

delivery of the child complete; however there occurs quite a difference between the child delivery and the placental delivery in very many cases of retained and adherent placentas. The time here recorded has reference to the child only. These records show that more children are born from midnight to midday than from midday to midnight, even without regarding the instrumental cases which changes the time in those cases.

Very many of the cases have a peculiar interest in themselves, and this paper could probably be profitably extended, but it seems better to defer a consideration of them to another time, when isolated cases can be taken up, and their history, clinical and otherwise, recorded.

802 TWELFTH STREET, ALTOONA, PA., JANUARY, 1874.

ANT. V.—*Account of the Yellow Fever Epidemic in Memphis, Tennessee, in 1873.* By J. B. MALLORY, M.D.

IN the epidemic through which Memphis has so recently passed, if there was nothing unusual, there was much that possessed a melancholy interest, and much that was instructive in a hygienic point of view.

Having passed successively through a visitation of smallpox and cholera, which left their mournful impress behind, little apprehension was entertained of a third affliction; but after a short interregnum the appearance of the yellow fever was announced in a portion of the city hitherto singularly exempt from epidemic influences.

The locality where it first appeared is known as "Happy Hollow." This is bounded on the north by a continuation of Market Street, on the south by a continuation of Poplar Street, on the east by the bluff, on the west by an embankment which runs parallel with the river. It is a considerable hollow, and if poverty and filth are conducive to human happiness, its name is not a misnomer. Standing on the southern extremity of Promenade Street, we will take a view of this Arcadian locality, that is destined to live in the annals of Memphis.

Far below our level a collection of rude shanties appears, constructed chiefly of the dilapidated materials of disintegrated flat-boats, in diversified styles of architecture. Some are covered with old sheet-iron, and some with various materials which would puzzle a mechanic to describe. Under the same roof may be seen lodgings for various domestic animals. The houses are not far apart, as each foot of ground has an estimated value. Few individuals are to be seen, and but for the smoke ascending from the rude chimneys, we might imagine all the occupants had fallen victims to the plague. There is no sewerage for the escape of the accumulated filth, and consequently when the yellow fever was

brought here all the conditions existed which were necessary for its propagation. In Happy Hollow the first cases of the disease appeared.

About the 10th of August, the steam-tug "Bee," from New Orleans, put off at the landing a passenger named Davis, who had yellow fever, and obtained lodgings with an Irishman named Riley, living in Happy Hollow. Davis died; and in a few days Riley himself and a member of his family were taken with the same disease, and died. The steam-tug, after landing Davis, continued to the mouth of Wolf River, and "tied up," for the purpose of taking on wood. Capt. C. B. Goll, her commander, was confined on board with yellow fever, and was visited by Dr. Blount, a physician of Memphis, who subsequently died of the same disease. After the departure of the Bee, Capt. Goll died. His body was brought back to Memphis on the steamer Fatne City, and reshipped by the undertaker, on the 12th, to St. Louis. A citizen of Cape Girardeau, Missouri, named Marchildon, was also a passenger on the Bee, and was taken with yellow fever a few days after his arrival at home, but recovered. An Italian named Lacarini, whose avocation was selling wood and groceries in a small way, and who is supposed to have gone on board the steamer Bee, while lying at the mouth of Wolf River, died on the 1st of September, on the corner of Second and Mill Streets, with the characteristic symptoms of yellow fever. Several persons were attacked at the Oil Works about this time, one of whom, Mr. Moran, I attended. These are believed to have been the first cases of the yellow fever epidemic in our city.

The disease then spread rapidly, and the number of fatal cases created considerable alarm among the inhabitants before its true character was announced. Promenade Street, and the portion of Front Street opposite Happy Hollow, were the next points of attack. Several valuable citizens died early in the epidemic, on Promenade Street, and the ravages of the disease became so terrible on this street that the majority of the houses were soon vacated. On Front Street the mortality was great among the poor of our foreign population, who pay little regard to cleanliness, and whose houses are usually crowded to their utmost capacity. From Front Street the disease spread rapidly over the northern portion of the city, called Pineh, which, together with Happy Hollow, was considered the "Infected District." The area of this district is estimated at about half a mile square, and contained at the outbreak of the fever a computed population of three thousand inhabitants. It was not, however, confined to this locality, but extended very soon to different portions of Chelsea, and northward along Second Street beyond the limits of the corporation. Cases meanwhile began to be reported in other portions of the city. At first the disease was observed to affect those only who had visited the "Infected District," but from uninterrupted communication its ravages were soon extended to every ward.

The origin of yellow-fever epidemics is an unsettled question, and

probably there is not anything peculiar in the one that has so recently left its impress upon this city which will afford a satisfactory solution of it. By some of the medical profession it is believed that the appearance of the epidemic so soon after the landing of the steamer Bee was simply a coincidence, and not referable to anything connected with that boat; that the *materies morbi* was generated amid the filth of "Happy Hollow" and the miasma that percolated the bluff, consequent on the uncleanness of Pioch.

