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A BRIEF HISTORY OF THE COMMENCEMENT AND PROGRESS OF THE YELLOW FEVER IN MEMPHIS, TENN., IN 1855, WITH SOME ACCOUNT OF ITS SYMPTOMS, TREATMENT, AND FATALITY.

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So much has been written and published, recently, on the yellow fever, that it may be considered an useless addition to professional literature to publish anything more on this subject; but when the fatality of the disease, and its tendency, in the past few years, to widen out and extend the area of its prevalence, are considered, everything that tends to throw any light upon the manner or the cause of the spread of this disease, and its origin and development, in places not hitherto affected by it, becomes a matter of interest, not only to the medical profession, but to the public at large.

Previous to the late epidemic, Memphis has been regarded as being above the yellow fever region, in the Mississippi valley, and secure against its introduction, or its origin and development as an epidemic, from any cause. This security of Memphis has been attributed to the elevation, the latitude, the interior and remote position from the sea coast and sea breezes; and whether attributable to these or to other causes, the exemption hitherto from the yellow fever here, either as a sporadic or epidemic disease, had produced a general feeling of security, and established the opinion, that we were above its range of prevalence; for, though some traditional account had been given of an epidemic, like yellow fever, in 1828, it was not considered, here, satisfactory and conclusive as to the character of that disease, which was said to have presented the icteroid appearance and some of the other symptoms of the yellow fever. Dr. Drake, who lately recorded the disease of 1828, here, as the yellow fever, in his work on the diseases of the Mississippi valley, stated to me, at the time he was collecting the information upon which his record was made, that he doubted, from the description given him of the symptoms, whether it was the yellow fever or not; and Drs. Christian and Sappington—(both now dead)—who saw that disease, did not speak of it to me, confidently, as well-marked yellow fever.

Memphis has heretofore occupied a position, on the Mississippi river, above the region in which cases of the yellow fever have originated; and though exempt from the disease, the citizens, and especially the physicians, have been familiarized with it, by the number of cases on the boats passing up the river, when it has prevailed as an epidemic in New Orleans, Natchez, Vicksburg, and at other places below. The boats

coming up from the infected places always landed here, and were freely visited by the citizens and physicians, when either business, or the professional call of the physician, required it. In this way the sick passengers upon the boats were not only frequently seen, and administered to, but when they desired it, were occasionally removed from the boats to the hotels and boarding-houses in the city, to be better attended to, in the way of nursing and having medical aid. No fear ever existed here of the propagation of the disease by cases thus brought from the infected boats on the river, into the city; and no instance has occurred in which a single case of the yellow fever has thus been produced here, by contact with the sick, the dying, or the dead, from the boats. The non-contagiousness of the disease has not only been demonstrated here in that way for many years, but it has been still more largely confirmed by the results at the Memphis Charity Hospital. When the yellow fever has prevailed as an epidemic in New Orleans, there has always been cases occurring on the boats, after leaving that city, before their arrival at this port. Many of these cases have been put off at the landing here, and sent through the city to the hospital, in former years. In 1853, about sixty cases; in 1854, forty cases; and in 1855, forty-two cases, were thus sent from the boats to the hospital. Of these cases a large proportion died, as they were sent out at an advanced period of the attack; but not a single instance has ever occurred of a nurse, or other patients, or persons in or about the hospital, taking the yellow fever from these cases.

Though I have said that Memphis has been exempt from the yellow fever, originating here, heretofore, this outline of its history would not be complete and true, without stating the fact, that three well-marked cases did originate here in 1853. About the 17th day of September, of that year, these three cases all occurred. Two of these were young men, staying upon and about the wharfboat—one, the watchman on the boat, and the other attending to business near it, and often on it when steamboats landed. The third case was a young man who was engaged in business on the river, and frequently on the wharfboat. These three cases were all removed up into different parts of the city, to be nursed and attended to, by their relations and friends. The first two mentioned, died the sixth day of their disease. They had black vomit and all the prominent symptoms and appearances, before and after death, of yellow fever. The third case recovered, but he presented the prominent symptoms, well marked, of the yellow fever—the three days' paroxysm, the calm, or remission, the prostration, attended with slow, feeble pulse, weak and irritable stomach, and hemorrhage from the nose, gums and bowels, followed by sallow, dusky yellow color of the skin, which continued during his protracted convalescence.

These cases were considered at the time as unmistakable cases of yellow fever, but they produced no panic or alarm here. The season was far advanced, the weather cool, and although the disease was then prevailing with great fatality below, and had widened out in different directions, and extended up the river to Napoleon and Helena, the area of its epidemic prevalence, still we felt secure here, though only about eighty miles by the river, above its epidemic influence. Why this feeling of security, then? may well be inquired. Because, no tendency to the production, or susceptibility to the spreading of the disease here, from cases, or from cases, or from infected boats passing, or lying at the landing, had ever occurred, and so much confidence was then, reasonably and intelligibly, felt, that our anti-yellow fever atmosphere was not, and would not become so contaminated by the morbidic poison, which produces this peculiar disease, as to make it at all epidemic. This was the position then assumed, and subsequent events proved it was correct; for, though these cases originated here at the landing, were produced here by the infected air brought from New Orleans, or other points below, by an infected boat, and disengaged and diffused by opening up the hatchway, and discharging freight, so as to produce these attacks, not one other case occurred that year, either at the landing or in the city.

This preliminary statement of previous facts, in connection with the history of this disease, brings us to the time of the commencement of the late epidemic; and as we have found that not a single case of the yellow fever has ever originated here—certainly not since 1828, if then—except the three cases in 1853, which were local, and produced by an imported cause, being clearly traceable to infection at the landing—the places, cause, manner, dates, and other circumstances, of the origination of the first cases, initiatory to the more general spreading of the disease as an epidemic, this season, all become highly interesting and important; especially so, in view of the tendency, as indicated in the last few years, of the continued, and greatly increased and increasing area of its epidemic influences; and its unprecedented pestilential fatality the present year, particularly in Norfolk and Portsmouth; and also in reference to the means most promising and efficient for its future prevention, whether consisting of sanitary measures to prevent its domestic origin and production, or of quarantine restrictions, to prevent its importation and dissemination.

For the purpose of presenting all the facts and circumstances connected with the first cases which originated here, in as concise and accurate a manner as possible, I shall first give the cases and their localities, and places of origination, up to the time when the disease became so extended in the southern part of the city, as to leave no doubt in the minds

of most of the physicians, that it existed there in an epidemic form; and then state the circumstances connected with the origin and production of these cases, so that a correct judgment may be formed, so far as the facts will admit of it, upon the important question, whether the disease originated here, or was brought here by the boats from the port of New Orleans, and disseminated from them in the city? To make the history of the epidemic more complete, a brief account will be given of the symptoms, treatment, and fatality of the disease.

August 2—Case 1.—Dougherty, from St. Louis, on steamer Ingomar, lying at the mouth of Wolf river, sickened on Thursday, August 2, was removed to Bostick's hotel, on Adams street, on Monday, August 6, died next day; had black vomit.

“ 2—Case 2.—Leahey, from Louisville, on the Ingomar, sickened August 2, was removed, August 6, to Union street, died the next day; had black vomit.

“ 5—Case 3.—Miss Barnet, on flatboat Long Tom, lying just below the Ingomar, sickened Sunday, August, 5, died on the boat, Thursday, the 9th, the fifth day after the attack; had black vomit.

“ 14—Case 4.—Mrs. O. C. Jones, South Memphis, near the margin of the bluff, sickened Tuesday, 14th, died Sunday, 19th; had black vomit.

“ 23—Case 5.—Davis, Long Tom; recovered.

“ 23 “ 6.—G. Hawkins. Ingomar, sickened Thursday, 23d, died Sunday, 26th, on the boat; had black vomit.

“ 23 “ 7.—Eberton, Ingomar, died the 27th; had black vomit.

“ 23 “ 8.—H. Harrison, died on the Harry Hill, at the landing.

“ 26 “ 9.—T. Hamilton, died on the Harry Hill.

“ 26 “ 10.—T. F. Woodruff, died on the Harry Hill.

“ 26 “ 11.—G. Newell, died on the Hill, at the landing.

“ 26 “ 12.—Ford, flatboat Long Tom, sickened Sunday, 26th; recovered.

“ 27 “ 13.—Mary Borker, sickened the 27th, at Stresler's, on Poplar street, between Main street and Front Row, sent to the hospital the 29th; died that night.

“ 27 “ 14.—J. H. Sen, worked seven days on the Ingomar, lived on Market street, between Second and Main, sickened the 27th; recovered.

“ 28 “ 15.—Maginnis, Ingomar, sickened the 28th, sent to the hospital, died September 6; had black vomit.

- August 29—Case 16.—Mr. Speckernagle, steamer Bluff City, lying near the Ingomar, sickened on the boat, died in the city September 3; had black vomit.
- “ 30 “ 17.—Hardy Latham, frequently went to the landing, lived in the northern part of the city near Third and Jackson streets, where he died September 4; had black vomit.
- “ 31 “ 18.—G. Wilson, worked four days on the Harry Hill, sickened, went to the hospital the 30th, and died 31st; had black vomit.
- “ 31 “ 19.—Riley, worked on the Harry Hill, sickened August 31, died September 4.
- “ 27 “ 20.—E. B. Fleming, South Memphis, Tennessee and Butler streets, died Sept. 2; had black vomit.
- Sept. 2 “ 21.—Catharine Fundle, Poplar street, near Stresler's cabinetshop, sickened 2d, died 7th; had black vomit.
- “ 7 “ 22.—Sangster, Front Row, near Monroe street, sickened the 7th, and died the 10th; had black vomit.
- “ 9 “ 23.—Forbes, wharf boat, baker, died 12; had black vomit.
- “ 9 “ 24.—Miss Rolfes, Poplar street, near Stresler's, died 13; had black vomit.
- “ 9 “ 25.—James Rodgers, South Memphis, on Causey street, died 14; had black vomit.
- “ 9 “ 26.—Miss Porter, South Memphis, Pontotoc street, died 14; had black vomit.
- “ 10 “ 27.—Becktol, Shelby street near Union, died 14; had black vomit.
- “ 11 “ 28.—Miss M. Winchester, Ark. bank, died 15; had black vomit.
- “ 13 “ 29.—Rev. Clary, Adams st., died 17; had black vomit.
- “ 10 “ 30.—A. Madden, wharfboat, died 15, on Court street.
- “ 15 “ 31.—Moore, often at the landing, died 19, Union street, east of the bayou.
- “ 15 “ 32.—A. Fleming, Tennessee and Butler streets, died 19; had black vomit.
- “ 18 “ 33.—Mary Savage, Market street, between Second and Main, died 21; had black vomit.
- “ 19 “ 34.—S. B. Gray, Jefferson st., between Second and Main, water hauler, died 23, at the hospital.

