Dissertation
on
Yellow Fever
Introduction

It is my intention in the following pages to give a description of Yellow Fever, as it is usually met with, and then proceed to an account of the epidemic which visited Charleston, S.C., during the Autumn of 1864.

After describing this epidemic, I shall endeavour to show that the disease is not contagious, and though not sufficiently I am prone to suppose that the evidence adduced by me, will be entirely conclusive, yet if I succeed in adding one fact, to those already accumulated by various writers, in favour of the non-communicability of the disease in question by contagion, I shall consider my object accomplished.

I feel that some apology is due the Faculty, for entering in an Essay whose object is so apparent even to myself, but I hope it will be some excuse, when I mention that this is merely a copy, written from...
memory, of one prepared with more care while at the hospital, and which con-
tained descriptions of several cases taken at the bedside; this however I
unfortunately lost with all my effects at the evacuation of Charleston, owing
to my having been obliged to leave in a hurry, and with limited means of
transportation.

G. McDowell

March 1866
Thesis

on

Yellow Fever.

Yellow fever, called also Typhus Icterodez, and "Domingo Negro," is a disease prevailing in certain hot climates, and in places situated upon the sea coast, or on estuaries emptying into the Ocean. It seems necessary for its production that a number of human beings should be congregated together, thus it is found in Cities, and also on board ships entering those latitudes in which it prevails. When occurring as an Epidemic, it makes its appearance towards the end of Summer, or at the commencement of Autumn, and has been thought to depend upon a high degree of temperature, continued for a certain length of time; but that this is not the only agent concerned in its production, has been from the fact, that it has never been known to occur in Calcutta, or in various other places, where a high degree of temperature is present and continues for a much longer
time than has been considered necessary for its production, I have noticed in Charleston, on more than one occasion, in which the disease prevailed in an epidemic form, that the season during which it made its appearance, was characterized by a very cold winter, followed by an unusually dry autumn, and it is not difficult to understand, how this alternation of moisture and heat, by loading the atmosphere with emanations from decaying vegetable matter, could be a fruitful source of fever of any kind, and have a large share in the production of the fever under consideration. As a proof of this, it has long been a subject of remark, that the Bilious Fever, occurring on the islands around Charleston, have always proceeded to a great extent, and been of a most malignant type, during the summer of those years, in which Yellow fever visited the City; nor had abundant opportunity of witnessing this, in 1864,
When we received patients into the hospital, not only from the islands, but also from the different batteries situated in the city itself.

Certain meteorological conditions of the atmosphere have also been spoken of in connection with the origin of yellow fever, but as this has been made at least to a small extent the subject of investigation, it would be quite out of place to discuss it in a treatise, which it is my object to make as practical as possible.

