Observations

on

Yellow Fever.

by

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Jamaica

June 15th. 1857. West Indies.
"For the Angel of Death spread his wings on the wind,  
And breathed in the face of the foe as he passed;  
And the eyes of the Sleepers were filled with deadly chill,  
And their hearts but once heaved, and for ever still."

- Byron

Preliminary Observations

The subject of Yellow Fever is one which has for more than a century past attracted the anxious attention of the scientific and medical inquirers in England and America, France and the other Continental States of Europe, and even the British and other Colonial Professions. The extent and frequency of its epidemic visitations; the fatal tendency and rapidity of its career; and the merciless, unrelenting seizure of the young and vigorous, the hale and beautiful, as the objects of its unnatural and self-legitimised prey, are circumstances in its peculiar history which cannot fail most powerfully to impress the mind, and evoke a deep and earnest feeling of interest in...
the patient and careful investigation of those
series of phenomena which conduce to the origin
of the disease and its subsequent development
and propagation.

But, happily for frail humanity,
a flood of light has within recent years been
thrown on the origin, the mode of propaga-
tion, the pathology, and the appropriate
Therapeutics of this fatal malady, by the
various contributions of many eminent med-
ical men engaged in the public service, who,
have nobly and most laudably devoted their
hours of ease and retirement to the duty of
giving to the world the results of their obser-
vations and experience, and of recording for
contemporary study and for the benefit of
posterity these carefully and well digested
facts which, if not altogether calculated
to remove the veil of obscurity by which the
nature and treatment of the disease is involved,
at least entitle them to the gratitude
and hearty commendation of those who both derive instruction from their experience, and acquire a new lease of life from their patient and persevering investigations.

The earnest medical inquirer will not be at no loss for sources of information on this important subject, while he has at his command the entire Medical literature of England and France, so rich in works of a didactic character as regards the consideration of the disease in its entirety; or monographic of its several branches; or descriptive of separate European or Tropical epidemics; or even of the more recent contributions of countries such as Italy, Spain, and Germany, too, the scientific physicians of each of which have individually pieced in their attempts to place on the most secure and approved basis these facts and generalizations regarding the disease, as deduced from a systematic and carefully investigated series of observations.
and which in a greater or less degree tend to corroborate the early labours of their more practical brethren.

But it is very much to be regretted that while so much has been generally, as well as specifically written on the subject of Yellow Fever, so little union of sentiment in regard to the etiology, or cause or causes of the disease, has been manifested in the numerous productions met with; for even at the present day there still exists a keen and acrimonious controversy relative to the contagious or non-contagious character of the disease; and to such an extent as to cause a complete division of numbers in reference to the question—and which must evidently lead to a vital difference both in the mode of treatment, and in the adoption of measures of segregation, quarantine or otherwise; to say nothing of the state of bewilderment.
and uncertainty into which the inexperienced physician must be thrown by these diametrically opposed views and opinions, supported as they are on either side by names calculated to command respect and enforce attention.

It is not, however, our intention to enter here into the question of the contagious or non-contagious properties of the disease, but merely to notice how great names, such as those of Blane, William Wright, Chesholm, Barrie, Thomas, Pugnet, Balby, Gonzales, Pym, Fellowes, &c. as contagionists, should be found ranged against those of Hunter, Jackson, Musley, Rush, Miller, Bancroft, Lempriere, Desge, Sauerrey, Valentin, Dickson, McArthur, Burnett, Doughty, Beith, Ferguson, Dickinson, Mortimer, Sheppard, Robertson &c. &c. as non-contagionists. Certainly, if numbers alone were to be the criteria of soundness of observation and depth of research, the non-contagionist party would be said to have
amply substantiated their view of the question; but this appeal to mere numbers must know is not always the fairest or justest mode of testing the truth or accuracy of an argument; although in this particular instance, it must be admitted that many of those who hold the view that the disease is not contagious (some holding official situations in the West Indies, the very seat and locality of Yellow Fever) had excellent opportunities afforded them of observing and of practically studying the various types and grades which the malady presented, from its incubation, through its development, to maturity and subsequent termination or decline; and that these were the men who, from their observations and experience, were the sole parties capable of giving an authoritative opinion relative to the contagious
on non-contagious properties of the disease, and of enunciating a principle which was to assume the standard of a well-ascertained fact in after times and to succeeding generations.

It is not surprising then, to find the young inquirer leaning to an opinion born out by well-ascertained and practically substantiated facts; especially when those facts are based upon actual observation, guided by sound physiological and pathological reasoning. At the same time, the careful consideration of the views and opinions of the contagious party should not be altogether set aside, so much as the knowledge of them might aid the young physician in determining the necessity or advantage of adopting certain prophylactic measures which otherwise might either ed-
cape or not immediately arrest his attention, in certain important situations, and where their adoption is most requisite and salutary.

But the further consideration of this question will meet with that attention which its peculiar importance demands in another portion of this paper; it has been merely introduced here parenthetically, to show how much a carefully compiled, and well digested monograph on the subject of yellow fever is desired, one that will as far and as fairly as possible attempt to reconcile and balance conflicting testimonies, opposing theories, and scrupulous deductions and data, so as in fact that will prove essentially to the student a text book and guide, from which he can both derive accurate and judicious information on the whole length and bearing
of the subject, as well as me that will vanish from the literature of the disease for good and all. Those multifarious difficulties and crudely-digested theories and complexities which tend so unfortunately to obscure and mystify its vital import, and render its successful treatment a matter of absolute and inevitable difficulty.

Indeed it would appear from many serious considerations, that at no time other than the present is a more elaborate and thorough revision of the entire literature of this branch of medical inquiry more absolutely or energetically called for, especially when we consider how continuously and unceasingly the tide of emigration is setting in the direction of the tropical portions of the great American continent, and in the direction of
those islands which principally constitute the geographical and altitudinal area of the disease; and how, from a want of proper information on the subject on the part of those whose professional duty it is to obtain it, or from their inability intelligibly to impart it, thousands of human beings may be allowed to take themselves to a new region, a new climate, a new home, without an adequate knowledge of the peculiarities of their future country; the nature and character, the stability or versatibility of its climate or the necessity of preparing their systems both as regards regimen and clothing, habits of abstemiousness and morality for undergoing those gradual yet decided changes which are ever attendant upon rapid transitions from a temperate to a tropical Zone. That vast mechanical power
power which is daily bringing remote
and hitherto almost unknown regions
into intimate and commercial relations
with the great centres of European civil-
ization, silently yet powerfully urges
upon the medical philosopher the necessity
for investigating in an enlightened and
progressive spirit those hitherto but parti-
ally-considered facts which involve the
whole subject of yellow fever! It urges
upon him the necessity of conducting his
observations with that self-same intensity
of enthusiasm, devotion, and zeal, with which
he invests the prosecution of a favourite,
and home-disputed theory! It calls upon
him in times of deep and anxious feeling
to exert his mind and intellect in the
investigation of those but ill-considered,
series of phenomena which appear to be
primarily eliminated from an unbalanced
atmospheric
atmospheric, or vitiated, terrane condition, and which, concurrently with other unseen and unrecognized morbid agencies, appear to contribute to the development and fatal dissemination of a ruthless and life-destroying scourge! It bespeaks him in the language of compassion, and by the sacred bond of one universal brotherhood, to devote his time and energies to the final solution of this vital and momentous question—"that thousands yet unborn, and who are predestined by the progressive course of events to transmit and extend, from the very centres of learning and Christianity, the extreme and widest limits of knowledge and civilization, may yet have joyful cause to bless the hour when men of name and talent, of energy, and philanthropic enlightenment, combined with one accord to establish a bright and far-seen light, by whose revelations
millions of human beings might yet be
snatched from impending danger, may from
the very jaws and cold embraces of an early
grave!!!

And, finally, the Genii of Humanity.
The interests of one common civilization,
and the recognized necessities of a progressive
and erudite age— all cordially conspire to
stand boldly forth, and loudly demand
with trumpet voice of practical science and
enlightened experience, the cultivation ab-
origine of a disease whose very nature and
esence it is to disseminate, dread to horror through-
out regions far beyond the pale of its sale-
ful and pernicious influence, and whose
well known and destructive attribute it is to taint and prematurely wither and
shatter the fairest, brightest, blossoms of
Nature's own Creation—to slay and callously
destroy the blooming, graceful, brilliant
flowers
From the imperfect consideration
in the foregoing remarks, of the subject of yel-
low fever, we now pass on to the statement
of the mode in which we intend, briefly, to
present the subject to the notice of the reader;
bearing that a systematic plan of procedure
will the more satisfactorily enable us to
take up singly, and sufficiently exhaust;
each individual section of our dissertation—
more than if we were to advance without any defini-
tely arranged or preconceived plan of
action. Arrangement and a due regard to
the order of sequentces are well known aids
of the practiced writer— and if he is not
oblivious of their nature, or scornful of their
worth, in how much greater estimation ought
we to hold them, unpractised as we are.
in arranging our ideas and fancies, and reducing them to a necessary and formal system! Under the circumstances then, and without further preface, we shall proceed to sketch out, categorically, the heads of our subject, in so far as their peculiar interest bears upon each phase of the disease; while we shall at the same time introduce under their appropriate divisions any new circumstance or peculiarity which might strike us as deserving of notice and embodiment as we proceed onwards in the investigation of the several heads. But we have already taken up too much space with our preliminary remarks on the subject of Yellow Fever to care to extend them further, if that were even legitimate. So we therefore proceed to classify under section

1. The various synonyms which the disease has derived from various authors who have...
1. We shall endeavor to consider and trace the history and chronology of the malady, as far as our means will allow, from the period when it first became known and was first described, then by whom and in what quarter of the globe.

3. We shall try to limit the geographical and altitudinal boundaries of the disease—comprehending within them, parenthetically, all those countries or tracts of territory that are liable, from their juxtaposition to the defined limits, to become affected by the influences of the malady in a greater or less degree.

4. We shall try to discuss the etiology or proximate and remote causes or causes of the disease, including a careful investigation of those atmospheric and terreine conditions that
that are supposed to be favourable to the origin-
ation, development, and maturation of the disease.

5. We shall occupy some little space in the
discussion of the question of acclimatization
and of the susceptibility of the different races
of mankind to an invasion of the disease.

6. The symptomatology of the disease must
carefully command our attention; as also the vari-
ous grades and types, and modifications of these.

7. Its nosological position must be defined,
and proofs of its distinctness from theMarsh,
remittent, and other forms of fever, given.

8. A careful investigation of the pathology
of the disease, as far as it has been made famil-
tous by the French commission, and the observa-
tions of enlightened medical men located within
the boundaries of the disease, must engage our
attention; as also a due inquiry into the altered
conditions of the fluids and solids of the body,
as revealed by post-mortem investigations.

9. The
9. The mode in which the disease is propagated—whether by contagion, fomites, or by atmospheric and terrene conditions.

10. The question of non-liability to a second attack must meet our consideration, and must, if possible, be followed up by a revision of the opinions entertained on this subject.

11. The prophylaxis must engage our attention, and we must endeavour to notice what are the modes of living and procedure in, and periods of going to, a tropical climate, in order to avoid the risk of being fatally attacked by the disease, shortly after our arrival.

12. The question of the therapeutics of the disease must finally engage our earnest attention, as upon it alone, based upon a sound pathology, can we hope to counteract successfully the pernicious poison of the disease.
According to our arrangement, then, we shall in the first place proceed to consider the various synonyms which the disease has derived from the many authors who have observed it in various localities, and under different circumstances. All we shall say by way of introduction to them is, that in all probability they derived their appellations from some peculiarity which presented itself in a marked manner to the observation of the individual. Thus we find that some of the appellations have reference to locality—while others are derived from some pathological, symptomatic, or general appearance—but none of them can be said to be based upon what, in these days, would be considered a rational pathology.

For instance, we have, as all the old authors tell us, the Coup de boire of the old West Indians—the Mal de Siam of Labat, Desportes, and some of the early writers—then
then the malignant fever of Warren, the putrid bilious fever of Hillery, the febris in\nacea occidentalis of Mackittrick, the continua putrida interceded Carolinsiensi\nbrigae, the elodes intercedes of Bogel, the febris maligna biliosa Americanae\nflave of Moultrie, the typhus intercedes of savages and bulb\n
den, also the endemic causus of Horseley, the typhus occidentalis of Saracis\ny, the bilious or yellow fever of Chisholm, the fièvre putride\ncontinuï of Pugnet, the bilious remittent or yellow fever of Rush and those of his school,\nthe coma to prieto of the Spaniards, the\n
dulcer fever of Pym, the hémagastrique pestilence of Copland, the fièvre jaune of the\nFrench and the yellow fever of the great ma\n
jority of the English and Transatlantic\nauthors.

When we reflect on the number of syn\nonyms enumerated above, we cannot help
being struck with the impression that these different names either refer to an individual disease, or that they are the appellations of a variety of them. The older authors must have narrated their observations in the first place, and their contemporaries or successors must have drawn over-much distinctions between the facts as mentioned by them, and those peculiarities which they themselves observed; or else how account for such a multitude of names, all derived from what we now know to have common origin? Indeed it is curious to observe that what the improvers on the practical observations of the older authorities on this disease did, in their day, is being scrupulously imitated by the generation of our own immediate time; and much as they, too, take up the simple, careful, precise investigations of such an one as Lamee, and having gone through
through them methodically and diligently, they endeavour to add something to them—
or to detract something from them, or to the raise a something still more elaborate out of them;
so that the original observation, when it comes to be placed side by side with its new development, no longer bears any trace of its primitive character, but seems singular and
unlike itself in its more ethereal and theoretic metamorphoses.

If, then, this process of ultra-refinement be so much in vogue among the scientific
men of the present time, we cannot be reasonably surprised that those who followed closely upon the footsteps of the older authorities should have acted precisely
in the manner they have done; but much as they too were moved by an anxious desire
to acquire a more elaborate reputation, at the expense of the simple, primitive, and unvarnished
facts
facts of their immediate and left refined predecessor.

Let us now proceed to consider as briefly as possible the leading section of our subject, that part which embraced a summary of the chronological history of yellow fever, from the period when the disease first became known, and was first more or less systematically described, to the time when it came to be regarded as a disease in general, including a mere notice of the original observers, and the position of the source whence these investigations emanated.

In the first place, we have already cursorily noted the history of the synonyms of the disease—and have in a very few words speculated on the real and approximate cause of their multitudinous origin; and we have endeavoured to show, that they must have been the result of a series of elaborations on the primary observations.
of the earlier investigations, rather than scientific deductions fairly arrived at from the consideration of special diseases.

Having done this much then, we may go on to say that the disease called yellow fever has been long known in the West Indies, even as far back as the time when the principal islands were first discovered by Columbus and his followers. For, from some of the writings of those who accompanied that expedition, we gather the important fact that the pilots who colonized the captured islands were shortly after their settlement in them seized with a fever, the character and general appearances of which do not so materially differ from those described by some of the host of writers whose names we have already mentioned; although indeed we do not desire to attach any great importance to the mere notice of the followers of Columbus.

But it would appear that the disease first
Just dates its history from the island of Barbadoes, in the Carribean sea, where in 1647 it was noticed by M. Pines and subsequently by M. Legon who states in reference to it, that the shipping and inhabitants of that island suffered so fearfully from the disease that there were hardly any living left to bury the dead.

In 1648, Du Furt wrote on the continued ravages of this pestilence in the same island, and also mentioned the fact of its having fatally invaded some of the adjacent Colonies.