That certain conditions are necessary for the existence of yellow-fever epidemics, few will deny. These conditions may be the result of the decomposition of animal and vegetable matter, with moisture and a continuance of a certain degree of temperature; but it is by no means certain that these conditions are capable of *originating* the disease. If so, why has Pinckney so long enjoyed exemption from epidemic influences? This part of Memphis has been notoriously filthy, far beyond any portion of the city, for the last twenty years, and yet has never before suffered from an epidemic of yellow fever; while other portions, more favoured by the appliances of wealth, were visited by its ravages in 1855, and again in 1867. Surely some additional morbid agent seems necessary for the creation of the disease. Is this agent an animalcule, or germinal molecule, capable of indefinite multiplication? If the development and growth of all organic matter is considered due "to the successive formation of histogenetic and hystolitic molecules," may not the active germ be all that is required in the creation of an epidemic, when the peculiar materials for its proliferation are supplied? The sporadic development of yellow fever is admitted, but the proofs of its contagiousness are not affected on this account. The first cause of this, as well as other diseases, however, will probably continue to elude our scrutiny, in view of the fact which physiology teaches—that "material, form, and function are inseparable."

The early cases of yellow fever in nearly all the most remarkable epidemics recorded during the present century, have been simultaneous with or shortly after the arrival of some infected vessel. The great epidemic that occurred in Philadelphia, in 1793, was attributed by the College of Physicians to importation from the West India Islands. In the spring of 1853 the yellow fever was carried to New Orleans by a foreign vessel, and through the summer months committed unprecedented ravages. The steamer *Moodorio* is reported to have carried the disease to Philadelphia from New Orleans, but the prompt enforcement of proper sanitary measures prevented it from spreading. Norfolk and Portsmouth suffered from a fearful visitation of yellow fever in 1855. This epidemic was attributed to the steamer *Benjamin Franklin*, on board of which were several cases of fever when she arrived in port. In 1852 the yellow fever prevailed at the Island of St. Thomas, West Indies, in the mouth of

December. A British vessel, from Southampton, touched at the island; several cases subsequently appeared among the passengers after the ship arrived at Pnoama; the disease was communicated to the town, and an epidemic was the result.

The yellow fever, in 1867, first made its appearance in the Gulf States in Indianola, Texas, Matagorda Bay. This was prior to the 18th of July. The *Indianola Bulletin* of July 25, 1867, states:—

"The fever was brought here by a schooner from Vera Cruz. Among her passengers were a gentleman and family. A drayman, Hunter, hauled them up to the Magnolia House, where the baggage was aired. Hunter, the drayman, took sick and died. A small lad in the employ of Clemeat & Barhaaks, opposite the north side of the Magnolia House, also took sick and died. A Mexican, who came passenger in the schooner and put up at Wagner's, also sickened and died, and subsequently two others died in the same house. The blankets, and some parts of the baggage of these people, were sold, and thus became distributed around; and there is not the shadow of a doubt that the disease now prevailing here originated as above. Two young men, one a son of Judge Dake, while on a visit to Indianola, examined the baggage and blankets above mentioned, before they were sold, and immediately after returning home to Hiaes' Bay they were attacked by yellow fever, and died; and the infection thus carried occasioned several other cases in that neighbourhood."

It reached Memphis about the 12th of September of that year. How it was brought here has never been definitely ascertained.

The fever which made its appearance at Shreveport about the 20th of August last is not supposed to have had a local origin, by those most capable of judging. By some it was attributed to the removal of the raft from Red River; others believed that the International Circus Company, from Texas, was the medium of communication; but the following extract, from a report made by a committee of medical gentlemen appointed to investigate the subject, furnishes the most probable cause for the appearance of the disease:—

"We are confident ourselves that the fever was carried from New Orleans by one or more of the Red River line of steamboats, through goods and persons. The evidence already accumulated points clearly to this avenue, but the investigation is much embarrassed by the natural reluctance on the part of officers and owners of boats to admit that they were the unfortunate, if ignorant and innocent agents, in the dissemination of a disease which has wrought so dreadful a calamity."

In the little town of Mansfield, La., which is situated between Shreveport and Alexandria, a family recently suffered from yellow fever, under the following circumstances: A young man named Baras visited Shreveport during the epidemic, and was detained several days by business. Soon after his return home he was taken with the fever, and died on the 12th of September. His mother in a few days was confined with the same disease, and died on the 5th of October. A gentleman named Howard, who boarded with the family and waited on the sick members of it, died shortly afterwards. The last one attacked was a little girl aged twelve years, who recovered. All communication with the house of Mrs. Barns was interdicted, and no case occurred outside of it in the town of Mansfield.

It would be needless to deny that yellow fever may be communicated by individuals and vessels from foreign parts. Nurses in Charity Hospital, New Orleans, it is true, often escape the disease. Physicians who are exposed in their attendance on the sick in severe epidemics, not unfrequently enjoy a similar immunity, evincing that it is not contagious in the same degree with smallpox; but that the germs of the disease may be transplanted to a suitable soil, so to speak, where a rapid proliferation may create an epidemic, seems eminently warranted by the foregoing statement of well-authenticated facts. If any local cause was the creative agent in 1867 of the Memphis epidemic, it would appear with some degree of plausibility to have had some connection with Bayou Goyoso. The disease, it is remembered, was limited to the meanderings of this stream through the city, and chiefly, but not entirely, to the inhabitants living on the east side of it. Why it did not affect contiguous neighborhoods on the west side with equal severity, and spread over the city, is as inexplicable as its recent ravages in Pinch, and the exemption of the localities where it previously prevailed. The northern portion of the city was as filthy in 1867 as it was previous to the outbreak of the fever last September, and notwithstanding twenty-five or thirty deaths occurred on Commerce Street, and several on Jackson Street, both of which were included in the "Infected District," no advance was made in the direction of Pinch or Happy Hollow.

