SIMONS (T. Y.)

AN

ESSAY

ON THE

YELLOW FEVER,

AS IT HAS OCCURRED IN CHARLESTON,

INCLUDING ITS ORIGIN AND PROGRESS UP TO THE PRESENT TIME,

BY THOS. Y. SIMONS, M.D.,

PORT PHYSICIAN, FORMERLY PRESIDENT OF THE MEDICAL SOCIETY AND PROFESSOR OF PRACTICE OF PHYSIC IN THE LATE MEDICAL COLLEGE OF SO. CA., MEDICAL ADVISER AND FORMERLY CHAIRMAN OF THE BOARD OF HEALTH, ETC.

READ BEFORE THE SO. CA. MEDICAL ASSOCIATION,
AT ITS ANNIVERSARY MEETING, MAY, 1851.

CHARLESTON, S. C.:
STEAM POWER-PRESS OF WALKER AND JAMES.
1851.

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Dr D W Randell

Louisville

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ESSAY.

On the present occasion, I propose to call your attention to a consideration of the Yellow Fever as it has occurred in Charleston, in which I shall confine myself, as far as practicable, to the characteristics of the disease as exhibited among us.

In the performance of this duty, I will,

1st. Give the history of Yellow Fever from its first appearance to the present time.

2dly. Inquire into the causes which have been supposed to produce the disease.

3dly. The former condition of Charleston, its present condition, and the system of medical police adopted.

4thly. The peculiar character of the disease and the diagnosis between it and other fevers among us.

5thly. A succinct view of the various remedial agents adopted for its cure.

In prosecuting this subject, I shall confine myself, as far as practicable, to the experience and observations of our own physicians—omitting what relates to other cities in our own or other countries.

The first inquiry then, is, the history of the disease.* The yellow fever, says Dr. Good, as far as we have any record of its origin, was at Barbadoes, whence it spread to different West India Islands, and at length made its appearance at Boston, in North America, in 1693, to which place it was carried from Martinique, by the fleet under Admiral Wheeler.

* I may here remark that most of this is taken from my report to the Board of Health, as its Chairman, in 1839.

Dr. Craigie, in his interesting article on yellow fever, in his work on the Practice of Physic, remarks:

"It is uncertain whether yellow fever prevailed among the indigenous inhabitants of the American continent previous to the period when it was visited by Europeans. From the testimony of Alzate and several Spanish authors, it appears that long before the arrival of Cortez in Mexico, a disease named Matlazahuatl, attended with hemorrhages from the nose and mouth, and extremely fatal, used occasionally to prevail among the native Americans, and was particularly mortal, so early as 1545 and 1546—and afterwards raged epidemically in 1736–7, and 1761–2."

Humboldt, indeed, maintains that this disease is totally different from the yellow fever, because it attacks the red or copper colored race, and is confined to the interior and elevated table land of Mexico at 1200 or 1300 tasis—7200 to 7800 feet above the level of the sea.

Dr. Craigie does not think Humboldt's objections satisfactory. I must, however, regard them as very potent if not conclusive. I have never yet heard of an instance of real yellow fever prevailing among the copper colored race, or, in another phrase, American Indians. Nor has it prevailed in any agricultural districts. It has been confined exclusively to cities, and cannot be propagated in the country, as will in our progress of investigation be shewn—and in cities, the blacks and mulattoes, for we have no Indians in cities, are almost entirely exempt. My own opinion is, that Humboldt was right as regards the disease not being yellow fever.

Dr. Craigie again remarks:

"One of the earliest distinct record of the disease, is given by Echard, who informs—that when the expedition against Hispaniola under Venables, returned to Jamaica, they met there an enemy more severe than the Spaniards, which he says was the plague, and which, he adds, in a little time reduced their army, originally 7000, to fewer than 2000."

Dr. Craigie regards this epidemic as yellow fever and not plague—in which opinion I concur. On the earlier appearance of Yellow Fever in America, and particularly in

Charleston, it was at first regarded as the Plague. Having given this general history of the first knowledge of the existence of yellow fever, we will now consider its history among us.

Its first appearance in Charleston was in 1699 or 1700, and it was called by Dr. Hewat the infectious distemper, and considered by the inhabitants as a plague. In 1703 it again occurred. It also made its appearance in 1728. That summer was uncommonly hot and dry; the beasts suffered from the want of water, and the fever raging with violence, swept off an immense number of whites and some blacks. The state of the city was truly deplorable, as the town, says Dr. Hewat, depended entirely on the country for fresh provisions, the planters would suffer no person to carry supplies to it, for fear of catching the infection and bringing it to the country. The physicians knew not how to treat this uncommon disorder, which was suddenly caught and proved suddenly fatal. The calamity was so general, that few could grant assistance to their neighbors. So many funerals happening every day, while so many lay sick, white persons sufficient for burying the dead were scarcely to be found. Though they were often interred on the same day that they died, so quick was the putrefaction, so offensive and infectious were the corpses, that even the nearest relations seemed averse from performing the necessary duties. In 1732 and 1739, it raged with so much violence that when at its height from ten to twelve died daily. It did not re-appear until 1745 and 1748, and was then comparatively mild. A few cases occurred in 1753 and 1755, and then there was a cessation of the disease until 1792, with the exception of a few sporadic cases, which occur more or less every year. "In the year 1792," says Dr. Ramsay, "a new era of the yellow fever commenced. It raged in Charleston in that year and 1794, '95, '96, '97, '98, '99, 1800, 1802, 1804 and 1807. A few cases occurred in the years 1803, and 1805; in both years its victims did not exceed 59. In the years 1793 and 1808, the disease is not mentioned at all; and in the year 1806 it is only mentioned as having occurred in a very few cases under particular circumstances. In its visitations it

extended from July to November, but was most rife in August and September; with a very few exceptions, chiefly children, it exclusively fell on strangers. The unseasoned negroes were not exempt from its ravages, but they escaped oftener than the white strangers; and when attacked they had the disease in a lighter degree, and if properly treated were more generally cured. Persons, both black and white, arriving from the West India Islands, enjoyed similar exemptions from the yellow fever of Charleston. In the year 1796 and 1798, it raged with the greatest violence; but since that time, has considerably abated both in frequency and violence."

