very highest kind.

According to Sir James McGrigor, typhus made great havoc among the British troops in the Spanish peninsula, in the year 1812; particularly at the hospitals of Ciudad, Rodrigo, and Viseu. At the latter place the disease was attended with a *yellowness and jaundiced state of the skin;* in all of which it ended in death.—In one of these cases the gall bladder was found distended with bile, but none was perceived in the duodenum*.

Another case, directly in point, is given on the authority of the Commissioners of Health: "A high grade of typhus, attended with bilious symptoms, has oftentimes occurred in this, as well as in other countries, at the same season of the year at which this disease prevailed. And a very remarkable instance of it took place in the year 1801, when many vessels, unusually crowded with passengers, arrived at this port, from Ireland, during the summer and autumn. Out of at least 750 patients, who were admitted into the marine hospital, almost all of whom were sick of this disease, nearly 300 died, besides a great number who perished on

* See Sketch of the Medical History of the British Armies, in the Peninsula of Spain and Portugal, &c. by Sir James McGrigor—London, 1816—p. 31, 32, 33, 34.

their passage. The disease, which was simply typhus on board the ships which first arrived, became, as the vessels progressively arrived later and later in the season, (from the same ports—chiefly from Belfast,) combined with bilious symptoms, which acquired more and more intensity as the season advanced*."

Again, "a fever precisely analogous, in all its particulars, to that of Bancker-street broke out nearly at the same time in the suburbs of this city, at the penitentiary at Bellevue." "During the months of July, August, and September, and the early part of October, (says the physician who attended this institution,) there occurred, at that establishment, a disease exhiting many characters of the typhus gravior, jail, or hospital fever, accompanied with bilious symptoms, especially among the blacks; such as yellowness of the eyes and skin, epigastric distress, in some instances, so great as to render the slightest pressure intolerable†."—We shall have occasion to refer to this again.

2. The vessels of the eye, in many cases, were tinged with red blood, as in yellow fever. But this was a symptom which, (if we may be allowed to treat this subject with levity,) the patient had had for many years, for it was only observed in those who were well known to be inveterate drunkards.

Admitting, however, that it was more frequently present than we are willing to allow, the ablest writer who has ever treated of typhus, (Dr. Armstrong,) informs us, that it is a very common symptom of that disease. In the inflammatory typhus, where the brain is involved in inflammation, there are, among other symptoms, according to this author, "Deep pulsating pain in the head; increased heat of the temples, forehead, and hairy scalp; throbbing of the carotid-arteries; tinnitus aurium; *redness* and *morbid sensibility of*

* Statement of the Commissioners of Health, p. 9.

† Report of the Medical Society Committee, p. 11.

the eyes ; and more or less disorder in some other of the external senses*."

Again, "But sometimes acute inflammation of the brain, in typhus is not to be discriminated by the succession of symptoms above described. In such cases it is mostly to be recognised in the beginning by a *glary bloodshot eye ;* a contracted pupil ; an agitated expression of the countenance†," &c.

This redness of the eye is also sometimes a prominent symptom in the attack of the congestive form of typhus, of this author. "The eye is occasionally glary and vacant, without redness ; but, at other times, it is *heavy, watery, and streaked with blood,* as if from *intoxication,* or want of sleep‡."

3. The irritation at the pit of the stomach. This symptom was, by no means, constant, and was often confounded with the genuine inflammation of the stomach, which accompanies yellow fever. In a great number of instances, it was a simple irritation, attributable entirely to the presence of bile, and other acrid secretions, in the stomach ; the proof of this we have in the fact that emetics removed, or, at least, mitigated this symptom, and that it declined with the bilious vomitings. In a number of instances, I ascertained that the irritation was not confined to the pit of the stomach, but extended over the whole abdomen, and down to the pubis. It was in these cases, no doubt, the same irritation, or sub-acute inflammation, which almost always affects the external muscles and integuments of the whole body in typhus fever ; producing a universal soreness, and leading the hasty observer to suspect that the pain is deep seated, and owing to the inflammation of some internal organ. We thus see that this mysterious epigastric affection ; this distress at the præcordia, which has been dwelt upon by so many as a pathognomonic evidence of the identity of this disease with yellow fever, may, in a great number of in-

* Armstrong on Typhus, &c. p. 29. † Ib. p. 29, 40. ‡ Ib. p. 76.

stances, be satisfactorily accounted for, without the necessity of this supposition. But we have yet stronger testimony. The irritation at the epigastrium, may, for argument's sake, be admitted to have been actually present in a number of cases. We will also allow that it indicated the presence of a degree of inflammation in the stomach, and we will now show that all this may have occurred, and yet be entirely reconcileable with the position for which we have contended from the outset, that the fever of Bancker-street was not yellow fever, but typhus.

Epigastric irritation denoting inflammation of the inner surface of the stomach, and ending repeatedly in gangrene, suppuration, ulceration, and even perforation of the coats of this organ, is, according to Armstrong, often complicated with typhus fever. Even where the brain and its investing membranes, only are involved in inflammatory typhus, there are, according to him, "generally transient pain in the limbs; *oppression of the precordia;* torpidity of the intestines; *uneasy respiration, attended with heavy sighs;* nausea, retching, or vomiting augmented on motion*," &c.

Again, "when an acute inflammation invades the lining of the stomach or bowels in typhus, it is generally denoted by some degree of *pain and tenderness*, by the stools containing unnatural mucus, a coagulable lymph, with or without some admixture of blood, by unusual flatulence, by a short hurried respiration, by an *anxious countenance*, *under pressure of the affected region*, by great prostration of strengh, by a small quick pulse, and by the patient lying prostrate on the back, with the knees mostly elevated, and the feet drawn upwards. If this acute inflammation be in the interior of the stomach, or of the upper portion of the intestines, nausea, retching, or vomiting, is generally present with a *sense of heat*, and an intense desire for cold drinks; but if the inflammation be seated in some inferior portion

* Armstrong on Typhus, p. 28.

of the gut, and particularly in the colon, these symptoms may all be absent*."