- Sept. 18—Case 35.—Cook, Causey street, South Memphis; recovered.
 “ 18 “ 36.—Miss James, St. Martins' street, South Memphis;
 recovered.
 “ 18 “ 37.—Miss Sanders, St Martins' street, South Memphis;
 recovered.
 “ 19 “ 38.—T. Sanders, St. Martins' street, South Memphis;
 recovered.
 “ 21 “ 39.—Dr. Harris, Tennessee street and Vance, died 29.
 “ 21 “ 40.—E. Williams, Tennessee and Butler streets, died
 26; had black vomit.

September 24.—On this day Dr. Berry told me, that he and Dr. Tuck counted twenty-three cases, within a short distance of Dr. Harris' residence, in South Memphis, which they knew of. Within the range of the epidemic influence then, in South Memphis, it was soon ascertained that there were forty to fifty cases, which had occurred within six or seven days; and the question was settled, that in that part of the city, extending from Beal street north, to Butler street south, and between that north and south boundary, west on the river, converging east to the bayou, the disease was epidemic. There were cases at that time, or within a few days, in most of the families in that district, on Main street, below Beal; and south of Union, between Shelby street and the river; and a good many cases east of Main, especially on Linden street, extending across the bayou, to Causey street, which soon became infected nearly its entire length south of Beal.

Some cases occurred between Causey and Hernando, and a few on, and east of Hernando, to DeSoto street. In this general account of the extension of the disease, it may also be added, that together with those persons living north of Union street, who seemed to have contracted it, by visiting, and nursing the sick in South Memphis, there were, during the latter part of September, and October and November, a few sporadic cases, scattered over the city, as far north as Market street; on Court, Jefferson, Adams, Washington, Exchange and Market streets.

We shall now return to the first cases which originated here, for the purpose of stating more particularly their localities, and the circumstances connected with their origin. Cases first and second, occurred on the steamer Ingomar, on the 2d of August. Now the question is, how, and where, did the Ingomar become infected? She was a new boat, had only run the previous winter and spring, as a packet, between Memphis and New Orleans. The last trip, she left New Orleans on the 24th of June,

and landed at this port on the 28th. Up to the 24th of June, only two deaths had occurred in that month, in New Orleans, and they were in the Charity Hospital. There was, therefore, no epidemic in New Orleans, during the time she run there. From her arrival here, on the 28th of June, she was laid up at the landing, in front of the northern part of the city, near the south boundary of the Navy Yard, undergoing repairs; and all the hands and crew at work upon her, were perfectly healthy from the 28th of June, until the 2d of August.

On Monday, the 30th day of July, the Harry Hill, a Memphis and New Orleans packet, arrived from the latter port, loaded with railroad iron. She landed immediately above the Ingomar, and remained there until the following Thursday, discharging the iron. She then dropped down to the lower landing, near the wharfboat, and remained until Saturday, when she departed for New Orleans again.

On Thursday, the 2d of August, the fourth day after the Harry Hill landed, and remained four days, immediately above her, cases first and second occurred on the Ingomar. On Sunday, the 5th of August, case third occurred on the flatboat Long Tom, lying a short distance below the Ingomar. No other case occurred on either of these boats again until the 23d of August, a space of about three weeks. On the 18th of August, the Harry Hill returned again from New Orleans, and landed near the Ingomar to discharge her iron, where she remained three days. On the 23d, six days after her second arrival, and proximity to the steamer Ingomar, and flatboat Long Tom, cases fifth, sixth and seventh, occurred, the first on the Long Tom, and the other two on the Ingomar. When the Harry Hill arrived at this port on the 18th, she had eight cases of yellow fever aboard, and during her trip up, had several more. Out of these eight cases, I have put down the cases eight, nine, ten and eleven, who died, to show the evidence of her being infected. The Harry Hill had cases of the yellow fever on the previous trip, when she arrived, or during her proximity to the Ingomar, at the upper landing, from the 30th of July to the 1st of August. I saw a case—one of her crew, who left the boat sick, on the 31st of July, and came up to a boarding house in the city, where he died, on the 4th of August, with black vomit. These cases show, not only that the Harry Hill was an infected boat; but furnish a remarkable coincidence, between the time of her arrivals here from the port of New Orleans, on the 30th of July, and the 18th of August, and the occurrence of the cases of the yellow fever, on the Ingomar, and the Long Tom, on the 2d and 5th of August, and then again on

the 23d of August, without any intervening cases, during this period of three weeks, between the two trips from New Orleans of the Harry Hill; and their production at each period of about four to six days, after the time of each arrival. I say that it was a remarkable coincidence, so much so, as to induce the general belief, that all these cases were produced, not by infection on the Ingomar, but by the infection on the Harry Hill being communicated from her, to those who sickened on the Ingomar and Long Tom. This general belief was greatly strengthened and confirmed, by the fact, that all the officers and hands had been healthy on the Ingomar, previous to the landing of the Hill, near her, and they all became, and continued so, after the Hill removed from near her, and laid up at the lower landing.

As evidence that the Harry Hill continued to be infected, and to originate, or produce the yellow fever, cases eighteen and nineteen, who died on the 31st of September, are given, and others might be enumerated, especially another—a son of Captain Newell's, who died on the 13th of September—proving, that the disease was developed in persons working on the boat only a few days, as well as among the crew. In connection with this evidence of the highly infected condition of this boat, another fact should be stated. Soon after the Hill laid up, at the lower landing, say 20th of August, her cabin furniture, chairs, sofas, &c., with their cloth covers, was sent up to Stresler's cabinet shop, on Poplar street, south of the Exchange Building, to be repaired. On the 27th, case thirteen, Mary Borker, a German girl, living with Stresler's family, in the shop, was taken sick, and died at the hospital the 29th, a few hours after being sent there. Catharine Fundle, case twenty-first, who lived the second house from Stresler's cabinet shop, where this furniture was, and was frequently in the shop, took sick the 2d of September, and died the 7th, with black vomit. She was removed a short distance from where she took sick, into a more confined, filthy, and crowded part of the city on Front Alley, where she died, in close contiguity with twenty to thirty persons on the same floor—yet no other case occurred, in the house where she died, or among those persons who were contiguous to her. Miss Rolfes, case twenty-fourth, sickened on the 9th of September, and died on the 13th, with black vomit. This girl, and her sister who was sick at the same time, but recovered, lived near Stresler's cabinet shop, and frequently passed and stopped there, in their walks upon the pavement. A few days after, Mary Borker, case twenty-first, was removed from the house which contained this furniture, supposed to be infected, and died in the hospital;

the furniture was removed, and shut up in an adjoining room, where it remained shut up, until it was sent back to the boat, late in the season. No other cases except these four, occurred, or originated, in this part of the city, during the epidemic.

As already stated, the Harry Hill laid up at the lower landing, near the wharf boat, about the 21st of August, and cases continued to originate upon her, among those who were employed in any way, even a few days on board. Of these cases which continued to originate on the Hill, after she laid up, only cases eighteenth and nineteenth, and the second son of Captain Newell, who died, are mentioned, though other cases occurred, which either recovered or were sent to the hospital, and not included in the reports of deaths made by the Secretary of the Board of Health.

In addition to these cases, originating on the Hill, in tracing up the cases of yellow fever, as they continued to occur, we find—case twenty-third, Sangster, on Front Row, near Monroe street. His only communication, that I know of, with an infected point, was by visiting the landing. He sickened on the 7th, and died on the 10th of September—seventeen or eighteen days after the Hill laid up, near the wharf boat at the steamboat landing. On the 9th, case twenty-third, Forbes, a baker on the wharfboat. On the 10th, case twenty-seventh, Beckett, not far from the wharf boat, on Shelby street. On the 10th, case thirtieth, Madden, clerk on the wharfboat, sickened, and died on the 15th, on Court street. On the 15th, case twenty-ninth, Rev. Mr. Clary, who was a good deal on the wharfboat, and at other places, visiting the sick, was attacked, and died, on Adams street, the 17th of September.

All these cases, and some others, of the forty reported, could be traced to the river—to sufficient communication with infected boats, to account for their production; and the coincidence of their origin with the dates of the movements, and with the location of the Harry Hill, together with the considerable proportion of them actually originating on that boat, were so obvious and remarkable as to produce the general impression, that the Hill was the focal point whence the morbid poison had emanated, and the yellow fever had spread into the city.

I have thus arranged a portion, and indeed the chief, of the prominent cases, most of which terminated fatally, that were traceable to the boats on the river, and especially to the Hill, as the infected place where they originated, or seemed to be produced, for the purpose of connecting and giving all the weight and importance to the facts which they deserved in favor of the importation of the disease, or the morbid infection by which

it was produced, by the boats from the infected ports below, especially New Orleans, to this port, and its dissemination from the boats, into the city. The dates, localities, and other circumstances, connected with the production of the cases, so far particularly detailed, are strongly in confirmation of the truth of this general opinion.

The object of this history of the origin and progress of the epidemic, however, not being so much to fortify or establish any particular opinion or doctrine, of the exotic, or the domestic origin of the fever, as to fairly and fully present all the important facts connected with it, for comparison with its history in other places, so that proper deductions may be made from them, and the public may have the resultant benefits, if any, of the means thus deduced for the prevention of the increasing and widely-extending prevalence of this fatal disease.

By further carefully canvassing the first forty cases of the disease, reported in succession as to dates, the localities and circumstances connected with their origin, difficulties are found in the way of tracing all of them to the boats, as the imported and only source of their production, and the subsequent dissemination of the epidemic infection, which cannot be easily or very satisfactorily overcome or explained.

Case fourth, Mrs. O. C. Jones, sickened on the 14th of August, and died on the 19th. The physicians who saw her and attended her, Drs. Tuck, Harris and Merrill, were satisfied it was the yellow fever. She lived on the margin of the bluff, near the river, in South Memphis, on an elevated point, somewhat remote from other houses, but about the middle of the district which became most infected afterward, extending from the river east, toward and across the bayou, near half a mile. She was three to four hundred yards distant from the steamboat landing, though close to the margin of the bluff, near the base of which the steamers passed, in ascending the river to the landing. There is no reason to believe that she had visited the landing previous to her attack; though her husband was frequently at the landing.