From 1807 to 1817, we have no records of the existence of this disease as an epidemic, although there were sporadic cases. In 1817, it prevailed with great malignancy. It again occurred in 1819, 1824, 1827, 1828, 1830, 1838 and 1839. From the statements I have thus brought to your view, it will be seen how irregular have been the visitations of this disease.

I will now present you, so far as we have any records, with the number of deaths in these respective years. In 1699, the fever which prevailed, swept off a great part of the inahbitants and a number of families. It was then considered to be a plague, "though afterwards," says Dr. Ramsay, "supposed to be the yellow fever." "In 1723," Dr. Hewat says, "the physicians knew not how to treat the disease." In 1732, when the population must have been very small, from 8 to 12 whites died daily, which exceeds any mortality in our city since that time, although our population has greatly increased. The following facts I collect from Dr. David Ramsay:

In	1799,	there	were	-	-	239	deaths.
"	1800,	"	"	-	-	-	184	"
"	1802,	"	"	-	-	96	"
"	1804,	"	"	-	-	-	148	"
"	1807,	"	"	-	-	162	"

From 1807 we have no account of the existence of the fever until 1817. I have collected the reports of the disease subsequent to that period, from the records of the Board of Health.

In 1817, there were 268 deaths, of whom were adult males 164; adult females 56; and natives under eighteen 48. 19 blacks died, of whom 14 were males and 5 females.

In 1819, there were 172 deaths; of whom 130 were adult males, 24 adult females, and 18 natives under the age of 18. There were 5 blacks, 3 males and 2 females.

In 1824, there were 236 deaths; 160 adult males, 32 females, and 44 natives under 18. No blacks died this year of the disease.

In 1827 there were 67 deaths; adult males 40, females 3; native children over fourteen 4, under that age 10; strangers' children 6. Blacks 2, who were males.

In 1828, there were 26 deaths; adult males 21, females 3, native children 1, strangers' children 1. There were no blacks. This year, a disease having many of the incipient symptoms of yellow fever, viz., the Dengue, prevailed as an epidemic, affecting every one, but proving only in a few instances fatal. It is probable that the prevalence of this epidemic caused the cessation of the yellow fever and limited its extent.

In 1830, there were 29 deaths; adult males 23, females 1, native children 1, strangers' children 4. Blacks 1.

In 1834, there were 46 deaths; adult males 28, females 10, native children 1, strangers' children 5. No blacks.

In 1835, there were 26 deaths; adult males 16, females 5, native children 4. Blacks 1.

In 1838, there were 353 deaths; adult males 281, females 30, native children 17, strangers' children 11. Blacks 4 females.

In 1839, there were 134 deaths; adult males 104, females 14, native children 8, strangers' children 7. Blacks 1 female. The first appearance of the disease occurred earlier this year than usual.

The yellow fever did not appear in Charleston proper, again, until 1849. But it made its appearance in 1841 in the suburbs of the city, beyond the incorporated limits. No registry having been kept of deaths, I am unable to say how far it extended, But I believe it was limited in extent, and certainly did not occur in the city.

In 1849, there were 123 deaths; 89 males, 34 females. Of whom, 65 from Ireland, 34 from Germany, 3 from England, 3 from Scotland. New-York 6, Boston 1, Georgia 1, Italy 1, U. S. 2, Portugal 1, St. Johns, N. B. 1, South-Carolina 33, Charleston 2. Total 123.

Of the two cases in Charleston, one was a young gentleman who contracted fever from exposure on a sea island near Charleston—was brought up to the city and died. The other was a black man.

From the condensed statements of the fever in this city which have just been made, we may deduce the following conclusions, to which I invite your attention:

The number of native children who die during the prevalence of fever is small in proportion to strangers, considering the great number who are liable, and is remarkably small in comparison with those who die of other diseases to which children are subject.

All who have not been acclimated to Charleston, are liable in the years when it prevails, to the fever, from which, however, many escape; but those from southern latitudes are much less liable than those from northern latitudes, either in America or Europe; and those from our surrounding country are much less liable than those from the upper country.

In conclusion, I may remark, that all natives arriving at the adult age are exempt from this disease, as well as those strangers who have had the disease, and not having it have been here many years

The number of male adults is greater than that of females. There are more males liable to the disease than females, and they are more exposed to exciting causes and more careless in their habits and mode of life.

The number of blacks who die is small, and the deaths are among those who have been brought from the country and are unaccustomed to the city, but these cases are rare and generally mild and manageable.

The fever generally occurs at the middle or end of July, and prevails in August, September and October, and a few cases sometimes occur in November. In 1839, it commenced

in June, and the only instance of its occurring earlier, was in 1732, when it commenced in May and terminated in October. The following statistics on this point, are extracted from the records of the Board of Health.

In 1817, there were 3 deaths in July ; in August 80 ; in September 149 ; in October 33 ; in November 3 ; and these were in the beginning of the month.

In 1818, in August 55 ; in September 27, and in October 20.