Could this change of base, last September, be accounted for by atmospheric conditions produced by malarial influences not existing in other portions of the city? Does not the same atmosphere pervade all Memphis? Does it seem possible an atmospheric wave would manifest a partiality to this degree in its occasional changes to an unaccustomed latitude? These are questions that arise when we give to the disease a local origin. The phenomena of the pestilence do not allow such an explanation of the causes producing it and its confinement to limited localities. Filth may sustain it, as it probably does, but it never has been proven that filth alone can originate yellow fever. Pensacola and Galveston, two cities proverbial for salubrious breezes from the ocean, and for yellow fever epidemics, forbid the idea of such a cause. If filth and climatic causes produce the disease, why does it never affect the eastern coast of Africa, and the East Indies, as well as the western coast, the West Indies, and the region of country bordering on the Gulf of Mexico?

On the 13th of September the Memphis Board of Health convened and announced through the local papers that yellow fever existed in Memphis. It was estimated that up to that time thirty persons had died of the disease. Immediately upon the announcement the usual consternation pervaded all classes. Steamboats and railroad trains were daily crowded with citizens seeking to escape the plague. In the effort to get away, houses were vacated and their contents left to the mercy of depredators. In this wholesale exodus a large portion of the inhabitants was included, leaving probably

ten or fifteen thousand persons to contend with the disease. A large portion of the material for it to feed upon was thus happily removed, and the relief societies were better enabled to employ effectively the means demanded by the necessities of the sick, many of whom were destitute of every domestic comfort.

The ravages of the fever increased to such a degree in the infected district that all work was suspended; the foundries were closed, the small merchants along Main Street ceased to do business, and every interest was merged in the pestilence.

The number of deaths steadily increased. During the first week after the Board of Health officially proclaimed the existence of yellow fever, the mortality was 97; during the second week 101; during the third 180; and during the fourth 305, making a total of 683 deaths from yellow fever alone in one month. The mortality reached its highest limit during the fourth week. According to the mortuary returns 232 died the fifth week; 161 the sixth week; 81 the seventh week; and 23 the eighth week, making, with the thirty who died previous to the announcement of the epidemic, 1210 deaths in eight weeks. To these may be correctly added a sufficient number to amount to 1500 in the infected district, which owing to circumstances unavoidably growing out of an epidemic, were not reported, making the whole number of deaths in Memphis about 2000. A large number of persons, it is well known, were buried without the services of the undertaker, to save expense.

The infected district, as before mentioned, was about half a mile square, and contained about three thousand inhabitants when the fever first broke out. Extraordinary efforts were employed to arrest the disease, but this large percentage of deaths evinces the stubbornness of its resistance.

It would hardly be possible to convey in adequate language the terrible sufferings of the poor. In the routine of professional employment the physician was constantly called upon to alleviate the miseries of some poor victim of disease and destitution. Upon entering the portals it was not uncommon to hear the ominous hiccough and to behold the dark fluid escaping from the parched lips. Alas! he could only mentally exclaim, too late! and, with no power to save, witness the last breathings of the unfortunate sufferer. The terrified inhabitants were at a loss what to do; the enemy was invisible, the defence uncertain. In this condition of things the panic, as may be surmised, was great. The writer of this has passed through several epidemics, including the memorable one in New Orleans in 1853, and he never witnessed consternation more complete, or pestilence more terribly fatal in its effects.

In the latter part of September it was deemed advisable, on account of the continually increasing ravages of the fever, to establish a hospital for the better accommodation of the sick, who, from poverty, were deprived of all salubrious comforts. The Commandant's House, opposite the old Navy Yard, supplied a convenient building for the purpose. As a mark

of respect to a benevolent gentleman from Mobile, who volunteered his services in behalf of the sick, it was called the Walthall Infirmary, and placed under the care of Dr. L. P. Blackburn, of Louisville, Ky., who kindly gave his professional services to the relief of the sick.

The presence of yellow fever in Happy Hollow was immediately followed by the reorganization of the Howard Association, first introduced to the notice of the citizens in 1867. This Association was eminently useful during the epidemic. Through its instrumentality nurses were supplied to wait upon the sick, and its most worthy members were ready at all times to visit in person the houses of the needy and afflicted. The City Council made an appropriation to enable the Howards to carry out their beneficent purposes. When it was announced that their funds were exhausted, contributions came abundantly from sympathizing friends abroad, and they were thus enabled at all times to render valuable assistance, to which reference will again be made. A Relief Society was likewise organized to furnish supplies to the poor and medicine to the sick. A considerable amount of human suffering was relieved, and many lives were saved by these useful organizations.