Symptoms. No two epidemics present identically the same symptoms, and even the same epidemic may change its type, usually becoming milder as the season advances, and cold weather approaches; there are, however, certain symptoms invariably present, and considered essential to the disease, to these I will now direct my attention. The fever then, is ushered in usually by a feeling of chilliness, with pain of a rheumatic character in the limbs and
back, there is also injection of the conjunctiva, and a certain degree of headache; there follow the ordinary phenomena of fever, characterized here however by severe headache, anxiety, restlessness, confusion of ideas, and lassitude, which last amounts in severe cases, to actual delirium, and an increase in the pain complained of in the limbs and back; the pulse is quick, but weak and compressible, the tongue moist and slightly furrowed, the tongue confined, and the urine scanty and high colored; after the fever has continued for a few hours, tenderness is complained of in the epigastrium, and nausea, with vomiting soon makes its appearance; the vomiting in these cases is peculiar, in that it seems to take place without any exertion on the part of the patient, it is accompanied by an eructation of gas, which is incessant, and very characteristic of the disease; this condition of things usually continues for three days, and then de-
must entirely disappear, leaving the patient in apparently a convalescent state. This constitutes what authors have described as the second stage of the disease. It is, but an apparent amelioration of the condition of the patient, the disappearance of the fever being dependent upon the failing powers of the system. This calm, which is, but the prelude to the full issue of the malady, generally lasts for about six hours, and is then succeeded by the stage of collapse. The chill now begins to acquire a yellowish tinge, which commences on the face, and gradually extends itself to all parts of the body. The nausea, which has never been entirely absent, assumes a degree of intensity greater than it existed in before, the vomiting is incessant: the vomited matters pouring out of the mouth in a stream, and with little effort on the part of the patient; there is constant coughing; extreme prostration now sets in, the pulse becomes irregular and weak, and may cease.
to be felt at the corium, though at the same time the heart may be pulsating violently; the tongue becomes dry, brown and coated; evolutes form upon the lips and cheeks; the urine from beingbaugh in quantity may become entirely insensible; the breath is ammonia cal; a great tendency to hemorrhage from the different mucous surfaces except "melena" and "eructation" being of frequent occurrence; the cutaneous sensibility is much impaired, counter-irritants applied to the skin producing little effect; there is also little vitality in the tissues, ulceration, and Inflammation of parts being not at all uncommon; there is much debility of countenance; the patient lying in a state of apathy, and quite indifferent to all around him, finally at a period varying from three to four days, or even earlier, form the cessation of the febrile state, the vomited matters begin to assume a chalky brawny colour, constituting what has been called "Black vomit," this chalk coloured matter
also escapes by the bowels, and its appearance in the majority of cases precedes death by a very short interval; few recovering in whom it has been present. The fatal termination is commonly through exhaustion, though Convulsions, Convolvulus, towards the close of the disease, and by no means rare, and one or both, are invariably present in those cases, where this expression of life has been produced, by the peculiar poison of the fever. The symptoms I have described are those usually seen in severe forms of this disease; in many cases of Yellow Fever however, and especially those occurring towards the close of the epidemic, Convalescence takes from the subsidence of the fever, and though slow, nevertheless leading to complete recovery, in other cases, after the stage of collapse has continued for some time, the system begins to recover itself from its lethargy, so occurring fever makes its appearance, which is known Captain Athenic type,
and may end fatally, though more often incur further treatment recovery later.
Place is finally in a third class of cases, after black vomit has occurred, the sys-
tem reacts, and the patient recovers, the "materiae morbi" having been apparently
eliminated from the system by the revol-
sion and vomiting. These recoveries however,
after the occurrence of Black vomit,
are extremely rare, as the power of
the system can seldom be strong enough
to resist the amount of purification, and
always accompanies this form of vomit-
ing.

Before proceeding to describe the differ-
ent causes which operate in the produc-
tion of this disease, I will lay a few
words respecting its nature, concerning
which some diversity of opinion exists.
Many authorities consider it is
merely a severe form of Bilious fever.
Others, that it is a disease sui generis,
and presenting no features in common
with Bilious, fever. Without entering
into the various arguments that have been adduced in support of each opinion. I think it probable, as is often the case when two opposite beliefs are entertained on any subject, that the truth is to be sought for between the extremes; accordingly, it is, in my belief, and I have had abundant opportunities of observing both diseases, that, 'yellow fever, nothing more than Bilious fever with something superadded, what this something,' &c., I am unprepared to say, but that it is, in some manner connected, with emanations from human beings, &c. I think rendered probable, by the circumstances, under which the two diseases occur, that we have already alluded to the fact, that during the time these diseases, in which yellow fever visited Charleston, Bilious fever was more prevalent, and of a more malignant type, but while the latter occurred principally in the county and was limited in a great measure to the neighborhood of rice fields, &c.
former was confined exclusively to the city, while in addition to the malaria consid-
ered necessary for the production of both diseases, there were also the emanations from numbers of
human beings living together, that this alone, however insufficient to account for the
difference, observable between the two diseases, is rendered evident by the fact, that, unless
fever only occurs in cities situated upon
water courses, while some other causes in ad-
dition to malaria and human emanations
must be in operation, a gain, as has
been already mentioned, there are certain
localities which are quite exempt from the
disease, where, with other, all the causes
considered as necessary for its production
appear to exist. Besides, a partial com-

The diseases in question being closely allied to
each other, for we notice, that they both
terminate on the appearance of prophy-
that negroes, though amenable to all
other diseases, which affect the
white man, enjoy an almost complete immunity alike from Yellow and Bilious fevers; a stranger, one more apt to be attacked by both diseases than native; and lastly, as I shall endeavor to show afterwards, neither disease is contagious, nor does one attack of either, engender another attack of the same.