In 1824, in August 32 ; in September 145 ; in October 42 ; in November 17. The frost occurred very early this year.

In 1827, in August 10 ; in September 38 ; in October 18.

In 1838, in August 44 ; in September 219 ; in October 77 ; in November 6 ; which were in the first week of the month.

In 1839, there were in June 5 cases ; in July 17 ; in August 73 ; in September 32 ; in October 9.

There were fewer cases in September than usual, for as soon as a peculiar fever resembling the Dengue appeared, the yellow fever began to disappear.

In 1849, the first case occurred on the 26th August, and to September there were 3 cases ; in September 37 ; in October 65 ; in November 18 ; 16 occurred up to the 10th of November, and 2 subsequently died in the Poor House, between the 26th and first of December.

The next question which presents itself, is, the causes which produce this disease. By some, and at an early period, most physicians attributed its prevalence to importation.

I am not disposed to enter largely into this vexed question, upon which so much has been written, and unfortunately with a partisan rather than philosophic spirit ; and after all the discussions for two centuries and better, there is still discrepancy of statements and differences of opinion upon this point. Let me summarily bring to your notice the opinions of the most eminent physicians among us in Charleston, before entering upon the philosophy of this very important question.

Dr. Lining, who first gave the most graphic description of this disease, remarks, " and lastly, whenever the disease appeared here, it was easily traced to some person who had

lately arrived from some of the West India islands, where it was epidemical."

This eminent physician does not give us any evidence in confirmation of this sweeping proposition, and it is not unfair to conjecture that his mind was biased by the opinion that the disease was first brought to Boston by Admiral Wheeler, from Martinique, in 1693. As Dr. Rush, when he recanted his opinion of the propagation of the disease by contagion, acknowledged he was led to ascribe the yellow fever primarily in Philadelphia, in 1693–4 and 97, to contagion, he was influenced by the opinion of Dr. Lining and others.

Dr. John Moultrie, of Charleston, who wrote an admirable thesis in 1749, when he graduated in Edinburgh, and which has been translated from the Latin into German and French, disagrees with the opinion of Dr. Lining, and those who advocated the introduction and spread of the disease by contagion.

I will now quote another passage from Dr. Lining: although says the Dr., "the infection was spread through the town, yet, if any from the country received it in the city and sickened and died on their return home, the infection spread no further, not so as to one in the same house." The same fact has ever since held true, as far as my experience of thirty years has extended, and I have never heard anything to the contrary. This fact will evidently show that at least the contagious or infectious character differs widely from those acknowledged as contagious and infectious by the whole profession. Such as small-pox, for example. But there is one striking circumstance which occurred in 1841. The yellow fever occurred on the Neck or suburbs of Charleston, yet strange to say, that many who sickened were brought to the city and died, and it did not spread or generate a single case in the city.

Let us now consider other medical opinions of more modern date. Dr. David Ramsay, in a letter to Dr. Miller of New-York, in 1800, remarks: "The disputes about the origin of yellow fever, which have agitated the Northern States, have never existed in Charleston. There is but one

opinion among the physicians and inhabitants, and that is, that the disease was neither imported nor contagious."

This was the unanimous sentiment of the Medical Society, who in pursuance of it, gave their opinion to the Government last summer, that the rigid enforcement of the quarantine laws, was by no means necessary on account of yellow fever.

Now these opinions were generally entertained until 1839, the particulars of which it becomes my duty to give, and let others form their judgment. The circumstances then occurring, has awakened doubts if not convictions in the minds of some few very intelligent physicians, whether the yellow fever has not occurred among us through importation, and either by infection or contagion, or to use a new phrase, transmissibility. I will, therefore, give you all the facts and the opinions predicated upon them, and leave it to your judgment to decide.

In 1839, the late Dr. Stroble endeavored to prove it occurred from importation, and predicated upon this, he wrote a work to prove the transmissibility, or in other words, contagious character of the disease. I refer you to the work for particulars, and will content myself with quoting from the work on the Practice of Physic, by our esteemed and eminent associate, Prof. S. H. Dickson, for whose medical opinions generally I have much respect.

"Dr. B. B. Stroble, of this city," says Dr. Dickson, "struck with the early and unexpected appearance of yellow fever here in June, 1839, was led to a patient, impartial and attentive examination of the subject. For the detail of his facts and arguments I refer you to his published work. They seem to me weighty if not conclusive, and if they do not prove, they surely render highly probable, the doctrine that yellow fever is in this country and climate, as it has been long maintained to be elsewhere, contagious and communicable, or, as Dr. Stroble has phrased it, transmissible, yellow fever is contagious; in other words, a case of yellow fever having been generated in a favorable season and locality, by its unknown and undetected cause, becomes itself a generating centre productive of other causes, or of a morbid agent capable of producing them.

"It is transmissible from any one centre to another, or from any one of its generating centres to a healthy locality, and this communication or extension may take place in two modes, either by consequence of a portion of atmosphere in which is diffused its undefined specific cause, as in the hold of a foul vessel, from any place where it prevails epidemically or by the introduction of a sick body or any formiles imbued with its contagion."

Now, here we have the opinion on one side. Let me present you the other.