Upon comparing the dates and succession of cases, it will be found that only three cases had originated in Memphis before hers, and that they were at the upper landing, near the navy-yard, more than a mile distant from her residence. Her husband, who was frequently at the landing, had a mild attack of fever at the same time, but not pronounced positively yellow fever. This case occurred on the 14th of August, at a time intermediate between the cases on the 2d and on the 23d of August, which were so strikingly coincident with the proximity of the Hill, on

her last two arrivals from New Orleans, to the Ingomar, on which they were produced.

On the 9th of September, case twenty-sixth, Miss Porter, took sick, and died on the 14th, of well-marked yellow fever, attended with copious black vomit. She resided about a quarter of a mile east of Mrs. Jones'.

Case twenty-fifth, James Rodgers, sickened on the 9th, died on the 14th, having had considerable black vomit. He died on Causey street, half a mile east of Mrs. Jones', but frequently went to the river.

Case twentieth, E. B. Fleming, died on the 2d of September. His case was pronounced yellow fever by Dr. Frayser, his physician. He fell sick about the 28th of August. His residence was on the corner of Tennessee and Butler streets, near the river and the southern boundary of the infected district.

Now, taking Mrs. Jones' case, August 14th; E. B. Fleming's, August 28th; Miss Porter's and James Rodgers', September 9th, and they furnish four cases which proved fatal between the 19th of August and the 14th of September, residing upon the extreme boundaries of that portion of South Memphis which was soon proved to be epidemically infected. Forty to fifty cases of the yellow fever which were ascertained to exist, as already stated, on the 24th of September, were nearly all within the boundary fixed by the streets on which these deaths had occurred.

The important question is, how were the first four cases, so remote from each other, in South Memphis, produced? Did they originate from communication with infected boats on the river, or from a local cause upon the bluff? Without affirming either position, I shall endeavor to state the facts.

It has already been stated that Mrs. Jones was not known to have been at the landing previous to her attack, though her husband was frequently there. E. B. Fleming, I was informed by his family, had not been near the landing, but once, for several weeks, and that was the day before his attack, and then he was not on or near any boat. There was a rumor, after Miss Porter's death, that she had been on the wharf boat; and another, that she had received a trunk with the clothing of her brother, who died in New Orleans, that might have been infected. As to the truth of these rumors, I have been informed by her brother-in-law, at whose house she died, that both were false. The case of James Rodgers, who was said to have been frequently at the river, aside, the case of Mrs. O. C. Jones seems to have had no connection with the river, with infected boats, or cases of the disease, except through her husband and his

clothing, nearer than the distance from her residence to the boats, as they passed up the river to the landing. Though her house was near the margin of the bluff, it could hardly be supposed that the infection would be communicated that distance from the boats in passing, over a bluff nearly eighty feet high above the river.

The result of much observation, and the accumulation of facts, go to prove, that the extension of the morbid poison, which produces the yellow fever, is limited, and slowly progressive from the local point or place of infection, and that in its extension it is more manifested as creeping along streets and alleys, and confined near the surface of the earth, than in its ascent to elevated places, or the upper stories of houses. Mrs. Jones' case, and Fleming's case, which was more remote from the river, and still more so from Mrs. Jones', and the other case—Miss Porter—seem to have occurred without obvious or known exposure to, or near proximity with any source of infection, remote from their homes, except the frequent communication of Mr. Jones with the steamboat landing. If the infection could have been carried by him in that way from the landing, there was time enough before the 28th for its probable communication to E. B. Fleming. But if these cases originated in South Memphis, the probability, at least, is, that the fifty other cases which occurred in ten or twelve days, within the circle of these cases, after Miss Porter's, all originated in the same way, and from the same cause, becoming more generally developed and diffused.

During the epidemic, a large proportion of those who remained in the infected district were attacked, and persons going there, and remaining any considerable time, especially in the night, for the purpose of visiting and nursing the sick, were liable to contract the disease. Though sporadic cases occurred in other parts of the city, during the progress of the epidemic, some of them from being thus exposed in South Memphis, and others without any obvious exposure to infection, remote from their homes; yet they were more isolated, not more than one or two cases occurring in a family, and no others in the contiguous or neighboring families or houses, except to a very limited extent, in one or two localities.

In the large proportion of the city, north of Beal street, this feature in the progress of the disease, was not more remarkable than inexplicable, that isolated cases should have occurred, scattered over portions of the area, nearly a mile north and south, and a half a mile west of the bayou, between Beal and Market streets, without being traceable to any exposure to the cause of the disease, remote from their homes. Of the movements

and the results of the morbid cause, it may truly be said to have been the pestilence that walketh in darkness and destroyeth at the noonday.

It is proper, in connection with these facts, to state, that in addition to the early cases reported in the northern part of the city, in the vicinity of the steamers Hill and Ingomar, at the upper landing, there were only ten or twelve other cases, which originated at or near that landing, during the epidemic, and of these cases, two were attacked at the steam mill, about the 12th of August, and the others all occurred before the 24th of September; showing that after the Hill left that landing, on the 21st of August, the morbid cause gradually ceased to exist, and became inoperative in that vicinity before the 24th of September, when, from the number of cases which had suddenly occurred in South Memphis, the disease was first considered as being certainly epidemic there.

There are some other facts, in addition to those last mentioned, that have had much weight upon the public mind here, in fixing the origin of the morbid poison upon, and its propagation from, the steamer Harry Hill into the infected district in South Memphis. After the Hill laid up, below the wharfboat, at the lower landing, in front of the Gayoso House, on the 21st of August, a negro woman, belonging to the estate of William Yates, who lives on Linden street, near the margin of the bluff, and near the centre of the western boundary of the infected district, was employed not only to nurse the sick on the boat, but to have their washing done at her house. About the 25th of August she took sick, and her physician, Dr. Chase, says, had a well marked attack of the yellow fever. She was not long confined, and her house was subsequently not only made the place to have their washing done, but a hospital for some of their sick, to which three cases were carried from the Hill, and nursed until they recovered.

By thus transferring the infection from the Hill, at the landing, to a point on the bluff, on the west, the windward side of the infected district, it is contended, the poison was generated and diffused, so as to spread over and propagate the disease eastward, through the infected region. Much might be said to sustain the probable correctness of this position; for, while it must now be admitted that the yellow fever is not a contagious disease, that is, that the morbid poison is not so developed in the system of those who are sick, as to propagate the disease by contact, or otherwise, in a pure and uninfected atmosphere; yet there is much reason and many facts to sustain the position, that in a susceptible state of the atmosphere, the yellow fever poison, when it exists in a boat, a ship, a

house, or any infected place, either imported or originating there, may be so developed and increased, by contaminating the surrounding atmosphere, as to gradually extend and diffuse the infection from the focal point, so as to produce an epidemic.

That these views should not be misunderstood, it may be repeated, that the fact of the non-contagiousness of the yellow fever, in a healthy, or rather an anti-yellow fever atmosphere, is now almost universally admitted; and the observations, the many facts here, which have been already stated, of the great number of cases, in former years, of the yellow fever, taken from the steamboats, into private families, boarding-houses, hotels, and to the hospital, without a single case ever having been produced in Memphis, in that way, not only demonstrates its non-contagiousness, but also demonstrates the fact, that the epidemic constitution of the atmosphere, favorable to the origination or production of the yellow fever, has never existed here until the past season.

In the last two years this atmospheric susceptibility to the production of the yellow fever, has not only advanced further north on the Atlantic coast, than it has existed for more than thirty years; but it has also extended out, in various directions, and advanced up the Mississippi valley, until it has reached Memphis. How much further north it may and will extend, time only can determine; but there is nothing in its previous history, that affords any assurance that it may not again develop, in Philadelphia, New York, and other northern cities, as fatal epidemics as it did half a century ago, and that it may not ascend much higher in the Mississippi valley.

The position long since assumed, and ably advocated by many, of whom Dr. Monette may especially be mentioned, in our own valley, then is, that in this epidemic constitution of the atmosphere, which is peculiarly predisposed or susceptible to the development of the morbid poison of the yellow fever in cities, the importation or introduction of infection, by the disengagement of infected air, from a boat, or a ship, or in any other way, introducing the infection, it acts like a spark applied to combustible materials, in developing and diffusing the poison. This position seems not only sustained by facts, but also by analogy. In the history of most epidemics of the yellow fever, it is described as commencing at what is considered the infected point—the place of its importation or domestic origin. From that locality, the facts show, that it is generally propagated slowly, requiring considerable time for its extension, as an epidemic, over a city, and is often limited in its prevalence to certain portions of cities,

and seldom extends to the suburbs. This extension, or propagation of the disease, is not by contact, or from the sick, to those that are well, but by a slow contamination of the surrounding atmosphere, and progresses often against the wind, when invited in that direction by the local causes of an impure atmosphere.

These generally admitted facts establish an obvious difference between the manner and extent of the propagation of the yellow fever, and the propagation of those epidemics, which depend upon, or are produced by malarial or meteorological influences—such as ordinary miasmatic fevers, influenza, etc. In these latter epidemics, the efficient cause is wafted by the wind, and spreads out much more extensively and rapidly than in the former, rarely, if ever, being confined to narrow and restricted limits, unless bounded by insurmountable or impassible barriers.

Specific diseases are now generally admitted to be produced by specific causes. Though this is so, the same family of diseases presents such varieties, or species, and such modifications of each variety, as to induce the belief that the efficient cause is modified by circumstances, so as to produce these differences in its effects or results. The remittent and intermittent forms of miasmatic fever, in different climates and localities, and indeed in the same climate and locality, in different seasons, exhibit such striking differences, in their symptoms and grades of violence, as to induce the belief, that the efficient cause is either modified in some way, or rendered more concentrated or virulent, so as to produce these different effects and results, as they cannot be satisfactorily explained by the difference of pre-disposition, or constitution of the persons attacked. Dr. La Roche, in his elaborate and truly great work on the yellow fever, not only admits, but furnishes many authorities to prove this notable difference or modification in remittent and intermittent fevers; and, although he places the yellow fever in the same class or family with these diseases, he considers it “a separate and distinct complaint.” “If such be the case,” he then goes on to say, “the effluvia giving rise to it may reasonably be viewed as constituted of different elements—produced by the decomposition of different materials—or, perhaps, of *different proportions of the same elements* proceeding from the decomposition of similar materials, but under the influence of peculiar external agencies.”