Causes of Yellow Fever: Among the preexisting causes, the most powerful perhaps is, being a stranger in the locality in which the disease is prevailing, intemperance of any kind, whether in eating or drinking, also renders a person more apt to be attacked; other causes which predispose to the production of fever, also act in the same way. This, for example, exposure to the noonday sun, or to the chilling air at night. The only exciting cause in exposure to the atmospheric influence, concerned in the generation of the disease. Diagnosis is not difficult where the disease presents itself in a well marked
form with injected conjunctiva, and an early appearance of the gastric irritability though, even here, it may be mistaken for Bilious Fever, in which both these are often present to some extent. The continuance, however, of the febrile stage, without intermission, or remission, for such a length of time, and the greater amount of vomiting, with the excessive evaporation of gas, would arouse suspicion as to the nature of the case, even before the severe prostration preceding the termination of the fever. Together with the appearance of black vomit, leved to render the nature of the case sufficiently evident. Milder forms, have been mistaken for "Dengue," "Catarinal Fever," or in cases where the pain in the back and limbs was severe, for even "Pneumonitis," but the knowledge of the prevalence of the Epidemic would be a sufficient guide to diagnosis, even if the injection of the eyes, and abrupt vomiting, always present to a certain extent even in the mildest forms of the case, did not remove all difficulty that might
present itself in the way of a recognition of the disease.

Prognosis. Varies with the epidemic, some being extremely mild, and in which recoveries are the rule; while others are characterized from their commencement, by the most severe symptoms, and recoveries in them are the exceptions. As a general rule, the epidemic, however malignant it may have been at its commencement, gradually becomes milder, as the disease advances, so that towards its termination, a much larger proportion of cases recover. Among the symptoms that would lead you to predict a fatal termination, a total suppression of urine stands foremost, next in order may be placed the appearance of black vomit as a few recover, in whom this has been present as a symptom. An early disappearance of the febrile stage is also an unfavourable sign, as it indicates that the vital forces have succumbed, after a short struggle, the influence of the poison, other unfavor
able signs, of a minor nature, are the appear-
ance of petechiae over the body at an
early occurrence, and death, one of the
signs more of illness, and an apathy and
incidence, on the part of the patient, as
to his fate; delirium making its appear-
ance at any stage of the disease, is always
to be regarded as unfavourable. On the oth-
hand, one of the most favourable signs is
the production of phlegm at the result of
mercurial action, or the appearance of
strangury following the application of a
 blister, the disease seldom terminating
favorably in these cases. Where these effects
have been noticed, any extension of
the fever beyond its usual limits, or
the appearance of a secondary fever
would also inspire hope as to the re-
sult, though in many cases where a
secondary fever makes its appearance, it
finds the patient already too much ex-
hausted to withstand its ravages, and
dies, merely to prolong his life for a
brief period, death taking place ultimate
by through exhaustion, or else he recovery after a tedious convalescence, to find her constitution permanently injured.

Treatment. To enumerate the different medicines that have been employed, and with alleged success in the treatment of this disease, would of itself occupy more time than I have to devote to the whole subject, for there are few articles in the pharmacopoeia, that have not at some time, and in the hands of different practitioners, been thought useful, or even to act as specifics; among these, Mercury has always held a prominent position, and even at the present day, is considered by many the chief anchor in the treatment of Yellow Fever; this idea no doubt arises from the fact, that the development of the physiological action, as has been already mentioned, was in the majority of cases, succeeded by recovery, but on the other hand it has been found impossible to produce this effect in severe cases, so that instead of relieving the appearance of
Physician, and the successful issue of the disease, in the relation of cause and effect, we ought rather to regard the former, merely as an indication that the attack was a mild one, and would not have doubt indeed, recovering under any rational treatment, while therefore mercury given with a view of producing its specific action is of little use, there is no doubt it acts beneficially when given at the commencement of the attack as a curative, for here it has the effect of stimulating the liver, which is usually toxi, and at the same time it clears the bowels.