On the 7th of June, 1839, three patients were admitted into the Marine Hospital, from the ship Burmah, which had arrived from Havana, of which I was informed by the physician of that institution. The pilot, contrary to the regulation that all vessels having sickness on board should be brought to quarantine, brought in this vessel. The remainder of the seamen on board that were sick, were sent to the Lazaretto, and the ship was thoroughly cleaned and ventilated, she being in ballast. She was in the stream and did not come to the wharf for some weeks after, and had no communication, as far as could be ascertained, with other vessels. On the 17th and 19th, cases were admitted into the Hospital from the ships Chatham, Leonore and Elizabeth Bruce. The Chatham and Elizabeth Bruce, were lying at Fitzsimmons' wharf, the Leonore was lying in the stream, opposite these vessels, and had never been to the wharf; the Burmah was lying in the stream off Roper's wharf: the distance from each of the vessels was therefore considerable, and there were a good many vessels between, on board of which no sickness had as yet occurred. The Chatham arrived here from Boston, on the 5th of June, in ballast; the Elizabeth Bruce arrived in Charleston from New-York, 7th of June, in ballast; and the Leonore sailed from Boston and arrived on the 7th of June, in ballast—all the crews were well. Subsequently, the disease occurred in different vessels in the harbor, which it would be unnecessary here to detail.

The appearance of the disease so early in the season and so soon after its occurrence on board of the Burmah, created a suspicion of contagion in the minds of some, but I could

not, upon the minutest investigation, come to that conclusion, and a committee, consisting of Drs. Lopez, Moultrie, Geddings, Campbell, Winthrop and Horlbeck, which was appointed by the Medical Society, after making a minute and thorough investigation, came to the conclusion that the fever was not introduced by the Burmah, or by contagion, but was produced by the peculiar condition of our atmosphere. In other words, it was epidemic, and arose from causes among us.

From that report I select the following passages:

"By an examination instituted through reference to the captains and mates of the various vessels, whose information was given from the log books, your committee have ascertained that they had, at the time of their sailing from the different ports, viz., Liverpool, Boston, and New-York, for this port, perfectly healthy crews, with sound cargoes, incapable from their character of generating foul air. That there was no malignant disease prevailing at the time of their departure; that their crews had not, while in this port, any communication, either direct or indirect, with the Burmah or her crew; and finally, that *that ship*, in all these instances, lay in the stream, from a quarter to half a mile from them, except for a short period, of which mention will hereafter be made." —Page 5.)

Again: "The presumption is thus fairly induced, that the cleansing and ventilation must have disinfected her, (the Burmah,) sufficiently of her foul atmosphere for purposes of safety, *else, why none other of her crew remaining on board* THENCE TO THE TIME OF DEPARTURE FROM OUR PORT, CONTRACT THE DISEASE?"—(Page 7.)

Again: "Thus far your committee have satisfied themselves, that the transmission of the fever through the agency of the Burmah, is neither tenable as a fact, nor in accordance with the opinions of a great majority of the medical profession in this country."—(Page 8.)

And again: "Your committee therefore, are of opinion, that the yellow fever which has prevailed, and still continues this season, has its origin, not from contagion derivable from

those cases imported in the ship Burmah on the 6th of June last, but from local and general causes."—(Page 10.)

I may here remark, that Dr. Lebby, in a letter to Dr. Stroble, shows that yellow fever occurred at Fort Johnson, some time before the Burmah arrived—and could not be possibly traced as arising from any foreign agency.

I may here also remark, that in 1838, a fire occurred which destroyed one-third of the city of Charleston—and in this year and 1839, the exposure of an immense mass of materials on the surface of so much uncovered earth, and water in the cellars, were exposed to solar influence, sufficient of themselves to generate yellow fever.

I have thus given you the opinions of our own writers and physicians. You are all doubtless well acquainted with the different views taken by medical authors in the United States as well as Europe, and I think after a thorough investigation, you will readily perceive different conclusions drawn from the same facts, and indeed, what is more unpleasant, often discrepancy of opinion, as regards the facts. Likewise that bilious remittent fever has been not unfrequently confounded with yellow fever, and above all, in the ardor of discussion, philosophic research after truth has too often been lost in the maze of controversial sophistries. Yet, I think that the most general opinion is, that the yellow fever, when epidemic, arises from local causes, while its contagious, or rather infectious influence, under certain circumstances may occur. All epidemics may become infectious without being strictly contagious or capable of transmissibility or extension, beyond a certain limit; and hence, in former ages, they were all regarded as contagious, whereas, now it is more than questioned by many.

Let us now enquire into a very interesting point of medical philosophy, which may throw some light on this subject. In former times the system of medical police and medical hygiene were miserably pursued. It was then in the treatment a rule, to have all fresh air excluded from the sick, for fear of catching cold. Now from this regime, we observe that not only there was an accumulation of fo-

mites emanating from the body, but an exhaustion of vital air, oxygen gas and the accumulation of carbonic acid gas, (non vital,) hence the aggravated type and infectious character of the diseases then existing;* and under such a system of regime, it is not at all surprising that those, as nurses or friends, who were exposed to such a vitiated air, should themselves feel the effects of the disease. Hence the terrible accounts which were given of the infectious and pestilential nature of epidemics, and the violence and mortality incident thereto. From chemical discoveries, and the judicious application of these discoveries to useful and practical purposes, a new system of medical police and medical hygiene became gradually to be adopted, the effects of which have been signally observed wherever they have been faithfully used. We now regard it as essentially important, to have a free ventilation to such an extent as to correct the vitiated air produced from the sources already stated, and we likewise use certain substances which are regarded at least, as partially disinfecting agents, and that plan has had a manifest influence and effect in diminishing the aggravated types of epidemics. We hear now no longer of the typhus gravior, which was so strongly depicted heretofore, which, says Southward Smith, is not known in the hospitals; but we have had evidences of the same disease in cases of emigrants crowded on board of vessels ill-ventilated, and accumulation of filth generating a foul and pestilential atmosphere, and creating a fever very similar to the description given of the typhus gravior.