By analogy, the position seems to be sustained, that the essential cause, whether transported from one place to another, or of domestic origin, may so influence an atmosphere containing the morbid elements, which

produces the epidemic constitution, as to gradually develop, or produce the proportional combinations of these elements, which constitutes the efficient and immediate cause of the yellow fever. This may result from the germ of infection furnishing a material, which, by selection from the elements of an impure atmosphere, forms a new compound; or it may result from the development, or re-productive force of the peculiar compound, constituting the infection, bringing together in the same proportion the elements furnished by that state of the atmosphere which renders it susceptible to the development of the morbid cause of the yellow fever. The difference in the appearance, the sensible properties, and the effects of some of the blandest substances, and the most powerful poisons, consists in the different proportions of their elementary combinations. It is so in the organization of the different animal and vegetable structures; yet these different parts of the organic structures, of both animal and vegetable formation, have the selective development force to appropriate from the same general fountain of supply, the proportional combination of the elements necessary to the peculiar structure and growth of each. This inherent organic force is notably exhibited by the engrafted bud, developing its peculiar growth and appearance, and producing its own peculiar fruit, from a tree of a different species. In the morbid vital actions of the animal system, this result is also exhibited. In a predisposed constitution, a cancer-cell is developed by specific morbid action. This nucleated cell selects and appropriates, by its development force, from the blood, the proportional combination of elements, necessary to the rapid and continued production of its own peculiar, malignant, structural growth. If a portion of these cancer-cells be detached from their place of local development, and washed along by the current of blood in its circulation, until they find a lodgment in some remote part of the system, as in the plexiform and obstructed circulation of a gland, they carry with them their local, peculiar, morbid development force, and like the engrafted bud, preserve their characteristic, malignant structure, in their selection and appropriation from the general circulation the pabulum necessary to their local re-development and growth.

But these inexplicable results are produced by vital, by life force; and so, it may be said, of many of the results of the chemical forces of elective attraction, of proportional combination, of aggregation, etc.; they are equally inexplicable, and only known by their results.

Aeriform combinations, and poisons which are intangible, and therefore inappreciable, can only be judged of by their effects and results, when

brought to bear upon the animal system ; and as morbid effects are found to be produced upon man's health, attributable to atmospheric influences, so far as these morbid phenomena clearly indicate distinct classes, or families, or different and distinct diseases, they indicate different, and in a greater or less degree distinct, specific causes. These special effects, and results from the exhalations of the elements of animal and vegetable substances, disengaged by decomposition, so as to contaminate the atmosphere, especially when electrical and meteorological influences are also considered, are not more remarkable and inexplicable, than the effects and results, of the vital and chemical forces alluded to ; and therefore are sustained by analogy. The important point in view, in these considerations, that is, the manner of development and propagation, of the morbid cause of the yellow fever, from an infected boat, ship, house, or any other place, whether imported, or originating there, by the development force of the infection, gradually contaminating the impure and peculiarly susceptible surrounding atmosphere, and thus slowly spreading the disease ; and when the infection is wafted by the wind from the place of its original, or first development, in a city, in an amount or quantity not sufficiently concentrated to produce disease, within the purer and less susceptible atmosphere of the more healthy districts, making its lodgment in the foul air of the more unhealthy spots, or localities, and there as in the place of its first development, its re-development and extension, likewise depending upon the amount of morbid elements furnished, to be appropriated and combined by the development force of the infection.

This view of its development by infection, and the laws, or manner of its propagation, not only seems to be sustained by facts and analogy, but it affords, perhaps, the most satisfactory explanation of its development, and gradual propagation from local points of infection, when it extends out as an epidemic ; or occurs in different, and somewhat remote localities, in a city, in a sporadic form.

The epidemic yellow fever in Memphis seemed evidently to originate, and extend into the city, from two points of infection—the packet landing above, near the navy-yard, and in South Memphis, nearly a mile, below, and remote from each other. From the point above, not meeting with a kindred or susceptible atmosphere, in the older, and better drained part of the city, only a few sporadic cases were produced ; but below, in South Memphis, whether it originated there from domestic production, or from the boats at the lower and principal landing, it found a more congenial state of the atmosphere, in which the infection gradually became

developed, and extended over an area of near half a mile in extent—north and south, and east and west, and affected most of the families in that district.

That the efficient cause—the peculiar morbidic poison, which produced the disease did not pervade the city generally in any considerable degree, is manifest, from the fact, that the most crowded and filthy parts, of all the older portions of the city, above Union street, and the most crowded and filthy parts, of South Memphis, between Union and Beal streets, near the bayou, though half a mile, or more, remote from the point of its origin below, were almost entirely exempt from the disease.

Now, the important thing in view, in tracing the facts connected with its origin, and its extension, or propagation, and the attempted explanation of the laws, or manner of its development and propagation, is to deduce therefrom, the best practicable means of preventing its future origination and extension, either from exotic, or domestic causes.

To do this it is necessary, in addition to the facts, as to time, locality, &c., of the occurrence of the first cases, to consider the relative condition of the different parts of the city, and to trace, if practicable, the local causes, which made the disease epidemic in one portion, while the other, and much the largest part of the city, and all the suburbs, were almost entirely exempt from it.

The infected district in South Memphis is comparatively new, having been built up and graded in the last six or eight years, and principally in three or four years. The streets nearest, and running parallel with the river, have been graded by filling up the hollows, and cutting through the ridges, almost to a level. The undulations in the natural site of South Memphis, are formed by ridges and valleys, running from the margin of the bluff next the river, east towards the bayou. In the embankment of these streets, across the valleys, large deposits of earth have been made. These embanked and elevated streets dam up, and obstruct the flow of water through the imperfect culverts, so as to produce, and retain an accumulation of the surrounding filth. Some of these valleys, and low places have been filled up with fresh earth, containing a large amount of vegetable matter, which from the obstructed drainage, is often saturated with moisture. A large surface of fresh earth charged with vegetable matter, and moisture from this system of grading the streets nearly to a level, has been exposed to the sun.

General experience and observation have demonstrated the fact, that it is not the first, most offensive products—the hydrogenized and the

ammoniacal gases disengaged by vegetable and animal decomposition, which constitutes the noxious effluvia, but the secondary, or tertiary—the ultimate products, or results of decomposition. This bluff contains in its soil, for a considerable depth, a large amount of vegetable, and doubtless, considerable animal matter, in this advanced stage of decomposition, and when thus excavated and embanked, and supplied with the semi-decomposed city filth from the surrounding surface, thrown, or washed into the low places, where there is constantly moisture enough to keep up the process of decomposition, when acted upon by a sufficient degree of heat, all the requisites seem to be furnished, by these misdirected artificial means, for the production and dissemination of the noxious effluvia, so pernicious and fatal to human health and life.

This is the condition of the district in South Memphis, which became so generally infected with the yellow fever poison. In the middle and upper portions of the city, the bayou is nearer the river, the surface is more undulating, and sloping towards the river and the bayou, the valleys are not so deep and long, and have never been so much filled up, or obstructed by embankments across them. Nearly the entire surface has been trampled for years, and thus the soil has become so settled and consolidated, as to cause nearly all the water that falls upon it to run off, and to carry with it the surface filth. There is no place of much extent, where fresh earth, and filth of any considerable depth and amount, are kept constantly in the moist state, necessary for decomposition. It actually so occurred, however, that most or all of the cases, which originated in North Memphis, were on, or near the hollow between Market and Exchange streets, and near the hollow north of Jefferson street—the parts of North Memphis, which approximate in the greatest degree, the natural and artificial, topographical condition of the infected district in South Memphis.

The different conditions of the upper and the lower portions of the city, and the exemption of all that part which is best drained, from the epidemic prevalence of the yellow fever, while a considerable portion of South Memphis suffered so signally, indicates the leading feature, in the sanitary measures, which should be carried out in the future.

In addition to these means, to prevent its domestic origin, and extension in the future; the inference from the facts, that the infection from the Hill, and other boats, at the lower landing, may have been the originating and productive source, of the more epidemic form of the disease in South Memphis, requires that the proper precau-

tions should be adopted, and carried out in the future, to prevent danger, so far as practicable, from that source of infection.

This involves the question of quarantine restrictions, which has been so fully and unavailingly tried in Natchez and Vicksburg, as to leave but few advocates of its expediency and success. The general opinion here, that much preventive benefit, and possibly the entire prevention of the epidemic, might have been effected by the immediate removal of infected boats from the landing, to a sufficient distance from the city, is sustained in a great degree, by the facts and circumstances, shown to have been connected with the origin and spread of the disease.

Instead of a rigid quarantine, then, public opinion, and the facts and circumstances, by which it is sustained, indicate, that a judicious sanitary committee, of competent physicians should be appointed by the Mayor, and that upon their report to him, after full examination, that there is an infected boat, an infected house, or any other local cause of the production of the yellow fever, that he shall, upon their report and recommendation, remove, or abate such cause, or causes of disease.

These two prominent sanitary measures, therefore, seem not only deducible from the facts and circumstances connected with the origin, and the propagation of the late epidemic yellow fever; but without a very careful examination of these facts and circumstances, public opinion generally seems to concur in their importance, and the necessity for the future safety and welfare of the city, that they, at least, should be faithfully carried out.

Preliminary to the brief account I propose to give, of the symptoms, treatment, and the mortality, of the late epidemic; a full and accurate description of the season, as to heat and moisture, and the amount, and character of the prevailing sickness during the season, before the commencement, and the amount and character of other complaints, during the prevalence of the epidemic yellow fever, would be given, if the means necessary for accuracy in all these matters could be commanded, as a knowledge of these important ordinary etiological agents, and their effects upon the general health, tend, by their comparison with other seasons, and other places, to assist in any effort that may be made to determine the extent, and influence of general, and special causes, by the amount and character of the general, ordinary complaints, and the more limited, extraordinary, and special disease under consideration.

The register of the weather kept for several years at the navy yard, in consequence of the suspension of that public work, was not kept last season. Therefore, no accurate account can be given, either of the average heat of the summer and fall months, or of the amount of rain. The general facts, however, are well known, that the previous fall, winter and spring seasons, were unprecedentedly dry, and from the medium, and moderate temperature, were unusually pleasant. Previous to the commencement of the rains, in the latter part of May, it was extremely hot, the thermometer at 3 P. M., standing at ninety-three to ninety-six, and once at ninety-eight. When the rains commenced, about the first of June, the atmosphere was considerably cooled, so as to be pleasant, but the latter part of June, and the months of July and August, the average range of the thermometer was no doubt higher than usual, although, occasional, seasonable rains occurred, all through the summer months, so as not only to prevent the dust from being unpleasant; but also to produce an unusual growth of vegetation. The unusually dry winter and spring, here, and in all the upper Mississippi valley, prevented a sufficient spring or summer rise in the river to overflow even the low banks. To some of these causes may be attributed the unusual exemption of the city generally, and especially the northern suburbs, from fevers, of the ordinary remittent and intermittent type. The batture in front of the city, and all the flats along Wolf river, and the bayou, including that around the saw mills, which contains a large amount of vegetable matter—saw dust and bark, were not at all overflowed and saturated with water, as has been the case every year heretofore, in the early part of the season. This, though flat surface, is so much of an inclined plane, towards Wolf river and the bayou, and is so trampled and settled, that the rain water did not penetrate so as to saturate it, during the summer. Though not penetrated, and deeply saturated with moisture, the showers were sufficient, especially in July, to wash from its surface, and from the bed of the bayou, the surface filth. To this healthful condition of the northern part of the city, and its suburbs, was ascribed their unusual exemption from fevers, and indeed from all kinds of complaints, during the entire summer and fall. No case of the yellow fever having originated in all the city and suburbs, north of Market street, and much fewer cases of ordinary fevers, than have occurred previous years, especially at, and in the neighborhood of the cotton factory, in the northern suburbs.