Those who have been conversant with the fever of Bancker-street, will not fail to recognise, in all the above symptoms, a great number of those which occurred in cases of that disease.

This irritability of the precordia is a symptom also of the *congestive* typhus of Armstrong. "The pulse is low, struggling, and variable; the stomach *irritable*†," &c.

A disease similar to that described by Moseley‡, also prevails, according to Curtis, in the East Indies. He describes it under the name of bilious fever and flux: it differs materially from the putrid bilious fever of Moseley in its duration. The fever he considers altogether symptomatic of the flux, and the latter he considers as produced and maintained by a superabundant and vitiated condition of the bilious secretion, evinced in the beginning by the nature of the discharges, and the disorder induced on the alvine functions. The fever disappeared the moment the bowel disorder was corrected, and in proportion to the quantity of bile discharged by stool. Evacuants here too were found of the utmost importance; and, as in the fever of Moseley, the combination most effectual, and at the same time most acceptable to the stomach, was cream of tartar and manna. Emetics were not indicated, and did harm. There was not more yellowness of the skin, eyes, or urine, than commonly accompanies all the India diseases where the liver or its secretion is concerned. The attack was sudden and severe in many cases, and attended with a high degree of fever; the pulse sometimes hard, but always very frequent; *tongue* and skin *dry*, hot, and *parched;* and the patient very soon became delirious. In a more advanced state, the tongue became thickly covered with a *yellow crust;* with a small and quick pulse; *prostra-*

* Armstrong, p. 51—2. † Ib. p. 76. ‡ See p. 18 of this Essay.

tion; pale, sunk, or *sallow countenance; great heat, pain, tension, and tumour of the abdomen; fulness* at the *pit* of the *stomach,* and *pain and tenderness there on pressure;* retching, vomiting, and great irritability; now and then with wild frenzy and delirium; and sometimes with cold extremities, hickup, cold sweats, and death. Inflammation and gangrene of the intestines soon came on. Generally continued when mild from two to three weeks; at other times to a much longer period. There were none of the symptoms of hepatitis.

The author remarks, that typhus, synochus, synocha, scarlatina, and erysipelas, were unknown. It is very evident, however, that the fatal and and more alarming cases of the disease terminated in *typhoid symptoms;* and that the *irritability* of the *precordia* was, particularly at this time, one of the most prominent and formidable symptoms. Epigastric irritation, therefore, may occur to an intense degree, among an assemblage of symptoms which bear much less resemblance to those of the yellow fever, than to the disease treated of in this essay. And if, as Curtis seems to believe, this disease was entirely produced by an extraordinary redundance of bile, we have a complete clue to the epigastric irritation and other symptoms of disordered stomach and bowels, which characterized the bilious typhus of Bancker-street*. In the fever of Bancker-street, the redundance of bile was not so great, but it was regurgitated upon the stomach more than on the intestines. The tendency to diarrhœa is stronger in the tropics, owing to the relaxed and debilitated condition of the bowels from the influence of heat. But we have fresh and stronger evidence at our own doors.

About two weeks before this disease began to prevail in Bancker-street, a fever, perfectly similar in its character and origin, broke out and continued to spread for some

* See Curtis on the Diseases of India, &c. Edinburgh, 1807. p. 117—55.

months in the apartments of the Penitentiary, a building situated in the suburbs of this city, in an airy open field, on the banks of the East River. The persons confined in this institution were crowded together to a degree which can scarcely be credited. A great number of vagrants, particularly blacks, who had been principally loungers, about Bancker-street, and were of the same description of persons as those who afterwards were seized with the fever in that street, had been recently conveyed to this prison, which added to the great numbers already there, rendered it wholly impracticable to accommodate them.

The following letter of the Resident Physician, read at the meeting of the Board of Health, of this city, July 5th, 1820, gives a particular account of the condition in which he found the Penitentiary, a few days before the disease became epidemical in that establishment :

"Dear Sir—In obedience to the order of the Board of Health, passed at their meeting on the 3d instant, I visited the Penitentiary on the afternoon of the same day, accompanied by the House Physicians, Dr. Westervelt and Dr. Belden. I examined most of the apartments of the institution, more especially those which were crowded, and from which most danger from disease was to be apprehended.

"I was first introduced into Hall No. 2, containing 50 coloured females. The air of the apartment was exceedingly confined and offensive, as was to be expected from so great a number of persons immured within a space of 45 feet by 22.

"Hall No. 4 is of the same dimensions, and contains 45 white females. The air of this apartment was similar to the former, scarcely respirable. But the back Hall No. 6 was in a still more offensive state, containing both black and white females intermingled—28 of the former, and 21 of the latter.

"From thence we proceeded to the apartment allotted to the *boys*. This too was crowded with 30 boys, some coloured, others white, and all within a room not exceeding 8 or 10 feet in width, and about 40 in length, with small adjacent sleeping rooms. The inhabitants of this apartment, by breathing this confined and impure air, have lost their healthy hue, the greater part of them exhibiting a remarkably pale and sickly visage.

"In this part of the establishment, the three boys whose sudden death was reported to this Board, sickened with typhoid fever, and fell victims to this disease after two or three days illness. Their sudden death is probably to be ascribed to the unhealthy scorbutic condition of their systems, antecedent to the invasion of fever, but doubtless in part induced by the confined state of the air in which they lay sick. And it is to be apprehended, should the contagion be renewed in any other members of the same crowded apartments, the same fatal result may be expected.

"The condition of the hospital attached to the institution, instead of being well ventilated, is no less crowded and injurious to the sick.

"Upon inquiry, too, it was found that a very unusual number, especially of females, have been recently taken up as vagrants, and sent to the penitentiary.