If proper sanitary measures had been earlier adopted, it is hardly probable the epidemic would have been felt beyond the infected district; but no measures were taken to prevent the spread of the disease. Individuals who had been exposed to the influence of the fever in Pinch were taken down in different portions of the city, and by these the disease is supposed to have been communicated to their respective neighborhoods.

As soon as it was ascertained that the fever existed in Happy Hollow, an effort was made by the municipal authorities to extinguish it with coal gas. The streets were unpleasantly impregnated with it for several days, with no perceptible benefit. Barrels of tar were likewise consumed, with no good effect. Disinfectants after this were not very much relied on, and beside the use of carbolic acid in the sick-room and lime in filthy places, little was done with this class of agents. A writer observes, with much truth, that sailors who work in tar, and are constantly tarred from head to foot, are not protected by it, and that it does not possess any disinfecting quality. In New Orleans it was extensively employed in the yellow fever epidemic of 1853, with no good result. The firing of cannon on Lafayette Square likewise failed to arrest the disease in the slightest degree. It is to be hoped these ineffective trials will prevent their employment on any similar occasion.

The disease, like a spreading conflagration, obtained a fearful headway, and deaths in quick succession were reported in many portions of the city; with equal step it attacked all classes. The young and the aged shared it alike. The robust and the weakly died. The hearse with sable plumes, followed by sorrowing friends, in its passage to the cemetery, from its familiarity, ceased to remind the beholder of his latter end. But amid all this gloom, a killing frost at length appeared. The epidemic yielded

to its influence, and the cool weather that followed effected what all the disinfectants had failed to do. The daily mortality continued to decrease until it finally disappeared, and the mortuary report ceased to record its victims.

That it did not assume more formidable proportion is due to the timely assistance received from every section of our country. The sympathy for our stricken city was manifested in the most liberal donations. In the hour of darkest gloom, the poor were greatly encouraged by the daily contributions for their relief. The money contributed to the different relief societies is said to have exceeded in the aggregate half a million dollars, and enabled them to distribute with a bountiful hand the provisions so much needed by the poor and the medicines required by the sick. The sum total received by the Howard Association alone amounted to \$124,245.38. Of this amount \$77,813.60 were expended for benevolent purposes, leaving a balance on hand of \$46,431.78 unappropriated. The orphans receive from this sum \$2128. The remainder will doubtless be used so as to be productive of the greatest good in the judgment of the highly respectable gentlemen who constitute its members.

To make such a disposition of it as will secure this end and at the same time give satisfaction to the many donors, who kindly gave this practical demonstration of their disinterested sympathy for our suffering city, will of course be a subject for future consideration.\*

Sixteen hundred applications for nurses were made, which large demand, the Howards were enabled to supply. Many of these nurses came from a distance and were highly estimated for their devotion to duties assigned them. At an early period of the pestilence not a few died with no one to attend them in their last moments, and there is little doubt that some might have been saved by the careful attention of the nurses to the peculiar requirements of the sick-room. It is estimated that fifty-two hundred persons were cared for by the benevolent Howard organization.

Among our foreign population, the Irish suffered the greatest mortality, as the infected district was chiefly inhabited by them. The Germans likewise furnished a considerable amount of material. To a very great extent the violence of the disease was intensified by national habits. The coloured population enjoyed a partial exemption. As usual the disease was milder with them, and the majority recovered, even in Happy

\* The following resolution has been passed by the Howard Association, since the above was written, which will doubtless prove satisfactory to the donors.

"Whereas, it comes to us that there is great destitution and consequent suffering among the people of certain sections, and especially in the large cities of the various States that contributed so generously to the relief of our sick and destitute during this late yellow fever pestilence, it is the sense of this Association that thirty thousand dollars of the forty-three thousand now in our hands be placed to the credit of the several States in proportion to the amounts contributed to us by them, the same to be drawn as they may need and call for it; the remainder to be kept for the relief of our own sick and suffering."



Hollow where the mortality was greatest. The intemperate among them, however, suffered equally with the whites. It was seldom fatal with those of unmixed blood.

*Symptoms.*—A medical writer of eminence observes: "When a large number of persons die with black vomit, and turn yellow without any other symptom, it is yellow fever." It was the alarming recurrence of these phenomena that occasioned the meeting of the Memphis Board of Health on the 13th of September, and the announcement of the existence of the epidemic. In the beginning the opinion was entertained by some in the profession, that the symptoms were due to an aggravated form of remittent fever, which a malarious neighbourhood was calculated to create. It was not long, however, before all doubt was removed on this subject by the fearful spread of the disease and the attending mortality. The usual features of the pestilence were well developed. With or without the cold stage, a severe headache, pain in the limbs and along the spinal column, more or less gastric disturbance, with the early supervention of fever, were the first symptoms complained of. These were modified according to the violence of the attack. In rapidly fatal cases they were greatly augmented; the features were often swollen; the eyes injected, glistening, and intolerant of light. The sclerotics if not red had often a peculiar rose colour. No symptom was so constant as the pain in the head and hyperæsthesia of the spinal column. Abdominal pain was not uncommon during the disease, but the usual symptoms of intestinal inflammation were generally absent; diarrhoea occasionally existed, but constipation was the rule. The tongue was peculiarly coated, but not uniformly so. In the commencement of the fever its surface was usually white, as if the patient had been fed on milk, with clean red edges, that showed the impression of the teeth along the inferior margin. This whiteness assumed a darker hue as the disease advanced. Fatal cases exhibited a dry fissured condition of the organ, with a frequent hemorrhagic tendency from the whole mucous membrane of the mouth. The fever was not constant in its duration; usually it lasted about three days, and was followed by a amelioration of the symptoms, which continued from six to twelve hours. If reaction appeared, indicative of the third stage, the case usually, but not always, progressed to a favourable termination. Great tenderness in the region of the stomach, an intermitting pulse, and the appearance of black vomit, left for the patient almost no hope. An unusual number of recoveries after black vomit have been reported, however, since the disappearance of the fever. The most constant character of the pulse was its large volume and want of resistance to pressure. It was sometimes small and frequent. The natural pulse, in the early progress of the disease, was regarded unfavourable to recovery. It sometimes fell as low as forty beats in the minute without diminishing in volume. The dejections in the first stage were in many cases bilious, and of a gelatinous appearance, with u