In 1671, it appeared in the island of Jamaica, just about the period when the victorious British fleet was returning from the Panama expedition; and which, in the language of the day, "brought with them a pestilential fever" of which a considerable number died throughout the island.

In 1691, the disease appeared in the island.
island of St. Domingo, at a place called Leogane, to which it was brought by the fleet of the French admiral, Ducape, and from which spot it extended to St. Christopher, and subsequently to Port de Paix, creating terrible havoc among the paralyzed inhabitants of those places.

From 1687 to 1694, this fatal malady so fearfully ravaged several places situated on the coast of Brazil, as to have created a feeling of dread and horror in the minds of the people.

Then in 1690, we have it appearing in the island of Martinique; — in 1696 at Cape Hayti, in St. Domingo; — and in 1698, at Leogane again, where, as we said, it had previously committed great ravages.

In 1699, mention is made of the disease having been conveyed to America through the medium of a fleet which went thither, and which appeared to suffer more terribly than the inhabitants on shore.
In 1703 and 6, the disease again appeared in the island of Martinique, where it had previously made itself felt in 1690; and it again also visited Cape Hayti in the years 1705, 1723, 33, 34, 39, and 40, as it had before done in 1696 and in 1702.

Segane was again visited by the old enemy of 1698; and Barbados was not passed over in 1723 and 33.

Bathagena, that famous voluptuous Spanish Colony, now for the first time felt the relentless power of the Scourge of the West; and saw more graceful and sylph-like forms totter and droop under the grasp of the tyrant, and more bright and brilliant eyes pale and grow lustreless at the sight of his demoniac proportions, than ever she remembered to have gleaned from her annals of mortality. Has the years of 1729 and 30!!

In the city of Charleston, United States.
the disease showed itself in 1732, 1739, and 1740—on each of which occasions it so terribly scourged the inhabitants, that men stood aghast at its malignity.

In 1791, the disease was imported into Philadelphia by trading vessels from Jamaica, in which island it was prevalent at the time of their departure.

In 1793, yellow fever again appeared in this city (Philadelphia), having previously descended upon New York in 1791, and upon Charleston in 1792.

In 1793, 17, 8, 29, and in 1802, the disease still continued to feast and reprint between the several places already referred to, (in an epidemic form) and it was generally regarded as an importation through the medium of vessels returning from an infected locality.

In the year 1804, this malignant disease
disease, glutted with one description of prey, abandoned its old battering ground in and about the region of Philadelphia; and longing as it were for fresher and less panic-stricken victims, transported itself to Leghorn, where it not only created terrible ravages among the people of that place, but committed even greater horrors on the inhabitants of some of the cities and towns of Spain.

In 1819, the tyrant, satiated with his Spanish hecatomb of slain, returned to the old field of desolation—Philadelphia—where having toyed sportively with the fears and the lives of many of the citizens, he finally ravaged them indiscriminately by a most malignant epidemic of 1820.

During the breathing interval that elapsed between the epidemic of 1820 and the still more virulent outbreak of 1853, Philadelphia happily enjoyed complete immunity.
immunity from the disease. But this was only to enable it the more effectually to carry desolation and destruction to many a home in the West Indies, the coast of Africa, in several of the American cities, and even in the very fortress of the impregnable rock of Gibraltar—where it diabolically stalked over the boastful colonists by involving them in one common destruction! Proud of its terrible power and gloating over its facility of progress, it then returned to America, and perpetrated the terrible mortality of 1853 and 4.

From that sad period, to within the last two years, this awful scourge of the European races has still continued in a greater or less degree to exercise its terrible sway over several of our West Indian colonies, and to pounce to its overthrow the talent and power of all Europe.

Such then is our rapid sketch of the
chronological history of this dreadful disease, its origin, and earliest notice.

Let us now pass on to the consideration of the 3rd section of our subject—viz., the limitation of the geographical and altitudinal boundaries of the disease, comprehending with them parenthetically, all those countries or tracts of territory that are liable, from their juxtaposition to the defined limits, to become more or less affected by the matteries morti, of yellow fever.

It would appear from the recent elaborate productions of some distinguished authors on this subject, that the disease spans an inconsiderable portion of the earth's surface; for we learn from their investigations, that its extremest latitudinal extension reached to between the 22°-23° degrees south of the equator.
equator, and on the other side, to the 42° of latitude on the Atlantic Coast; then as far, as the 35° of the Western seas, and finally to the 8° 56′ degree on the Pacific Ocean.

Longitudinally, considered, and with strict regard to precise locale, it extends from about the 60° to the 97° degree of west longitude. Though, from its periodic invasion of countries lying in an eastern longitudinal direction, such as badajoz, carthagena, malaga, seville, barcelona, and some of the other cities and towns of Spain, it may be said to have extended to the 2° degree in that direction.

Within this fixed geographical limit, then, this terrible scourge of the European races of races an unbounded, and almost unconquerable sway over the lives and destinies of thousands of adventurous men; establishing as its centre of malignancy the islands haphazardly scattered in the barbary sea.
the not far distant coasts of Columbia; the extensive littoral of Rice Mexico's gulf—hence to the southern portions of the American coast; from each of which it will at stated intervals push upon some unprotected region, and further whet its appetite for blood by the indiscriminate slaughter of two thirds of its people.

Those who have made the altitudinal range of the disease matter of careful observation and inquiry tell us, that in their opinion it has never reached an elevation of from 2000 to 2500 feet above the level of the sea; for at that range no case of the disease ever appeared. And they prove the truth of their assertion by instance the remarkable salubrity of Maroon Town in Jamaica, which is placed at an elevation of 2000 feet; the immunity of the summits of Mount St. Dominick, in the island of Dominica, from the disease; and which stands at only 1,500.
1,500 feet. But there they go on to show that at a height exceeding even 1,000 feet, the disease might manifest itself, and they prove this by instancing the mortality which we know frequently occurs at the Hong Hill Barracks, in the Liguanea Mountains of Jamaica, where an epidemic of yellow fever breaks out among the garrison stationed there; although these Barracks stand at an elevation of 1,360 feet above the level of the sea. And they make out a still more decided case of the limitation of the altitudinal range of the disease to the above elevation, when they give us the results of the mortality from yellow fever at stations such as Fort George, on the Island of Tobago, and Soufrière, in St. Lucia, and even Mount Bruce, in Dominica, at which places, although the respective garrisons enjoy a greater or less immunity from the ordinary forms of tropical fever, still
still do not escape from the devastating in-
casions of the European Juggernaut.

From these carefully established data,
then, we may gather this important fact,
that yellow fever never manifests itself be-
yond a certain elevation, and within a pre-
scribed geographical limit, although we
cannot venture to say it could not be taken
there by an individual affected with the
disease. But then that would not constitute
its origin, nor would it be likely to spread
there.

It may then be regarded as a disease
of low, flat, and level localities, and as one
generated out of certain morbidly agenized by
the action of high atmospheric temperature
within a certain thermal range, and never
exceeding a fixed altitudinal elevation.

We
We have now to take the 14th section of our subject—viz. the etiology, or proximate and remote cause or causes of the disease, including a cursory investigation of those atmospheric and terrane conditions that are supposed to be essentially favorable to the origin, development, and maturating of yellow fever.

If we glance at the writings of medical men on the subject of yellow fever, we shall find that they classify its etiology under the heads of predisposing, exciting, and remote. But although this arrangement would answer sufficiently well in the case of many ordinary fevers, and be more or less exhaustive of them, still it does not appear to include, in the consideration of this malady, those, or even all those morbid influences...
influences, external and internal, which seem to exercise an agency in predisposing to an attack, and in being instrumental in exciting the development of the disease.

For this reason, the most recent and apparently the very best authorities on this subject have arranged their investigations of the causes of the disease under the following heads—viz. 1. Those dependent on the individual himself, embracing peculiarities natural, organic, or acquired—and dependent upon temperament, age, sex, and race. 2. Hygienic causes; embracing the various influencing morbid agencies, such as temperature, excess of light, or in other words, the intensity of the solar rays—the decidedly electric condition of the air during the hot tropical months; and the pressure of the atmosphere as revealed by the barometric test. Then also humidity, of a terrestrial, and atmospheric character, developed at particular periods.
How are the forests and vegetation affected?
of the year, and which precedes and follows the
season-rains, which are nature's mode of regenerat-
ing her sunny territories. Then again what
might be termed a combination of heat and
humidity, which we know to follow the season-
rains, and in promoting an abundant evolut-
ion of rank vegetation, give rise to a terrible phalanx
of distempering fevers and intestinal affections. Be-
sides these, and ranging under the same second-
ary causes, we might notice discrepancies of
temperature, as manifested by scorching days,
and chilly, dewy, vapourous exhalation nights;
as also the condition of the winds, which at
one time are dry, parching, and exhausting,
and at another, cold, chilly, aqueous, and par-
ticularly disagreeable and feverish; although
we cannot but confess the opinion that dis-
crepancies of temperature will not honestly ac-
count for the occurrence of yellow fever; though
might, in a greater or less degree aggregate its development.
3. The same authorities have ranked the question of contagion under the same division of causes, and in confirmation have discussed it in all its bearings, antagonistic of the views of the non-contagionists—whichever they support and 4—th, they investigate at length the question of the infectious, or non-infectious properties of the disease.

Now, with such a mass of important facts and circumstances bearing vitally on the etiology of yellow fever before us, and ranging themselves under one or other of the four heads alone narrated, we shall be wholly incompetent to deal, unless we proceed in a most guarded and methodical manner; and endeavor, as tersely as possible, to say all we can on each individual characteristic cause, as it presents itself to us. And we cannot help determining on the adoption of an interrogational system of procedure, inasmuch as the question and answer, it will both enable us to inquire into, and sufficiently
cantly exhaust the subject under consider-

Let us then ask, in the first place, what are the causes or causes in an individual person that give origin, under certain telluric and at-

mospheric conditions, to the yellow fever?

We would answer that the cause or causes in an individual person may evolve themselves out of certain organic peculiarities, which might be natural or acquired in him; and which might be further dependent on his temperament, age, sex and race.

What would you consider as organic peculiarities in such an individual, and which would predispose him to the disease? I would regard his robust or plethoric state of health, developed in a latitude beyond, and out of the limit of the disease, as organically predisposing him to it, especially if he arrived with in the area of the malady at an unfavourable season.
season of the year, and without preparing his system medicinally, or by living temperate habits, to meet a decided change of climate.

How what would what you call acquired peculiarities conduce to the disease, and what do you mean by the expression? I mean, that by high and luxurious living shortly after arrival in a hot climate, the individual's physical system might become so gross and accreted, as to place him in the same physical conditions with the individual of the natural plethoric habit; and thus render him as susceptible of an attack of yellow fever, as the other. Of course, exposure and general indulgence would act as further exciting causes.

What temperament would conduce most readily to the disease? The sanguineous, especially at unfavorable periods of the year; and if the individual were newly arrived, and lived freely after arrival.
Would those of a bilio-lymphatic temperament suffer so readily? In my opinion, no; because in them there does not exist the same amount of physical gnostics, or the same affection for rich fare; and they are generally more alive to fear for their own personal safety than are those of the languid temperament.

You spoke of sex, which sex suffers most from the disease, and why? The male sex, and because they are more exposed to the delectating and exciting causes of the disease than females; and because the males are more intemperate in their habits than the other sex; and because they expose themselves more freely to the deleterious influences of the night air of the tropics than the females do. The European women are more regular in their habits in every possible respect than the men; and this is perhaps the great reason why they do not suffer so fearfully from the disease, unless it be prevailing...
prevailing epidemically.

You spoke of age; how does age conduce to the disease or, in other words, at what period of life are Europeans most liable to its invasion? I think at the adult age; for we find that few children die of yellow fever, during infancy, and that few comparatively fall victims to it in their old age; much as they have either become acclimatized by length of residence in a warm climate, or by coming into the tropics late in life with more or less infested systems. Besides we must not lose sight of the fact, that children can be restrained, and old people prevail upon, while the adult is headstrong and rash, and not very amenable to reason or advice. But we must also of course allow for the influence of devastating epidemics over all ages and degrees of Europe and, when children as well as old people fall already victims as the adult.

You spoke of race. In any particular race
race of men more liable to the disease than another? Yes, all the European races are more susceptible of it than the dark races, as a rule. It is, in fact, a disease essentially peculiar to the Whites, when they place themselves within the geographical bounds. Would you believe it, if any one told you, that a Negro could be seized with yellow fever? I do not know that I should do so readily, unless I learnt the entire history of the case. I myself would consider the case only possible under such a circumstance as when a male and female black's were taken at a very early age to a European country, lived there, gave birth to an offspring, which grew up there, and then afterwards went at the adult age to a tropical climate. If a yellow fever epidemic were prevalent at the time of his arrival, he might be seized with the disease, or not.

Would you suppose now that any particular set of Europeans could suffer more from the

Release
Incorrect phrase -
Atmosphere or Meteorologists
In light, atmosphere atmosphere
disease than another, and why? Yes, I could suppose to; and for this reason, that the further removed the particular European was from the extreme longitudinal and latitudinal boundary of the disease, in the greater proportion would the intensity and fatal nature of his suffering be, in comparison, with that European nearest its limit.

If you remember, under the second head, you spoke of Hygienic causes contributing to the development of the disease; and under that head you noticed temperature, light, electricity, at, atmospheric pressure, humidity, humidity and heat combined, vicissitudes of temperature, and winds. Now, let us say a few words on each of these predisposing causes. In the first place, what do you mean by Hygienic causes? I mean causes which embrace various morbid influences such as those I have mentioned already, besides causes which spring out of the
the individual himself, from his habits, pursuits, occupations &c. &c., and which might contribute, with atmospheric and terrean conditions, in concurrent action, to the development of the disease. How would temperature contribute to it? By occupying a very high thermometrical range during the summer months, and not below 80° Fahr., by promoting rapid decomposition of animal and vegetable matter, which would impregnate the air with a putrid effluvium, and render it in time loaded with morbid particles.

How would light contribute to it? By its intensity (accompanying an excessively high temperature) causing over-excitement in the system of the individual, and giving rise to languid sensations; to say nothing of the disagreeable impression on the sight which the powerful mid-day glare creates.

How does electricity conduce to the development of the disease? By being an integral
portion of the atmosphere during very hot weather, by acting very likely on the nervous system of those predisposed to the disease, and by stimulating in some unknown way their general economy.

How does atmospheric pressure conduce to it? In some way I cannot explain, but which I think goes to help out the predisposing causes.

How does the humidity of the atmosphere and earth conduce to it then?

By the humidity of both being caused by heavy falls of rain upon a previously parched up surface; by gaseous exhalations arising at night as the direct result of such previous conditions and a widely-extended surface; from minute organic exhalations from marshes and stagnant pools of water; and from all those aqueous morbidic matters saturating both the air and earth.

How would a combination of heat and moisture contribute to the production of the disease?
Disease 2.

By giving off putrid miasmatic exhalations from swamps &c.; by promoting the decomposition of vegetable matter; by causing the over luxuriant growth of rank vegetation, and which, in tropical countries, exhaled a very overpowering and sickly odor; by hastening the decay of animal matter in or about a town; and finally by causing foul emanations from open drains, cess-pools, and privies.

How would vicissitudes of temperature and winds contribute to the disease?

In my opinion only in a secondary degree, and acting only in concert with other morbid influences, localizing or diffusing them according to their degree and character.

A little while ago you spoke of habits, passions, occupations &c. of an individual conducing with other morbid causes, to the development of the disease. Mention in what manner?