"To this cause the present evils are to be attributed, the apartments not being of sufficient dimensions for their accommodation.

"The only method by which still further fatality in that institution is to be guarded against at this hot season of the year, is either to discharge from the house some of the vagrants, or to provide additional temporary buildings for their reception; for, under the present state of things, a commitment to the penitentiary involves a punishment much more severe than that which was contemplated by the Legislature in the organization of that establishment. I also recommend, and have expressed the same to the

keeper, that the walls be again whitewashed without delay, and that this process be repeated at least monthly during the summer season; that the floors be frequently cleansed, and fresh vinegar daily sprinkled through the apartments, at the same time that the prisoners be supplied with a large proportion of fresh vegetables and fruits. But as the institution is under the care of eminent physicians, further remarks on this subject become unnecessary.

"I am, dear sir, very respectfully, yours,
(Signed) "DAVID HOSACK.

"*The Hon.* PETER A. JAY, *President, pro tempore, of the Board of Health**."

These predictions were lamentably verified, and more than one hundred cases of fever, the greater number of which were blacks, broke out in this institution, similar, in every respect, to the fever which very soon afterwards made its appearance in the cellars and filthy apartments of the negroes, in Bancker-street and its vicinty. We have the authority of several intelligent and highly respectable physicians for saying that the disease in the penitentiary, at Bellevue, and that in Bancker-street, carried the most indubitable evidence of identity, both in the assemblage of their symptoms, and in the causes which gave rise to them. For while cases were occurring at the penitentiary, and placed in the hospitals there, those afflicted with the fever in Bancker-street, were conveyed to the same hospitals, by which means the diseases were brought together and faithfully compared.

The Attending Physician at Bellevue, also, who had the care of the patients ill of this fever, confesses it to have been the same as the low typhus of hospitals and ships; and says that the epigastric irritation, was a notable symptom of the disease. His own words show how closely the peni-

* Statement of the Commissioners of Health, p. 17,18, 19.

tentiary fever resembled that of Bancker-street. "During the months of July, August, September, and the early part of October, there occurred at that establishment a disease exhibiting many characteristics of the typhus gravior, jail, or hospital fever, accompanied with bilious symptoms, especially among the blacks, such as yellowness of the eyes and skin, *epigastric distress, in some instances so great as to render the slightest pressure intolerable**."

It has appeared, therefore, somewhat unaccountable to us, how this gentleman should have signed his name to a statement, declaring yellow fever and the fever of Bancker-street to be one and the same disease†.

But again, as if proofs were constantly multiplying at our hands, and opportunely presenting themselves for our use, while the fever was prevailing in the penitentiary and Bancker-street, a disease having precisely the same characteristics broke out, at the very same time, among the blacks in the filthy alleys and courts of Philadelphia. This too was confounded by the physicians with yellow fever, until the unfortunate opportunity occurred of contrasting them together, when those who had adhered to their prejudices with the greatest obstinacy, were now the readiest to admit that they had been deceived. The preconceived notions which they had formed of the disease, took their rise, like most of the errors which cloud this subject, from a stubborn persuasion of the domestic origin of yellow fever.

The only account we have of this fever, which has been communicated to the public, is contained in a letter from Dr. Joseph Klapp to J. B. Sutherland, Esq. It triumphantly establishes the identity of the disease with that of Bancker-street and of the penitentiary, and shows that this epigastric irritation, as well as all the other symptoms and cir-

* Report of the Medical Society Committee, p. 11.

† See Report of the Medical Society Committee.

cumstances of the Bancker-street fever, may and do occur in genuine typhus.

The disease appears to have prevailed between the first of July and last of September, during which time there were brought to the sugar-house or fever hospital, at the almshouse, about two hundred patients. They chiefly came "from Atkinson's court, Pine alley, Miles's court, and from other equally filthy and dirty places both in the city and Liberties. The particular forms of disease which they laboured under, appeared to be the low remitting fever and the different grades of typhus. These complaints are *such as physicians are accustomed to meet with at this period of the year*, but their *particular prevalence this season among the blacks* must be attributed to a general *want of employment, to vicious as well as indolent habits, to which many of the lower class of these people are known to be addicted; and further, their scanty and often unwholesome diet, with an habitual disregard of cleanliness, both personal and in their dwellings*, have doubtless contributed much to disseminate the disease. *Many of them pass through the first stages of their disease, before their situation becomes known to the guardians of the poor, and consequently* (as Mr. Jones has already asserted) *are put down at the door of our hospital, either in a state of actual dissolution, or they have been so far exhausted as to preclude all hope of deriving benefit from medical application.* Under such circumstances, the mortality of the disease should cease to be a matter of surprise. *The typhus disease was the one most prevalent.* It was usually introduced by a chill, and considerable subsequent excitement of the circulation, by pain in the head and vertigo, much *soreness and tension of the epigastrium*, a white tongue, and a prostration of the muscular system. Much general debility usually appeared between the third and fifth days, and the *disease in many instances came to a termination between the seventh and tenth days**."

* American Medical Recorder, vol. IV. No. xiii. p. 83.