Opium has been a favourite with many, given in large doses, it produces a stimulant being to relieve the congestion of internal organs, and especially that of the stomach, in the only case however where I came under my notice in which the irritability of the stomach permitted of its administration for any length of time cerebral symptoms were soon developed, delirium lasting in coma being the se-
dult. Among the other remedies that have enjoyed the reputation of being Specifics, may be mentioned "Pulvis of the Muria of Irm," "Acetate of lead," "Dioctyle of patent," besides others too numerous to mention, most of which were employed empirically, and for the development of no particular action. Their only recommendation being that, in some cases, in which they had been administered, advanced to recovery; thus during a mild Epidemic, some one of these so-called Specifics would be used with very successful results, but when subjected to the test in another Epidemic, whose type happened to be of a more malignant character, it was found to be wholly inefficacious in controlling the disease, and was replaced by another, which being introduced towards the close of the season, when the disease had nearly extended itself so far acquired as high a reputation as its predecessor, only however to yield it to a third remedy, which popularity
would be equally as short lived; the fact is, when the disease presents itself in an ordinary degree of severity, it is only during the first few hours of the attack, that remedial measures, in the shape of medicine, administered into the stomach, can be of any avail, for after this, the extreme irritability of that organ, so prominent a feature of the disease, render the introduction into it of any substances, even of morphine in small pills, productive of more injury than benefit; by adding to the amount of irritability already existing; hence it must be inferred, that those cases in which any particular medicine has been alleged to have effected a cure, must of necessity have been exceedingly mild, to admit of such medicine being retained by the stomach, and they no doubt would have terminated far more naturally, and perhaps more speedily had no such medicine been administered. While denying the existence of any specific in the treatment of this disease, I still believe in the efficacy of medicines, and...
at the same time convinced, that much may be done for the patient, by appropriate treatment at the commencement of the attack, and also by supporting his system during the stage of collapse; and I think I have seen good results in more than one instance, attend the following plan of treatment.

If the patient be seen soon after the first symptoms have made their appearance, a cathartic of bismuth should be administered, while at the same time a large blister is applied over the epigastrium. After the vomiting has made its appearance, it only needs to the sufferings of the patient to make him swallow anything, but the vomiting may be relieved to some extent by sprinkling morphia over the blistered surface; giving him ice to hold in his mouth, and rapid changing of the surface of the body, also aid much to his comfort; if any cerebral symptoms supervene, cold clothes to the head; etc.
not P. multiloculus, should be recurred to as soon as the febrile stage has passed, and collapse sets in, our attention should be directed to supporting the sickly and this can only be accomplished by administer of strong beef tea, with brandy, taking care to avoid Ammonia, as the blood already contains a large quantity of it; if the inflammation be very great, we should also have recourse to paraffination with Paraffin oil to the chest and spine, while at the same time Emulsions are applied to the extremities. By these means we hope to support the vital forces, and not our patient alive until the disease has extended itself, and the poison has been eliminated from the system, as we doubt it is by the act of vomiting. This plan of treatment, founded on rational principles, though failing in the majority of cases, owing to the malignant type of the Epidemic, certainly appeared no more than one instance, to be productive of benefit and
had at least the advantage of being productive of no injury, which it more than can be said of other plans of treatment adopted during the same epidemic; thus a favourite plan with many, was to commence the treatment with an aperient, followed by a brisk cathartic, then a colonel, combined with opium, and persevered in, despite the great irritability of stomach presented. Considerable, too, were also applied to the epigastrum, but could have little effect in soothing the irritability of stomach, when it was being hourly increased by the internal administration of medicines; besides these, each course of treatment as the one just described, other practitioners, had recourse to enecsection, which could not have been otherwise than injurious in a disease, whose characteristic was a stage of prostration, which required more than ordinary powers of constitution on the part of the patient, to resist.
Pathological Anatomy. There are few diseases, perhaps, in which the post-mortem appearances are so inadequate to account for the urgency of the symptoms during life, than in the disease under consideration; one would naturally suppose, that some extensive lesion of the stomach would be visible after death, to explain the irritability of, and the great degree of tenderness referred to that organ, but contrary to our expectations, an examination revealed at most in the majority of cases, only a slight degree of congestion of its mucous membrane, it being exceptional to find any ulceration of its coat; and in one post-mortem examination at which I was present, of a case where the symptoms had been specially well-marked during life, the interior of the stomach, after having the black vomit adhering to its walls removed, presented a perfectly healthy appearance; there was in fact, no morbid appearance peculiar to this
disease, thus usually found, differing in no respect from what we might expect to find, after death from other fevers, such as congestion of various internal organs, with occasionally effusion into the ventricles of the brain, in those cases where cerebral symptoms had been developed during life. Some authorities have described a very anemic condition, and yellow color of the liver, as being pathognomonic of death from yellow fever. But the testimony of other observers goes to show that this condition is by no means universal; and in a subject at whose examination I was present, the liver, though to a certain extent congested, and therefore somewhat enlarged, was in other respects apparently quite normal, and certainly presented none of the appearances described as peculiar to it. The pallor of the skin, though it becomes of a deeper color after death, can hardly be classed among the post mortem appearances, as it is invariably found present to some extent during the course
of the disease, and apparently once its
origin to the same cause, which produce
the ecchymoses, so distinctive of Purpura
hemorrhagica; viz a depressed condition
of the blood, which gives it a tendency to
become extravasated into the cellular tissue.

