A history of epidemic cholera, as it appeared at the Baltimore City and County Alms-House, in the summer of 1849 : with some remarks on the medical topography and diseases of the region / by Th. H. Buckler.

A

HISTORY

OF

EPIDEMIC CHOLERA,

AS IT APPEARED

AT THE

BALTIMORE CITY AND COUNTY ALMS-HOUSE,

IN THE SUMMER OF 1849,

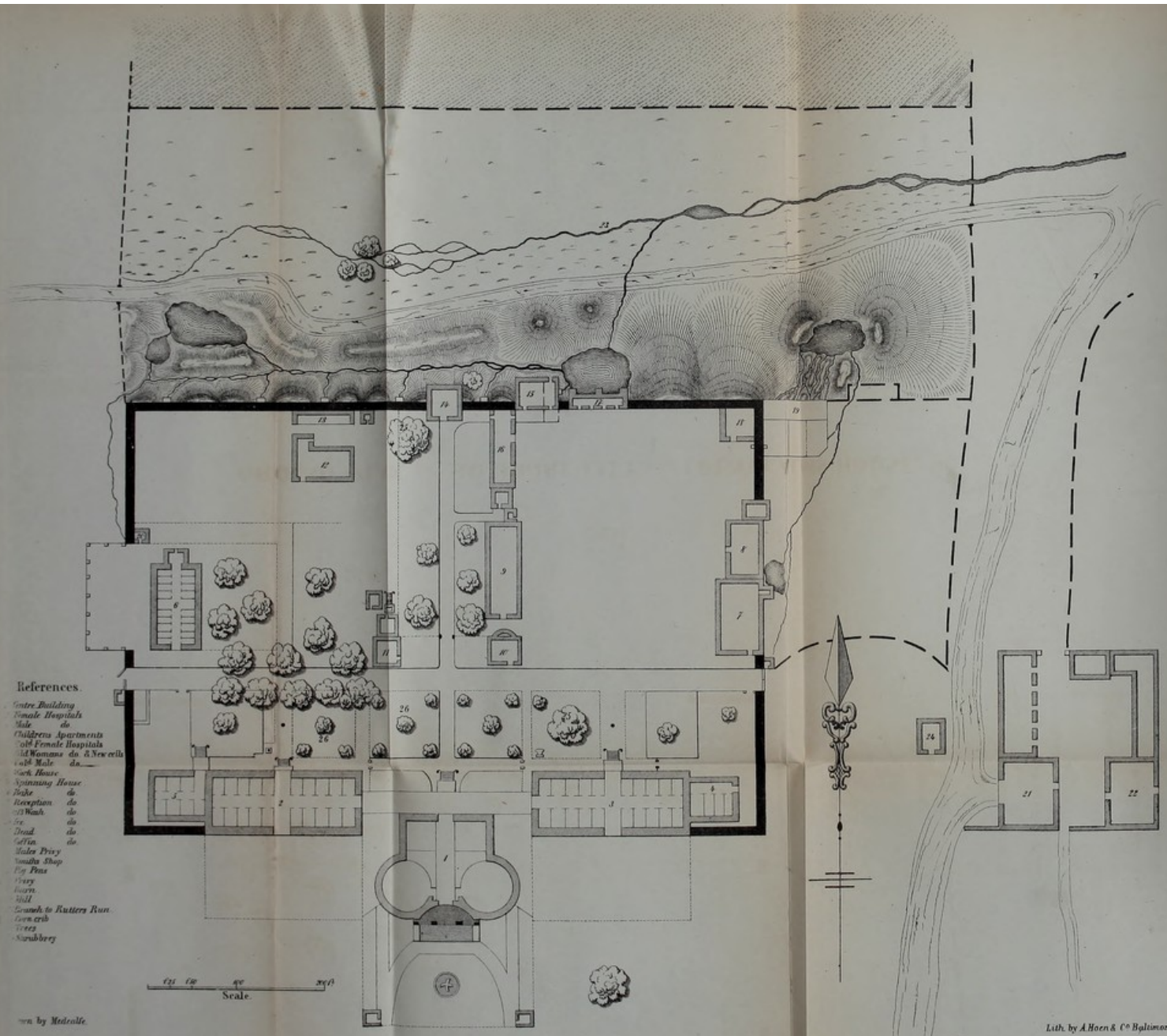
WITH

SOME REMARKS ON THE MEDICAL TOPOGRAPHY AND DISEASES OF THIS REGION.

BY TH. H. BUCKLER,

Physician to the Baltimore City and County Alms-House.

BALTIMORE:
PRINTED BY JAMES LUCAS,
(PATENT CYLINDER PRESS,)
Corner of Calvert-st. and Lovely Lane.
1851.



GROUND PLAN OF BALTIMORE CITY AND COUNTY ALMS HOUSE.