Again; "The principal determinations were to the head and stomach. In the latter respect, there was a difference from ordinary typhus, and from its being a symptom common to both it and yellow fever, some were at first disposed to believe them the same. This opinion, however, attained to a very limited extent, and I believe in the latter part of the season, when all had an opportunity of contrasting them, the opinion of their identity was relinquished by every one. A circumstance evincing the diversity of their character, is the fact of their prevailing in different districts of our city. *I do not recollect to have heard of a single well-marked case of yellow fever originating in the dirty alleys, remote from the river Delaware, though abounding throughout the summer with cases of typhus, intermittents, and remittents.* My public and private practice afforded me many opportunities of instituting a comparison between the symptoms of the two epidemics, which enabled me to detect the following differences between them: First, *in the typhus of the blacks, in the very first stage, the epigastric region evidences great sensibility to the touch, whereas in the malignant yellow fever this sensibility does not usually occur until about the third day.* The particular seat of this morbid sensibility is different in the two diseases; *in the former it is more external, while in the latter it is more internal.* Secondly, in the typhus the most active as well as the most unpleasant remedies are generally retained with ease on the stomach; not so in the yellow fever. Thirdly, in the different stages of typhus, the tongue undergoes the several changes characteristic of that disease, but in the yellow fever it presents a different appearance; *in no case of that disease, have I met with the hard and glossy tongue, the usual attendant on the former.* Fourthly, hæmorrhages in the second and last stages of typhus are uncommon, but very common in yellow fever. Fifthly, in the typhus there is an early prostration of the muscular powers; not so in yellow fever. Sixthly, the *yellow or icteric eye marks the first stage*

of the typhus, but in yellow fever it rarely occurs before the third day. Seventhly, *black vomit very common in the second and last stages of yellow fever, and very uncommon in the typhus of the coloured people.* Eighthly, the convalescent state of yellow fever is generally short, and as generally tedious in the typhus*."

Out of the large number who died of this disease, there were five cases in which a dark coloured matter was voided from the stomach, "something like black vomit." The substance "appeared to be composed of a mucous secretion of blood, and the common contents of the stomach intimately blended." Dr. Klapp judiciously observes, that these suspicious cases ought to be considered as anomalous, and by no means as conclusive evidence of this disease having been yellow fever. For we are told by this writer that black vomit may occur in intermittents, remittents, cramp of the stomach, pleurisy of the winter season, gastritis from drinking cold water when the body has been much heated, in dropsy, consumption, &c†.

Fevers similar to that of Bancker-street, not only in being accompanied with bilious symptoms like that of 1801, but also with a peculiar irritation of the precordia, have repeatedly occurred in this city in previous years. And if sufficient evidence had been adduced of the occurrence of vomiting of dark matter in the Bancker-street fever, we have, in addition to the remark of Dr. Klapp, proof directly in point, that this symptom too may now and then exist in true typhus, but that it is essentially different from the black vomiting of the yellow fever. "I began," says Dr. Samuel Bard‡, "to practise medicine in New-York in 1766. Remitting fevers have, since that time, prevailed *more or less every fall.* They frequently were attended

* American Medical Recorder, vol. IV. No. 13. p. 85.

† Ib. p. 86—7.

‡ Now President of the College of Physicians and Surgeons of the University of New-York.

with bilious discharges, and a yellow skin; and in proportion as these symptoms prevailed, were termed bilious remittents; in some instances these symptoms have run very high, and the accompanying fever, in such cases, has generally been more *ardent* and *constant;* but *nevertheless sensible remissions so generally accompanied them*, that they were generally looked for; and it is now thought the duty of the physician to watch for them, and by emetics, other evacuations, and blisters, to promote them, so as to procure an opportunity to administer the Peruvian bark, by which the cure was generally completed. Now and then, and *particularly during the war*, when the city was much *crowded*, and *little attention paid to cleanliness;* fevers of a more malignant nature have prevailed, in which a *foul mouth*, *hæmorrhages*, *petechial* eruptions, and other marks of dissolution, have either *characterized* the disease from its *commencement*, or been *superadded* to the *bilious symptoms* in the latter stages; and then the disease has been termed *malignant*, *putrid petechial*, *jail*, or *hospital* fever. In such cases I have *now and then seen* profuse bloody discharges, and *black*, or, as it is now more generally named, coffee-ground vomiting*; but a more frequent symptom in these fevers, and one I do not remember to have seen in yellow fever, is the apthous crust with which the mouth and throat is often lined. In these fevers death seldom occurs, nor is a crisis often to be expected before the *seventh* day, and both are frequently protracted to the fourteenth, or even to the twentieth. Such were the cases of my sister during the war, and of my son about six months ago, which you have frequently heard me mention. Just before, and what gave occasion to the appointment of health officer of New-York, about the year 1758 or '59, a ship crowded with Germans

* "Is this of the same nature," says Dr. Bard, in a note, "with the black vomiting of the yellow fever? I suspect not."

arrived there in a very sickly state, and were put under my father's care. He procured accommodations for the sick at a little distance from town; and I have heard him say, that out of five or six pupils and attendants, he was the only person who escaped the disease. This disease he always called ship or jail fever, but never yellow fever; and it is worthy of observation, that he had seen the yellow fever which prevailed in New-York about the year 1744. Another instance of the same kind occurred whilst I was health officer—I mean the ship in which Mr. M'Clain came from Scotland; in which, out of, I think, about three hundred passengers, upwards of seventy died; but of those, I saw no one which in the least resembled yellow fever. The *first case* of fever I ever saw with that assemblage of symptoms we have since denominated yellow fever, was the case of Mr. Jenkins (1795), &c*."

The spotted fever, which has occasioned so much interest among the physicians of this country, and particularly of the New-England States, appears to have been a disease of the typhoid type. It prevailed in the winter, about the month of *January*. There was here also an *indescribable anguish about the precordia*. Vomiting also frequently occurred, which from being at first merely the ingesta or a greenish liquor, obeyed, as the spring advanced the influence of the season, and became *bilious*, like that of the Bancker-street fever.

There was neither yellowness of the skin or adnata; but its course, like that of the bilious typhus of Bancker-street, was also hurried, terminating when fatal usually before the fifth day.