That this is the true explanation of its
occurrence, is rendered probable by the
fact, that other hemorrhages are common
in the disease, as from the nose, bowels,
and stomach, the substance known as
"black vomit," being generally admitted
now, to be nothing more than altered
blood, from the mucous coat of the last
mentioned organ.

[Signature]
Having concluded my description of yellow fever as it usually appears, I now proceed to an account of the epidemic, which visited Charleston during the autumn of 1864; and shall then endeavour to show, that the disease is not contagious.

Various circumstances, combined to render the epidemic of 1864, more malignant than any of the preceding, by which the city was visited; thus, the population was to all intents and purposes a foreign one, consisting as it did, of troops brought from the upper portion of the State, many of whom had never been on the coast before, and who in addition, were badly fed, from the nature of their duties, exposed, and subjected to these depressing influences, ever found to affect the garrison of a besieged city; it is not to be wondered at then, that after the appearance of the first case, which was noticed towards the end of September others fol-
loured in quick succession, and the disease soon became general. I was attacked at the time to the Naval Hospital, situated in the suburbs of the city, and during the continuance of the disease, which lasted about five weeks, we had admitted upwards of thirty-nine patients, of which number only eleven recovered; the disease terminating fatally in nearly every instance during the first week, but gradually becoming milder towards the end, so that in the last week the majority escaped; the peculiar situation of the epidemic may be inferred, when I mention, that this number of patients were received from a body of Marines, numbering about one hundred men, who were doing duty on the wharves: and we did not receive a single case from the gun-boats, which were lying in the harbour, and between which and the shore no communication could permitted, beyond what was actually necessary.

The period of incubation, as illustrated by one case,
Exceedingly short, then, Mr. Elwart, an Assistant Surgeon in the Navy, was ordered from Wilmington, where there was no Yellow Fever prevailing, to Charleston, for duty on one of the gun-boats; he arrived in the city at a time when the fever was at its height and too late in the evening to have a boat sent him from the fleet; accordingly he was compelled to spend the night in the city and proceeded on board the next morning; the consequence was, he was taken ill the first night he spent on board, and his symptoms increasing during the following day, he came up to the hospital, where he ultimately died, with all the symptoms of Yellow Fever, here there was an instance of the disease making its appearance within twenty-four hours after exposure to the contagion. The duration of the disease in those admitted into the hospital at the commencement of the epidemic, was much shorter than I have described it to be usually. The disease began in many of these cases terminating within twenty-four hours, the stage of
Collapse, with "black vomit," rapidly took
over; and death closing the scene very
soon after; towards the close of the epi-
demic, however, the fever sometimes exten-
sed over four days, being succeeded by
more than a certain amount of prostration
and convalescence, dating from its epi-
demic. It was found impossible to pre-
dict from the character of the symptoms
at the commencement, whether the attack
would prove a severe one or not; as of
the cases which proved most fatal. Many
presented on admission no symptoms
of an urgent character, while conversely,
towards the close of the epidemic, more
than one patient recovered, who was found
on admission to have high fever and
marked injection of the conjunctiva, with
swell headache, and pain in the back and
limbs. There was obtained a great tenden-
cy to sighing of the chest parts during the
Course of the disease, this was well ex-
emplified, in the case of a man who had
undergone amputation at the wrist, and
who subsequently contracted the fever while in the hospital, in his case, the stump they nearly healed, commenced to cough, and a considerable portion of the tissues had been destroyed before death, though the attack was comparatively of short duration. Notice also in many of the fatal cases, an evacuated condition of the lungs, towards the last stages of the disease; this was at first ascribed to the action of the Croton oil brought about by the patient rubbing his chest, to which the oil had been applied, and afterwards placing his hands in contact with the lungs; that this was not the true explanation of its occurrence, however, was satisfactorily proved, by its having been observed in several cases, where the oil had not been employed, so that there can be little doubt, if it has been one of the effects produced by the fever poison, and contributes to the removal of the vitals of the lungs impaired by the disease in question.