As regards habits, I would say that excessive...
in diet—especially of a luxurious character—in alcoholic or vinous fluids, in immediate sexual indulgence, in excessive active bodily exertion, exposure to the night air, and the like—would all contribute to the disease, especially at certain periods, and I would say also that the mental emotions, such as extreme fear, and high nervous excitement, would be active concomitants. The occupations that would conduce to the disease would, in my opinion, would be those carried on out of doors under a meridian sun; and those also which called for the aid of intense heat, such as the blacksmiths', farriers' & c. c.

From the consideration of the above facts then we cannot help feeling how necessary the observance of strict sanitary measures is to the safety of Europeans especially in the tropics. In these remote places, a very serious obstacle exists to the continuous adoption of these measures, in the fact of the great and general want of knowledge with
with reference to the vast importance of the subject itself; its wide and certain influence over life, and the inestimable benefits which have resulted in other more densely populated parts of the world from their adoption. It is to be borne in mind that the existing misconceptions of some in regard to the nature, origin, spread, and mortality of diseases induce in their minds a strong tendency and feeling towards fatalism, quite unlike the results that men of common sense would arrive at. Persons then of this mode of thinking, and consequently of acting, are very apt, on the breaking out of an epidemion of yellow fever, to give themselves up for lost, and to make no effort whatever to ward off the impending danger. They consider themselves doomed to die, refuse general or medical assistance, and thus destroy themselves through their own folly and want of moral courage. This is no hypothetical statement, for all
all who know anything of the terrore and of the
cap of men who go there in search of fortune, know
that instances innumerable support this assertion.

Again it is a well known fact that there are
many so called clever people in these remote
regions who, in the outbreak of any epidemics,
trust themselves prominently forward to coun-
teract, by their aspersions and preconceived op-
sitions, any statement or fact which a medical
man might bring forward, and which he has de-
duced from the researches and the extensive ex-
perience of the very best authorities. These
lawgivers, who are truly more boastful than
learned, do all they can to place their asump-
tions based on a limited observation, in contra-
distinction and in opposition to the experience
and the investigations of him who has made
sanitary considerations a subject of peculiar
study.

Indeed many are aware, that in the
topic, during the prevalence of an epidemic of whatever kind, scores of persons are to be found who, having no better employment, amuse themselves by inserting in the local newspapers all sorts of ill-digested remarks regarding the disease (almost always opposed to scientific medicine) and which in many cases are greedily caught up and exaggerated by those equally as unemployed, and who make matters worse by propagating all sorts of fallacies in the garb of fact. No wonder, then, that such a line of conduct should have the effect of conveying, for a time, misery and alarm to minds not always susceptible of their influences; and it is not less surprising that such an unwise course should produce fatal alarm and unwholesome in the minds of the timid, nervous and afflicted.

He cannot wonder at these results, when we reflect on the peculiar organization of the human mind, and its singular aptitude to grasp with
both eagerness any impression, however opposed
to science, reason, or even to common sense,
which might be thrown out for its adoption by
ill-judging ones. As a proof of our meaning, let
us suppose that a European family arrived in
a tropical latitude during the prevalence of an
epidemic of yellow fever. If they were told in
the most off-hand manner possible that the disease
was contagious; that having arrived at the very
symptom of its malignity, and with symptoms fa-
orable to its infection, that they were sure
to be attacked by it, and that there was no
use in adopting any preventive measures, how
soon after this wicked statement, would the
minds of this family yield to fear and alarm,
and from being so worked upon, at last fall vic-
tims to the disease? When, by a very opposite
mode of reasoning, by sending them as speedily
as possible out of the region of the infected locality,
and giving them good advice, their lives
might be spared, and their friends, thousands of miles distant, prevented from bitterly bewailing their untimely fate!

There is little doubt but that all epidemics are fearful by the neglect of wise sanitary precautions. If this fact holds good in England, how much more does it make itself intelligible when considered within the bounds of yellow fever! There all sorts of garbage, offal, decomposing vegetable and animal matter, lie exposed to the action of the scorching heat, and more or less near to the dwelling-places of the poor or even the rich; and if not near either of these, at least in a situation in which their gaseous and other products of decomposition can be detected far and wide, and be perceived within the very houses themselves! Under such a disastrous state of things, then, it cannot be wondered at that when an epidemic of yellow fever breaks out in a tropical city or town,
down a thousand hydra-headed exciting causes should be found ready to combine with other unseen or unrecognized agencies, and thus to contribute powerfully to its propagation, and the destruction of new centers, and those who have not yet been acclimated.

We can from these observations perceive how anxiously sanitary reform ought to engage the attention of corporate bodies, or even an inland legislature; inasmuch as the strict observance of sanitary rules can do away with numbers of those predisposing causes to yellow fever, which help to develop the disease.
has a general application to a man may be accustomed to a warmer climate when coming from a southern climate.
Let us go on now to consider the 5th section of our thesis, viz. the question of "acclimatization"; and then the susceptibility of the different races of mankind to the invasion of yellow fever.

In the first place, let us inquire into the meaning of the term "acclimatization". It refers to a person who, having left a northern climate which is placed out of the geographical bounds of yellow fever, comes into a tropical one, within these limits, and having, during the first two or three years of his residence, become subjected to several forms of tropical fever, or even one attack of yellow fever, no longer is susceptible of the latter disease. Thus, when he enjoys the same immunity as the native from the disease, we consider him to be "acclimatized". For his two or three years residence in a locality in which the climate is almost invariably the same, and where the
cases of the disease are more or less permanent or frequently evolved, have rendered him so accustomed to their actions, that he no longer suffers from them as the new comer would, who brings with him a state of body peculiar to the degree of latitude whence he comes, and which renders him more obnoxious to the disease, in proportion to the northern direction of his country. We all know how, from the moral as well as the physical organization of his being, man is better capable of withstanding these deleterious effects of climate which induce, through time, a thorough alteration in his economy, than we find obtaining in the case of even the most intelligent of the lower animals. And this superiority we can only attribute to the most pre-eminent which he possesses over them in point of mind and reasoning faculties, by the aids of which he

"studies well the climate."
shoulds be to its manner his obsequious frame

And mitigates those ills he cannot shun.

It has long been observed, and daily experience teaches us, that persons arriving from other climates or other countries are more susceptible of the causes of the disease prevalent in the place to which they have come, than those who have long been resident there. The constitution undergoes a gradual change, and adapts itself by degrees to the altered physical conditions and other habits and circumstances dependent upon the change, so as in time to be better able to resist their influences. This adaptation of the system then, is the actual meaning of the term "acclimatization."

As a necessary consequence, the changes which take place in each person will naturally vary according to circumstances, in proportion to the difference between the climates of the two places. Thus, as a general rule, it may be said, that the changes as regards climate are greater in the
further removed, than in the more progressively-
localised European, though after both have un-
dergone the full period of probation, their systems
at the end of the three years may be more or less
said to be in a state of acclimatization.

It may be perhaps not unimportant to notice
here, with regard to the question of acclimatiza-
tion, that there is an idea prevalent on the
subject, to the effect that to become "seasoned," the
new-comer should have at least one fit of illness,
and that of a febrile character, before he can be
said to have attained a position of immunity from
the attack of yellow fever. Now, with all respectful
deference to the wisdom of those who hold this op-
inion, we cannot but consider the principle
therein involved as highly erroneous, if not dan-
gerous, and most mischievous; nay, much as a
timid person is always anticipating what
he considers to be the necessary trial, the or-
deal through which he must pass. This
feeling
feeling of self becomes a strong predisposing cause; and if on the other hand he should get his expected attack and recover, he becomes reckless and careless, considering himself safe, having passed the Rubicon of his imagination. No attack is essentially necessary to effect this end in our opinion; the longer a person has been in a tropical climate without suffering, the less chance is there of his being attacked. It may be added also that the subject of reasoning is one that is considered a fit object of domestic treatment. Cooling, acidulous medicines and drinks are therefore prescribed and daily given; the different organs (already in an excited state from the effects of temperature &c.) are irritated, and disease often produced.

It may be not also out of place here to observe that new-comers should arrive in the tropics during the cooler months, as December, January, and February. Physicking unwise,
Demanded by particular symptoms, is unnecessary and injurious. Due care should be taken to avoid the known causes of disease. With these precautions, experience proved that moderation in eating and drinking, in sleep, in the indulgence of those appetites, feelings, passions, and desires which have been implanted in our nature by a wise Providence, for our advantage, gratification, social improvement, and happiness, an equable state of mind, with confidence in our own powers, and the pleasant excitement accompanying a well-regulated course of application to business or study, are the best means of resisting the impressions of injurious agents, and of change of climate.

There are certain classes, however, to whom tropical climates, with all their existing evils, have nevertheless been found to be serviceable, as for example to Europeans who have been subject, or who have been predisposed in their nature
Native countries to scrofulous, rheumatic, or pulmonary complaints. In the latter disease if only the predisposition exists, the outbreak or development is often prevented; but if the morbid action has commenced or progressed, the change to a warmer climate is more apt to hasten the fatal termination. In some such cases, however, in particular stages of the disease, if its progress is not checked, still a longer truce is obtained to persons of a spare, but not weakly habit, and more especially to such as have passed the meridian of life; it being an observation founded on the experience of life, that the individuals who enjoy good health at the age of forty-five or fifty in a tropical climate will probably live to a greater age in the West Indies than in their native country. The climate seems also to agree with the constitutions of children, who, during the state of infancy, are usually stouter, and are subject
fewer diseases than are those of Europe. They are observed to 
suffer earlier marks of comprehension and intellect, and have more mental 
activity than children in Europe have; but after 
the age of four or five, they fall off in these respects, become weakly, relaxed, and languid, 
and acquire the characteristics or constitutions peculiar to the Creole nature.

This process of acclimatization, then, readiness of the individual to previously incapable of hearing, 
without injury, all those external agencies operating 
with the sheltered, would be followed up by detrimental and even destructive results, as indeed 
we have just above shown.

We cannot but regard it as a happy 
provision of nature, that the system of the Eu-

erpean should in time become adapted to the phys-

cial and even the moral conditions of the country 
of his adoption; for were it not so, how could 
his bodily organization maintain that due 
equilibrium.
equilibrium with those atmospheric and other
more recognized causes which are perpetually
in action! Indeed from the moment when he en-
ters the tropics, a vital change commences to
be perceptible in his system, and this is by-
length of years to operated upon by the cli-
mate that he is at the eleventh hour, to to
spread, as unlike himself in physical pecu-
larities, as he in moral sentiments acknowled-
ges himself greatly changed.

For it is not to be gainsaid that
Europeans do undergo a great moral change
in character after a lengthened residence
in tropical countries. This moral change
need not refer to vice, for vice is only an
attribute of the wicked. Men may and do
in a thousand different modes and states,
but vice in all its degraded forms clings only
to the really bad, and forms the chief
feature of their character. But the chang
we allude to are those of feelings and affections, of asserions, tastes, habits, convictions,
which might all be said to be fostered and more powerfully developed by the climate in which
they are placed.

Having thus endeavored to define the meaning of the term acclimatization, and show the
period necessary for its accomplishment, as well as the immunity from repeated attacks of yellow
fever such a process confers on the subjected party; we now go on to notice especially the suscep-
tibility of the various races of mankind to the disease.

We have already said that the attacks of the disease itself in a peculiar manner to all the white races
of men; that it affects them powerfully and fatally in some degree in proportion to the ratio of
their removal from its geographical and altitudinal bounds. Thus those for instance who are
inhabitants of Russian latitudes more intensely
from the disease, than would those within the limits of England or France. Then the English would suffer more than the French; the French than the Italian and Spaniards; these again more than the Americans of the southern states of the Union; and these in their turn, more so than the Europeans who live in the West Indian Colonies. These again, although acclimatized, would be more obnoxious to the disease than their native breeding; and these in turn, more so than their progeny, while others, from being the true Creoles, would escape the disease.

It is not certain that any positive proof can be advanced to show that the Black races are susceptible of the disease termed yellow fever. For our own part, we have heard of such a thing as the death of a negro or coloured individual from that disease. Indeed we recollect we now, the fearful mortality that would periodically arise among the troops stationed at
at the Hughton Barrack. Up Park Camp in St. Andrews, and even at Stone Hill, in the St. Andrews Mountains, whenever an evidence of yellow fever would break out; but we never heard of any of the black soldiers forming a portion of the several companies and similarly treated with them, falling victims to the disease.

And it is almost Providential for the Europeans that it has been so; or else how could they have been forced to carry back to their homes and humble firesides a grateful recollection of the unceasing kindness and tender solicitude of their more mentally-blessed, but still self-generous-hearted and devoted comrades in arms!!

We have now to proceed to the

symptomology of yellow fever and afterward to a careful notice of the various grades and types which the disease presents. Before closing...
What mattered?
doing so, however, we would observe, that the most recent authorities on the subject seem to have noted the symptoms as they progressively presented themselves, so as the better to be able to arrange them under the different stages that usher in each attack; and these they named
1. 1st. The stage of reaction; 2. 2nd. That of remission or calm; 3. 3rd. That of exhaustion.

The description of each of these stages by the authorities above mentioned, is so lucid, comprehensive, and admirable, that it would be detracting greatly from their value to alter their arrangement in the remotest degree; and therefore we offer no excuse for presenting them unaltered to the notice of the reader, in their native and most interesting perfection.

"The attack of yellow fever often commences abruptly in the midst of ordinary health; the patient being seized, without warning, with languor and a sense of debility, which sometime
times superfluous while he is walking the street, or attending to his usual avocations.

"Sometimes it is preceded for several days by symptoms; the individual complaining also of general uneasiness and laboring under irritableness, loss of appetite, malaise, heat in the stomach, sickness, pain in the head, swollen, with dull watering, or brilliant yellow, or red eyes, low spirits &c. In some of these cases, as well as in those which come on abruptly, the attack announces sometimes at night, generally in the after or fore part of the day. In some instances, the patient is struck down instantaneously, as if by a blow, or by lightning, and falls at once into a state of coma. Very frequently, the attack is ushered in by a regular chill, sometimes by a mere sense of coldness, in others again by complete rigor; whilst in the contrary, very severe and dangerous cases are not unfrequently characterized by an absence
absence of all symptoms of the kind.

"In those cases in which the attack is ushered in by a chilly fit, the latter often alternates with glowing flushes of heat. This state is generally of short duration, but at times it continues for twelve or more hours. It is usually followed by confirmed fever, which is more violent towards evening and throughout the night, and presents some alleviation, but seldom decided remission, towards morning. In a different set of cases, on the contrary (and these the most malignant and dangerous) there is an almost or total absence of febrile action; the pulse is feeble, soft, sometimes full or scarcely to be felt, the patient passing at once into the state of depression, presently to be described, or sinking immediately with stupor, coma, and convulsions. After the febrile excitement has become fairly established, the pulse is generally found quick and tender.
and during the exacerbations full and strong, though sometimes soft, beating from 90 to 120 times or more in a minute. In very malignant case it is gaseous; the temporal and carotid arteries during this time beat and throb strongly; the skin becomes hot, dry, harsh, and pruny; in others it is dry, and unequally or pruny, flabby, and cold, except over the centre of the body. The face is highly flushed, or pale, or purplish, and the eyes remain flabby and sometimes apparently blood-shot, hot, more or less painful, imparting a sensation similar to that produced by the introduction of grit or sand. In many instances, the ball of the eye appears to be a mass of vessels filled with blood; it is at the same time brilliant, shining, and watery— and in some instances present somewhat the expression peculiar to drunkenness. In some cases, this state continues from the commencement of the attack.
to the close of the stage of reaction; in others it
does so only partially for the first and second day.
In some instances, there occurs profuse perspi-
ration which continues to the second or third
day, while in others, there is but little change
in the temperature of the surface. In others again,
the surface soon becomes dry and cool, with a
complete torpor of the reflexes and loss of vitality.