peculiar sweetish and offensive odor. The yellow hue of the skin did not usually appear until several days elapsed, sometimes not at all; after death, however, it was seldom absent.

The respiration was much accelerated. Insomnia and restlessness were frequently complained of. Great thirst was almost always present throughout the disease, and to some degree distress about the stomach. If in the stage of collapse the coffee-ground matter was ejected from the stomach, coma supervened in a short time and deepened until death. The closing scene was quite tranquil sometimes, but the sufferings of the patient were terminated occasionally in a fearful struggle with dissolving nature. Every limb was convulsed and the countenance distorted in the last dying effort. Some died delirious, talking of imaginary things or persons. There was a remarkable degree of apathy in the latter stages of the disease; the patient seeming to regard death with calm indifference, and as a relief from physical suffering. Hiccough was an important symptom, and was regarded as indicative of the greatest danger. Enlargement of the cervical glands was a frequent complication.

A very common and a very fatal symptom was suppression of urine. In some of the few cases of recovery reported, I have thought it probable, the introduction of the catheter would have revealed only retention. I am credibly informed, however, by a medical friend whose declaration was corroborated by the application of this test, that one gentleman recovered under his treatment, after complete suppression for more than forty-eight hours. Black vomit was regarded with its usual significance, but a number of recoveries after this usually fatal symptom occurred. Almost every member of the profession I have consulted witnessed one or more recoveries, after the ejection of this secretion. The liver seemed to perform its normal functions, as evidenced by the bilious alvine dejections, in many cases to the last moment of life.

In the epidemic at Gibraltar in 1828, M. Louis discovered in this organ the only constant lesion in his numerous autopsies. It is greatly to be regretted that the medical profession in our recent epidemic enjoyed no facilities for the purposes of dissection. The confirmation of published pathological investigations would have been interesting and instructive. In three of the patients I attended exanthematous eruptions appeared over the whole person, due probably to the elimination of morbid matters from the blood; recovery ensued in each case. Relapses sometimes took place from a too early return to accustomed avocations, or imprudent habits. The consequences were generally fatal. That class of patients for whom Dr. Dickson, of South Carolina, says "there is almost no hope," constituted no exception to the rule in our epidemic. The intemperate were the most incurable patients, and generally resisted all therapeutic agents. The many recoveries from the disease among this class, however, do not permit the admission that such cases are "necessarily fatal." In thermometrical examinations an elevation of temperature, without a

corresponding acceleration of the pulse, was viewed unfavourably. Hemorrhage from any portion of the mucous membrane was regarded with concern. The general impression has heretofore been opposed to the belief that a person may have the disease more than once. The opinion of a committee at Gibraltar in 1823, was opposed to the probability of a second attack, one in nine thousand was thought to be the ratio, after considerable investigation. There was an unusual number of persons who suffered from a second attack in a mild form during our recent epidemic. Several physicians with whom I have conversed are cognizant of cases, and many deaths are reported among this number. Some of these persons, however, were intemperate, and their deaths were in all probability partly due to this cause.

*Treatment.*—As yellow fever is admitted to result from an unknown cause, it is not remarkable that the remedies employed differed according to the respective estimate of its pathology. With the medical profession the remedies chiefly relied upon were *quinia* and *mercury*. Those who regarded the disease as due to malarial influences advocated the use of the former, either exclusively or in conjunction with moderate doses of the latter. As a restorative hæmatic, as a sedative to the pulse, to control the periodicity of the fever, and as an appropriate tonic in physical prostration, quinia was extremely popular. In regard to its efficacy, however, in the case of yellow fever, the same diversity of opinion prevails since as before the epidemic. If it failed to cure, death was attributed to the greater violence of the disease, or to peculiar complications. Gastric irritability constituted a frequent contraindication to its employment, notwithstanding it was with a few the "*sine qua non*." In convalescence, and in those cases having the character of congestion, it was used with decided benefit. In the slow pulse it was employed apparently with benefit, in connection with stimulants. Upon the whole, as a curative agent to be promiscuously employed in yellow fever, the verdict with many was not favourable. If it did not prove, in the language of Dr. Ardivol, of Gibraltar, in 1823, a poison, and an obstacle to the removal of the material cause of the disease, it was found by no means to be a specific. Quinia has been praised and condemned as a remedy in the treatment of yellow fever. May not this difference of opinion arise from peculiar modifications in the nature of the disease, on account of malarial influences?