From the great improvement in medical police, the apprehension of the propagation of these fevers by infection, has been much questioned by many, and the virulence and mortality evidently greatly diminished. Predicated upon these principles, that extraordinary genius, Bonaparte, peformed an act which had a powerful influence

* I may mention here an anecdote of that original and eccentric medical genius, Dr. Radcliffe, in the reign of Queen Anne. He was attending the young Duke o Beaufort, in small pox, and in opposition to the received medical opinion, as well as the strong remonstrances of the Duke's mother, ordered the windows opened to obtain fresh air, which was strenuously resisted—he, however, persisted, and from th period, a change in the symptoms took place, and ultimate recovery.

as regards his undaunted courage among his soldiers, and of good sense by his medical staff, when he passed through undismayed the hospitals in Arabia, encouraging his men suffering with the plague, a disease which, like yellow fever, was regarded with as much horror as the leper in ancient times, and which made the boldest warriors shrink from with terror. These hospitals were well ventilated, and the virulence and mortality was much diminished.

There can be no doubt then, that an atmosphere can be so generated in a ship or residence, as to produce a similar disease to those in its immediate atmosphere; but whether a person or persons coming into a healthy city could propagate the disease so as to vitiate the atmosphere of a whole city, and create an epidemic, is very questionable. I will here introduce two very interesting cases I published many years ago, illustrative of this subject. A Spanish vessel came into Charleston and anchored at quarantine, with all her officers sick with yellow fever. The mate of an American vessel sailing from New-Orleans to Philadelphia, was placed on board the Spanish vessel while at sea, to navigate her to Charleston. The mate, when I visited her, was perfectly well; the next day however, he was seized with yellow fever, and died on the fourth day with black vomit.

To satisfy my mind as far as practicable, I wrote to New-Orleans to ascertain if yellow fever was prevailing there at that time, to which I received in answer it was not. I then wrote to the port physician of Philadelphia, to ascertain if any sickness existed on board of the vessel on its arrival at quarantine, and the reply was—"There was none."

Now, here seems to me a clear case of infectious influence.

Again, of another disease, viz., Cholera, I will cite an instance which occurred on our sea-coast, and which I published. The brig "Amelia" was stranded on Folly Island, about twenty miles or more from Charleston, with patients suffering from cholera. Several of those who went to the wreck and encampment near, thereby took the disease, and as soon as the vessel and all her materials were burnt, the disease became arrested. Two of the sailors absconded and arrived in Charleston, sickened with cholera in Elliot street,

and died—but no other cases occurred in the city, nor was it propagated therefrom.

Dr. Dickson wrote a very graphic account of this circumstance, and it was regarded by him and the contagionists, as a most powerful evidence of its infectious character. Now, I admit and concur in the fact of its infectious influence to the extent in which it was generated. But still it is questionable if it could have extended beyond a certain limit, or, in other words, would have in a city produced a general epidemic. Be this as it may, the circumstances prove an important lesson in medical police, to prevent all cases of such kind being introduced into a city. From what I have presented to you, you will perceive I have endeavored to do so in the most impartial manner. You will likewise perceive that I regard it as peculiarly essential to have a judicious regulation of external and internal medical police. The laws of epidemics are puzzling problems in medical re-research, and have not been satisfactorily explained either by chemical analysis or meteorological observations. Yet the investigations in these respective departments of scientific research have led to much valuable and useful improvements in medical police, if not in preventing, at least greatly ameliorating, the mortality by epidemic disease.

I will now consider the condition of Charleston formerly, and its present condition, and the consequent progressive improvement in the medical police. The following extract is from Dr. Ramsay's History of South-Carolina, a work now out of print. The extract is long, but I hope I will be excused in presenting it.

"George Chalmers, in his political annals of the United Colonies, printed in 1780, page 541, 542, observes that: 'Charleston was long unhealthful. From the month of June to October, the courts of justice were commonly shut up. No public business was transacted. Men fled from it as from a pestilence, and orders were given to inquire for situations more friendly to health.' This statement is corroborated by tradition from the elder citizens, who inform us that in the time of their fathers, the sick were sent from Charleston, to expedite their recovery in the more wholesome air of the

country; and that the country was preferred on the score of health, as a summer residence. This is by no means improbable. The situation of Charleston in its natural state, was a slip of land stretching southerly between the two rivers, and projecting into the harbor formed by their junction, and divided into a number of peninsulas by creeks and marshes indenting it on three sides, so as to leave but little unbroken high land in the middle. The first buildings extended along East Bay street, and had a marsh in their whole front. A considerable creek, named Vanderhorst's Creek occupied the foundation of Water street, and passing beyond Meeting street, sent out a branch to the northward, nearly to the Presbyterian church. Another creek stretched north-westwardly nearly parallel to East Bay street, from the neighborhood of Macleod's lots, through Longitude Lane and to the north of it. The same kind of low ground ran up Queen street, then called Dork street, beyond the French church and through Berresford's alley, till it approached Meeting street. The north end of Union street was planted with rice about the middle of the 18th century. Another very large creek occupied the site of the present central market, and extended westwardly beyond Meeting street, which diverged southwardly almost to the Independent church, and northwardly spreading extensively and dividing into two branches, running to the north-west and to the north-east, so as to cover a large portion of ground. Besides the marsh and these creeks, which nearly environed three sides of the improved part of Charleston, there was another creek a little to the southward of what is now Water street, which stretched westwardly over Church street; and another, which ran northwardly up Meeting street, and then extended across westwardly nearly to King street. A creek ran from the west near where Peter Smith's house now stands, and nearly parallel to South Bay, till it approached the last mentioned creek, and was divided from it by King street and a slip of land on each side. Six other creeks ran eastwardly from Ashley river, three of which stretched across the peninsula so as to approximate to King street. There were also ponds and low grounds in different parts of the town. One of