These symptoms are usually if not al-
ways accompanied with an annoying and even
suffering pain in the head, most commonly in
the forepart and in the eyes, and shooting from
temple to temple, but sometimes only on one
side. In most cases, the pain continues through-
out the whole stage of reaction, and constitutes
one of the most distressing features of the dis-
ease. In addition to this, the patient complains
of an equal degree of pain in the back, loins and
large joints—extending from the loins to the
hips
hips and down the thigh and even lower.
The pain is generally so severe as to extort
groans and even screams.

But frequent and severe as these symptoms
are, cases occur in which the patient is great
measure, or even altogether, remains free from
them; or in some very malignant cases, the pain
in the back and limbs is obscure and dull, or is
replaced by a sense of weight and stagnation
in the head. The tongue, during this time, is
moist, and covered with a white, thin, cottony
fur, and usually, though not always, red on the
edges and at the apex, while the throat is oc-
casionally sore, to such an extent indeed as not
infrequently to cause difficulty of deglutition.

"In almost every case the gastric organs
become early involved in the morbid derange-
ment", as manifested by a variety of pheno-
mena. Nausea or the nausea of the stomach
with or without vomiting is not infrequently
an
an attendant from the outset of the attack, the stomach is generally distended—often, though not always painful in pressure,—and irritable, especially after taking any kind of drink or aliment,—frequently affected with sick qualms, and more or less propensity to yield its contents. But although these gastric symptoms often occur at an early period, they are not generally fully developed until from twelve to twenty-four hours after the outset of the attack, or at the acceptance of the second stage, when they become prominent. When this is the case, the patient complains of a burning pain, or a sense of structures, weight, distension, or oppression—sometimes overwhelming—at the macroadia, which feels as if tightly bound with a cord. Tenderness or pain in the pressure, if it did not exist before, is now experienced—at least in most cases—and becomes excessive. The irritability of the stomach increased and proves distressing—the organ rejecting...
rejecting everything swallowed, and throwing off its mixed contents when undisturbed by drink or medicine, — the act of ejection being often violent, and attended with retching, and considerable distress and pain.

"During the stage of reaction, the matter thrown up consists of usually, the drink or other substances swallowed — sometimes mixed with clear, glistening mucus, or in some cases with matter of a sea-green colour, and bitter taste. In mild cases, bilious vomiting sometimes occurs. In those of a concentrated character, bile is seldom ejected, and when it is, cannot be viewed as characteristic of the disease. While the patient suffers in this way, he usually experiences considerable, though not often insatiable thirst. But most generally, his desire for cold drinks is extreme, the natural result of the gastric heat, under which he labours. The urine during this time is generally deficient in quantity.

rise from his bed, and walk about the room—his muscular strength remaining unimpaired to a degree unusual in febrile diseases. But in a large number of instances there is from the outset universal debility, which continues to the last. Respiration in some is laborious and hurried; in others it is slow, and accompanied with deep, heavy sighing. Instances are not unfrequently found in which the patient complains of feeling as if he could not expand his chest and inflate his lungs; or experiences spasmodic pains about the chest. Nevertheless, none of these symptoms are constant attendants on the disease which not seldom runs its course without greatly disturbing the respiratory functions.

"When drawn soon after the onset of the attack, and when symptoms of reaction are well marked, and especially when local inflammation exists, the blood is sometimes found"
found of a bright natural colour, as well as dry and even cupped. In many cases, if not generally, however, it presents no cup or Buffy coat, whilst the coagulum is flabby and easily torn.

In some cases where the separation into coacoa-sanguineum and serum takes place, the latter is of a natural colour. In others it is of a yellow hue, or slightly tingecl with red and transparent.

"In another set of cases, and in some epidemics more frequently than in others, the separation does not take place, the fluid remaining for hours or altogether much as when received in the vial. In a few cases where drawn later, or at all periods in cases unattended with reaction, the blood is of a dark colour, void of all inflammatory manifestations, and not unfrequently as fluid as molasses; while in other instances, again, it

is smeared over with a pellicle of zigzag lymph, at
at the same time that the part lying at the bottom of the recipient vessel is disturbed. In the early stage of the inflammatory variety it is very hot, and has a peculiar odour which according to some accurate observers is supposed to furnish a sure indication of the true nature of the disease."

In the early stage the mind is usually disturbed. The patient is apprehensive and anxious to a distressing degree, and his countenance exhibits a strong token of the existence of those feelings especially in malignant cases, when either there is an expression of apathy, or one indicating a sense of horror or intense agony. In most cases, there is some confusion of intellect, attended with constant perspiration, though without so much derangement of the reasoning faculties as to amount to decided delirium. In some cases, however, the latter symptom assumes a more marked character, the disturbance of the mind reaching...
reaching to the degree constituting mania, attended with wild or fiery looks, and uncontrollable agitation of body. In other instances, there is a greater or less degree of stupor through which, when short of coma, the signs of distress show themselves, as through a veil. In not a few cases, though particularly in young persons of both sexes and in those of one of the sexes at two different periods of life, hemorrhages take place from one or both nostrils, during the afternoon exacerbation.

This stage or period of febrile reaction continues with little or no mitigation during a time of longer or shorter duration, varying from some hours to two or three days or more days — the duration being generally in inverse ratio to the violence of the attack. Having run this course, the fever subsides, never more, or very seldom to return — the disease being one of a single paroxysm, and is followed by a state of remission, a great apparent amelioration of almost all the symptoms now experienced.
experienced. The skin of hot before assumes its normal temperature, or became much cooler than it was. The pulse returns nearly or quite to its natural state, falling to 80 or 70 or even 60 per minute, and seldom if ever re-acquiring frequency or activity, and strength, even during convalescence, when recovery takes place. The respiration at the same time becomes calmer, and gastric irritability, with the distress attending it, disappears more or less completely. The delirium or intellectual disturbance, if it existed, headache and the pain in the back and limbs, if not previously removed, subside. The patient thus relieved from the bodily suffering and mental distress under which he had laboured, fancied himself well, is cheerful, hopeful, sits up in or gets out of bed. Sometimes indeed the result is favourable, at other symptoms do not quickly make their appearance, and convalescence is at once established. The eyes and face
face become tinged with yellow, a copious evacuation of bilious matter takes place by stool, or a gentle or profuse perspiration sets in; or often without any euhoric signs, the patient speedily recovers—the disease consisting in such instances of but one of the stages—(the first) into which it is usually divided.

Most usually however matters take a different turn. The amelioration described above proves delusive, and the occurrence of it the harbinger of a dangerous condition. The great struggle between life and death is yet to come. The physician soon learns how little he can trust to the state of amelioration he notices; for while in some cases a restoration to health has followed, as we have seen, the cessation of the symptoms of the reactionary stage, in another and larger number of cases, he finds that their improvement is very temporary, and is soon succeeded by other phenomena of a more formidable
ible character. Indeed he discovers on close inquiry, that, during the very period of tranquility which buried up the hopes of the patient, symptoms denoting the existence of undiminished danger were there. The tenderness of the epigastrium is unrelieved, and in some instances is even greater than it was before. The redness of the eye and the flush of the face have given way generally, but not always, to a yellow or orange colour, which gradually extends from the forehead and eyes to the face, neck, chest, and at last diffuses itself more or less completely over the whole surface. The urine also is found tinged with the same yellow hue. The pulse is sometimes slower than in health, and in bad cases, the patient betrays a little heaviness of intellect or stupor.

This state of extraordinary but imperfect perspiration varies in point of duration from a few hours to twenty-four. At the effusion of
of that time the symptoms already existing become aggravated, and to these others are added.
In some, but not many, the pulse becomes quick, irregular, and feeble. In a greater number of instances, it remains natural, or slower than in health, and becomes still slower as the disease advances, until at last the pulsations are reduced to forty or thirty in a minute, and are withal feeble and irregular; the heart at the same time, even in the most malignant cases, being found to beat with considerable energy and to continue to do so after the pulse had ceased to be felt at the wrist or other parts. The tongue becomes loaded, particularly in the centre; moist or dry, with or without redness of the edges. Thirst increases and is often intractable; nausea and vomiting, attended with heat in the stomach, appear again, and become constant—the matter ejected being mixed with streaks or flakes of a red or brownish colour. The
The respiration quickens, or becomes embarrassed; the skin becomes cool, dry, and parched; the anxiety of the pericardium is now distressing, accompanied with a sobbing kind of sighing, constant hiccup, and occasionally with an expression of deep anguish and despair.

In many cases the mind remains clear and undisturbed: the instability and extreme distress of the febrile stage is replaced by an extraordinary degree of apathy, and the countenance conveys the expression of resignation or indifference as to the issue. In other instances, the patient at the time is affected with a kind of cheerful delirium, imagining himself well. In others again, though most delirious, he remains a long time in a deep reverie; and when roused from this state, starts with surprise, and answers in a hurried manner. Many on the other hand will apparently in great distress answer that they are well.
As the disease progresses, this condition of mind is often succeeded by another of a different kind. Some now supervenes, from which the patient is aroused by the act of vomiting or by dreams. When thus aroused, he fancies himself restored to health, attempts to get out of bed, but soon relapses into a state of insensibility. In many instances, debility is more or less considerable. In not a few, however, the patient retains to a late period of the disease, his muscular strength; to such an extent indeed, as to get out of bed and walk about his room, and even further if permitted. The physiognomy is peculiar and striking, and as is well remarked by Dr. Jackson, conveys at once an impression of the malignant and dangerous nature of the disease.

It is not uncommon to find the tongue, becoming after a short time cleaner and moist than before. Ordinarily, however, its foulness increases
increases. It is sometimes tremulous, and with difficulty protruded, and when the patient succeeds in drawing it, he not unfrequently forgets to draw it in again. It is tremulous and dry in the centre, or smooth, red, chapped, with edges in the gums, lips, teeth and nostrils, or again white on the edges, with a black streak in the middle. The vomiting as the case advances, becomes less frequent, without however being accompanied with diminished irritability of the stomach, which rejects everything introduced into it. But while the frequency of the vomiting, when not excited by drink, somewhat diminishes, the quantity thrown up at each ejection increases, sometimes to an extraordinary extent. The act of vomiting which affects momentarily respects to the patient being effected by a sudden contraction of the stomach and of the parts concerned which propels the contents to a considerable distance. From this con-
At times recovery not infrequently Takes place generally by a gradual receding of the symp-
toms, but sometimes by an evident critical.
resolution—the pulse acquiring force and ac-
tivity, the skin becoming warm and moist,
and the irritability of the stomach lessening and
gradually disappearing.

But in other cases, the disease progresses
and presents symptoms of a still more for-
bridable character. The matter vomited now
consists of brown, blackish, or chocolate-colored
flakes or particles, diffused in a colourless
liquid which though at first slightly tinged
by them, ultimately becomes black and opaque,
resembling coffee-grounds floating in a serous
fluid. In some cases putrid and digested blood
is thrown up. The matter vomited is acrid—
often stinging the throat, tongue, and lips.
Usual, however, as the occurrence of such vom-
titing may be at the present period of
Three albumens or bloody

or is it the yellowwash to you wise
enraged to bilious yellowwash?
The disease, cases occur in which it does not take place, and the patient dies without having thrown up black matter. Be this however as it may, its appearance portends the most imminent danger; for though some recover after this discharge, the number is very limited.

The abdomen is soft, seldom distended, but the stools when they occur at this time present much the same character as the matter ejected from the stomach, or assume the appearance of tar or molasses; or again consist of blood mixed or not pure. The urine becomes unnatural in appearance, or of a dark colour and limpid. It is now often suppressed from deficiency of secretion, or simply retained. Sleep is interrupted, and attended generally with painful dreams. The face and breast become spotted as with ink. The jaundice (which though so frequent an attendant of the disease as to have given it its name) is nevertheless often especially
especially in rapid cases, totally absent) becomes more diffused and of a deeper hue. The skin is now often of a deep, dusty yellow, or brown, mahogany, brume, or purple colour, imparting the idea of blood settled in a bruised part. The fluid becomes stagnant in the capillaries, forming petechiae, vesicles, or large blotches, and accumulates in dependent parts and the extremities. It vesic in many cases from the nostrils, tongue, gums, anus, eyes, leech-bites, blistered surfaces, and the puncture of veins, and is like all the blood in the vessels dark-coloured and discoloured.

As the disease advances, the symptoms described increase in intensity, and are combined with others imparting a still higher degree of malignant and danger. Accidents now set in, and is soon attended and accompanied with hippocratic countenance, difficulty of swallowing, and a slow and stridorous respira-
atun—often of a convulsive character.

The pulse becomes small, feeble, intermittent, heat, and finally fades away. The algæe evaucations are highly offensive of cadaverous smell, and like the urine, which if at all secreted assumes a blackish and bloody appearance, are voided involuntarily. Subcutaneous tendinum not unfrequently follows; so also gangrenous spots—and in a few cases buboes, carbuncles and ulcers in various parts of the body. Loss of speech, dimness of vision, insensibility, low muttering, delirium and coma at times superscience; but it is not unusual to find patients retaining their intellectual faculties to the last unimpaired. Next we have rattling in the throat, cold, clammy sweat, cadaverous and peculiarly offensive odour of the body, coldness of breath, the whole ending in death, which often occurs quietly but in other instances in the midst of violent convulsions. The duration of the disease
disease varies, according to the nature of
the case, from three to nine days; sometimes
it is shorter, at others longer, while in
cases of recovery, the convalescence is usually
secure and rapid.

Our authorities having thus generally
purged the symptoms observed in
yellow fever, at a most interesting and
instructive length, pass on to the con-
sideration of their phenomena in the
aggregate, and under the several groups
in which they arrange themselves. And
they proceed to do so, by classifying
them under two great divisions or
species—marked by two opposite con-
ditions of the system; the one character-
ized by phenomena denoting an
inflammatory vascular action; the other
marked by those denoting a state of
asthenia, impaired vascular action or
congestion.
What author?
congestion. Each of these two divisions is further subdivided into a number of species which arrange themselves under their respective heads. Thus we have the inflammatory species, including the intense, mild, and ephemeral grades of yellow fever, and the asthenic or congestive species, including the aggravated, adynamic, walking, and aphroplectic grades of the disease.

Our author takes up each of these grades systematically, beginning with the intense inflammatory, and gives so excellent and beautiful a resume of them, that we cannot do better than make use of his own expressions. He says:

"Cases of this intense grade of the inflammatory species are usually ushered in by a chill, preceded by the premonitory symptoms enumerated above. In some patients, there is only a sense of coldness;"
coldness; in others complete rigors, the attack
commonly coming on at night, and the chill,
when it occurs, often alternating with flashes
of heat. This is succeeded by febrile re-
action, which generally attains considerable
intensity. The pulse becomes frequent, strong,
and full, beating from 90 to 120 strokes in
a minute. The skin is hot, and though
sometimes moist, is usually dry and parched.
The temporal and carotid arteries beat with
considerable force; the face is
highly flushed; the eyes are remarkably red
and bloodshot, and the balls often appear
as if the vessels were gorged with blood.
They are, besides, hot and painful—feeling
as if they contained sand, and pricking.
brilliant, shining, and watery—while the lids
are sometimes swollen. The patient complains
of intense pain in the prefronto-orbital region,
and severe pains in the back, loins, large
joints,
joints, and limbs. The tongue is moist, covered with a white or yellow fur, and usually of a crimson red at the edges and apex. The gastric organs soon share in the morbid derangement. There is a sense of anxiety, constriction, and intense heat at the precordia. Nausea soon supervenes, increases rapidly in severity, and terminates in retching and vomiting. The stomach is often distended and in some cases, painful on pressure, and generally affected with an almost inconceivable irritability. These gastric symptoms, though early developed, are not usually so to any extent, until from twelve to twenty-four hours after the outbreak of the attack, when they assume a permanent character, and constitute a source of great suffering and distress.