*Mercury.*—In the beginning it is well to admit, with M. Louis, that the remedy for the cure of yellow fever must be left to time and chance, and to the acuteness of the observer. But we are not so ready to admit the statement of this distinguished pathologist, that experience has sufficiently proved that "no dependence whatever is to be placed on mercurial preparations of any sort." The treatment of the fever in the recent Memphis epidemic with mercury was a favourite practice with many, and the success

attending its use seems to justify its employment in a future pestilence. Notwithstanding the admitted opinion that the blood is primarily affected in yellow fever, the nervous and organic systems secondarily, no remedy was found more effectual in controlling the secretions, and especially in preserving the normal functions of the great secreting organ, whose office it is not only to secrete bile, but to separate from the blood the hydro-carbonaceous products resulting from the disintegration of the tissues. The spanæmic action of the remedy upon the already partially defibrinated blood, like the gastric irritability in the administration of quinia, appeared a contraindication, but the experimental effect justified its employment. The treatment with mercury by some was considered eminently successful; the control of inflammatory action, and the preservation of the normal secretions until the elimination of the morbid material from the system, was considered due to its agency.

In the commencement a cathartic dose of calomel was given; if not active enough, it was followed by a purgative, which, if contraindicated by gastric irritability, was superseded by an enema. After purgation, the remedy was continued in small doses until ptialism was induced. In many instances it was impossible to impress the system so as to exhibit the usual signs of mercurialization; the remedy appeared, nevertheless, to exert a beneficial influence, and the patient recovered without manifesting any inconvenience, in very many instances, from its employment. Suppression of urine was evidently less common under the mercurial treatment. This fearful symptom did not appear in a single instance among eighty-one patients on whom it was employed in my practice, and on whom its effects were carefully observed. Whether the exemption was due to the remedy, or to fortuitous circumstances, I am not able to determine. Some of the physicians, however, did not employ quinia or mercury, preferring occasional purgation, nervous sedatives, and the judicious administration of stimulants, with appropriate nourishment; an equal amount of success was claimed by them.

During the febrile excitement of the first stage, the usual refrigerant remedies were employed, with such additions as the indications of the case appeared to demand. The effervescent draught was popular in gastric irritability. To allay this distressing symptom, however, the creasote mixture was greatly preferred, in connection with a sinapism over the stomach, and, in obstinate cases, a blister. Instead, however, of neutral mixtures, an infusion of orange-leaf tea, or elder flowers, or of flaxseed, was also preferably employed. Ice, broken up fine, was grateful to the patient, and ice-water was allowed in moderate quantities throughout the disease. Orange-leaf tea was much employed by those who confided in nurses from a distance; and many, it is probable, were given the anaesiating draught to an injurious extent; the beverage was not popular in the latter portion of the epidemic. One lady has been reported who imbibed freely of it until informed she must die. "Well, then," she

replied, "give me enough cold water to drink, spooge me with it, and oh ! fan me ! let me die comfortably !" Her wishes were complied with, and she recovered.

In the treatment of hemorrhagic cases, various remedies were administered: plumb. acetat. et opii, tinct. ferri chloridi, and some vegetable astringents, had their respective advocates; the former was held in highest repute; black vomit was seldom relieved by either. In the second stage little treatment was given. Some one of the foregoing hæmostatics was used when indicated; sometimes in anticipation of an indication. In this stage remedies calculated to disturb the quietude of the stomach were carefully avoided. In the third stage the amount of reaction modified the treatment; stimulants were employed when the debility demanded their use, and diet suitable to the emergency; cups and leeches were used in severe headache; the lancet was never employed; ammonium and the sulphites were tried with no beneficial results.

It is the purpose of the writer to give only a synopsis of the most popular medications, and not to include all the methods that were employed to cure the disease; this would embrace much that was empirical. The closest confinement to the sick-room was preferred by a few; free ventilation, without a draft, was advocated by the majority of physicians.

*Remarks.*—In the early history of Memphis it excited no surprise when yellow fever appeared in New Orleans, Natchez, or Vicksburg. The most fearful epidemics of this disease in the Southern States have probably prevailed in those cities. In Memphis no more alarm was felt when the announcement was made by the Southern papers of its reappearance than would be created by the announcement of cholera in Bengal. Even the fearful scourge of 1853, unprecedented in its violence, and which destroyed in New Orleans ten thousand persons, failed to create any concern, in the belief that the pestilence could not ascend as far as the latitude of Memphis. The reports were listened to with feelings of commiseration. The wonder at that time was that individuals were not afraid to expose their lives in such a place.