The natural, and present, artificial topography of the southern and middle portions, and especially the infected district in South Memphis,

have already been described. In all this part of the city, however, it was as healthy, and even more so, than for several years, up to the middle of August. In consequence of the alarm produced by the two cases of the yellow fever, which originated on the Ingomar, at the upper landing, on the 2d, and being removed from there, up into the city, died on the 7th of August, the Board of Health was called together on the 9th. At that meeting of the Board, consisting of five out of six members, appointed by the Mayor, one out of each ward, a full and free expression, and comparison of opinions, and the observations of each member, together with all the information, that could be obtained, resulted in the unanimous opinion, that, though these fatal cases of the yellow fever had originated at the landing, the city was then, and had been during the summer, as healthy—more healthy than usual. My own opinion then was, that the summer, up to that time, had been more healthy, than for nineteen years previously; and that so far as could be judged from appearances, there having been no overflow, the streets and the bed of the bayou having been frequently washed by heavy showers, the city was as clean, and as free from any obvious causes of disease, as I had ever seen it. In this latter opinion, there seemed to be a general concurrence, by the members of the Board; though fully aware of the importance of more rigid, and better directed sanitary measures, in the removal of all decomposing animal and vegetable matter—of filth of every kind, and in the adoption and execution of a better system of drainage. Measures however, which could not be adopted, and carried out at that time in the summer, to any great extent, with benefit, or even safety. Though the cases which had originated from the packets, at the landing, indicated a greater tendency, from atmospheric susceptibility—the epidemic constitution necessary to the production and dissemination of the disease, than had ever existed here before, there was no very obvious evidence of the cause, or existence of a greater amount of noxious paludal exhalation, than during previous years.

Description of the Yellow Fever.—In the very brief account I propose to give, of the characteristic symptoms, and of the treatment, of the yellow fever here; a division of the disease into the different grades, necessary to present all the symptoms, will not be attempted. The symptoms presented by cases of a medium grade, which under proper treatment recovered, and without proper medical treatment and nursing proved fatal, will be taken, as the bases for the description of the disease, and its treatment, in the different stages; and the prominent symptoms,

the progress, and the treatment of the higher, graver, and milder forms, will then be noticed.

Precursory Symptoms.—In most of the cases, there was more or less complaint, for one, two, or more days, previous to the attack, of headache, malaise—a feeling of lassitude, want of appetite, increased thirst, &c. In some cases these symptoms, attended with, or resulting in a frequent and increased discharge of highly colored, acrid, urine, which produced not only burning, but pain in the urethra; or bilious laxative discharges from the bowels, passed off, without a well developed attack of the disease. In a few cases, in which the attack most frequently occurred in the night, there were no precursory symptoms of illness, and some of them, the day—the evening, before the attack in the night, felt not only perfectly well, but unusually comfortable and cheerful.

Symptoms of the Stage of Reaction, or Excitement.—As most attacks commenced with a chill, this fever, like others, might have a cold stage appropriated to it; but as some were attacked, or had the fever developed without a chill, or very marked depression of the system, previous to febrile reaction, it cannot be considered as constituting a stage of the disease in all cases. When the attack was announced by a chill, it varied very much in its duration and intensity. In some cases, the chill was severe, and of several hours duration, in others it was distinct, but of shorter continuance, and in others again, the reaction was preceded by rigors—slight chilliness, and afterwards, alternated by chilly sensations and flushes of heat, until the fever was fully established. Sensations of chilliness were occasionally complained of, especially when uncovered, or exposed to cool air, in some cases, during the first, and even the second day of the fever.

If headache existed, as a precursory symptom, it was increased during the chill—if not complained of before, it almost invariably occurred during the chill, attended generally with pain in the back, and often with pain in the limbs, oppression, nausea, and sometimes vomiting. These symptoms were all increased, by the reaction or fever, which ensued, except the oppression and distress, when great from the internal congestion, during the chill. The reaction when established, somewhat relieved this kind of distress, while the pain in the head—especially through the anterior part of the head, and in or behind the balls of the eyes, and in some cases in the posterior part of the head, and in the back, and the large joints of the extremities, was increased, with the increase of fever. The eyes, in many cases, especially when there was much pain

in that region, become red, injected, watery and glistening, and the pain in, and behind them, was increased by moving the balls, or much light being admitted upon them. The acceleration of the circulation during the fever was various—the pulse, varying from 90 to 130 beats in the minute, in different cases. When most frequent, it was less full. It never presented, the sensation to the touch, of the strong, hard, tense, incompressible pulse of synochal fevers, or even of a well developed inflammatory remittent, or intermittent fever. Though sometimes, rather feeble and oppressed, it was generally, open, soft, flowing, but rather gaseous and compressible.

The development of heat was somewhat various. The body, and especially the head was hot, and generally the feverish heat was diffused to the extremities; but in some cases the extremities, and particularly the feet, were too cool. The face was more or less flushed, and in some cases very much flushed, but the redness of the face, upon examination in a good light, when very marked, presented a dark, or livid tinge, especially the lips and cheeks, and when slightly compressed, the color was slowly restored by the capillary circulation, to the point of compression. The skin was sometimes dry and hot, and continued so during the fever; more frequently, it was inclined to be moist, or easily made so, though hot, and in some there was a tendency to quite profuse perspiration, without abatement of the heat.

The respiration, except during the oppression of a chill, and the reaction, was not prominently disturbed during the fever stage. The stomach, under the oppression of the chill, and reaction, was generally sick, and some times there was vomiting. In these cases, the reaction, somewhat relieved the stomach, but when the excitement following a chill, or developed without it, became sufficient to produce great cerebral distress, the stomach indicated its sympathy with the brain, by continued nausea, retching and even vomiting, attended with restlessness, jactitation and complainings, and a notable expression of distress in the countenance.

The tongue, though variously covered, more or less, with a thin whitish, or brownish coat, was generally moist, through the paroxysm of fever. Late in the season, when the weather became cool, it was more inclined to be dry in the centre, and red at the tip, and edges, the second and third day. The thirst for cold drinks was generally great and insatiable, though in some bad cases, it was not so distressing. Drinking freely of any thing, in some cases produced nausea and vomiting, in others the stomach was not distressed by it.

The ejections from the stomach were sometimes bilious, though generally they consisted of undigested food, at first, and subsequently of the drinks. When the nausea did not give rise to free and full vomiting, the food taken before the attack, was retained in the stomach in some cases, twenty to twenty-four hours, though the bowels were freely operated on by oil during that time, and then the undigested food was thrown up, after the purging from the oil. The bowels were inclined to be torpid, though generally easily moved by medicine. The evacuations from the bowels at first consisted of their fecal contents, and when nothing more was aimed at in that way, in the treatment, than their evacuation, not much, if any bilious matter was discharged.

It being a prominent object in my course of treatment, to produce as early as practicable, the largest possible amount of biliary discharges, I obtained in my cases, the first and second days even more copious bilious discharges, than in bilious fever. The action of the kidneys, though in some cases as free, as ordinarily occurs in fever, in others it was limited, and in a few, after the first or second day, ceased almost entirely. The suppression of urine was a most fatal symptom. When not so at the commencement of the attack, by the second day, the urine became highly colored, and at the decline of the fever deposited a good deal of sediment.

Although there was generally much complaint of pain in the head, and in some cases, a tendency to indifference, apathy, and even stupor, attended with hemorrhage from the nose, yet in the fever stage, there were but few cases of decided and continuous mental derangement.

These are most of the prominent symptoms of a case of medium, or a little above the medium grade of violence of the disease, before and during the attack, and the full development of the stage of excitement; and so far, nothing has been presented, that is conclusively diagnostic of the yellow fever; because many, and even most of these symptoms, are sometimes exhibited, in the commencement, and early stage of an attack of remittent fever; though the physiognomy, and combination of the prominent symptoms, of the yellow fever, should seldom be mistaken by the experienced and skillful physician, in its first stage.

But as the disease progressed, the diagnostic symptoms became more and more obvious and marked; for, unlike the ordinary malarial fevers, the paroxysm of excitement—made up of most, or all the symptoms described, was continuous, until it rather abruptly subsided. Though there was some abatement of the symptoms in the morning, it did not amount to a remission. The evening, or, more frequently, the night of the third

day, the prominent symptoms began to subside; this was not only sensibly felt, and expressed, by the patient, but was more clearly indicated by the pulse, which always become slower, softer, and feebler, or more open, gaseous, and compressible. By the next day, the fourth day, in most cases, the fever, pain in the head and limbs, soreness, or distress in moving the balls of the eyes, had all subsided, or nearly so. The pulse became preternaturally slow—70, 60, 50, 40, to the minute—and was so notable, from its slow, soft, creeping, gaseous and compressible character, that the practiced and experienced touch could not only diagnose the disease, generally, from all others, but determine its stage, by the pulse. In some cases, where the pulse did not become so preternaturally slow, it manifested the other peculiarities, so perceptibly, as to be very certainly recognizable. It was, therefore, an important symptom in the diagnosis of the yellow fever, from all other fevers, at the termination of the stage of excitement, and during the stage of remission—of calm, of prostration, which followed it. This stage of remission, the third, fourth, or fifth day, much the most frequently on the fourth day, occurred in all cases, whether they were properly treated, or not treated at all, medically—whether they recovered, or died. In negroes, the stage of remission generally occurred earlier—the third day. In whites, the violence and duration of the paroxysm were certainly diminished by proper treatment, and when this was instituted at the commencement of the attack, it sometimes subsided the second night, or third morning, and seldom continued beyond the fourth morning.

This stage of remission was attended with great relief from suffering, the peculiar pulse described, subsidence of external feverish heat, abatement of internal heat and thirst, diminished restlessness, improvement of the spirits and hopefulness of recovery, and some relief from the previous disgust or inappetency for even the blandest nourishment.