The matter thrown up consists of drinks and other articles swallowed, mixed with a clear, glairy mucus, and occasionally with
with a substance of a sea-green colour, and bitter taste. In a few instances, bile is
excreted, and appears to consist in that
which was contained in the gall-bladder
or duodenum at the moment of the attack.
The urine is deficient in quantity, high-
coloured, and often sedimentous. The bowels
are ordinarily constipated, and difficult to move;
the matter evacuated being at first soft
and feculent, and sometimes tinged with
bile; then when no cathartics are used,
becoming of lighter colour, and of starchy,
cream-like appearance. The patient suffers
from restlessness and palpitation; moves, sighs,
shifts his position constantly, and feels a
disposition to leave his bed and walk
about. The respiration is laboured and
hurried, and the countenance presents an
anxious, gloomy, sad, or unpatient expression.
The patient is apprehensive and anxious to
a distressing degree. His intellect is confused, and he experiences constant delirium. Delirium, properly speaking, seldom occurs. In some cases, however, it makes its appearance, reaching at times, even from an early period, to the degree constituting mania. This stage of inflammatory reaction continues with but little or no mitigation from some hours to two, or three, or more days—generally from sixty to seventy-two hours—and is succeeded by the state of remission. The pulse loses its feverish excitement, and becomes almost natural or even slower than in health; the skin regains its natural temperature; the pain of the head, limbs, and extremities disappears, or is greatly diminished. The confusion or derangement of mind likewise subsides, and the patient either thinks himself or endeavours to represent himself well.
is cheerful, sits up in, or gets out of bed, and expresses an appetite for food. The redness and glistening appearance of the eyes are no longer apparent, but are replaced by a yellow tinge of the conjunctiva. This state of relief (which proves but too often delusive, few cases ending at this time) continues from a few hours to twenty-four or thirty, and gradually glides into the succeeding stage. Restoration follows—the pulse becomes rapid, irregular, and depressed, or, as is more usual, it is of natural frequency, or even slower than in health. The tongue becomes loaded with a brown fur, presenting a dark streak in the middle, and is swollen and moist. As frequently it is clean, with a slight, pasty coating, or of a dark grayish red. Occasionally, at an advanced period, it is bloody or dry, black and chapped, with dark-coloured spots about the mouth, lips, gums, and nostrils. 

Respiration
Respiration quickens and becomes laborious; thirst increases, and is often miserable. The anxiety at the precordial becomes distressing, and is accompanied with hicouche and sighing. The pain at the epigastrium increases, and in many instances becomes intolerable. It is increased during vomiting, which is now effected without difficulty, the contents of the stomach being spouted out, sometimes to a considerable distance by a sudden contraction of the stomach and abdominal muscles.

The matter vomited now consists of brown, blackish, or chocolate-coloured flakes or particles diffused in a colourless liquid, and gradually acquires, in fatal cases, the qualities characteristic of the black vomit already described. In some cases, the vomit give passage involuntarily to black acid, and offensive discharges, sometimes having
having the external characteristics of tar or molasses, at other times consisting of blood. The jaundice, which had commenced towards the beginning of this stage about the forehead and eyes, next extends to the face and chest, and at last covers the whole surface. It gradually acquires a deeper hue, the skin being of a deep duney, or of the brown, mahogany, orange colour mentioned. In many instances, however, it is absent, restricted to the conjunctiva, or shows itself only after death. In many cases the mind is clear and undisturbed, and remains so to the last—the patient not unfrequently exhibiting an extraordinary degree of apathy, with an expression of resignation and indifference.

In other individuals we notice the various modifications of delirium enumerated. In many instances the debility is more or less
less considerable; but in as large, perhaps a larger number, the patient regains his muscular strength, if he had lost it before, and retains it often to the last to an almost incredible degree. As the case advances, the body becomes cold and clammy, the urine is blackish, or bloody, and often voided involuntarily. More frequently it is suppressed or simply retained. Haemorrhage takes place from the natural outlets, the blood being dark and dissolute; and death, preceded by intolerance of light, photophobia, metemesis, eisguptus, eructation of offensive gas, subcutaneous tendinum, convulsions or coma, closes the sad and distressing scene.

The rapidity of the disease in this grade is generally proportioned to the violence of the inflammatory action of the second stage; the latter, in its higher degree, overwhelming and disorganising
rapidly the vital organs, and thereby hastening the occurrence of them of changes incompatible with the continuance of their functions, and as a necessary consequence, with the continuance of life."

Our author concludes his remarks on the above with the observation that death is not the inevitable result of this grade of the inflammatory species. But he thinks that recoveries do not often occur in the most violent cases, and when they do, he believes that they take place before the accession of the black vomit and succeeding symptoms, and are effected by a gradual amendment of the symptoms, sometimes through the instrumentality of some critical movement.

He then goes on to review those symptoms which constitute the mild grade of the yellow fever. He observes: "In this grade of the inflammatory species, the symptoms are much the same as at the outset as those just described, though less violent, palpable, and tumultuous. The disease presents similar premonitory symptoms, and is often preceded
Preceded by chills or rigors. The pulse is full, strong, and frequent, between from 90 to 120 strokes in a minute, or it is comparatively corded and hard; the skin is hot and dry—sometimes soft, with a disposition to diaphoresis.

The pain in the orbits, back, and forehead, is intense; the face is flushed, attended at first with cerebral excitement, producing occasionally a flow of spirits amounting almost to slight intoxication; stupor or delirium sometimes supervenes, but in many cases, the intellectual functions are unimpaired. Respiration is hurried, and often laborious—the tongue is slightly furred and moist, with more or less redness at the edge and apex. As the disease advances, this organ often becomes dry and covered with pustules, and assumes sometimes one of the other appearances described under the spreading head. The uneasiness and sense of heat at the epigastria are very troublesome; the thirst and desire for cold drinks great, nausea and vomit.
ing are distressing, and with difficulty controlled— and
the bowels give passage to dark-coloured and offensive
discharges. This period of excitement continues, as in
the former grade, from a few hours to two or three days;
but unlike what takes place in that grade, it is at-
tended with more decided exacerbations and abate-
ment of the fever, making, in some instances, an
approach to decided remissions, and often extends to
four or five days. It is then followed by the afore-
mentioned state of remission, which is also more perfect,
and in many cases, the harbinger of recovery—convalescence
dating from the subsidence of fever which takes place at
this period; and the disease which, in such cases, con-
spires of only the first stage, going off with bilious
critical discharges by the bowels, a moisture over the
skin or diaphoresis, a copious emission of urine, or a
hemorrhage from the nose, with or without jaundice—
often without any evident crisis. In other cases,
however, this state of metaphysics proves delusive,
and is succeeded by many of the symptoms enumerated
as constituting the closing stages of the preceding grade. In some cases, they assume a character of great malignancy, and if not arrested by art, or the recuperative efforts of nature, carry off the patient in the manner mentioned. In others, they often rest

of the black vomit, and the patient is gradually restored to health by the intervention of art, seldom through the unaided efforts of nature. In others, again, though in very small numbers, the patient is saved, even after the superintendence of that and other supposedly fatal symptoms. But whatever be the apparently visible character and issue of these cases, they raise the fact that the yellow fever, in this grade, is evidently less malignant in its nature, and within the range of remedial agencies. The bowels are acted upon without much difficulty by cathartics or enemata, and the operation is productive of relief. The pain and afebrile of the head and other parts are under the control of proper depleting remedies, general and local, of poultices, etc., the gastric irritability, though

Obstinate,
obstructive, is not always as difficult to manage as in the preceding grade; and diaphoresis is generally obtained by external and internal means."

The next proceeds to notice the ephemeral grade of the disease in the following manner:

"The disease, in this grade, is mild and manageable. It is, as may be presumed, of short continuance, terminating sometimes in a single day from the action of proper and even mild treatment. In other cases, it continues from three to five days, in which event, it is sometimes attended with slight and imperfect remissions. But although mild and easily under the control of art, and often removed by the unaided efforts of nature, the disease, in this grade, presents the same features, the same outline of phenomena, as characterize the other two grades, and enable us to form a correct diagnosis.

"Like the others, it is usually preceded by a chill, while the period of reaction is attended with the pain in the superorbital region, in the loins, the joints,
joints and limbs, noted in the other grades; but in
the one under consideration, these symptoms are not
as intense. The eyes present the suffused, shining
and glistening appearance described; the face is
flushed; the skin hot, dry, and hard to the feel;
delirium seldom attends, but the mind is usually
confused; the urine is scanty and high-coloured;
the respiration is sometimes embarrassed, the pulse is
quick, frequent, and full; the tongue is often Loaded
and red; and the thirst is sometimes considerable. In
the milder cases, the stomach generally remains
undisturbed, or is slightly affected. In the more
severe cases, however, nausea and irritability of the
stomach, and copious vomiting are constant attendants;
the matter ejected consisting of the ingesta mixed
with mucus, and of bile—the quantity of the latter
being much larger than in other grades of the dis-
ease. These symptoms which exhibit evidence of
an open and well-developed febrile paroxysm sub-
pire sometimes suddenly, at other times gradually, the
oniosis
This being marked by increased alvine evacuation, by diaphoresis or epistaxis.

Having thus considered, in their several grades, the inflammatory species of the disease, in a manner both interesting and most highly instructive, our author next proceeds to review the congestive species, which he divides into 1st, the aggravated grade; 2d, the adynamic or typhoid grade; 3d, the walking grade, and 4th and lastly, the apoplectic grade.

He then goes on to discuss the 1st, or the aggravated grade of the congestive species of the disease.

"Dangerous and frequently fatal as may be the first grade of the inflammatory species of yellow fever, more apprehension must be felt when the disease assumes the congestive form. In this, whatever be the grade it presents, the efforts of art prove but too frequently of little avail, those of nature are powerless, and the large proportion of individuals thus attacked are doomed to almost certain death.

"In the inflammatory form, we have seen that the disease..."
the disease, especially in its milder grades consists sometimes of but one of the ordinary stages, convalescence commencing at the period of remission; and that in other cases it consists of the first, second, and portions only of the third stage, the patient recovering before the accension of adynamic symptoms. In the congestive afflues, the disease passes as it were immediately from the first sign of indisposition to the last stage, without going through that of reaction. In this grade, the attack comes on suddenly—and is attended from the outset with considerable prostration—quickly followed, in many cases, by godliness, stupor, almost unconquerable disposition to sleep, loss of memory, and a desire to be left alone. Together with this stupor, there is a sense of weight and oppression rather than acute pain in the head. In a few cases, there is delirium, either transient or ending in confirmed coma. The face is full and sunken or livid in colour, with an expression of countenance either stolid or apathetic—the patient appearing
appearing in a taciturn mood, and uttering no complaint. In other instances, he is entirely insensible; with his eyes wide open—and presents at times an expression indicative of a feeling of distress, horror, and even intense agony. The acute pain in the loins and extremities, noticed in the inflammatory phase, is replaced by one of an obscure character; and a feeling of helpless debility about the spine, most distressing about the sacrum, sometimes attended with a paralytic failure of the lower extremities. The eyes have a dull, glossy, red or drunken, idiotic look, with, in some cases, a dilatation of the pupils, and a sleepy motion. The state of the skin varies in different cases, but is always deficient in tone—dry, dense or Vincent, or sometimes covered with, and as if melting in sweat. It is generally cool, sometimes cold, except at the central portion of the body, which is hot—in some instances smooth and white, and occasionally less, more or less completely its sensibility and irritability. The pulse varies considerably in regard both to frequency.
Frequency and expansion—being sometimes accelerated, at others not more frequent than in health—sometimes fall at other times small. But it is always weak, and offers no resistance to the pressure of the finger—and is occasionally almost wanting at the wrist, though at the time the heart and the carotids may be throbbing forcibly. As the disease advances, it diminishes in frequency—the beats not amounting at times to more than forty, or even thirty, in a minute. In some cases it becomes intermittent. When blood is drawn, it is generally found dark or discoloured—and seldom retains its natural character.

"During this time, there are tenderness of the epigastrium, and tension of the hypochondria—weight and oppression at the precordia. The stomach becomes early irritable—vomiting soon follows—the matter ejected rapidly, assuming the character of the deadly black vomit. The discharges from the bowels are scanty, cream-coloured, purulent, or gelatinous; sometimes they are of a pea-green colour, or black and bloody. The respiration is labi-


torious. The tongue, in some cases, natural, at others, it is at first pasty - with patches of white fur, its edge and after being red. Occasionally it appears as though seared with a hot iron. It is often tremulous, and when the patient puts it out, he often forgets to draw it in again. In some cases, the tongue becomes dry - the papillae being at the same time separated by deep fissures. Besides these, we have erythema, raw throat, deep and interrupted sighs, hemorrhages of dissolved blood from some one or other of the natural outlets - a yellow or bronze colour of skin - suppression of urine, extreme restlessness, low, monotonous mumbling, and other symptoms denoting the utmost danger, or the approach of death.

In some cases of this variety, the disease is principally characterised by an overwhelming oppression at the precordial, attended with slow, laboured respiration - deep sighs and piteous groans. In others, the stomach is the organ most implicated, the patient being affected with constant vomiting, and intense epigastric distress - the whole soon followed by black vomiting.
and death. In a different set again, the pulse is nearly natural, the tongue clean, and the stomach calm. But this is accompanied with excessive restlessness, and great anxiety and distress, soon followed by black vomit and fatal collapse.

"The symptoms enumerated above are characteristic of the more intense form of congestive yellow fever, from which but a very limited number of those attacked recover. It may not be improper to remark that in some instances the disease, though marked by the same train of phenomena, assumes a less formidable character, stops short of the black vomit and other fatal symptoms, and proves comparatively mild and manageable."

He then goes on to speak of the adynamic or typhoid grade in the following terms:

"This grade, which occurs in persons of deficient vital power, or under circumstances tending to foster or develop the typhoid diathesis, is usually ushered in by a sense of chilliness, which is succeeded by one of burning heat partially distributed over the whole body, and of
affecting principally the under parts of the arm, and inner surface of the thighs. The circulation is depressed, the pulse being small and weak. The eyes present a stringy appearance; the head is severely painful, and attended with confusion of thought, and dimness of vision. The skin assumes an olive hue, and is covered with petechiae or petechies. Hemorrhage from the natural outlets, cheek-bites, &c. follow, as also eruptions about the nose, mouth, or the parts—gangrene of blanched surfaces; sometimes anthrax, buboes, and more frequently poisonous infilations under the skin, or in the interstices of the muscles.