these extended on the east side of King street, almost the whole distance between Broad and Tradd streets. This was granted to the French church in 1701, but being useless in its then state, was leased out by them for fifty years. In the course of that period the tenants improved and built upon it. There was also a large body of low grounds at the intersection of Hasell and Meeting streets. The elder inhabitants often mention a large pond where the Court House now stands. It is believed that this, though real, was artificial. It is probable that the entrenchmemts attached to the western fortifications of Charleston, which extended up and down Meeting street, from the vicinity of the Independent church to the vicinity of the Presbyterian church, were dug so deep as to cause a constant large collection of water at that middle part of the lines. It was the site of Johnson's covered half moon, and of a draw bridge, over which was the chief communication between the town and the country. No prudent engineer would erect such works as these on a pond, though when they were erected in the soft soil of Charlestown, they would be very likely to produce one. Whether this was a natural or artificial collection of water, there was enough in other parts of the town to make it unhealthy. Such, with some small alteration, was the situation of Charlestown for the first seventy years after its settlement.

"To reduce such a quagmire as a great part of Charlestown originally was, to a firm, high and dry state, required time, labor and expense. Much has been done, but much remains for future enterprise.

"The pond at the south end of Meeting street, was filled up and built upon by Josiah Smith, in the years 1767, 1768 and 1769, at an expense of about £1200 sterling.

"Vanderhorst's creek was turned into firm, solid land, between the years 1788 and 1792, and obtained the name of Water street.

"The creek running under the governor's bridge, was finally obliterated and turned into a market, between the years 1804 and 1807. The extensive marsh land and low ground to the north and west of this creek, had been filled up and built upon some years before, by John Eberly, An-

thony Toomer, and others. The time when the other creeks were converted into solid land and improved, cannot be exactly ascertained."

Such, then, was the condition of Charleston when it was early settled. Gradually and progressively, all of these ponds and creeks were filled up. Subterraneous drains in the different streets were made, and drains from the yards of respective premises were made to communicate with the drains in the streets. But it was found that the drains having the grates in the centre of the street and becoming thus filled up, caused, after heavy rains, a vast quantity of water to be accumulated in the streets, making them at times almost impassable. The offals of the city were required regularly every day, except Sunday, to be removed.

The first improvement was the paving of East Bay street and Elliott street, where the yellow fever was generally the most rife; a great improvement in the healthiness of these localities was found to be the result. The great and general improvement, however, commenced in the administration of General Hayne, in 1836, at which time I was a member of the Council. It was then determined to make a general system of internal medical police. The leading objects were to have:

1st. Every low lot drained thoroughly, so as not to allow water to remain thereon and become stagnant, and if they could not be drained to have them filled up.

2d. To have all the cellars existing to be kept so constructed as not to allow accumulation of water in them, and if this could not be done to have them filled up.

3d. To forbid subterraneous cellars in all subsequent buildings.

4th. A great and important object was adopted, to have the streets paved or Macadamized convexly, and to have side drains in the streets communicating with the main drains in the streets, thus preventing the accumulation of water; and having likewise the drains thus cleansed, and thereby preventing the accumulation of filth requiring them to be opened and cleansed,—a great cause, in my opinion, of disease.

Now these plans have been progressively going on, and in proportion has the healthiness of our city been improved; and while the public authorities are gradually, nay, I may say actively, pursuing this plan, I firmly believe it will be the cause of making the city not only one of the healthiest among commercial cities, but may possibly make us in a great degree, if not entirely, exempt from yellow fever, and should it occur, lessen its virulence and mortality. From a long experience and observation, I regard it the solemn duty of the public authorities to go on with this plan, regardless of expense, not only for the preservation of health, but for the extension of commercial prosperity.

Let me now say what is generally admitted; that the exaltation of heat without moisture or accumulated vapor, as exhibited by the dew-point, will not produce yellow fever any more than moisture without high temperature will do it.

It is only in more modern times that we have had proper meteorological observations. The thermometrical heat among us was formerly given, but the hygrometrical and dew-point were not understood, nor had we electrometers. Hence, in 1728, we are informed that the summer was hot and dry, meaning there was no rain; yet, I have no doubt the atmosphere was damp and the dews heavy. Such, at least, is my experience in dry seasons among us.

From the statements which I have brought to your view, you will readily perceive, that while I regard it as proper to prevent, as far as practicable, the introduction of yellow fever from other sources, we should not be forgetful to remove all causes which may arise among us to produce the disease. It is a great error to conceive that we receive all the evils of epidemics from other sources, rather than causes among ourselves. The true, and in my opinion, the wise plan, is to attend particularly to internal medical police, with a judicious care as regards introduction of it from other sources. I must in candor say, that I do not believe the yellow fever was ever produced in Charleston from importation; and this is the result of an experience of thirty years as Port Physician, and twenty-four years a mem-

ber of the Board of Health, many years of which I have been its chairman.

We will now describe yellow fever:

1st. To give its peculiar characters.

2d. The different subordinate forms which it exhibits.

1st. Yellow fever is a continued fever for three days, sometimes less, which may be called its first stadium or paroxysm.