In one case the
principal cause of the disease appeared to be suspended upon the mouth, there being excessive ulceration of its interior, with a copious expectoration of blood; while at the same time there was, comparatively little in the bility of stomach, scarcely any vomiting being present, until the occurrence of black vomit. This condition of the mouth was not one, as might be supposed, to mercurial action, as there was an entire absence of all feces in the breath, and Tannic acid, in no case treated in the hospital, was mercury ever given in such quantity and be combined, as to produce, fright. In many cases before death, the pulse was found to be entirely absent at the wrist, notwithstanding the heat, at the same time, was beating tumultuously. In a few cases, a total suppression of urine immediately preceded the fatal termination, producing coma, with or without convulsions; this however in which no suppression of urine was present, generally retained their faculties to the.
end, and would reply when spoken to, but displayed no interest in what was going on around them, and seemed quite regardless of their fate.

The treatment employed by us, is that I have already described in previous pages, and it was relied on in all cases, which we had an opportunity of treating from the commencement of the attack. There were many cases, however, which were not sent up to the hospital until the disease had become so firmly established, and the gastric irritability so extreme, as to render any other measure beyond counter-irritants applied externally, with stimulant enemata, when the collapsed stage made its appearance, useless, if not positively injurious. Again in a third class of cases, which were not received by us until the stage of collapse had been reached, even counter-irritants were of no avail, as blisters even, would fail to produce the slightest relief, except upon the skin, where immediate dependence was upon stimulant enemata.
Having by their means to support the strength of the patient, though I am not aware that we accomplished our object in a single instance, as the vital power had sunk too low to admit of the system responding to any medicines. In only one case (viz. that mentioned before, in which there was copious profusion of blood, with little woundings) were we tempted to try any of the so called specifics, and Chloral purgative. Was it the one chosen more from a view to do a action at a mouth than from any belief in its virtues as a specific. What our treatment was, not very successful, cannot be denied, but its want of success, though, according in a great measure to the malignant character of the disease, is, at least partly to be accounted for, by the fact, that few of the patients were sent to the hospital, until the disease had advanced beyond the period, at which medicine could be employed with the greatest hope of success; at the same time, it
must be admitted, that at the commencement of the epidemic, though there were several patients subjected to treatment as soon as the first symptoms made their appearance, yet there was only one case which terminated favourably, recovery being in this case preceded by strangury, as the result of the successive application of blisters.

I now proceed to consider the question, as to whether Yellow Fever is contagious or not, and perhaps there is no subject in medicine which has given rise to more controversy; for though medical men having every opportunity of rendering themselves practically acquainted with the disease, have devoted their minds to elucidating the subject, it may be considered as much a point in dispute at the present day, as it was when the science of medicine was in its infancy, with however this difference, that there being the impossibility of the disease being communicated by contagion, whatever authority once held an opposite opinion.
and there have not been wanting examples, of minds firmly believing in the doctrine of contagion, becoming convinced of the opposite opinion, after having had opportunities of seeing several successive epidemics.