The tongue was generally moist, but if the disease continued beyond the third or fifth day, it became *darker co-*

* Additional Facts and Observations relative to the nature and origin of the Pestilential Fever, by the College of Physicians and Surgeons of Philadelphia. Philadelphia: 1806. Letter of Dr. S. Bard to Dr. D. Hosack, pp. 15, 16, 17.

loured, and *yellow* or brown. Other circumstances also bespeak its typhoid character, such as great prostration of strength, low frequent pulse, depraved sensations, delirium, coma, and finally petechiæ all over the surface; together with the tonic and cordial treatment most generally had recourse to, and which was most successful. We are furthermore confirmed in this opinion by the committee of the Massachusetts Medical Society, who have furnished the most accurate and authentic accounts of this disease:

"It appears also," say they, "that in various parts of the Commonwealth, the *common typhus* is much more frequent than usual at this season of the year; appearing in many instances with its ordinary symptoms, but in others with a character more or less resembling the disease which we have described."

As in the fever in Bancker-street, in that described by Dr. Bard, and in that of the Philadelphia alms-house, there were not wanting cases with dark and suspicious vomitings; which gave occasion to considerable alarm, and led several to suppose that the matter ejected, was no more nor less than the real *black vomit*. The language of the committee will place this subject in its proper light, and taken in conjunction with the time of year in which the spotted fever was most prevalent, [January,] and the appearances on dissection, show us how much credit was to be attached to these conjectures. "In several fatal cases at Lancaster, and two not fatal, a dark matter was thrown up, which was called black vomit. Whether this matter was the same called by that name in the autumnal fevers of warmer climates, the committee are not assured." Again; "The coats of the stomach were generally free from the *slightest morbid appearance:* its contents had sometimes a resemblance to coffee grounds, or more nearly to brown soup, while in other cases they con-

sisted of greenish mucus: each without any offensive odour*."

These important facts teach us, that we are not always to attach such frightful apprehensions to symptoms of præcordial irritation, and that we are by no means to suppose that this or the vomiting of a dark greenish bile are always to be looked upon as the certain forerunners of gangrene and sphacelus of the stomach. Much less is the detection of a discoloured water in the stomach, *after death*, to be taken as the consequence of such derangement, or an indication of the existence of the matter of black vomit *during life*†. This mode of reasoning a posteriori rarely leads to satisfactory results; but it is one which, however unphilosophical it may be thought to be, is, we regret to see, too often employed‡.

The *irritation at the præcordia*, is one of the symptoms also of the autumnal *inflammatory remittent* of the Southern States, a disease peculiarly obnoxious to strangers, and very different from the endemial *bilious remittent* of that part of our country, or from typhus fever§.

In the endemic fever of Bengal, commonly called marsh

* See Transactions of the Massachusetts Medical Society, vol. II. Also, American Medical and Philosophical Register, vol. I. p. 12, 378, 176. Vol. III. p. 482.

† Burnett, a voluminous author on the Mediterranean Fever, avers that this disease continues through the *winter*, and is then "often accompanied by *severe* and *evident inflammation of the lungs*." What must be thought of this assertion, when it is known that the Mediterranean fever was the identical yellow fever of the tropics! Burnett was desirous of proving the non-contagionsness of this disease, and that it was entirely attributable to atmospheric influence. To do this, it was necessary, as much as possible, to liken it to the ordinary fevers of the Mediterranean. Hence, perhaps, the explanation how this remark escaped him, and another still more singular and incredible, that *black vomit* was in some cases found to be a very rare occurrence.—*Burnett on the Mediterranean Fever, Lond.* 1816, *p.* 11, 423, 491, &c.

‡ See Report of the Medical Society Committee of this city, p. 26—7.

§ Vide Norcom's Observations on the Fevers of North Carolina. American Medical and Philosophical Register, vol. I. p. 17.

remittent fever, occasioned by the inundation of the Ganges, one of the most distinguishing symptoms is *oppression on the præcordia, and excruciating pain at the stomach.* The vomitings were always bilious, and emetics were dangerous. The disease being of an inflammatory type, venæsection was found eminently useful. The disease, like the inflammatory remittent spoken of by Norcom, prevails in August and September, and attacks more particularly strangers*. Indeed, the *gastric or præcordial irritability*, according to Johnson, together with pain of the head, constitute the pathognomonic symptoms of the bilious fever, or grand endemic of hot climates. This is a fever which occurs on land or at sea, independent of marsh miasmata, which seem however to have a modifying influence upon it, as in the endemic of Bengal†.

4. Duration. In some few instances, the fever of Bancker-street terminated fatally within the space of a week. Great pains were taken to make a handle of this circumstance; and it was held forth as a strong evidence of the analogy between yellow fever and this disease. The documents in possession of the Board of Health, however, and under the signature of the physicians who reported these cases, show that not one of them was seen by these gentlemen more than once, and then in several instances not until after death! The account of their symptoms, therefore, was derived from the persons in whose apartments they died, and cannot be fully depended upon. As far as has been ascertained, however, it appears that their symptoms were very nearly those of the more sudden forms of congestive typhus described by Armstrong, as occurring in England; where yellow fever has never been supposed to exist, strange as it may seem, even by the

* Johnson on the influence of tropical climates on European constitutions, London, 1818, p. 40—87. Also Clarke and Lind, who have also treated of this fever.

† Ib. p. 105.

most inflexible advocate of the domestic origin of the disease.