In the summer of 1855 the citizens of Memphis were, for the first time, alarmed by an unusual mortality, in which a yellow hue of the skin and black vomit were the attendant symptoms; the disease was pronounced yellow fever, and many valuable lives were lost. Many believed, from the fact of the previous exemption, that it was not yellow fever at all, but was attributable to some accidental cause. Indifference and fancied security soon returned with the disappearance of the fever. During September, 1867, a sudden and remarkable fatality, attended with the symptoms before described, again excited suspicions of yellow fever, and very soon its presence was officially announced; the mortality steadily increased, and some of our most valued citizens were soon numbered with the dead. This second visitation caused great astonishment, and various causes were assigned for its appearance. The Nicholson pavement was being laid down,

and the exhuming of malarial was supposed by many to have been the disturbing element; the streets, however, upon which the Nicholson pavement was laid were not visited by the fever, so that this theory was untenable. As previously mentioned, the disease was confined chiefly to the people living east of the bayou; it disappeared with the return of cold weather, and after a short time was forgotten.

In Happy Hollow the attention of observing persons was again attracted, as previously mentioned, early in September by the prevalence of an unusual amount of fever, resulting in black vomit and death. The opinion that it was yellow fever was very much opposed in the beginning, but all doubts were speedily removed by the rapidly increasing number of deaths. The fact is now demonstrated by this third visitation that Memphis is not beyond the yellow-fever latitude, as was formerly supposed. Whether this be due to malarial influences, atmospheric waves, or germinal matter, the experiment has been successfully demonstrated that the disease may be prevented or controlled by a timely observance of sanitary regulations. The inauguration of these regulations in New Orleans, by the commanding general during the war, proves what may be done by them to oppose this terrible fever. Since that time yellow fever has lost much of its terror where a constant surveillance is maintained by efficient sanitary officers. There are no local causes for yellow fever in this city that cannot be removed; its location is one of the finest in the Mississippi Valley, central in position, and high above the river.

Public opinion attaches much blame to the city officers for a seeming dereliction of duty during the past year in regard to important sanitary measures, more, probably, than they deserve. It is true the streets were not so clean as they should have been, that the back alleys were much neglected at a time when the health of the city seemed to demand the greatest cleanliness. The garbage from private houses, and especially from public boarding houses, was not removed with the expedition that was proper under the circumstances; but it should be remembered that all the requirements of a city like Memphis cannot be supplied immediately without the necessary means to do it with. The city officers had a personal interest in preserving the health of the people by all the measures which, in their corporate wisdom, seemed judicious. It would have required a supernatural endowment to have foreseen coming events; and if everything was not done which public opinion conceives should have been done, two things must be remembered—the epidemic was not yet developed, and the city treasury was not encumbered by a very large amount of money. Within the last few years extensive and costly improvements have been made at the expense of the city government, all of which are to the highest degree important as sanitary agents, and for which the city is still in debt. In 1867 the Nicholson pavement was laid down on the principal streets of the city, at a cost of over a million of dollars. Previous to this year it was not uncommon, in the winter time, to see wiggins

stilled in the streets. Few will deny the great convenience this expensive undertaking has been to the inhabitants, to say nothing of the acknowledged facility it affords of keeping the city clean. Like all things earthly, it begins to exhibit the effects of constant use, but a timely remedy will probably be found to prevent a return to the primeval mud.

In 1872 a second improvement was made of almost equal magnitude, which yet remains to be fully appreciated. At a vast expenditure of money, the water-works were established, by private enterprise, by means of which all the principal streets of Memphis are supplied with water from Wolf River. What could be more conducive to health, than a bountiful supply of fresh water for all the purposes of cleanliness?

These were large enterprises, and their successful accomplishment was the result of wisdom and well-directed energy. Additional taxes have been imposed to defray the large expenditures involved in the construction of the Nicholson pavement; many have murmured at the additional burthens put upon them, and yet they think the city fathers should do something to prevent the possibility of a future pestilence. Whatever they do will have to be at the expense of the inhabitants of the city.

We learn an important lesson from the recent yellow fever visitation, that something must be done additional to the Nicholson pavement and the water-works if we would escape similar scenes in the future. The most important public work demanded to secure exemption, in addition to what has been so judiciously done, is the construction of an extensive system of sewerage for the easy egress of the debris of the city. This under a suitable corps of engineers would be easily accomplished, but of course will involve the expenditure of another large sum of money and a corresponding augmentation of taxes. The question is, shall it be done? If we value good health and exemption from future pestilence, the continued growth of the city, the rapid increase of population, and increased value of property, it seems to be the part of wisdom to answer in the affirmative.

It remains to be seen what will be now done for the sanitary condition of the city and for the prevention of epidemics next summer. It is not impossible that another steamer Bee may arrive at our landing freighted with germs of yellow fever—that another passenger shall find lodging with a benevolent Riley. In view of the possibility, shall Happy Hollow be allowed to remain in its present state of quiescence? Would it not be the better part of wisdom to remove the massive edifices from Happy Hollow at the expense of the city, and the poor inhabitants to a more salubrious atmosphere, as a commencement to the inauguration of measures that should be instituted during the cold winter months for the prevention of disease when summer returns?