A Map of the Medical TOPOGRAPHY of Baltimore, 1851.
Scale one Mile to an Inch.
FORMATION
HOMESTEAD
IRON ORE REGION
PATAPSCO RIVER
BACK RIVER
NORTH WEST BRANCH
MIDDLE BRANCH
CURTINS CREEK
Region of Intermittent & Remittent Fever
Wm Sikes, Surveyor, Baltimore
Lith by A Hoen & Co

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A HISTORY

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EPIDEMIC CHOLERA.

Baltimore with a population of one hundred and seventy-five thousand inhabitants, and covering about 4,000 acres of land, is situated at the head of tide-water, on the river Patapsco, in lat. 39.17 W. and long. 76.36 N. It is one hundred miles south west of Philadelphia, and thirty-seven north east of Washington, and directly on the line between the alluvial and granitic formations, a portion of the city being built on the former; but much the longer part on a series of hills rising in every direction from the water, with elevations of from ten to one hundred and sixty feet above tide. Four streams traverse the built portion of the city in a north and south direction. Schoeder's and Chatsworth runs intersect it on the west, Jones' falls near the centre, and Harford run on the east. Chatsworth run courses for about one mile underneath an arched aqueduct of stone—Harford run is now in the process of being arched. The drainage is on the surface and probably more perfect than that of any other city of its size The water which falls on the streets running north and south, finds its way along the declivities to the docks, while the avenues passing east and west, are graded generally with an inclination in the direction of the streams above named. The carriage ways are paved with stone, and the sidewalks laid with brick.

The city is supplied with water from Jones' falls by means of large open reservoirs with which are connected iron pipes running through most of the streets.

The supply pipes are lead, from the use of which no injury to health results, the water containing—as ascertained by an analysis of Mr. Riggin Buckler,—a sufficient quantity of the sulphates of lime and magnesia to cause a coating of insoluble sulphate of lead to be formed on the surface of the pipe.

Remarks on the Diseases of Baltimore.

The diseases of Baltimore are very similar to those of the other Atlantic cities. Typhoid fever prevails to a greater or less extent every year, either in the city or its environs. Dysentery in the sporadic form may be met with every season. The epidemic variety has prevailed for the last three summers, preceeding the appearance of cholera in 1849. It was also noticed before and after the invasion of cholera in 1832 and 1834. With these exceptions, this form of dysentery has only been observed occasionally as an endemic disease, occuring in particular localities, and not as a wide spread epidemic.

Sporadic cholera is met with to a greater or less extent every summer, especially at the commencement of the hot weather and when the early fruits and vegetables are first brought to our market.

At two different periods, within the last ten years, erysipelas and puerperal fever have prevailed to a very considerable extent.

The bills of mortality during the hot months show that about two-thirds of the deaths reported, occur in children under five years of age, and that a very large proportion of these die from summer complaint (cholera infantum.)

For the last ten or twelve years variola and varioloid have been unusually prevalent here and in all the other cities, as well as in very many rural districts, attributable more to the circulation of bank notes, of a low denomination, than to atmospheric causes. Since the money pressure of 1837, the banks in many of the States, have issued several millions of one, two, and three dollar notes, the effect of which has been to drive silver out of circulation. The inmate of a small pox hospital generally keeps what little money he may chance to have about his person. If he wants a lemon he sends a note saturated with the poison, and having perhaps the very Sea-tick odour of small pox, to a confectioner, who takes it of course. On leaving the hospital, the convalescent from this loathsome disease pays some twelve or fifteen dollars board. Provisions are wanted for the other patients, and the notes are sent to market, where they are taken both by town and country people, and may pass through twenty different hands in a single day. It would be impossible to conceive any better mode of distributing the poison of a disease, known to be so very highly contagious and infectious. It could hardly be worse if so many rags were distributed from the clothing of small pox patients,

Some physicians believe that there are particular cycles in which Small Pox has and ever will occur independently of any contagion. Dr. Purple has published an article on the spontaneous origin of small pox in the last number of the New York Journal of Medicine, and in the Medical Examiner is a paper on the same subject by Dr. Banks. Both of these gentlemen reason by exclusion and say, if

there was no possible communication with others, that small pox must have originated spontaneously in the cases which they have noted. Dr. Banks says:

"The family in which the first case occurred lived completely in an out of the way place; no one ever visited them but their neighbors, and no small pox had been within a hundred miles of that place, nor had any communication taken place between them and any strangers, either pedlers or others. No clothing had been purchased except a shawl at one of the stores in our village, dozens of which, out of the same pack, had been sold to other persons, and no ill consequences had followed. They are people that keep at home most completely, and as I stated above, no communication ever takes place between them and strangers. Hence the impossibility of its being brought there, the man of the house positively asserting that no intercourse has occurred, and that no garment, except the said shawl, has been purchased for six months. All those who had been vaccinated escaped altogether, or with varioloid in the mildest form. Several very severe cases occurred among those who never had been vaccinated."