Among the arguments brought forward to prove that the disease spread by contagion, is the fact, that on the appearance of one case, others follow in rapid succession; but this is also observed in Bilious Fevers, and yet no one considers them contagious. It has already been mentioned as probable, that Yellow Fever owes its origin partly at least to Malaria; and if this be admitted, then the fact of one case being rapidly followed by others, is easily explained, by supposing that the same condition of atmospheres concerned in the production of one case, by increasing in intensity and spreading, would be instrumental in giving rise to the others; that this is the true explanation, is rendered probable, by the fact, that there is no well authenticated account of a case of Yellow Fever giving
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Boa Vista
Francea
rise to others, when removed from the atmosphere, in which it originated, and take to a perfectly healthy locality; instances have been mentioned it is true, to prove the opposite, but these do not bear investigation. Thus, the appearance of the epidemic in Charleston during the war, was attributed by the contagionists, to the disease having been brought from "Massaua," where it was prevailing, by a blockade runner. But unfortunately for this assertion it was found on investigation, that the vessel supposed to have brought the disease had never had a case on board; besides, even had the disease been on board of her it could have had no agency in the production of the epidemic, as a reason never prevails in Charleston without the occurrence of one or more epidemiac cases, and yet an epidemic of the disease is, only been perhaps once in five years, when it may be assumed, that the poison by accumulating in the atmosphere, is present in sufficient intensity to produce it; it appears...
probable then, that the Epidemic of 1864, owes its origin to the poisonous state of the atmosphere, rendered more intense, by all actions to hygiene, in the City, having been neglected during the war.

Another argument adduced in favour of the contagious character of the disease, was that it made its appearance in "Nassau," during the American war, though never known to prevail there before, as the result of the frequent communication between that port and Havana, at which latter place it is of yearly occurrence through the agency of vessels bringing goods intended to run the blockade. Now admitting that the disease did make its appearance in "Nassau," at that period, though previously unknown to prevail there, it could not have owed its origin to the cause alleged, for there was communication between the two ports before the war, and yet the disease did not make its appearance; we must therefore look for some other cause, which existing there during the war, was not
present before, and this is to be found
in the fact that prior to the war, the popu-
lation of "Nassau" consisted almost exclu-
sively of negroes, upon whom, as we have
already been, the atmosphere influence,
concerned in the production of yellow jay,
was no effect; as soon as the war commen-
ced, however, owing to this port having become
a depot for blockade running, there was
a perfect influx to it of Europeans, who
by adding to the population, favoreted the
generation of the fever poison, while at the
same time, they furnished the best material
possible for it to exert its influence upon
after having been generated.

A case occurred
during the Epidemic in Charleston, which
appeared a triumph for those maintaining
the doctrine of Contagion, it was that of
the man already alluded to, as having
contracted the disease while in the hospital
recovering from the effect of an ampu-
tation which he had undergone, at first
sight it appeared impossible that he could
I have taken the disease to any other way, than as the result of contagion, for the hospital was situated in the suburbs of the city, and in a perfectly healthy atmosphere; fortunately, however, he languished before death, that he had, on more than one occasion, left the hospital at night, and visited the infected portion of the city, which accounted in a very bad manner for his having taken the disease. There can be no doubt, that many of the so-called instances, of the fever having been communicated by contagion, if closely examined into, would at least, in an equally satisfactory explanation as the above.

Lastly, as the most convincing proof, that contagion is not concerned in producing the disease, I may cite my individual experience, during the epidemic, while it continued, I was living in the hospital, and exposed hourly to any contagious influences that might have existed, but at the same time I took care
never to visit that part of the city, in which the disease was prevailing. The consequence was, I escaped an attack; on the other hand, my colleague in the hospital, who relying upon the prophylactic virtues of a previous attack, was constantly in the way of visiting the infected part of the city, contracted the fever, and narrowly escaped with his life.

In conclusion, I may venture to express the hope, that the day is not far distant when with increased knowledge of the etiology, and pathology of disease, we may be able to give a positive opinion on the non-contagious nature of "Yellow fever," and by doing, dispense with the necessity for quarantine, whose paralyzing effects upon commerce and travel, can only be realized by those communities, in whose midst, the disease is likely to occur.