While these signs of improvement were so manifestly felt, and seen, yet there was always complaint of more or less, and sometimes of great prostration, described as the feeling, like they would sink in or through the bed, an unusual feeling of numbness—deadness, coming up from the extremities to the body, and producing faintness, or the feeling of faintness without this numbness, or the numbness as a more constant symptom. To these few prominent general symptoms of exhaustion and prostration of the general vital powers, may be added the evidences of the extreme exhaustion and prostration of the functional powers of the heart and stomach. Any considerable muscular exertion, especially rising up, or

getting out of bed, produced distress and faintness, and was very prejudicial. And though there was abatement of thirst, and of the inappetency to food, the stomach, and the whole system, were easily distressed, and greatly oppressed, by taking too much drink, or nourishment, even of the blandest and most proper kind; and such imprudence either resulted in increased oppression and prostration, or in vomiting and increased irritability of the stomach. In most cases, not all, the orange, or dusky, yellowish color of the eyes and skin, were obvious.

This stage of remission, where the medical treatment and nursing properly conducted and assisted, the peculiar and extraordinary efforts of the system, exhibited in this disease, to eliminate the poison during the paroxysm; and then were properly directed, to relieve it from the consequent prostration, was the commencement of a gradual, but progressive convalescence. And though the improvement, for two, three, or four, or even six days, was slow, where the vital organs gradually recovered their tone, and wonted power and functions, the recovery became more rapid, and progressed to the restoration of perfect health.

But, if, from the violence of the disease, the overwhelming or disorganizing influence of the special poison, which produced it, or from the want of proper medical aid, in assisting and conducting the sanitary efforts of the system, in relieving itself of the morbid poison, so mightily disturbing its functions, and contaminating its fluids and tissues, the attack was to be fatal, or to run the gauntlet of most of the subsequent bad symptoms, to a slow, but final recovery; then, a succession of symptoms very different from those of convalescence were manifested. The deceptive calm, or remission, which always occurred, instead of emerging slowly from prostration to health, was more rapid in its progress to the stage of disorganization or dissolution of the solids and fluids, and the final issue, in death; or to the more protracted stage of continued prostration and functional derangement, resulting in tedious convalescence, and final recovery. In these cases, when fatal, instead of a gradual improvement in all the symptoms, the deceptive calm was short in its duration. In a few hours, generally, there was flagging of the pulse, and increase of thirst, and nausea of the stomach, coolness of the surface and extremities, vomiting of the drinks, rendered distressingly acid by the secretions in the stomach; and finally the fluid ejected contained dark grains, or flocculi, of the matter of black vomit, which increased in a greater or less degree. In some, where the stomach was not so irritable, a half-pint to a pint of black vomit was thrown up at once, without being

preceded by vomiting, for two or three days. This black matter, and in some cases grumous blood, was passed in considerable quantities from the bowels. The discharge of urine was diminished, or entirely suspended. The eyes and skin, generally, were of an orange color, or of a dusky, yellowish hue; the pulse remained slow, but become more and more feeble and intermitting; the nose, gums, and other mucous surfaces, exuded dark, dissolved blood, in greater or less quantities. The surface was cool and sometimes clammy; and finally, as the result of all these indications of dissolution, spasms, or a more gradual state of unconciousness, precluded the extinction of life. In such cases, death occurred generally on the sixth, in some on the fifth, and seldom so late, or later than the seventh or eighth day.

When recovery occurred in protracted cases, which presented many bad symptoms, during the continued stage of prostration and functional derangement, the stage of remission was generally longer, and attended with more relief from previous distress, than in fatal cases, but less so, than in those which progressed to a more favorable and speedy recovery. The stomach, during and after the calm, was weak, nauseated, and easily excited to emesis; the fluids ejected acid, and but little or no appetite for any kind of nourishment. In a few cases, where the morbid secretions and irritation of the stomach persisted, during the fourth and fifth days, there was more or less of the matter of black vomit ejected from the stomach, and dejected from the bowels, followed by hemorrhage from the nose and gums, of five to ten days' continuance, and in females, from the womb. In less intense cases, these hemorrhages occurred without black vomit. The pulse generally continued slow and feeble, though in a few it increased in frequency to 80, 90, and even 100. The bowels were torpid, though easily moved; the urine highly colored, and deposited considerable sediment; the skin cool, not remarkably dry, perspiration sometimes was easily produced. The chief difficulty in the way of recovery, seemed to be in the suspension, impairment, or vitiation of the important functions, of digestion, assimilation and nutrition, and of secretion and excretion. The stomach remained weak, and when the undigested food accumulated, it was ejected; the secretion of bile was deficient and vitiated; the bowels were either torpid or too loose; the general debility continued, attended with restlessness, and disturbed, or want of sleep. The skin became pale, and of a sallow, yellow color. Ultimately, however, after passing through all or most of these bad symptoms, health was gradually restored.

In a few cases of the more intense grades, the cerebral symptoms—stupor, or derangement, attended with early suspension of the secretions and excretions—were more prominent; and in these, the tendency to death was earlier—the third, fourth, or fifth day. In a few, though the disease run through its different stages, as indicated by the symptoms, the animal functions were so little involved, that the patient and friends believed nothing serious was the matter, until they had lain down to die. In these cases, they were able to sit up and walk about, during the stage of excitement and remission, though each was indicated by the pulse, and death occurred on the fifth or sixth day.

Pathology.—The careful observation of all the symptoms, properly pertaining to the disease, in its stage of excitement, and the consequent stage of remission, of exhaustion, of prostration; when it run through its course, without treatment, and terminated in death; and when it was properly conducted through its stages, by medical treatment, to convalescence, and the restoration to health, indicated that it was produced by a special morbid poison, introduced into the system; that this poison acted primarily upon the nervous system, and secondarily through the blood, by its contamination, and produced depression, irritation, reaction, pain, and the great disturbance and distress evinced by the symptoms, during the stage of excitement. This stage of excitement, then, like all the conservative and curative actions of the system, was a protective and curative effort, to prevent the disorganizing effects of the poison upon the body, and to expel it from the system. In cases where the nervous susceptibility was not great, and the functional powers of elimination were active, the poison was carried out of the system, mainly through the liver and kidneys, without a notable development of an attack of the disease, but doubtless sufficient to protect them against a subsequent attack. In less favored cases, these important organs, and other outlets, perhaps the skin, having failed in their efforts to eliminate the poison from the system, its disturbing and disorganizing effects were soon manifested by the excitement produced. This excitement was disease—exalted, deranged, often misdirected action, which disqualified the system for the proper and successful functional efforts necessary to eliminate and expel the poison from it. The cerebral and ganglionic innervation, impaired, and diverted from the important secretory organs, by the general morbid irritation produced by the poison, the general deranged excitement was kept up during the paroxysm, until exhaustion rather abruptly

terminated it. The kidneys and liver, having failed in their efforts to remove the poison from the blood—being surprised by the general commotion which it caused to be produced in the system, and thus deprived of their innervation—their power of action remained in a state of inefficiency, until the storm of excitement subsided, and then, if not too much crippled and disqualified by the disorganizing effects of the poison, they resumed their functions, and produced the critical discharges, of turbid urine and bilious stools, so specially noticed by most writers.

That this fever was a disease, of morbid irritation and excitement of the solids, produced by the contaminating and disorganizing effects of the poison upon the blood and the nervous system, seemed to be indicated by the dissolved state of the blood—the atonic, relaxed and permeable state of the solids—the general exhaustion of the system—the preternaturally slow, soft, gaseous and compressible state of the pulse—the enfeebled state of the heart and stomach, manifested by faintness and nausea, most like that caused by exhausting hemorrhage; all resulting from the fever—consequent upon the paroxysm, and all these symptoms and effects evincing a state of prostration, and not inflammation, being best relieved by stimulants and tonics.

That it was a special and distinct disease, essentially different from any malarious fever that has been prevalent, since my residence here—nineteen years—I need not affirm. It is only necessary that the intelligent and experienced physician should review all his cases of malarious fever—congestive, inflammatory, or of whatever grade or type—and determine, from his observation, whether he has ever seen, in the prevalence of these diseases, the persistence of the paroxysm, without remission, for three days, and then its rather abrupt subsidence into a calm, exhibiting during the fourth day a preternaturally slow, soft and feeble pulse, almost a healthy aspect as to the general appearance, and state of the skin, and the feeling of comfort and speedy recovery, and these, and the other characteristic symptoms I have described, to be speedily followed by black vomit and death.

Treatment.—The brief and imperfect, but faithful, account I have endeavored to give of the symptoms and character of the disease, from my own observations, and the results, not only of my own treatment, but of every different mode of treatment, and of no treatment, so far as I could ascertain them, by careful inquiry, indicate so clearly the course of practice which I endeavored to carry out, that it may be briefly given,

though somewhat in detail. Many years' experience, and careful observation, in all zymotic fevers, tending to the disturbance and suspension of the functions of the important organs of secretion, of the benefit not only of producing and keeping up for a time their functional action, but in the commencement of the treatment to evacuate the stomach and bowels thoroughly, induced me to adopt the same course in the commencement of the treatment of the yellow fever. Cautiously feeling my way, watching its symptoms and progress, and the effect of the remedies which my pathological views of the disease indicated, and contrasting them with the effects and results of the various other modes of treatment, I settled upon the following course of practice, which was continued, with such modifications as particular cases and the course of the epidemic required.