Dr. B. does not say with what description of money the shawl in question was purchased. Is it not likely that these cases had their origin in the exchange of notes?

Until the year 1834, scarlet fever was looked upon in Baltimore, as an extremely mild disease, but since that period it has often appeared in its most malignant form, and is now regarded as one of the most fatal diseases incident to childhood.

The city is remarkably exempt from intermittent and remittent bilious fevers, the latter never originating within the populous districts, unless from some local impurity; but an occasional mild case of the former is now and then met with on the low grounds along the falls, and in the neighborhood of the docks. On the necks of land extending down to the river in a south east direction, and from one to eighteen miles from the city, the people engaged in fishing, shooting, and agriculture, are remarkably subject to intermittent and remittent fevers during the months of August and September. This is also the case with workmen engaged in digging iron ore, along the line of the Washington road, in a south west direction.

In 1832, when the population did not exceed 90,000, the number of deaths reported from epidemic cholera was 853.

In May and June 1849, preceding the advent of cholera, an epidemic typhus made its appearance amongst the free negroes of the city. It was confined almost exclusively to this race, only two cases having been noted in whites. In rows of houses occupied by Germans, Irish and free blacks, it would invariably single out the latter, in many instances seizing an entire family. It came alike from all sections of the city, and invariably from filthy and unwholesome localities. This disease was highly infectious in character, and in its pathological lesions corresponded in almost every essential particular with the yellow fever which occurred at Gibral-

tar, and is described by Louis. Many of these cases were taken to the alms house, and large numbers to the old small pox hospital fitted up for the purpose.

Description of the Alms-House, and Medical Topography of the surrounding Country.

The Baltimore City and County Alms-House, distant about a mile and a half from the populous portion of the city, in a north west direction, is situated in a remarkably salubrious region of country, having in its immediate vicinity, the chosen summer seats of some of our most prominent citizens. The centre building of this establishment was formerly the private residence of a leading merchant, and since it has become the property of the city, extensive wings and out buildings have been added, rendering it suitable for the accommodation of its numerous inmates, numbering, at certain seasons, six or seven hundred. Connected with it is a very productive farm of about three hundred acres: this, as well as the surrounding country is rolling and hilly, and rests on the granitic formation, over which is to be found, in many places, a superstratum either of micacious rock or ferruginous sand-stone.

The fields are dotted here and there with trees, and strips of woodland of small extent may be seen in most directions.

Passing through the farm and about a quarter of a mile distant from the house, is a lively rippling stream called Rutter's run, furnishing a sufficient quantity of water to turn a mill, to which is attached a force pump, which gives to the establishment, at all seasons, an abundant supply of pure water. In a valley about half a mile west of the house, is another and larger stream, feeding at a point several miles above, a mill race, the water of which, coursing along the hills, has here, a sufficient elevation to turn, in succession, five separate flour mills, before the water finds its way again to the bed of Gwynn's falls. These streams have rocky and precipitous banks, with very little still water along their course, and are confluent about two miles east. The alms house stands on ground having an elevation of about forty-five feet above the beds of these streams, and one hundred and forty above tide, which is distant, at the nearest point on the middle branch, about two and a quarter miles.

The centre building of the alms-house, and its two large wings occupy a due south front of six hundred feet. Directly north of these is an area of about four acres, a parallelogram in shape, included by a stone wall ten or twelve feet high, the house itself forming the southern boundary.

The centre building is a large double house with four rooms on a floor, it has a basement, and above this two stories and a half. One large room is used by the trustees at their weekly meetings, and the rest of the house is occupied by the overseer and his family, eight resident medical students and an apothecary.

Each wing is about thirty feet wide, and two hundred and ten long, and has a basement of about eight feet elevation, two stories (the rooms of which have a pitch of about thirteen feet from floor to ceiling,) and an attic, with dormant windows. The lower floor, with the exception of the space appropriated to the dining room, kitchen and one or two work rooms, is divided into small apartments for the accommodation of the more refractory class of maniacs, who in the absence of a more suitable establishment for lunatic paupers, (such as enlightened legislation and liberal endowments have already furnished in some of the other States,) are forced to go to a place entirely ill suited to their wants. On the floor of the first story, and continuous with the portico connecting the main building, is a corridor running through the middle to about half the length of each wing, where it intersects another and wider hall, furnishing accommodation to a flight of stairs and opening on a north and south portico. On each side of the corridor first described, on the west wing, are the private apartments of the matron, the kitchen for preparing articles of diet and the sewing room; while the corresponding apartments on the men's side, or east wing, are used as store rooms or occupied by some of the subordinate officers. It may be well to remark that the rooms just described, like those of the centre building, have either a north or south exposure, while all the other apartments of the establishment, with the exception of the cells and the surgical ward for the blacks, have windows on both sides, and consequently two different exposures. The other half of the first story, on each wing, has a large dormitory for the working hands, and beyond this, on the male side, in an addition to the main wing, a school and other rooms for the use of some eighteen or twenty children. In the second story, on the male side, there are but two large rooms, one the hospital, and the other the surgical ward, having windows on the north and south fronts. The garret above is divided into sleeping rooms. In the second story, on the west wing, or female side, is first one large medical and surgical hospital, then the magdalen, next the lying-in ward, and lastly, in an addition to the main wing, the hospital for colored women. The attic is appropriated to sleeping rooms and a chronic hospital for aged colored women. Connected with the hospitals, in both wings, are water-closets, the drainage from which is effected by means of zinc tubes, which pass down and connect with iron pipes running under ground and opening back of the north wall.