The walking grade of the congestive species of yellow fever our authority thus proceeds to discuss, briefly yet most comprehensively:

"In this grade the functions of organic life appear to be at first alone complicated, those of animal life remaining almost untouched. The patient, though sometimes in bed, is found more frequently rambling about his room; and indeed he at times walks..."
walks about the streets for recreation or business. And though in some instances, he states that he is weak, at others he exhibits at intervals or throughout marks of considerable muscular strength. He complains of nausea, denies his being ill, amuses himself in pastime or otherwise, and to a casual observer, appears to be slightly, if at all, indisposed. To the physician, however, matters appear in a different light; for he may generally observe that the patient exhibits an unusual expression of countenance—dull and listless. The eye is watery—the complexion is almost of a marbled color—while the pulse is found to be exceedingly weak, and even totally absent. Black vomit overtakes him, even while occupied on the way mentioned, or very soon after, and death speedily ensues.” He finally concludes his elaborate description of these various subdivisions, with a comment on what he terms the apoplectic grade of the disease, and in the following terms:

"In some of the cases classed under this head,"
head, the patient is struck down suddenly, as if by lightning, with stupor, coma, and death, preceded by convulsions, soon follows. In other instances, the progress is less sudden. Without even the slightest premonitory symptoms, the patient is in an constant state of lethargy and confusion of mind. He complains of dull pain and fulness of the head, together with a phlegmotic state, and considerable debility in the legs, coldness, debility, and a sense of weakness in the spinal region. The pulse varies in different cases in point of fulness and frequency, but is always weak, and finally becomes fluttering. The skin is cold—sometimes dry and flabby, but generally moist or bedewed with cold perspiration. The stomach is sometimes irritable. In the meantime, the patient lies as if stunned, with dilated pupils and an expression of gloom on his countenance. From this unpromising state, an effort at reaction occasionally takes place, but this scarcely ever leads to a successful result. More generally, the patient becomes
become perfectly comatose; the eyes assume a
glasy appearance, the pulse fades away; involuntary
discharges and profuse hemorrhage supervene, and
death finally closes the painful and distressing scene.
Having, in the preceding pages, entered into a careful and detailed narration of the symptoms, pathology of yellow fever, as well as the consideration of its several grades and types—let us for now pass on to notice under Section 7 its nosological position, and to endeavour to define as briefly as possible its distinctness from the marsh, remittent and other forms of fever.

In the first place we find, that the disease is localized among the Pyrenees of Cullen, and that it is associated with the intermittent, remittent, and the bilious remittent fevers of the inter-tropical regions, which latter diseases have been regarded by many as varieties of yellow fever, each varying only in degree, but (according to their view) not in character, while on the other hand again, others regard yet low fever as a disease sui generis—different and distinct from the others.

Sometimes, malignant cases of remittent fever
or even the inflammatory seasoning fever to which Europeans are subject when they migrate to tropical or warm countries, might assume so nearly the characters of yellow fever as to cause some little difficulty in distinguishing between them, but the difficulty is chiefly owing to the mildness of the symptoms at first, and to the circumstance of yellowness of the skin and vomiting of a dark brown or black fluid, being observed in many of the malignant remittent cases, as is observed in the black vomit and yellow tegumentary coloration in yellow fever.

The disease differs from the malignant cases of remittent fever in being more silent and insidious, and yet rapid in its course than the latter, which are more open and manageable.

In the second place, when the body becomes affected by the poison of the fever, there are furnished indications of a greater or less shock, sustained by its vitality, and of a marked contamination.
contamination of the circulating fluids and even of the solids, and these indications appear earlier and more decidedly in this distemper than in the malignant forms of remittent fever.

Then in the next place, jaundice, mental depression, apathy or delirium which supervene at the outset in this disease are much longer in appearing in any form of the remittents; then also the peculiar lemon-coloured tinge of the skin is more marked and early developed in yellow fever than in the most malignant remittent cases.

Then the early accession of nausea and vomiting and the peculiar epigastric distress accompanying these symptoms mark its difference from the other forms of fever.

Then also the character of the pulse, and its rapid rise and frequency after the development of the poison of the disease, is a distinctive proof of its difference from the other fevers.
fevers.—

The state of the eyes and conjunctiva, the
diffusion and tumefaction of the features, the
severe and intense frontal and supra-orbital
pain— the peculiar state of the tongue and
its papillae— the acrid, burning sensation at the
stomach, the sense of constriction at the praecordia
the thickened, moist, clammy, or hot dry and
burning character of the skin— its want of sensi-
bility or irritability, the senigultus, the scanty
or total absence of urine— costuwinep— subcutitus
tendinum, vibices & c.— all serve further
to distinguish this malady from any other
fever.— Beside these diagnostic marks between
yellow fever, and the worst forms of remittent
fever, we must bear in mind, as Dr. Cipkland
lets us” that malignant or bilious remittent
fevers even in their most intense grades proceed
entirely from malaria, or emanations from
endemic sources of disease of a more or less
Concentrated
concentrated kind, and present more or less marked
promiscuous." — While on the other hand "yellow
fever appears independently of endemic or terrestrial
sources or malaria, and proceeds from an infectious
or contagious poison which however formed originally
infects the healthy by contaminating the
air immediately surrounding those already
affected, or which being absorbed and retained
by other bodies is afterwards given out from
them on exposure to the air and adjoining
objects."

Then we find that the yellow fever differs
from the plague in being attended with greater
febrile excitement — in the absence of carbuncles
buboes, and enlargements of the lymphatic
glands, and in the black vomit being
always peculiar to it, whilst it is never seen
in the plague.

The disease also differs from scarlet or
typhoid fever, by the great want of accordance
In their individual symptoms, course, and duration.

In lymphoid fevers, vomitings are very rare indeed, the diarrhea always accompanying it is not present in yellow fever, where we feel have a state of extreme constiveness instead, and where the stools are different from those of the lymphatic case. Then in lymph, we have eruptions breaking out over the body, prostration of strength and a slow progress in the course of the disease, while in yellow fever, we have no such eruptions—no such slowness of progress or bodily prostration—but on the contrary a very rapid course and quite a different character of issue.
We have now to consider, in this the 8th section of our subject, the Pathology of Yellow Fever—so far as it has been made known to us by the investigations of the French commission—and by the recorded observations of enlightened medical men located within the boundaries of the disease, as also a brief inquiry into the altered conditions of the fluids and solids of the body as revealed by post-mortem examinations.

The morbid anatomy of the disease is a subject of considerable importance, no less as from a knowledge of the changes discovered in the several tissues and organs of the body after death, alone can we hope to arrive at a correct view of the seat and character of those morbid actions from which arise the pathognomonic phenomena.
phenomena of the disease.

Let us proceed to consider then, these changes methodically— as they in the first place present themselves externally in reference to the body—and then secondly with regard to the several visceræ. But before doing so we must observe that, many agree in affirming that when the disease has proved quickly or suddenly fatal, or run a rapid course, no organic or structural alteration, appreciable to the senses, can be discovered on dissection, all the organs and tissues exhibiting apparently their normal condition, without thickening, softness, swelling, congestion or redness. Or too little of any of them to enable us to refer to them any agency in the effect produced.

But
But, then, again others seem to think, though in a very few cases, no perceptible morbid lesions appear to exist; yet in the majority of them, sufficient changes can be found in one or more parts, external and internal, to lead to the identification of the disease; and to further the study of its pathology.

Externally then, the surface of the body of a patient dead of yellow fever presents a yellow, ecchymosed coloration, varying from a light to a dark orange, or brown hue. In many cases the skin is of a greenish mahogany, or leaden colour; a purple or even black; and the discoloration is the more evident in the trunk, especially the back, and face, and
on depending parts, such as the scrotum, penis, fingers, toes and ears, than on other the upper or lower extremities. There is observed also an extraver- 
sation of blood in the cellular tissue, which presents the same dis- 
coloured character, as the integumentary surface. The face, in a death 
from yellow fever, almost always 
presents a tumefied appearance, especially if the patient was of the 
sanguine temperament. The brain and spinal cord 
do not appear in this disease 
to present, pathologically, any 
appreciable lesion; or at any rate 
any indicative of the existence of 
their inflammation; although 
some observers tell us that they 
have found the perioranium, the 
...
sinuses, and vessels of the brain more or less gorged or congested with blood, and the brain and the membranes in some cases injected with vascular patches, and with a yellow coloured fluid effused into the ventricles.

Some observers have tried to localize the pathology of the disease in the ganglionic system; and they have fixed upon the semilunar ganglion and the solar plexus as also the majority of the visceralplexuses of nerves, as the principal seats of the morbid changes in yellow fever; and they take their data from the more or less inflammatory condition in which sometimes they find these several structures, but then we know that frequently similar changes occur in these parts in the case of typhoid and other
other depreasing forms of fever, so that no certain dependence can be placed on their morbid alteration, pathognomonic of their pathology in this malady. The investigation of the thoracic viscera throws no apparent light on the pathology of yellow fever; for the lungs and pleura are said to present no appreciable change from their ordinary normal condition, though the laborious breathing might have been supposed to have produced some slight effect on them.

The only organ lying within this cavity, and which appears to be pathologically altered in its structure by the disease is the heart, which under the microscope is said to present a molecular degeneration of its striated fibres. This fact has been
been repeatedly observed by Professor Riddell, of America — and he appears to have called the attention of his professional brethren to it, especially during the epidemic of yellow fever which prevailed in New-Orleans in 1853. Besides this structural change in the muscular fibres of the heart, the organ has been found darker in colour than natural, and more flabby, soft, and lacerable; then the ventricular cavities, especially the right, have been found filled with concretions of an albuminuous character, varying in size and consistence — and of a transparent yellow colour — like amber, or some clear jelly, and which are said to project even into the aorta.

The pericardium does not generally seem to present any morbid change though
though sometimes it is found to contain a quantity of yellowish, or reddish fluid, and the lining membrane of the heart appears in some cases to be slightly tinged with red, while in others no appreciable alteration in its structure can be detected.

But of all the organic viscera of the body the stomach is the one which appears to be most generally and seriously implicated by the disease, and in which marks of its effects can be most frequently discovered after death. On examining it externally then it presents sometimes a more or less yellow coloration, but not always. On cutting into the viscus we find that there immediately escapes a greater or less quantity of dark coloured fluid, similar to that ejected
by the patient prior to death, and which is known by the appellation of "black vomit." Removing this, and coming gently down upon the mucous membrane, we find it more or less inflamed or diseased, and presenting changes due to a previous inflammatory condition. These changes have been made the subject of careful investigation by many medical men, and we have given to us, as a summary of their observations, the following facts:

1st. In some cases the stomach is contracted, in others distended. 2nd. Longitudinal ruge enlarged, surface vermicular corrugated and thrown into folds. 3rd. Capillary vessels injected, with blood to a greater or less extent, or even gummy.
4th. Redness sometimes intense, at other times lighter in colour and varying in tint.

5th. Spotted discoloration of mucous membrane - either entire or limited to the cardiac, or pyloric orifices of the stomach or to the greater curvature of that viscus.

6th. Membrane presenting the appearance of abrasions or pits - conveying the idea of a portion of the tissue having been removed.

7th. Sometimes mammellated.

8th. Thickened and opaque whether mammellated or not.

9th. Sometimes softened (when the mammellations even exist) and easily detached.

10th. An effusion under the mucous membrane sometimes present, especially when the disease has been very malignant.
The morbid changes observed in the intestinal canal after death from yellow fever are said to be the following.

Beginning with the duodenum we shall find it of a yellowish colour, studded with patches of a red, brown or even black hue, and which are the result of the congested state of the capillaries distributed in the part.

Laying it open we shall find in all probability the mucous surface of this portion of the canal still more vascular than its outer wall and its contents to consist of either bilious excrementitious matter or of excrementitious matter presenting a brown, black, or tarlike appearance.

The jejunum and the ileum present also changes more or less similar to the above but not in so marked
a degree. In either of these portions of the small intestine, invaginations may occur.

Next to the stomach, the liver may be said to be the only other viscus which presents any important appreciable lesion in a case of yellow fever. Pathologically examined, it is found more or less enlarged, but this state of enlargement is not always persistent, inasmuch as some observers have found it either unchanged in normal size or very much shrunk. Then as to colour, it has been described by some as presenting a light, marmoreal, yellow, flesh butter straw, coffee and milk, green, yellow, buff, gamboge, light-orange, or pistachio colour, any of which might represent the actual appearance of the organ.
in the disease, and further, that in some cases the dechloration occupies the whole surface and pervades the entire parenchyma of the organ, while in others, it extends only partially over both, giving thereby to the organ a marble appearance, presenting throughout patches or regular streaks, and alternating with others of a dark green colour.

But on the other hand again, we are told that frequently as this peculiar coloration has been observed, it is by no means universally persistent, cases occurring in which the organ is found of a quite different hue; as for instance dark yellow, brown, red, purple, slate, chocolate, or livid; and again where no abnormal coloration at all
all exists, the organ retaining its natural healthy appearance, both externally and internally. — There does not appear to be ever found after death any bile in the secreting cells of the liver.

Microscopically examined, the liver is said in this condition to present a fatty state of all the secretory epithelial cells, and an abundance of free fat globules. Professor Leidy of America thus gives the result of one of his investigations.

"The portions of livers which you submitted to me for examination from nine different persons who had died of yellow fever presented a uniform pathological condition, the hue of the tissue varied from a yellow clay like tinge, to a browish orange..."
orange, and becoming darker on exposure to the air from drying and thus rendering the blood more visible. The pieces also were a little less firm than usual, and when small detached portions were dried on paper in the Sun widely-extended green) spots resulted. Beneath the microscope the structural elements of the liver presented a similar appearance as in fatty degeneration of the organ in drunkards, and some cases of pulmonary disease. The hepatic secreting cells were unaltered in form and structure from the normal condition, but they differed in having deposited in their interior a variable amount of oil globules, frequently entirely obscuring the nucleus, which
however was rendered readily visible on the application of acetic acid. The oil globules varied in size from a small granule, to the one half the diameter of the containing cells, and many of those observed loose in the field of the microscope, which had escaped from lacerated cells, ran together and formed drops larger than the cells. I think the uniformity with respect to the presence of so much fat in the liver of these "yellow fever" cases clearly indicates it, as one of the pathological phenomena of the disease; and although it may throw no light on the character of the affection, yet I deem it an important fact to be added to that accumulative map.
map of evidence by which Medical
Science gradually, but surely, moves
onward.

The gall bladder presents the following morbid
changes. Diminished in size or shrunken; or distended
with a greater or less quantity of contained bile. Then
the bile might be in a fluid, viscid, or impissated
state, or greatly mixed with mucus of either a
dark green, blackish brown, or dark red colour—
or of the consistence of tar. The lining membrane of the
lacr is generally vascular and studded with red
spots, but as often it presents no trace of congestion.

As regards the kidneys— it appears that no
structural change has ever been found in them,
although they have been carefully examined.
However, they have been sometimes found in a state
of congestion, while at other times no even this
change has been noticed.

As regards the spleen and pancreas, the
only changes observed in them have been that
the
The former appeared, under examination, larger, and more darkly coloured than natural, and more softened and more gorged with blood than in the healthy tissue, of the viscera, while the pancreas only seemed softer.

Lastly, the bladder is generally found contracted and empty, with its mucous membrane, either punctured with red spots, or lined with a yellow mucous.

If there be urine within the cavity, it might either be of normal colour, or tinged with blood, or be even like the greasy mucus matter ejected from the stomach.

Let us consider the subject of the pathological anatomy of yellow fever by considering the changes which the blood undergoes in that disease.

We are told that the first action of the poison is apparently upon the functions of the fluid. They are impaired, or in very acute cases cease altogether. The functions of the blood we know are first to maintain the activity of the nervous and muscular systems, and secondly to supply the materials for the molecular changes constantly going
or in the tissues. It is essential to this being properly performed that the blood corpuscles be in a fit condition to carry oxygen; and it would appear from the symptoms which mark every stage of fever, that the function of the corpuscles is impaired from the first. This is indicated by the besoin de respirer, developed in the premonitory stage of the sensation and condition of the respiratory organs are precisely the same as if their capacity had been diminished, and due aeration of the blood thus prevented. The patient takes many forced respirations, sighs or gasps, and the breathing is quickened on the least exertion. The haematocrit globuline is changed also, for the skin assumes a peculiarly pale, sallow and unhealthy look."