As early as possible after the attack—the commencement of the stage of reaction, five to ten grains of ipecac, with five to twenty grains of calomel, were given, to produce nausea and vomiting; cold water to be drunk as freely as desired; the feet to be bathed in a hot mustard bath, and kept warm by hot applications, if necessary; cold applications to the head; the body and arms sponged with cold or tepid water, if there was much complaint of heat, and positive warmth of the skin; the room to be well ventilated, and the temperature agreeable. If the first dose of ipecac and calomel produced full emesis, which was generally the case, the ipecac to be diminished in the second and third doses, to the quantity necessary to produce decided nausea—say two to four grains, combined with five to twenty grains of calomel, enough to secure an impression upon the liver; these second and third doses to be given at intervals of an hour and a half to two hours. In one and a half to two hours after the last dose, a seidlitz powder, or its equivalent of salts, to be given, and repeated every one to two hours, until free purging was produced, which consisted generally of the fecal contents of the bowels, mingled with or followed by copious discharges of bilious matter; this purging to be kept up, through the evening and night, by repeating the saline cathartics, until the bilious matter was worked off, and the discharges became decidedly watery, showing that depletion from the bowels and the portal system was effected; then the saline purgatives to be suspended. During this time, the hot foot-bath to be occasionally used, and the feet kept warm; the cold water as a drink, iced, if desired, to be freely allowed; ice, or ice-water, in napkins, applied to the head, and the cold or tepid sponging, as most agreeable, to the body, to be continued as

required, to relieve the morbid, sensible heat, and the bed-clothing to be regulated by the feeling of comfort; when the pain in the head and back was severe, six to ten ounces of blood to be abstracted from the back and mastoid regions of the head, by cups. So soon as the necessary emetico-cathartic evacuations were accomplished, say about two o'clock A.M., the second morning, three doses of six to ten, or two doses of ten to fifteen grains of quinine to be given at intervals between two and eight o'clock A.M.; the foot-baths, cold to the head, sponging if necessary, and the free use of cold drinks—water or lemonade—to be continued the second day, and only enough covering to be comfortable. If there was high fever, and distressing headache, the seidlitz powders to be repeated through the evening, every two hours, until free purging was again produced; if the bowels were free, soda powders to be used. The next morning, about the same time, half the quantity of quinine to be given; the cold to the head; sponging the body, if the heat required it; cold drinks, and hot foot-baths, to be continued the third day; and seidlitz, or soda powders, if the bowels were, or were not open, and the fever was not subsiding, in the evening.

With these means, in this succession, proportioned to the age, constitution, and violence of the symptoms of the case, the active treatment ceased. The fourth morning, and in some cases, especially in negroes, the third, the fever and pain had subsided, or nearly so. In the stadium, or stage of prostration, always following the paroxysm, the critical struggle between life and death required careful watching and guidance. The use of stimulants, from this period in the disease, was almost indispensable to the recovery of all cases, of a well-developed attack. The stomach was too weak to receive much cold drink, or indeed much of anything, without producing nausea, oppression, and vomiting. The taste and appetite of the patient was then consulted, and brandy, wine, or porter, whichever was preferred, was given at regular intervals of one to two hours, in such form—mint ^julip, sangaree, mulled wine, panada, etc.—as was most agreeable, in small quantities, one to two or three spoonfuls at a time; and a like amount of barley or rice-water, or, if the stomach would bear it, chicken-water, or beef tea. If the stomach was very weak and nauseated, or irritable, whichever of these kinds of stimulants and nourishment agreed best, were given in the smallest quantities, and but little or no water was allowed as a drink, but pulverized ice in lieu of it. If vomiting of acid occurred, carbonate of ammonia, or soda, or lime-water and milk in equal quantities, succeeded best in relieving it. This

course of stimulants and nourishment—the nourishment, and the stimulants, if necessary, gradually increased in quantity, from day to day, and changed as desired by the patient, together with perfect quietude in bed, and not rising out of bed; comfortable covering, so as to promote the action of the skin, from the time of the subsidence of the feverish heat; the bowels not to be disturbed, if easy, for two or three days, and then moved by enemata—enabled the exhausted and prostrated system to rally, and gradually restore itself to health, if not imprudently prevented by excess in eating, or by exposure, and sitting up too soon.

In addition to these means, in the stage of prostration and functional derangement, a blister over the stomach was useful in relieving irritability and vomiting. Of the various tonics resorted to, the only one agreeable to the stomach was muriated tincture of iron, and in some cases it was very useful, especially where the general debility was attended with continuous oozing of blood from the gums and nose, which continued in a few cases several days, after black vomit, and still they recovered, by the use of the other means stated, and the tincture of iron, in addition, in doses of fifteen to twenty drops every two to four hours.

This is a brief outline of the course of treatment pursued during the epidemic. The object of the external appliances was to control and relieve the general, morbid and exhausting excitement, and thereby to reserve some of the nerve force, misdirected and spent in that way, to be appropriated to the important organs of digestion, secretion and excretion, which were in a dormant and inefficient state. The ipecac and calomel, followed by the salts, not only thoroughly evacuated the stomach and bowels of their contents, which they neither had the power to digest nor expel, but by the combined influence of the nauseating effect of the ipecac upon the stomach, and the special effect of the calomel upon the liver, and subsequently the effect of the salts upon the kidneys, the necessary innervation was invited and secured to those organs, to relieve them from their surprised and inefficient condition, and to restore their wonted functional action; thus to eliminate from the system the poison producing so much disturbance, disorganization, and tendency to death. The effect of this impression made upon, and the evacuation of the stomach, bowels, and the liver, was to relieve measurably the morbid condition of the brain, and increase its invervative energies, and thereby not only lessen and relieve the sympathetic oppression and nausea of the stomach, but to promote the action of the liver. The result of these sympathetic and reflex influences, was not only the

lessening the general exhausting excitement, the relief of the cerebral and gastric distress, but the early promotion of the wonted secretions, by which the poison was eliminated from the system. Subsequent, and auxiliary to these means, the quinine was given, as the safest and most efficient sedative and febrifuge, to relieve the morbid irritation, excitement, and pain; and thus to assist in promoting secretion, and especially perspiration. For whatever theorising there may be about the effect of quinine, we who have long used it, in small doses and large doses, and carefully watched its effects, know that it is not only febrifuge, but certainly, powerfully, and more safely and permanently sedative in its effects than opiates. It was not desirable, or useful, to produce more than a moderate impression, sufficient to control and partially relieve the morbid sensibility, pain, and excitement, by the quinine; and for this purpose, twenty to thirty grains the second morning, and half as much the third, seemed sufficient. A greater degree of quinism obviously obtunded the nervous sensibility, and depressed the system too much. Quinine seemed to act, also, in a good degree, as an antidote to the poison; for those who had taken the proper quantity, at the proper time, had a better chance for, and a more favorable, recovery. Though quinine manifestly produced these favorable effects, when given, as soon as the system was prepared for it, in the paroxysm; at the close of the stage of excitement, and during the stage of prostration, it was not only very repugnant and nauseating to the stomach, but in small doses, in that way, and in large doses, by its depressing effects, done harm. Except in a very few protracted cases, calomel was never given, after the first day of treatment, though in some cases the disease was permitted to progress one or two days before the physician was called in, and then it proved to be the most successful to commence the treatment in that way.

During the stage of prostration, and functional suspension and derangement, the treatment was assistant and expectant; carefully avoiding everything that was repugnant, or nauseating to the stomach, in the use of stimulants and nourishment, and the little medicine, in the way of antacids and tonics, that were indicated.

After the thorough evacuation of the stomach and bowels, at the start, and the decided and somewhat continuous impression by the ipecac and calomel on the stomach and liver, it was important to avoid the use of anything that was repugnant or nauseating to the stomach, in the first stage. On this account the seidlitz powders were resorted to, and were soon found not only agreeable and soothing to the stomach, but efficient

and peculiarly useful in their purgative and diuretic effects. The encouragement or production of perspiration, during the stage of heat and excitement, by hot diaphoretic drinks, wrapping up in blankets, and keeping the room heated and confined, was soon found to be most decidedly injurious. The morbid heat was thus retained, and the excitement, restlessness, pain and exhaustion, greatly increased, without any compensating benefit. Some of the most favorable recoveries occurred, when the liver and kidneys acted well, without any greater action of the skin, than the insensible perspiration and a gentle moisture. As the heat and excitement subsided, however, it was favorable to have moderate perspiration, and useful to encourage it by gentle means, especially the moderate increase of bed-clothing. In the course of the epidemic, the only case that I saw in which this treatment was properly instituted and carried out, that proved fatal, demonstrated the inefficiency of the skin, in eliminating the poison from the system. He had a high degree of heat and excitement, attended with profuse perspiration, from the evening of the first day, throughout the paroxysm, without any special means being used to produce it, but the heat and excitement were not relieved by the perspiration, and the second day the secretion of urine failed, and could not be re-established. The fluids ingested seemed to pass off rapidly by the skin, thus depriving the kidneys of their proper stimulus to action. He died on the fifth day of copious black vomit and hemorrhage. Careful observation, as to the effect of the different excretions, lead to the belief that moderate perspiration, at the waning of the paroxysm, was beneficial in relieving the subsiding heat and excitement; but that little benefit was derived from it as a carrier of the morbid poison out of the system. These observations and deductions, made at the bedside, are sustained by the researches and experiments of the ablest pathologists, who have demonstrated that but little of anything, but the watery fluid of perspiration, can be made to pass out of the system through the pores of the skin; while the liver and kidneys are the great emunctories of the effete and poisonous matter in the system; and that the skin cannot be made, to any salutary extent, the substitute for these organs in the performance of their offices.

In connection with this account of our mode of treating this epidemic, it is proper to notice some of the various modes of treatment, adopted by the people and by different physicians. The panic produced by the yellow fever originating in our midst, and soon heightened by the daily accounts of its pestilential fatality in Norfolk and Portsmouth, induced

not only the sick, and their friends, to resort to those—whether physicians or not—who had seen the disease, and professed to know its treatment, but the conductors of newspapers caught up and published the fugitive and domestic accounts from abroad of the treatment of yellow fever. These published modes of treatment, of course, being the simple domestic practice, understood by laymen and nurses. Unfortunately, most of this public information, which was sought after and adopted with so much avidity, was derived from the creole practice in New Orleans, and but illy adapted to this latitude and to our northern population. Nevertheless, it took so strong a hold upon the public mind, that its influence for a time was seen and felt, in the domestic treatment and in the nursing of almost every case of the disease. This was so much the case, that it was difficult to resist and overcome the influence of the popular prejudice in favor of the newspaper and nurse practice, sufficiently, to have a proper and scientific course of treatment carried out.

This newspaper practice, which was published as the way to cure yellow fever, because the creoles in New Orleans, or on the coast, are said to cure themselves and their negroes, who rarely have the disease badly, in that way, consisted of a dose of oil; wrapping up in blankets, after a hot mustard foot-bath; closing up the room, so as to exclude the fresh, pure air and keep it warm, and by drinking plentifully of hot diaphoretic teas, to sweat off and cure the fever. Acting upon an opinion, like that avowed by Dr. Stone, that yellow fever is "the same in all latitudes and longitudes, unmodified by topographical causes or changes of climate, but under all circumstances the same, identical and unchanged," some physicians inclined to, and perhaps adopted this practice. But it was soon found, whether the disease was the same here—"unmodified," that the practice, that was said to cure it in New Orleans and on the coast, failed in producing that result here. From careful inquiry, I feel authorized to state that, if every case, of or above the medium grade of violence, of the disease that was treated in that way did not prove fatal, I have been misinformed. On the 5th of October I addressed a short communication to the press, inveighing against the evils and fatality they were producing, in that way, and also gave an outline of the treatment which I found almost uniformly successful.