The fever comparatively subsides after this period, or we have the commencement of black vomit. There is in the first stage much irritability of the stomach and pain in the epigastric region, which, if not controlled, produces in the second stage an ejection first of a greyish floccent matter, accompanied with viscid mucus, and if this is not arrested, the black vomit, resembling coffee grounds, is thrown up. In this stage sometimes, there is bleeding from the nose, gums, and ears, and even the finger nails, with vomiting of venous blood, previous to black vomit. The circulation becomes now languid, the skin cool, and in many places of a bluish, mottled appearance, especially along the spinal column, probably from the pressure in remaining in a recumbent position; there is heavy and deep sighings, sometimes hiccoughs, and a slow and laborious breathing. These then are the general phenomena presented, according very much to what was described so graphically by Dr. Lining, as far back as 1748, showing no change in the character of the disease in this long interval of time. Having given these general symptoms as I have observed them, we will proceed,

2dly. To the varieties which are presented which depend upon the constitutional temperament of the individuals attacked. Thus in the sanguineous and bilio-sanguineous, we find a high exhaltation of nervous and circulatory excitement; generally in the latter, a higher degree of circulatory action than in the former. In these cases there are always a strong action of the heart and a strong pulse and active capillary circulation, exhibiting the following phenomena: quickness of respiration and great uneasiness, and even acute pain in the epigastric region, increased animal heat in the cutaneous surface, with redness of tongue and excessive thirst. The cerebral excitement is great, ac-

companied in some instances with delirium, and if not, with violent pain in the cerebrum, in the cerebellic portion of the brain, and the spinal column; there is likewise irritability of the stomach, a diminution in the secretions of the liver, kidneys, and cutaneous surface, and frequently in the mucus membrane, as evinced by the dryness of the tongue. I have seen some cases where the intensity has been concentrated in the brain and cerebro spinal column, in which there is intense agony with symptoms of the character of phrenitis. In such cases the extremities are very cold.

Now there are cases again where the general symptoms are directly the reverse, and these are in the phlegmatic temperaments. In such cases there is a languid circulation, the pulse being slow and easily compressed, a slow respiration, a languor of cerebral functions with a torpidity of mind and drowsiness, a pale and cool skin, having at times a mottled appearance and a diminution of animal heat, evincing a feeble capillary action. The other symptoms are not dissimilar to what have been already described. These two different forms are the inflammatory and the congestive, in both of which the characteristic diagnosis of yellow fever is maintained, and in both these forms will be found, generally speaking, a striated redness in the tumica conjunctiva, gradually in the progress of the disease, (pari passu,) with the skin becoming yellow.

We are next to consider the prognosis of the disease. I regard this in many instances difficult. If the various symptoms which have been already described, are not relieved, and the irritability of the stomach continues with the vomiting of black vomit, the prognosis is unquestionably unfavorable, although there have been extraordinary cases of recovery under these inauspicious circumstances. A heavy and deep sighing with laborious breathing, in all cases wherever the other phenomena are favorable, is in this, as in other fevers, a dangerous indication. If these indications are relieved and the patient has biliary evacuations, and all the active derangements composed after the fourth day, the prospects of recovery are cheering, although there have been many melancholy and fatal changes.

It is, in truth, a very difficult matter in all cases, however seemingly favorable, to make a prognosis; and the patient should always be regarded as in a precarious condition until all the unfavorable symptoms disappear.

I will now consider briefly the diagnosis of the disease. The fever with which it has been frequently assimilated, is the bilious remittent fever, and hence by some it has been called the paludal fever—upon the supposition that it was produced by marsh miasmata.

1st. Yellow fever is a continued fever of one paroxysm and different stadia, as already described. Remittent fever has, as its name imports, daily remissions and exacerbations.

2d. Yellow fever prevails in cities, and cannot be propagated in agricultural districts, and rarely is known in cities upon navigable rivers, far remote from the ocean—although there are exceptions to this rule; but I think it was frequently the bilious remittent fever of an aggravated type, in place of yellow fever. Oftentimes physicians thus fall intothe same error as many Europeans, from not examining the vomit ejected. Remittent fever is peculiarly endemic in agricultural countries in warm latitudes.

3d. Once having the yellow fever, is an exemption from future invasions. In remittent fever, once having it, so far from being an exemption, renders one more susceptible to the malaria influence.

Such, then, are the prominent diagnostics. The peculiar yellowness of the skin, in the progress of yellow fever, resembling jaundice and its type, being of continued character, induced Sauvage and Cullen, two celebrated nosologists, to give the following terms to the disease—Sauvage denominates it typhus ieterodes; Cullen, typhus cum flavedine cutis, a distinction without a difference. The yellowness of the skin is not a diagnostic symptom of yellow fever, as it is almost equally an accompanying symptom of bilious remittent fever. Nor can it be regarded as a typhus, as yellow fever requires altitude of temperature, and is the disease of warmer climates; the other of diminution of temperature, and is the disease of cold climates. The black vomit, the vomito prieto of the Spaniards, has been regarded

as a diagnostic sign, although black vomit has occurred in other cases. Yet it is comparatively with few exceptions in this disease—the termination of the first stadium. There is often in bilious remittent fever, a kind of black atrabilious matter ejected, which has, upon ordinary inspection, the exact appearance of the black vomit of yellow fever, but subjected to minute examination, will be found widely different. The opinion of Dr. Rush, and some others, was, that yellow fever was nothing more than an aggravated type of bilious fever, and that the black vomit was nothing more than vitiated bile. Dr. Physick, however, made many interesting autopsies, and clearly proved that in all the cases, with few exceptions, the liver was in a healthy condition, and no vitiated bile in the gall bladder; that the stomach was the centre of the disease, showing abrasions, congestions, etc. etc., and he demonstrated the difference between vitiated bile and black vomit. Subsequent anatomical investigations have confirmed his views. Many years since, when I was Physician to the Alms House Hospital, I collected the vomitings from those affected with bilious fever, and those with yellow fever, and as Professor of Practice of Physic, demonstrated clearly the difference between them. In repose, they could hardly be distinguished; agitated and placed on paper, the vomit of the bilious remittent patient would show the marks of bile; the yellow fever, the same coffee ground appearance untinged. These were mere confirmations of Dr. Physick's previous experiments.