The function of the nervous system is impaired in consequence of these changes in the blood, namely the changes effected by the pain and the defective oxygenation; hence lassitude and weariness, disturbed function, or congestion.
of some or all of the viscera, and a lower temperature. To these effects may be added prostration of the entire constitution, and disturbance of the circulation, while the diminution of the fibrine explains the want of cohesion in the solids - the ecchymosis on the skin and in the cellular tissues, the bleeding from the gums, nose, stomach, bowels, and other outlets and the black vomit.
In the 9th Section we have to consider the mode in which the disease is propagated—whether by contagion—fomites, or by atmospheric or terrane conditions. And first let us take up the question of propagation by fomites:—Now we know, that although observation and experience have shown that certain diseases, of a contagious character, may be propagated through such media as bedding, clothing, badly-ventilated or long closed up. sick-room apartments; yet we also are aware, from the careful series of facts, brought to our notice by many worthy writers that as regards the poison yellow fever, the possibility of the transmission of the disease through the agencies mentioned above, does not exist, in spite of the attempts of many other observers to induce a contrary belief. They, in asserting the positive presence of the poison in these articles, seem entirely to lose sight of the fact of the materies morbi of the disease floating.
in the atmosphere, and thus affecting individuals, who have neither approached the sick, nor their beddings, nor any other particular source of infection.

Now those who believe in the nontransmissibility of the disease, through these several media tell us, that they have had numerous proofs of its innocuousness in this respect, by direct experiments, in many epidemics of yellow fever, in different parts of the tropics, and at different periods. And they go on to say before us such a mass of corroborative evidence, that it is quite impossible not to be satisfied with their view of the question.

In course of time, Mr. Beechey, in speaking of an epidemic of yellow fever in Cartagena in 1805, remarks, 'I have before mentioned that the disease ceased on the 23rd January 1805, on which day the last patient was received into the Royal Hospital. On the 5th February following a French frigate having on board the wounded of the Arrow Ship, which she had captured a few days ago.'
after a gallant resistance, arrived in the harbour. The wounded were immediately landed and placed in the same bed and bedding in which several patients who had died of the prevailing fever had lain, without the bed or bedding having either been washed or aired; yet not one of these men was attacked with the disease in consequence."—Then we are told by an association of Barcelona physicians, that during the prevalence of an epidemic of yellow fever, in that place in 1821, many inhabited apartments in which pestiferous patients had died—without their having been whitewashed or aired—and others again had worn and used the clothes and linen that had been left by those who had fallen victims to the disease."

Dr. Blair also, speaking of a similar epidemic which raged in Demerara in 1843, tells us, "that in December of that year, he placed a seaman who was suffering from a trifling indisposition into an un aired bed, in which a few days previously..."
a mate had died of a very malignant form of yellow fever; and that no infection followed this act, but that the man got better, and shortly after went away. Many more instances, equally as honestly detailed, are given in proof of this view of the question; and from them we cannot help deriving the opinion that yellow fever is not communicable by fomites.

With regard to the question of the propagation of the disease by atmospheric and lessened conditions—enough has almost been said in a preceding section to show how these two sources can aid in the elaboration and diffusion of the poison, but in addition thereto we may perhaps be allowed to make a few general remarks—pertinent to the subject.

In the first place, whatever the nature of the epidemic may be, it requires an atmospheric medium and certain atmospheric conditions to ensure its spread. Its morbific particles obey superficially the general law of diffusion—and it infects a
A locality attacks a particular description of people, and is more or less intensely increased or diminished according to the sanitary and social conditions of the place and people. An additional proof that a peculiar state of the atmosphere does generally, if not always precede and accompany an epidemic is to be found in the fact, of the appearance of certain natural phenomena—as for instance a famine, a preternatural increase of winged or other insects—an epidemic among the domesticated animals, the disappearance of birds, and also blights in the vegetable kingdom. With these phenomena we may have others affecting the temperature, humidity and electricity of the air, and all combining in a greater or less degree to accelerate the diffusion of the materies morbi of an epidemic.

But combined with these, we have terrene conditions which, as we before showed, powerfully aid in propagating the spread of yellow fever. And we instance several of these causes, the
chief of them being malaria.

Now malaria or marsh miasmata are emanations or effluvia which arise from certain sources under the influence of a very high temperature, these sources being stagnant pools of water partially covering the soil, or covered with vegetable substances, vegetable and animal substances in a state of decomposition, moist, spongy, absorbent soil exposed to the action of the solar rays; then the muddy and foul bottoms of shallow pools or lakes, marshes and lagoons, low-lying grounds which have been partially inundated by the sea or by rivers, collections of stunted and dense underwood, weeds or rush grases.

The decomposition of all these tend in a very powerful manner to develop and propagate the disease.

It is a known fact, that all malarious districts are more dangerous by night than by day, most probably from the poison being then more copiously evolved and becoming perhaps more concentrated.
Concentrated and condensed from the diminution of the temperature; and it is from this reason that European newcomers, are always strongly advised to avoid passing through these dangerous districts at an unsafe hour of evening."

"Having briefly discussed the second and third points included in this section, let us now pass on in conclusion to say a few words relative to the propagation of yellow fever by contagion."

"It is needless for us to hope to be able to exhaust this question satisfactorily in this paper, seeing that it is one which carries with it so vast an amount of professional difference, and so great an embodiment of conflicting arguments and opinions as to require not only a world of time and patience to sift them and reconcile them, but far more ability, acumen, and knowledge of the subject, than we dare venture to lay claim to. All we can pretend to do, is to give, in as few words as possible, a summary of the opinions held by the two opposed parties."
parties on this important question—and then a sort of
decision based upon the popularity of the more generally received and accredited opinion.

We have already, in our preliminary remarks placed before the notice of the reader, the names of the two classes of medical writers who stand opposed to each other on the disputed ground of contagion and non-contagion—and we have only to say in further connection with those names, that the contagionists affirm that the disease is always, and under every circumstance contagious, while the non-contagionists maintain the opinion that the disease is not propagated by contagion but by a materia morbi—developed under the combined influences of unbalanced atmospheric states and initiated terrain conditions, aided by a high tropical temperature—all these acting in combination within a certain limit upon particular constitutions, habits, and races of men—and thus developing the disease.  But let
we ask what are the grounds upon which the contagionist partly founded their opinion relative to the propagation of yellow fever, by direct or indirect contact or by importation?

In the first place—upon the abandonment of preconceived opinions held by several writers in favour of non-contagion.—

2. By the disease being an importation from a particular sickly locality, and conveyed through a certain medium, and being also different in character and properties from the ordinary fevers of the country.—

3. From inland towns in direct commercial communication with sea port towns, being affected with the disease through transmission.—

4. By the disease appearing at times and prevailing very extensively in certain places, when there were no unusual meteorological phenomena or local domestic circumstances to produce any description of ordinary fever.—
5. By breathing the effluvia exhaled from the body of a yellow-fever patient, or by making use of the clothing, bedding, &c., saturated with the viruse of the disease.

6. By the disease being carried to previous healthy cities and towns, which lay quite out of the track of the disease.

7. By the disease not being propagated, if, when known to be imported in a vessel, strict quarantine is enforced and segregation carried out.

8. By the disease being confined to the particular part where it first appeared, and only spreading, as those within that locality were cut out.

9. By the immunity which one attack gives to the invasion of a second.

10. By the capability of tracing the disease to a spot where it is at the moment raging and whence it has been brought in trading vessels.

11. By the viruse of the disease being communicated.
communicated from one individual to another especially under certain atmospheric conditions of a more or less vitiated character and when it is replete with putrid exhalations.

12. By the disease being developed in an impure atmosphere, crowded rooms, and in low, damp and unhealthy places.

These then are the arguments advanced by the contagionists in support of their view of the question.

Now let us ask again, and in the second place, what are the grounds upon which the non-contagionists found their opinion, relative to the non-propagation of the yellow fever, by contagion or by mere importation?

In the first place they found the truth of their arguments upon the fact of the return of those who had deserted their ranks, and gone over to the contagionist party, and of their bringing subsequently over with them a vast
past number to support the non-contagion view and who to this day promulgate as an established fact this much controverted opinion.

3. By the disease appearing at determinate periods of the year, and often prevailing some months, generally during the summer or autumn, disappears either suddenly or gradually.

4. By the regularity with which the disease breaks out, runs its course, and terminates, as compared with the same states in the other common fevers.

5. By the disease becoming milder and less fatal as its force is gradually expended.

6. By an epidemic of yellow fever being generally preceded by certain meteorological states of the air acting upon malarious exhalations.

7. By the disease, when it does occur in certain localities and at certain periods, superseding the other forms of fevers that might be in existence.
and reigning in their stead.

1. By yellow fever being a disease of hot climates or hot seasons, beginning in hot weather, continuing, and being more malignant and widespread after the middle of summer, and during the autumn, than in the cold winter months, besides, being considerably influenced by certain hygrothermal conditions of atmosphere due to the action of domestic causes.

2. By the disease being developed after the long continuance of a very high temperature, accompanied by a certain amount of humidity, and certain atmospheric and terrene conditions, and most often modified in its intensity by a series of heavy showers, and colder weather.

3. By the prevalence of the disease in any tropical region being coincident with its appearance elsewhere as proof of its having been propagated by contact or by importation.

4. By the immunity of other places from the disease.
disease, when it prevailed in some quarter not far distant, being no proof that the fever is contagious in its character, and exotic in its origin.

11. By the disease proving more malignant in the case of those who remain within highly infected localities, than if they had transported themselves out of it.

12. By the disease, when it prevails epidemically, making its influence felt as well by those who have no intercourse with the sick whatsoever, as by the sick themselves but certainly only in a very remote degree.

13. By a very severe epidemic of the disease being almost always preceded or accompanied, or followed by certain phenomena, in the vegetable or animal kingdom, such as blight, and peculiar diseases among the domesticated lower animals as also an unusual number of insects.

14. By the disease hardly ever affecting those who are acclimatized to the climate of the locality.
locality in which they live, and when they have never left it for one of a lower thermal temperature for any period of time calculated to do away with the state of system produced by the acclimatization.

15. By the disease being almost always circumscribed in its limits—and never extending very far out of the area of its origin—and that to no extreme distance.

16. By the virulence of the disease being frequently confined to circumscribed bands, the cases occurring out of these not assuming so malignant a type.

14. By the disease never extending to the country, and perpetrating the mortality it effects in the localities favourable to its development.

18. By the disease not affecting those who are unacclimatised, if they keep out of the infected localities and place themselves for the time in the earliest situations they can command.

19. But by these becoming affected by it when...
when they are careless of these precautions, and not from coming in contact with those who have or might have had the disease.

20 By the disease being of local origin, as proved by the occurrence of sporadic cases of yellow fever in the summer or autumn months.

21 By the disease being almost intense, and aggravated in its character in localities deficient in free ventilation and in cleanliness.

22 By the disease being almost always local (viz. at the beginning in low-lying, damp places, where the soil is either covered or mixed up with all sorts of substances; or where from the absence of hygienic measures, exhalations arise), and combine with other atmospheric causes to taint the air.

23 By the disease being sometimes brought into existence under peculiar conditions of the soil, when turned up under certain prevalent thermometrical and hygrometrical states of atmosphere.

24 By the disease proving the non-contagious
help of its character, and its nontransmissibility by individual contact or by the agency of fomites, by breaking out on board ships under circumstances which forbid the idea of a foreign source of contamination, and which point to the vessel itself as being the source of the disease.

25 By the disease being put a stop to on board ships, in a greater or less degree, after it has broken out, by the removal of the materials from which the person of the disease was eliminated, or by the neutralization or destruction of the effluvia escaping from the hold.

26 By the disease proving its right to be thought non-contagious by never communicating itself to patients in hospital or barrack, (as we find obtaining in the case of an epidemic of small pox, typhus or measles) even during the warm weather, when of course free ventilation is fully carried out, or even during the autumn months in temperate latitudes, when they are kept comparatively close.
27. By ship's crews not being attacked by the disease if they lay a good distance off from an infected locality and hold no communication with it, observing of course every sanitary precaution.

28. By the poison of the disease not becoming more cumulative in its character from the greater accumulation of patients in the wards of an hospital or the sick room of a ship.

29. By the disease not being transmissible by fomites, such as body and bed clothing, beds, furniture & impregnated with the poison of the disease.

30. By the disease not affecting those who come in contact with the sick or dead or make post mortem examinations on the latter.

31. By the adoption of seclusive means being unnecessary. The disease not being communicable by direct or indirect contact.

32. That yellow fever cannot be said to be contagious because it attacks an individual a
second time), who on a former occasion suffered from the disease; because this attack might result from either the excessive malignity of an epidemic generally prevailing, and when his system had not been fully acclimatized—or from his having left a particular locality, and returned to it after a very lengthened interval, during which his system had lost the benefit of the seasoning and during the height of the epidemic.

33. The non-contagionists affirm, that yellow fever seldom, or ever extends out of its widest geographical and altitudinal range.

34. They consider that exposure to malariaous exhalations during the hours of night, when the virus of the emanations are supposed to be more widely diffused than at other hours contribute more to the origin of the disease, than if exposed to them by day.

35. They affirm likewise that, the disease often breaks out in a delirious manner, attracting persons...
persons here and there who hold no communication
with each other; and then gradually, and finally
rapidly diminishing the space it is to encompass.
And lastly,

31 They tell us that yellow fever
differs considerably in its aspects, at different
seasons; being at one time more or less inflammatory,
at another intensely malignant, with
symptoms, at one time so very mild and un-
noticed for, as hardly to call forth notice, while
at another, they are overpowering as in a very
short time to prove sadly fatal.
Let us now pass to the discussion, very sum-
marily, the 10th section of our subject; that, namely;
which embraces the question of non-liability to a
second attack of yellow fever.

Now, in regard to this controverted question,
it cannot but be admitted that a very great dif-
fERENCE OF OPINION still continues to exist; as much
as there are medical men, of high repute and ac-
nowledged professional standing, who previously main-
tain the opinion that one attack of the disease,
whether in a mild, or severe form, securely shields
the individual from further danger; while on the
other hand, there are others, equally respected and
able, who as confidently affirm that the yellow
fever is in no way different, in a protective sense,
from any other form of uncommon bilious remittent
fever; and that an individual under certain cir-
cumstances, is just as susceptible of being attacked
by the disease a second time, as by any other less
serious form of fever. And when we come to sum-
up
up the names of those who held these diametrically opposed opinions, we cannot but wonder at the regularity of the fact, that they should disagree in so decided a manner and without the slightest apparent reservation on either side. Thus we find that those who support the opinion that an individual, once attacked with yellow fever, is not susceptible of a second invasion of the disease back the statement with an array of names such as Sir Blair, Sir James Fellowes, Aujula, Becker, Gonzales, Sir Joseph Gilpin, Aniel, Parcet, Jelloust, Sir David Barry, Sir William and Louis, Sir Wm. Pym, Living, Dickson, Townsend, Suthill, Manges, Griffiths, Rhone, Westin, Con-rie and Davy;—while on the other hand those writers and observers who maintain the confident opinion that second attacks of yellow fever are of occasional occurrence, support their assertion with names such as Sir Ferguson, Rich-ardson, Jackson, Doughty, Lovicsey, Bally, Balliot, Gardiner.