The congestive typhus of Armstrong sometimes terminated in death in 40 or 72 hours*. Among other symptoms which showed themselves in the cases described by Armstrong in the beginning of the disease, were "involuntary sighing, and a *sensation of weight and distress at the pit of the stomach.* The countenance soon acquired a look of extreme agitation, and the skin was dry on the trunk, and damp on the extremities; the centre of the tongue white, but moist; and evidences of internal excitement gradually developed themselves; the pulse being small and hurried, the beat sharp and concentrated about the præcordia, but lower than natural on the wrists, ankles, forehead, and lobes of the ears†." On dissection, "the brain, liver, and spleen were the only parts chiefly engorged with blood, the two latter organs [as is mentioned of the spleen by the Medical Society Committee, p. 27] being ruptured by the forcible pressure of the hand‡." Most of the cases that proved fatal in this manner in Bancker-street, occurred in subjects whose systems were completely paralyzed and destroyed, by the use of ardent spirits and a most violent course of debauchery. In the majority of cases, the fever of Bancker-street extended beyond a week; and generally, when it terminated fatally, ended in less than a fortnight. In instances more mild, its duration was protracted to longer periods, observing the same diversity in this respect with ordinary typhus. So in the inflammatory typhus of Armstrong, where the brain was deeply involved, the disease was not protracted much beyond the first week§. In that where the chest was implicated, it often terminated "within the first nine days‖," and where the bowels were the seat of the local inflammation, the

* Armstrong on Typhus, &c. Cases, p. 71, 2, 3.
† Ib. p. 73. ‡ Ib. p. 73, 4. § Ib. p. 30. ‖ Ib. p. 41.

disease was known to terminate "at the expiration of the first week*." The bilious form of typhus which prevailed simultaneously in Philadelphia with the Bancker-street and penitentiary fevers, we have also seen terminated, in many instances, between the seventh and tenth days.

The author of a very able Review on the Report of the Medical Society Committee, which appeared in the American Medical Recorder for April, 1821, has also collected a great number of high authorities to prove that typhus may run a very rapid course. We will avail ourselves of his remarks and references on this point, without deeming it necessary to make an apology for so doing.

Sir John Pringle, in speaking of hospital fever, says that "when the air is at the highest pitch of malignity, the course of the disease comes to be *very rapid*, so as to terminate in *five or six days*, in death, or a favourable crisis†." Wilson says, "typhus sometimes terminates in 10 or 13 days, *or within that period*‡." Both Drs. Bateman and Rogan, in the works already quoted, relate cases of typhus terminating on the 6th and 8th day of the disease§. Even Dr. Thomas, an author from whom we suspect most of the medical knowledge contained in the Report has been derived, speaks in the following terms: "In warm climates it (typhus) seldom continues above *a week or ten days, if so long*‖.

Some of the cases of this disease were nearly as rapid in their course as the putrid bilious fever described by Moseley¶. This has probably induced the author of the REMARKS on theMedical Society Committee's Report, toob-

* Armstrong on Typhus, &c. Cases, p. 61.

† Observations on the Diseases of the Army, &c. p. 304.

‡ A Treatise on Febrile Diseases, by A. P. Wilson, vol. i. p. 137. Am. Ed.

§ Bateman on the Contagious Fever, &c. p. 50. Rogan on Epidemic of Ireland, p. 25.

‖ Practice of Physic, p. 52. 4th American edition.

¶ See p. 18 of this Essay.

serve, that the two diseases were nearly alike. There does not appear, however, to have been so great a disposition to putrescency in the fever described by Moseley as in that of Bancker-street, though there was a much greater redundancy of bile. Whereas in the Bancker-street fever, the putrid generally predominated over the bilious symptoms, particularly in fatal cases. The putrid bilious fever, when fatal also, terminated as soon as the third or fourth day. But it will be said, perhaps, that all these differences may be easily explained away. In truth, it would prove no easy task to say where the line of demarcation between the two diseases actually exists. Nor would it be difficult to conceive, from the strong analogy between many of their more important phenomena, that they both belong to the same species. The disease is called by Moseley, putrid bilious fever, or a high grade of bilious remittent. This is somewhat contradictory: for if it was a putrid bilious fever, we ought to understand by the phraseology that it was a bilious typhus; and if it was a bilious remittent of a high grade, we are naturally to take it for granted, that it *commenced* as an ordinary bilious remittent, and terminated in putrid or typhoid symptoms. Those who believe it to have been the same disease as the fever of Bancker-street, and that both were of the typhoid type from the commencement, will say that the putrid bilious fever of Moseley was not so strongly marked by putrid symptoms, because the climate of the tropics being unfavourable to animalization*, as well as to the concentration of febrile infection, exercises an antiseptic influence over the system. In support of this argument they will adduce the fact that typhus more frequently occurs, and that the septic tendency is much greater in cold than in hot latitudes, in winter than in summer. They will moreover allege that the putrid bilious fever of Moseley, originated as the worst forms of typhus usually do, in a situa-

* Moseley on Tropical Diseases, p. 92.

tion where great numbers were crowded together, and where the disease might have been reasonably anticipated. And that the great redundance of bile was the natural consequence of the season of the year at which the disease prevailed, and its occurring in the tropics, where, according to Blane, typhus is usually accompanied by bilious symptoms. That as to the duration of putrid bilious fever, all fevers run their course sooner in hot than in cold climates†. In opposition to this we would urge that the bilious symptoms had undoubtedly more to do with its fatality than its typhoid character, which is proved by the complete success which attended the introduction of manna and cream of tartar, after the disease had carried off a great number of the troops. For by giving this combination until the bile was entirely evacuated by the stools, the disease was effectually subdued‡. This important fact in regard to the treatment of the disease, together with the circumstance that the troops were exposed to the influence of marsh miasmata, and, therefore, to remittent fever; as also the fact that the remittent fever of the tropics, is peculiarly charaterized by bilious symptoms, ought, we think, without taking into view the rapid termination of the disease, or the absence of well-marked typhoid symptoms, to incline us rather to the opinion that the two diseases were specifically different.

5th. The season of the year at which the disease appeared. It has been contended by some persons, with zeal not very creditable to their medical erudition, that this disease could not have been typhus because cases of it happened to occur in the latter part of August, when the summer heat was not yet expended. We acknowledge that the fever of Bancker-street was rife in the month of September; a month which is nominally autumnal, but certainly, in this climate, a genuine summer month in its temperature. Is it then an unalterable law of typhus, that it

† Blane on Diseases of Seamen, p. 395, &c.