You are well aware that there are various physiological theories and speculations as regards the character of the gastric juice; among others, that it was free muriatic acid. At that time, when as Professor of Practice of Physic, I lectured on yellow fever, I made experiments before the class, of fresh drawn venous blood, to which I added diluted muriatic acid gas, and after shaking it, there was all the appearance of the black vomit—and when tested in every way, could not be distinguished from the black vomit which I had preserved—both being exhibited at the same time. Those who are curious can repeat the experiments. It is evident, therefore, that a great mistake has been made as to the character of the ejections of the sto-

mach, in bilious remittent and yellow fever, by very many medical gentlemen of high eminence. It would be tedious and supererogatory to detain you longer, or enter more minutely into the pathological character of yellow fever.

We are now to consider the treatment of this disease. In this, as in other diseases, great diversity of opinion prevails. From the description of the disease, and its modifications, you may readily perceive that we cannot depend exclusively upon any one regular course of treatment. The American and English physicians generally, regard calomel as the *sine qua non*, or sheet anchor, to be used to ptyalysm. The French and Spaniards condemn it as prejudicial and fatal, and give mild laxatives, the warm bath, ptysans, etc. The active purgation with seneka snake root and Epsom salts has been frequently used. There are others who regard calomel to a certain extent valuable, but cannot agree in the opinion that calomel is a specific, or *sine qua non*, in the disease ; they regard it valuable as exciting biliary secretion, for the liver in this disease is torpid, and the production of biliary evacuations is regarded as a very favorable and important symptom.

In the treatment of the symptoms, blistering or cupping on the epigastric region, mustard pediluvium, if the extremities are cold, cupping or leeches to the head and spine, or general bleeding, cold affusion and warm baths, have all been used ; and these applications must be regulated by the temperament, and in accordance with the symptoms developed, and according as the disease is inflammatory or congestive. This general view is all that is regarded as necessary on this occasion.

I will now present you briefly with the plan I have generally adopted in the treatment of this disease, referring you to the different works published of the different views taken of the treatment by others. From the different forms in which I have described as inflammatory and congestive, you will readily perceive it would require a different course of treatment. In the inflammatory form, I use general bleeding, so as to make a strong impression. Give a large dose of calomel, say twenty grains, and in four hours' time give senaka snake root and Epsom salts until it operates well,

and have the spine and limbs bathed with spirits and cold water frequently.

After the depletion by bleeding and purgation, if the pain in the epigastric region is not diminished, and if there is irritability of stomach, I immediately place in that region a large blister, and keep the irritation their continually, so as to act as a powerful counter-irritant. If the pain in the head continues, and in the spine, I use cupping and leeches. Of medicines, I now give four grains of calomel, with some creta preparata to keep up biliary secretion and subdue acidity of the stomach—a very important object—with an occasional injection per ano; and I regard injections very valuable as a kind of derivative from the stomach, and preventing the stomach, so peculiarly affected in this disease, from being irritated by cathartic medicine. Such, then, is the course of practice which I have followed in the inflammatory form. When the extremities are cold, mustard poultices are then applied as a derivative, or any other stimulating application.

The next form is the congestive, the symptoms of which I have described. As in the inflammatory, the great object is to bring the over-excited condition of the system to such a state as to prevent congestion in the capillary system, and derangement of functional action in the different organs, so in the congestive form we must endeavor to arouse the system from the extreme depression which exists. For this purpose, whenever practicable, I use warm stimulating baths; and if not convenient, I apply mustard plasters to the stomach and extremities, and sponge with stimulating applications. The great indication is to arouse the nervous system, and to have a proper circulating action. The other means of practice is not dissimilar to what I have described, so far as medicine is concerned in the inflammatory form.

These, then, are the plans in the first paroxysm or stadium. I will now briefly consider the treatment in the second stage, but previously remark that the great class of patients are of that population where it is difficult to carry out faithfully a judicious course of practice, except when in hospitals, and hence the mortality. Here, I frankly confess, all of our

treatment is empirical. The stomach, in the stage of black vomit, is evidently not only functionally but organically deranged. There is hypertrophy of the Vasa Brevia, and an exudation of blood incident thereto, as I have previously explained. In this stage, yeast, sugar of lead,* effervescence of carbonate of soda, and tartaric acid, carbonic acid gas, and many other means of this kind, have been used. My opinion is that no medicament in this stage can be of any service as taken in the stomach. The only plan which may be probably advantageous, is to keep up in the epigastric region a constant irritation, and to give, according to circumstances, stimulating injections.

I have thus endeavored, in a very humble way, to discharge the duty assigned me, and as in my introductory address.† I repeat, I could have wished the appointment as your orator had been given to an abler member. Should it awaken a proper feeling to investigate the peculiar characteristics of our endemics, I should, indeed, be more than gratified. I have now only to invoke the blessings of the Great Supreme upon the labors of our Association, the objects of which are to produce brotherly love, and promote the cause of medical science and humanity.

* Our late very eminent physician, Dr. Irvine, wrote a very interesting article on yellow fever, in which he advocated the use of acetate of lead to act as a sedative and subdue the irritability of the stomach, and prevent the functional derangements incident thereto. But his theory was not sustained by practice.

† This part of the Address was omitted as unnecessary, but will appear in the proceedings of the Association.