As to the practice of physicians generally, the difference consisted chiefly in the time of administering, the quantity, the repetition, the continued use &c., of the leading remedies. Some continued the use of calomel in full doses, even after the subsidence of the paroxysm, to keep up bilious

secretion, and to produce constant bilious stools, and even to produce ptyalism. Some deferred the use of quinine until the subsiding of the paroxysm, and then used it as a tonic febrifuge. Others, at least for a time, proscribed both calomel and quinine as not being adapted to the disease. All these different modes of treatment, being proposed and sustained by high authority, and adopted here, in accordance with the pathological views, and the judgment of different physicians.

General bleeding was resorted to, in a few cases, but though seeming to be temporarily beneficial, its results were not such as to encourage its continued or general use; while local bleeding with cups, was much more generally approved of, and decidedly salutary in its effects.

Progress and Mortality of the Epidemic. By the 25th of September, in addition to ten or twelve cases which had occurred, at, and near the upper landing, fifty cases perhaps, had originated in the infected district in South Memphis. The panic then, and soon after, induced many persons in that district, and some from other parts of the city to flee from their homes to the country. But few families that remained in the infected district escaped the disease, and in many, nearly or quite all, both white and black, were sick. Several instances soon occurred, of persons from other parts of the city, and from the country, visiting and nursing their friends in the infected district, contracting the disease, and dying after returning to their homes. This produced the general impression that it was catching, and not making the distinction, between the danger of being exposed in the region of the infected atmosphere, and being exposed to contact with cases, out of that region, many of the friends, and even relatives of the sick, were afraid to expose themselves to danger, by rendering the necessary attention and assistance to the sick, or to perform the necessary duties to the dead. This was not only the case with those living out of the infected region, but also with those living in it, and near neighbors to the sick and the dead. Although the number sick at any one time, in proportion to the population of the city, was not so great, but, that they might, and would have been nursed and attended to by their relatives and friends, had it not been for this fear of the contagiousness of the disease.

The voluntary organization of the Howard Association at this trying juncture, was very opportune and useful. The little band of self-sacrificing citizens, who constituted that organization, visited the sick, night and day, to ascertain their wants, and had them properly supplied, not only with other things necessary to their comfort and recovery, but nurses were

obtained and furnished to all who needed them, at any price required to command their services. In this important duty, they embarked without means, relying upon public charity and liberality, to supply the amount necessary. In this, the faithful performance of their duties, secured them prompt and full success; for though their expenditures during the short time of their active services, amounted to about \$4000,00, it was readily raised and furnished by individual, and city contributions. By the vigilant and prompt attention of this Association, much distress and suffering, from want of nurses, and other means necessary to comfort and recovery were prevented.

The Mortality, from the epidemic altogether, from the first death on the 7th of August, to the last death from yellow fever on the 25th of November, was about one hundred and fifty. Three of them were physicians, and two were clergymen. Of these, eleven occurred in August, thirty-nine in September, eighty-nine in October, and eleven in November. From the 20th of September to the 20th of October, there were one hundred and thirty-six deaths. Of these eighty-five were from the yellow fever, and fifty-one from other diseases, making about twelve a week from other diseases, and twenty-one from yellow fever. This part of September and October is taken as the most fatal period of thirty continuous days, and it shows a weekly average of about twelve deaths from other diseases, which is below the average of deaths of that period of time, for two or three previous years, when the city was unusually healthy. This proves, that though the aggregate mortality was greatly increased during the height of the epidemic, the mortality from other diseases was diminished, and that there was either less of other diseases, or they merged into yellow fever, and thereby became fatal.

Of the proportional mortality, to the number of cases which occurred, I have not the means to make a correct estimate. No report was made or register of all the cases kept, during the epidemic. The President of the Howard Association has made an effort to obtain a report of their cases, and the deaths from all the practicing physicians, but only a few have made out their reports, so that the effort to arrive at the aggregate number of cases in that way has failed, and the imperfect statistics obtained would afford nothing valuable by their publication.

In compliance with this request from the Howard Association, I made a careful report of the cases I had attended, leaving out all the cases I had seen as consulting physician, or merely called to see with other physicians. My cases thus reported, giving the names and localities of each, to prevent error in summing up the aggregate of all the reports, amounted to

sixty-six, though I had seen many more cases with other physicians. These cases were embraced within the period of time, from the 23d of August to the 1st of November. During this time my report shows, that I had treated one hundred and thirty-two cases of intermittent and remittent fever, nearly all of which occurred in the northern part of the city and suburbs, and out of the infected district. Of the sixty-six cases of the yellow fever, sixteen were negroes; and of the one hundred and thirty-two cases of other forms of fever, fourteen were negroes.

During this period of time I attended two cases of congestion and inflammation of the brain, which resulted from neglected intermittent fever, that proved fatal. They were both brought to the city from the contiguous railroads, and were treated too late to relieve them. No death occurred, out of the one hundred and thirty-two cases reported. These two cases, when they came under treatment, being hopeless ones, of disease of the brain, were not included in my reported cases, of ordinary intermittent and remittent fever.

Out of the sixty-six cases of the yellow fever, I reported six deaths. Of these six cases which terminated fatally, in only one was the treatment instituted early enough, and properly carried out. The first, had no physician until I saw her the fourth morning of her disease—that evening she had black vomit, and death occurred the next morning. The second, a girl six years old, refused to swallow the medicine, and was not forced to take it the first two days—and she died the evening of the fourth day; had black vomit. The third, a negro man died the ninth day, after a mild attack of yellow fever, from dysentery produced by imprudence. The fourth was carried through the heating regimen, during the paroxysm, and the medicine not properly given by her nurse, she died the fifth evening with copious black vomit. The sixth was a case of medium violence in the attack, but the prescription of thirty grains of quinine to be taken the second morning was put up at Dr. Gayle's Botanic Drug store, and instead of three doses of quinine of ten grains each, near two drachms of acetate of lead with a small portion of quinine was put up in one paper, of which she took from forty to sixty grains in the morning, in two doses. No impression having been made by the quinine, and the stomach having been unusually irritable, led to the discovery, that she had taken the wrong medicine. To say the least of the effect of this unaccountable mistake in filling the prescription, the stomach was irritated, and the day was lost with improper medication. The partial subsidence of the fever on the fourth day, was attended with much complaint of numbness, followed by copious black vomit and death the next day. The fifth case, exhibited symptoms and a result of such

peculiar interest, that I have made it the last, to give it the special notice it seemed to deserve. This case proved fatal in a young man of pretty good constitution, without presenting symptoms, the first two days, as violent as other cases then under treatment in the same vicinity, which recovered favorably. The medicine was given and the nursing conducted according to the directions. The liver seemed to act well, and the dejections from the bowels were copious and bilious the first evening and night, but from the first night after the attack in the morning, there was copious hot perspiration, which continued during the paroxysm, without any means being used, specially with a view of producing, or keeping it up, and without seeming at all to relieve the morbid heat and excitement. The secretion of urine was very scant, and the second day ceased almost entirely, and could not be restored. The feverish heat and excitement only partially subsided the fourth day, and the fifth morning he had copious hemorrhage from the nose, and black vomit, and the same from the bowels, and death occurred that evening, preceded several hours by stupor. Other cases at the same time, and in the same vicinity, progressed and recovered favorably, without more than gentle perspiration. These facts are stated in confirmation of what has been already stated, as to the seeming inefficiency of even profuse spontaneous perspiration, during the paroxysm, in relieving the heat and excitement, and eliminating the poison from the system, by performing its own proper office, and that also of the kidneys.

It is a matter of regret that the aggregate number of cases could not be obtained, to show the proportional mortality. I doubt not, if this could be fairly done, that, considering the malignancy of the disease, the proportion of deaths, when compared with the fatality of yellow fever epidemics in other places, would be highly favorable to the skill and success of our physicians generally. It may truly be said—and I would do the members of the profession injustice, to leave it unsaid—that, without a single exception, they not only remained at their posts of duty and of danger, but actively and perseveringly, and I may say heroically, contributed their services and best skill, to the relief of all the suffering, and their salvation from death, as far as was practicable.

Although this paper is already much more extended than was designed at the outset, some important facts and considerations, which have been more fully brought to view during its progress, in reference to the natural and artificial topographical condition of the localities where most of the cases occurred, require a few additional, concluding remarks. The facts proved, that the more extensive and virulent district in South Memphis, and the more limited and less virulent localities in North Memphis, be-

between Market and Exchange streets, and north of Jefferson street, were in the same condition, differing only in extent and degree. That this peculiar condition in South Memphis, consisted of the two hollows, north and south of Linden street, and running parallel with it, being intersected by the high embankments of the crossing streets, and the intervening hollows having been partly filled in a few years with fresh earth and filth, but still left in a condition to receive city surface filth, and to retain moisture. In addition to this, I have been reminded of a large pond, which was filled with fresh earth, a few years since, between Linden and Pontotoc streets, not far from the margin of the bluff, central to the area in which the first considerable number of cases occurred. The localities in North Memphis have undergone the same artificial change, though not so recently and extensively. Now it may be, that in a certain period of time, after fresh earth is placed in hollows, in a position to receive the admixture of surface filth, and to receive and retain moisture, and to expel the products of decomposition through the loose, untrampled, and often cracked surface, from a considerable depth, the ultimate products, the noxious effluvia, may be disengaged, and afterwards the same continued condition of such localities become innocuous and healthy. But the fact so often remarked in cities where yellow fever prevails, that it commences and is most virulent in the artificial, unpaved, and most damp and filthy localities; that it indicates these as the special conditions which develop and produce the noxious effluvia necessary to the production and spread of the disease.

These facts, then, sustained and confirmed by facts and observations elsewhere, speak loudly and earnestly, and with us, as well as in other places, they have been forced upon our notice, by appalling scenes of sickness and death; and I desire so to rehearse them before our city authorities, as to obtain for them that notice, that action, which they indicate—that sanitary action, which the preservation of health and life, and the good name of our city, demands.

But the question may be asked, what can and should be done? The general answer is, that where filling up is required, it should be so elevated and sloped, as to give the greatest possible facility to the escape, or running off from the surface, of rain water, so that instead of soft, unsettled, fresh earth being made the receptacle for filth and moisture, it should be so elevated and sloped as to have all surface filth washed off, with the rain water, so that it may become dry and firm, and the surface become settled and compact, and be cultivated, or coated with grass, or covered by pavement.

5.



4.



3.





THE BRONZE LIVER OF BILIOUS FEVER.

From nature by Joseph Beall.

Th. Sinclair's lith. Philad.



YELLOW FEVER LIVER,
EPIDEMIC OF 1854.