‡ Moseley on Tropical Disease, p. 181, &c.

cannot become matured and ripened except under the frosts of winter? We know that the disease deriving its origin most usually from human effluvia, does not need the aid of marsh miasms to bring it into existence. The effluvia arising from persons being crowded together into close confined apartments, will alone engender the disease without any other cause whatever; and although the surface of the earth be at the same time frozen and covered with snow. But have we not the very highest authority—have we not our own daily experience to show us, that typhus will appear under the very highest temperature of summer? Is it not possible to conceive that the same effluvia to which it is so generally indebted for its production, may, from a peculiar concurrence of circumstances, be accumulated in such force and quantity, that even the high temperature of August, could not fast enough volatilize it, to prevent it from innoculating the human system with its poison? Sir Gilbert Blane, who first suggested the ingenious opinion that the matter of infection or contagion, is readily dissipated under a powerful sun, gives, nevertheless, innumerable examples of the susceptibility of the human constitution to typhus, even under the heat of a tropical summer. In the immense fleet of the line of which he had the superintendance, and to which we have already alluded, instances constantly occurred of typhus in certain ships in which the presence of peculiar causes particularly favoured its production and development*.

"In England (says Armstrong) typhus is evidently favoured by a low temperature, being most prevalent in the cold seasons of winter and spring, generally abating or disappearing, as the heat of summer advances, and often prevailing to a considerable degree in cold wet autumns; but, nevertheless, it occasionally prevails at *all times in the year, and is even undiminished by the hottest weather in this*

* Vide Blane on Diseases of Seamen, passim.

*country, as I once witnessed when the thermometer was unusually high during the greater part of a summer**.

We again call to our assistance the researches made into this part of our subject, by the author of the masterly review of the singular production which issued from the Medical Society.

Sir John Pringle, in his observations on the hospital or jail fever, which is the same as the typhus gravior, tells us that "the hospitals of an army, when crowded with sick, or when the distempers are of a putrid nature, or at any time when the air is confined, *especially in hot and dry weather*, produce a fever of a very malignant kind, and very mortal†." In confirmation of this, he states, that in 1743 the hospital or jail fever prevailed in the army in the month of July and August‡. In 1746 it broke out in May and June§, and in 1748 it raged in July, when the weather is described as having been extremely hot and dry‖.

Dr. Willan describes typhus fever as occurring in London in August and September, and adds, "this disease is extended by infection, during the months of October and November, but its progress is generally stopped by the frosts of December¶."

Dr. Bateman says, "at all times there appears to be a greater disposition to fever in London during the autumnal months, which diminishes with the approach of winter. The present epidemic, (typhus,) if we may deduce such an inference from the demands upon the house of recovery, was most particularly prevalent from the beginning of August to the middle of November. The monthly admissions were—in June 28, July 22, August 67, September 81, October 109, November 92, December 68**."

* Armstrong on Typhus, p. 9.

† Observations on Diseases of the Army, &c. p. 291.

‡ Ib. p. 27. § Ib. p. 57. ‖ Ib. p. 75.

¶ Willan on the Diseases of London, p. 43.

** Bateman on the Epidemic, &c. prevailing in London, 1818, p. 16.

In 1817 and 18, typhus raged epidemically in Belfast, Ireland. It commenced in May, and prevailed extensively throughout all the summer and autumnal months*. We shall now quote two or three American authorities, to prove the same point. A very sensible physician and writer, Dr. Gallup, of Vermont, says, "this disease (typhus) prevails most frequently in August and September; but no month is free from it, especially the fore part of the cold season†."

The seventh volume of the New-England Journal of Medicine and Surgery, contains an account of a typhus fever, which prevailed in the Boston alms-house in 1817, 18, and which broke out in the month of May‡. "In the *hot* months of the year, (says Johnson,) the fever [at Seringapatam] becomes remittent or *typhoid*§."

7. In many cases of the Bancker-street fever, instead of the biting heat or calor mordax of typhus, there was observed a peculiar coldness and dampness of the skin, indicating a much lower temperature than natural. This has been compared to the moist clammy state of the surface, so often seen in the second stage of yellow fever. Overlooking the ensemble of phenomena, premature inductions have been made from this symptom, in favour of the identity of the two diseases. In the Bancker-street fever this symptom, as well as the low sunken pulse, were seen in those cases where there existed an extreme degree of prostration, the natural effect of the poison of the disease operating upon a habit of body already exhausted and broken down by debauchery. The same symptom was noticed in a fever which appeared among the British troops at Mariegalante, West

* See Observations, &c. on the Epidemic in Ireland, by Francis Rogan, M. D. &c. p. 150—1.

† Sketches of Epidemic Diseases in the state of Vermont, &c. by Joseph A. Gallup, M. D. p. 363.

‡ See Vol. VII. p. 105.

§ Johnson on the influence of Tropical Climates upon European constitutions, p. 99.

Indies, in December, 1808, the phenomena and circumstances of which disease, bore, indeed, in most of the cases, an extraordinary resemblance to the fever of Bancker-street. It commenced at night with chill; heat, followed by low temperature of the skin, lower than usual in the commencement of yellow fever—thirst—flushed face—eyes tinged—pulse now full, firm, and frequent—skin moist and soft—remission in the morning—pulse less full, and often irregular—tongue before white, now thickly coated with mucus, whitish round the edges, but very foul and brown in the middle—debility—dull, heavy sensation in the head—propensity to sleep—at noon, febrile symptoms recur, but increased in violence and duration—remmission then less complete, and exacerbation earlier. In general there is no third remission—the fever becomes continued, and is early accompanied by great irritability of the stomach, beginning with a vomiting of bilious matter—distressing retching, uneasiness and pain there—dull pain in the forehead, and constant, as also of the limbs—bowels loose—continues thus four or five days—then stupor—pulse sinks—is unequal, and scarcely perceptible—coldness and dampness of skin remarkable in a great number of cases—tongue dry and hard, and teeth and lips covered with a dark coloured fur—at night delirium—frequently complains of pain of stomach, but vomiting now often ceases, returning frequently at the same time of day—vertigo—now, in most cases, there comes on complete coma, muttering delirium, subsultus tendinum, and involuntary discharges—pulse no longer felt—in some cases, a deep yellow colour of the skin—average duration twelve days—one half of the cases died. In the early stage venesection was found useful, if the patient told his complaint in time. Sometimes there was no remission—emetics were of doubtful utility. The disease was considered an intermediate type between yellow fever and typhus. No mention is made of dark or black vomitings*.