Now when we read over all these names, and reflect but a little while upon the great worth and merit of some of their predecessors, what is the direction in which a positive opinion in this wise? Are we to say to ourselves—one attack of yellow fever excepts me from any more, whether I remain altogether in the tropics, or whether I go away, and after a long interval return to my old locality; or are we to think, that though we have had an attack of the disease—time, circumstances, or a very virulent epidemic might so work upon our then state of system, as to make us susceptible of the poison of the malady; but not perhaps to so fatal a degree?

In my opinion this question of liability or non-liability...
Non-liability to a second attack of the disease, required great consideration, and a very careful revision of all the facts and arguments advanced on either side, in we can attempt to give a correct view of it. But this much we may be allowed to say—that secondary attacks of yellow fever are more the exception than the rule; and that they only seize an individual, after a very long interval, who has previously suffered from it, at such times as when a very evident epidemic of the disease prevails; or when he has been for so long a time absent from a tropical locality, as to have undergone a complete alteration in his acclimatized physical system, and thus rendered himself, like the newcomer, susceptible of the poison of the disease, and more or less amenable to the fatality of its character.
According to the order of our classification, the II* section embraces the hygienic basis of yellow fever — as also a consideration of the most fitting modes of living and proceeding in, and period of going to a tropical climate, in order to avoid the risk of being fatally attacked by the disease shortly after our arrival.

Now it is very evident that the more dangerous any disease is, and the greater the tendency it has to diffuse itself and affect a large section of the community, the greater ought our efforts to be either to retard its spread, or at least to counteract its pernicious influences. If this course of action holds good in the case of the ordinary contagious exanthema, then how much more ought it to be anxiously exercised in the case of such a disease as we treat of — the propagative of which, among a certain class of persons, is invariably certain to be attended with the most disastrous and fatal consequences! Thus
it is true, that from a very early period the most careful attention has been devoted to this subject by medical writers of every shade of opinion in connection with the disease, and they have divided the prophylaxis into two orders. The first having reference to the community at large, and including the consideration of police and municipal measures to prevent the outbreak and arrest the diffusion of the disease, in a particular locality; the second having reference to those hygienic and other measures requisite to guard the individual, placed within the sphere of the morbid influence of the efficient cause, from being attacked with the yellow fever; and when attacked, of having its dangerous and virulent tendency lessened in a greater or less degree.

What then, let us ask, what are usual modes generally adopted to prevent the spread of this disease in towns and communities? In
In the first place, admitting the fact that yellow fever is generated out of a special medium, the product of the decomposition of organic substances—vegetable and animal—exposed to a high temperature, and at a particular season of the year in tropical climates; and not the product of a specific transmissible contagious poison, it follows that to prevent its diffusion among the inhabitants of a town or community every means should be adopted to remove all local nuisances and refuse within or without doors before the approach of very hot weather; so that everything likely to prove a source of infection, contamination, and calculated to generate or aggravate the disease, might, ere that period arrived, be entirely removed, and burnt, used as manure, or otherwise rendered innocuous. In a word, the strictest sanitary measures should be carried out: streets, lanes, courts, market-places, public squares, and other places of general resort.
resort should be kept clean, more or less paved, drained, and watered, during the intensely hot seasons. Prairies, cisterns, pools, drains, etc., should be kept well-ventilated, purified, and flowing; all sorts of effluvium should be burnt or buried; marshy lands, lying adjacent to towns or villages, and carrying their pestiferous effluvia unto them by the current of the prevailing winds, should be systematically drained, and planted over with strong, hardy shrubs that could be turned to everyday account. Their large pools of stagnant water should be drained off, and their deleterious fluids turned, if possible, into the cleansing sea, or if not, into an extended superficies of porous soil, so that the surrounding land, enriched by such irrigation, might be turned to profitable agricultural account.

But independently of the adoption of such sanitary measures on the land, attention should also be anxiously directed to the state
of vessels, lying off wharves, docks, the mouths of marshy bays, rivers, or adjacent swamps, in the ports of the inter-tropical towns. These vessels, having discharged their cargoes, and hauled out, as they would do into the stream, should be thoroughly cleansed and fumigated; all their bilge-water having been previously pumped out and the planking of the hold, well washed with an unlimited quantity of salt water. They should be made to take up the best position at an anchorage that could be obtained, with reference to the direction of certain currents of air laden or not as they may be with pestiferous effluvia; and their captains should be careful to receive on board none other than the finest kind of water that can be had in the vicinity of their anchorage.

We are afraid that but little only can be said in this place on the vexed question of quarantine. Our paper, as it is, has already acquired
No inconsiderable bulk and we are therefore unwisely disposed to extend it unnecessarily much farther. Suffice it to say then that this subject has given rise to great discussion, and provoked much controversy among medical writers, chiefly on the ground of the supposed exotic origin and transmissibility of the disease through fomites and individual contact.

Now let us inquire in the second and last place under this head what are the hygienic and preventive measures an individual should adopt who is under placed within the influence of the efficient cause of the disease, and who is anxious, either to ward off an attack, or lessen its danger and virulence when it has taken place.

1. He should, in the very outset, if a newcomer, and therefore unacclimatized, avoid all intercourse with infected localities, and speedily betake himself as much as possible out of their influence.
2. He should not occupy a crowded or ill-ventilated apartment; or one the windows of which admit malarious effluvia. If he cannot from circumstances to otherwise, then carry out the system of cleanliness, ventilation and aperuption.

3. He should keep his mind as tranquil as possible—cheerfully employed, and yield not either to emotions of despair, or indifference.

4. He should take care that all his bodily functions are regularly performed; that he indulge in but a reasonable amount of sleep and only within proper hours.

5. He should take moderate exercise in the cool of the morning—bathe in fresh or salt water as frequently as he can, and keep all his secretions within healthy limits.

6. He should above all things avoid exposure to sun and rain and remaining in wet clothes or sitting in strong currents of air, or
Exposing himself to their action when perspiring immoderately or otherwise.

7. He should then the pensive influence of the night air; indeed after sunset his balcony or his sitting room is his best resort.

8. He should wear flannel next the skin, and a cotton in preference to a linen shirt as the former absorbs the perspiration more readily than the latter. He should also wear a moderately warm coat in preference to the linen jackets usually adapted for their lightness by the Creole matrons.

9. He should live sparingly and abstemiously, the ingesta being of the most simple and digestible kind, and he should avoid late and heavy meals.

10. He should most assiduously forebear drink, the bare and destruction of all European adventurers to tropical regions. If the individual's habits have been brutal or moderate in this particular, they should at this time be still more so, as he can only reckon his chances of immunity from
from an attack, in proportion to the measure of his triumph over the spirit of the bottle. Of course if he be a drunkard, he must have a daily allowance of stimulants, but this ought to be prudently dealt out to him by some tender and compassionate hand.

11. He should avoid excessive physical fatigue produced in any way whatsoever.

12. He should, if very pellagrous, depurate his system dietetically, and in very particular instances by enemation. He should indulge in cool drinks, acidulated fruits, and ice to a moderate degree, keeping all his secretions and reactions normal; and should it happen that he gets prickly heat, he should encourage the same rather than debase him to despel it.

13. He should at this period especially keep strict guard over his natural appetites, lest he go in quest of pleasure, and unfortunately find a dreary grave.
14. and lastly, he should not neglect any marked feeling of indisposition — such as hearing about the head, flushed of heat, with a tendency to sleep during the day, but in the restless inability to carry out that function at night; bitter taste in the mouth, and a greater or less tendency to consternation. By adopting a prompt and judicious treatment of these precursory symptoms of the disease, he may ward off an attack; by allowing them to proceed and acquire a more confirmed hold upon his system, he passively prepares the way to his ultimate destruction.

As the disease attacks, not once why not inoculate for it under circumstances favourable to recovery?
Having thus summarily discussed
the preceding pages the question of the Pro-
phylaxis of yellow fever — let us now pass
on, in the 12th and last section of our
Declaration to consider the Therapeutics
of the disease — or upon it alone, based
on sound and comprehensive pathology,
can one hope with more or less success to
counteract the primitive nature of the dis-
temper, and under the helping of Provi-
dence be the instruments of rescuing thou-
thands of our fellow creatures from its fell
power and destructive malignity.

In the first place, after all
that has been written on the subject of the
modifications which yellow fever under-
goes under the influence of various cir-
cumstances, one cannot help being prepar-
ed to find the malady calling at cer-
tain times for a mode of treatment more
a life different from that we could be compelled to adopt, were the leading symptoms quite of a different character; — for it is evident that the treatment must be modified according to the state in which we should find the patient at the time of our visit; — and not guided by the fixed rules the many writers laying down for an invariable observance. But even although we were capable of recognizing and appreciating in their fullest extent each of the modifications which the symptomatology of yellow fever so fully and elaborately presents to our notice, still we could not place implicit reliance on the certain efficacy of the means we armed employing; — because we could not determine in our own minds how long the simple modification and remain stationary, so as to admit of a
a particular mode of treatment; or would glide into a more fatal form, requiring the adoption of far different measures; so that after all we should be compelled to content ourselves with treating the more prominent symptoms as they presented themselves, and then leaving the rest to the constitutional forces of the patient.

Let us proceed then to describe briefly the mode of treatment generally adopted in the general stages of this malady.

In the first place, and in every case of yellow fever, whether simple or malignant, the patient should be strictly confined to bed; the apartment kept clean and thoroughly ventilated; and himself put at ease under careful medical treatment.

If the attack be merely of the...
Inflammatory variety included under the first grade. Then we order our patient to bed, and having acted freely on the intestinal canal by means of mercurial cathartics, administered when reaction has commenced to set in—we place him on a strict antiphlogistic regimen—not forgetting ice cold drinks and cold tody of affusion—commencing with a due regard to the necessity of conserving his strength, and of assisting everything calculated to decrease the vital functions when reaction shall have again set in.

If he be restless and phrenic, and complain of severe pains in the head, and present a flushed face, and red, brilliant, glistening, watery eyes; and if we find him with a feeble, hand, frequent pulse, furred tongue, and with a hot, dry, burning skin;—in a word, if there be present.
general excitement and local inflammation, then we are justified in having cautious re-

sponse to the lance - but promptly and ela-

sumingly - during at least the first twelve or

twenty-four hours of the attack. Excessive
depression by reaction would not be perhaps
judicious, inasmuch as when reaction acts in,
the patient's vital powers would be found
deficient to carry him beyond the danger
of collapse. If he be not in a condition
to bear reaction with advantage, from the
general state of his physical system, as
well as the smaller character of the pulse;
and if from the state of local irritation
existing, relief must be afforded, then we
ought safely have recourse to cold external
affirm - and local depression; and

Lipping, or the application of leeches to the
empired organs would be the agents we
would call to our assistance.
If by the above means we succeed in putting a check to the violence of the symptoms of the disease, and in obtaining a remission—then, when the febrile excitement had entirely subsided, we would bring up our patients strength by tonics such as quinine—iron & co. and the parinaacea, and, if necessary, by hot light soups, and other appropriate diets. When he became sufficiently convalescent to bear the fatigue of travelling, we advised persuade him to go to a sanitious locality, out of the reach of the influence of the disease, and complete there his full restitution to health and vigour.

But if the remission attendant upon the preliminary attack be incomplete, or succeeded by a train of symptoms indicative of a continuance and exacerbation of the disease, then a different course of treatment must be adopted. We should
Shave the head, and apply bladders of ice to relieve the cerebral pain and congestion after the head perhaps taken away a sufficient quantity of blood by local depletion. And we should have the body charged with cold vinegar and water, and cold drinks given in very moderate quantities, what would be still more preferable, if at hand, small pieces of ice, to allay the pained and burning sense of thirst, as well as the extreme irritability of the stomach which would now probably supervene.

We feared at this time especially to more or less afford to use the largest lead, from the symptoms urging rapidly towards the explosive form, we found its aid diametrically opposed to the advent of re-animating power on the part of our patient, and to the continuance of contractile power in the coats of his vascular system.
The gastric irritability we aimed further in
the region to relieve by mercurial frictions applied
over the region of the epigastrium, as well as the
internal exhibition of calomel in limited quan-
ties, and in combination with cathartics
and followed up by suitable doses of the sul-
phate of Quinine morning and evening.
And we would also exhibit, as circumstan-
ces rendered it necessary, frequent doses of
peduline—such as hydrochloric acid, in
way better chloral form, which would be pre-
ferrable to either the tartarized antimony
many of the combinations of pheraeumkin;
insomuch as those latter, by keeping up
a constant feeling of nausea, and con-
tinued gastric irritability, not only create
vomiting and greater inflammation of
the organ, but tend still further to de-
press the vital and reactionary powers
of the patient. Of course in this
stage
stage, we must have an eye to the fully previous condition of the intestinal canal, and the cool and moist state of the cutaneous surface, if obtainable; and we would adopt such measures as the necessity of our patient urged upon us.

We should take care that the fluids intaken were perfectly cold, and given at stated intervals, so as to lessen as much as possible the peculiar irritable condition of the stomach.

We have already stated how we would treat the general symptoms referable to the extremities when they arose; and if the powers of the system began to fail, we aimed to sustain the patient's strength by tonics and stimulants administered by the mouth of the stomach to counter their introduction, or per os when the region still continued expectorably irritable.
Then if there was a tendency to hemorrhage from any of the natural outlets of the body, we used endeavor to arrest it by means of kedative remedies, or cold applications, as the case might be.

While our patient lay in this state, we used endeavor, to avoid bleeding him, while the symptoms still ran high, and practice had not set in: we used hot tincture of spirits of ammonia to allay the gastrie irritability. Since the administration of these medicines, used only tended further to aggravate what we had already allayed: we would not pour rednessly into his system an unlimited amount of calomel, since this proceeding has been shown. The attended with a further situation and more marked disintegration of the already poisoned blood.
and lastly we must not consider ulceration as a state to be arrived at, result of all concurrent evils.

In the congestive form of the disease—when the reaction is deficient, or altogether wanting—remorse must be had to means calculated to arouse the dormant faculties and energies of our patient, and at the same time to relieve the oppression of his loaded organs.

If he be young, robust and plethoric, we may carry out venesection cautiously, expeditiously and during the first twenty-four hours of the suppression of the attack; it will more safely relieve the congested state of the inflamed organs by local depletion. Then we might apply blisters to the neck and between the shoulders, and emulsions over the epigastrium to allay with interval adhesive to the continued si-
pituitary of the stomach. In the milder congestive forms of the disease, we might exhibit mercurial cathartics and watch the state of the intestinal canal. But in the severer forms, we would have to administer stimulants freely and even largely—such as arachis, Burgundy wine or champagne—by the mouth, if the state of the stomach allowed of its ingress, or per anum if the organ still continued irritable and chenodochially ejected everything received into it. Of course in this form a paucity of the disease, we would not lose sight of an alkaline—quinine—a beet and beet juice administered to allay the excessive gastric irritability—a cold affection—or iced acidulated drinks to neutralize the burning heat of skin, and the dry brush and tongue—a carbolic or stimulant—to keep up as much as possible the heat.\[2b\]
ebbing powers of the sufferer.

We aimed in a word do every thing from patience that the collected experience of skilful men had taught us to consider and believe applicable and must judicious under the circumstances, and having anxiously and earnestly done thus much, we would hopefully leave the issue in the hands of that Great Physician, who watches equally our all elapses, events, complications and conditions of his people; and who permits not even a lovely flower, a fading another ing leaf, to leave this scene of earthly existence, with out the express fiat of his omnipotent will.

[Signature]

[Date]