During the winter and spring months, Memphis enjoys a great benefit in Bayou Gayoso, which, running through its entire length, carries off much of the filth that would otherwise accumulate. At a later period the

benefit, however, is of a doubtful character, for at the season of the year when a running stream for this purpose is needed, instead of carrying off the dead carcasses and refuse matter to the waters of the Mississippi, it is the receptacle of all the filth conveyed to it from both sides. Along its banks putrefying animals and human excrement mingle, to contaminate the atmosphere. At a time when the waters of the bayou would be a public blessing when disease is laying its heavy hand upon us, it dwindles down to a little stream that meanders lazily along. It is on this account considered by many a nuisance rather than a convenience.

The idea has been suggested to cover it over, and private enterprise proposed to do it free of expense to the city. The immense sums of money expended in building bridges over the bayou have more than counterbalanced the benefit it affords.

In conclusion, there is very little doubt, that, in process of time, when the requirements of a large city have been perfected, as will assuredly be the case in the future of Memphis, in point of health she will rank with any city in the South.

The following table exhibits the maximum and minimum thermometrical indications during the prevalence of the yellow fever in Memphis; the daily mortality as published by the Board of Health, together with remarks on the condition of the weather. It was drawn up by Mr. S. W. Rhodes, of the United States Signal Service.

Date.	No. of deaths from yel. fever.	Minimum temperature.	Maximum temperature.	Remarks.	Date.	No. of deaths from yel. fever.	Minimum temperature.	Maximum temperature.	Remarks.
Sept. 14	10	53	68		Oct. 13	38	46	60	
" 15	8	53	76		" 14	41	46	74	
" 16	12	61	82		" 15	41	57	80	
" 17	19	66	86		" 16	26	67	80	
" 18	12	70	85		" 17	30	64	79	
" 19	24	63	69		" 18	28	65	57	Very heavy rain.
" 20	12	53	64		" 19	30	46	56	
" 21	6	58	73		" 20	17	44	55	Light frost.
" 22	10	63	70	Rain began at 4.52 P.M., and ended 7.20 P.M.	" 21	27	40	63	
" 23	11	60	70		" 22	27	58	68	Light rain.
" 24	16	56	73		" 23	21	40	40	Heavy rain.
" 25	20	66	79		" 24	23	35	55	
" 26	15	70	87	Heavy dew.	" 25	24	46	52	
" 27	21	72	78	" showers during day.	" 26	22	57	63	Very heavy rain.
" 28	21	72	64	Light showers.	" 27	18	56	56	
" 29	21	71	63	Heavy rain in early part of morning.	" 28	14	32	41	
" 30	15	54	66		" 29	9	30	46	
Oct. 1	18	53	69		" 30	12	42	58	
" 2	28	63	73		" 31	4	36	47	
" 3	19	62	79		Nov. 1	7	29	54	Heavy frost.
" 4	34	70	76		" 2	7	45	69	Heavy frost.
" 5	45	63	81		" 3	5	48	58	
" 6	37	46	56	Light rain at midnight.	" 4	4	46	53	Light rain.
" 7	43	43	59	Light frost.	" 5	4	53	61	
" 8	31	46	69	Light frost.	" 6	3	52	64	
" 9	45	52	74		" 7	2	50	68	
" 10	53	52	76		" 8	2	45	65	
" 11	45	60	77		" 9	3	47	69	
" 12	46	54	66						



Notwithstanding the frequent returns of frost, indications of the pestilence were observed as late as the 20th of December. A number of individuals who remained away until the advent of cold weather have suffered severely since their return to the city.

NOTE. The following members of the medical profession died of the yellow fever during the epidemic: Drs. C. E. Miner, C. Crone, E. S. Hatch, J. T. Kennon, R. J. Freeman, J. J. Williams, and B. F. Blount.

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ART. VI.—*Description of two New Modifications of the Nélaton Catheter.* By GEORGE COWAN, M.D., of Dunville, Kentucky.

IN certain diseases of the prostate, especially in hypertrophy, it is one of the most frequent and important duties of the medical attendant, as all know, to have the patient properly catheterized. Generally, there is not any very serious difficulty in having this duty satisfactorily accomplished; but exceptions to this sometimes occur. Many cases are met with, there is reason to believe, where the prostatic portion of the canal is so misshapen and tortuous in its course, as to call into requisition all the tact and ingenuity of the most skilful and experienced surgeons, and even then failure is not impossible. It is, furthermore, an operation which the comfort and safety of the patient alike demand should be performed, *cito, tuto, et jucunde*.

At the present time the various catheters which are becoming generally used, while greatly superior to the old inflexible silver catheter, in very many respects, have still certain serious defects, and hence much difficulty is experienced in passing them. The following are the most popular, and generally used now, to wit:—

The “jointed,” or so-called vertebrated catheter of Dr. Squire, of Elmira, New York;

The “Sonde Condée” of Mercier;

The black or French catheter, olive or bulbous pointed;

The English catheter, prepared according to the plan of Sir Henry Thompson, by keeping it for a long time “over-bent” on a stiff metallic stylet; and

The soft gum catheter of M. Nélaton.

Each one has its special merits, and also certain defects, which only experience with serious and prolonged prostatic disease, inducing much irregularity and distortion of the prostatic portion of the urethra, can fully demonstrate. Having had lately, in a very serious and prolonged case of hypertrophied prostate, complicated with other equally serious troubles of the bladder, an opportunity of testing these various catheters, it was found