* See Dr. Dickson's account of this Fever, in Johnson, on the influence of Tropical climates upon European constitutions, p. 364—9.

We might go on to enumerate authorities in support of our position, that fevers, in every respect similar to that which forms the subject of this discourse, have repeatedly been observed in other parts of the world.

For the present we shall content ourselves with the following observation :

We are informed, by Lind, that the most frequent and fatal diseases in the sickly [wet] season, in Guinea, are not of an inflammatory nature ; but generally of a bilious type, attended with a low fever, sometimes of a malignant, at other times, of a remittent kind. The pulse was always low, and the brain and nerves seemed principally affected. There was a tendency to remission. The disease began sometimes with a vomiting—often with a delirium, followed by coma—sunken pulse—skin became yellow—frequent bilious vomitings and stools—Expired sometimes in forty-eight hours—generally in fourteen days. Venesection was not admissible, but emetics were used with benefit*.

* Lind on the Diseases incidental to Europeans in hot climates, p. 72, 3, 5, 8, and 80.

PART III.

We have then four notable instances of the occurrence of a fever in our own country, analogous in its details to that of Bancker-street. Three of these happened in this very metropolis, of which one went on *pari passu*, at the same time with the Bancker-street fever; and the other two of which occurred here at two distinct periods of time not very remote, and at the same season of the year. The fourth instance occurred also at the same time and season with the Bancker-street fever, and at the distance of less than one hundred miles from the city.

In two of these instances, viz. the fever of the Penitentiary in the suburbs of this city, and that brought to the alms-house at Philadelphia; the coincidence of character was extremely remarkable in this; that they broke out simultaneously with the fever of Bancker-street, and critically resembled this disease in every particular, both as to the description of persons whom they attacked, and in the general concourse of their symptoms.

The fever at the penitentiary, that of 1801, and that described by Dr. Bard, also powerfully strengthen the chain of our argument in another respect: for they not only appeared at the same season of the year, attacked the same description of persons, and were distinguished by the same symptoms with the Bancker-street fever, but occurred in the same locality and district of territory, showing thereby that they were exposed with this disease to the modifying influences of the same soil and temperature. These three instances prove that certain causes have heretofore existed in this locality, capable of producing the same form of typhus, at three distinct and successive periods of time not re-

mote from each other. We have good reason, therefore, to think that these causes, whatever they may have been, were the same, and that they may continue to operate also at future periods of time. But since the Bancker-street fever so intimately agrees with these three several fevers, both in its symptoms, the season at which it appeared, and the description of persons whom it attacked, and also in the several circumstances derivable from the influence of locality, we are under the necessity of believing that they were all one and the same disease, and were produced by the same cause, or combination of causes.

But the fever at the Alms-House, at Philadelphia, although it occurred at the same season, attacked the very same description of persons, was distinguished by the same symptoms, and went on like that of the Penitentiary, simultaneously with the fever of Bancker-street, nevertheless differed in its locality. The causes connected with locality or position, therefore, do not appear to be essential in this form of fever.

What then are those causes in which all those five several fevers agree, and which of them effected the peculiar phenomena in their character, different from those which belong to the ordinary forms of typhus?

They all agree in these particulars.

1. Season of the year at which they appeared.

2. Description of persons whom they attacked, viz. the poorer classes, those who are intemperate, and live in unhealthy and confined apartments.

3. Symptoms.

The secret of their production then is concealed here. The second trait they have in common with typhus, as it appears in jails, ships, hospitals, &c. at all seasons of the year, in summer or in winter. This, therefore, could not have given the characteristic aspect to this disease. It follows, of consequence, that the season, the only attribute

remaining to them in common, besides their symptoms, must have given this disease all its peculiarities. In all the five instances, the disease was rife at the hot season of the year, *i. e.* in the last summer month, and beginning of Autumn. On recurring to their symptoms, and the parallels we have drawn of common typhus, under the influence of tropical heat, we shall perceive that the natural consequences resulting from this peculiar circumstance in the history of these five several instances of fever, must have been the production of *bilious symptoms*.

As the hot season, therefore, was the cause, so were the bilious symptoms the effect wrought in this fever, and the characteristic feature by which it was distinguished from ordinary typhus.

The comparison which has been made between the fever of Bancker-street and yellow fever, in those points in which they are at total and direct variance, shows that the opinion which maintained their identity, is utterly fallacious, and carries on the face of it its own refutation. But here we have had an additional, collateral, and analogical mode of testing the merits of this opinion, by comparing the fever of Bancker-street with the co-existing fevers in the Penitentiary of this city, and the Alms-House of Philadelphia, and with those which appeared here in the year 1801, and during the revolutionary war.

If then we can put confidence in the copies given by their historians of these four several fevers; if we bear in mind that the details of these diseases do not come to us in a mutilated or garbled state, but unwarped by controversy, and unobscured by hypothesis; if we call to our recollection that their character has been presented to us unembarrassed by rival or counter testimony, and that no person has ever contended that either of these fevers was yellow fever, or other than some modification of typhus; surely we may be allowed to conclude that they have been truly and con-

scientiously described, and are, therefore, what their historians have represented them to be, diseases of a typhoid type. Whence it also follows that the fever of Bancker-street, which has been shown to bear an exact resemblance to these diseases, was also typhus, and not yellow fever.

FINIS.