The range of buildings just described are erected on the side of a gently sloping hill, the end of the west wing resting on its summit, from which point there is a declivity both in the direction of the north and east walls. The cells, in the basement of the west wing, are about five feet below the surface, with an intervening area of ten feet from the surrounding ground, while the same class of apartments, on a like level, at the extremity of the east wing, are above

the surface, giving to all the rooms on the male side of the house a freer exposure to the surrounding air, and to this portion of the buildings, from all points of view, a far more elevated appearance than that which is presented by the west wing.

The surface of the alms house ground, on its west border, has a declivity of about two feet from the house to the north wall, distant seventy-five yards, and at similar points on the east side, a fall of some eight feet, which allowing for the depth of the area just described, gives the top of the north wall an elevation of some twelve or thirteen feet above the base of the west wing; while on the contrary, the floor of the basement on the east wing has an elevation at some points a little below, and at others a foot or two above the corresponding top of the north wall. From the north east corner of the yard, the lowest part, to the south west angle, the highest point, an acclivity of some twenty feet is overcome.

On the line of the wall enclosing the alms house yard on the east side, is a building twenty-five by fifty feet, and two stories high, called the black hospital. It is on lower ground than any other building used for hospital purposes, and is divided into two large rooms, the lower one being the surgical, and the floor above, the medical ward for negroes of the male sex. Connected with these rooms are water-closets opening on the outside of the east wall.

On the high ground directly opposite the black hospital, parallel with, and about twenty feet from the west wall, is a large stone building, thirty by seventy feet, and four stories high. The first story, or basement, is a little below the surface, but removed from the surrounding ground by a spacious area about six feet broad at its base, and widening at the top of the bank, to the breadth of twelve or fifteen feet: it has a passage running through its centre, having rooms on each side, and terminating in a door at the north and south ends of the building. The arrangements, on the floor next above, are precisely similar, only there is no opening on the north gable wall, which, above the first story presents a dead surface, with the exception of some few panes of glass, let in, for the purpose of lighting the water-closets on the three upper floors. These apartments are occupied by lunatics, and being of more recent date, are called the upper and lower new cells, to distinguish them from the old cells, under the wings of the main building. The third story, called the children's room, is devoted to foundlings and nurses, and the fourth, or chronic hospital, to aged females. Each of these stories has windows looking out on the east and west.

A few feet from the north basement entrance, under an arch concealed by a loose door, and connected with the water-closets above, is a receptacle in the form of a common ley-hopper, and from this, there is an underground drain, which finds a vent on the outside of the north wall.

Nearly equidistant from, and parallel with the east and west walls, and about the centre of the alms house yard, is the bake house and spinning room, a range of buildings a story and half high and about sixty feet long, serving in a measure, to protect the west side of the establishment from the east wind. Near these houses are a number of large tall and thriving apple trees, the rich foliage of which furnishes, in summer, an additional barrier to the north and east winds.

From the windows and portico of the west wing, the north wall is nowhere visible, the view being shut out by three rows of English elms, which were covered during the prevalence of cholera, with a dense foliage protecting it, and also the four story building, from north and east winds. From the portico and some of the windows of the east wing, or male side, not only the corresponding portion of the north wall, but also the hill beyond are distinctly seen. Directly adjacent to this side of the establishment is a willow, and one or two other well grown trees, and in the centre of the yard, are others of two or three years growth, furnishing little or no protection against the north winds.

On the west wall, near its angle with the north, is the cesspool common to the female side. Next below this, on the north wall, is the wash house, where all the linen of the establishment is cleansed, and directly on the centre of this wall is the ice house, in front of which is a fine old American poplar—*liriodendron tulipifera* with branches and leaves innumerable, and serving as an additional barrier against the north wind. Next comes the dead house, where all the post mortems, numbering nearly one daily throughout the year are performed, then the men's privy, and on the east wall, near its angle with the north, and directly back of the black hospital, is an opening through which a number of pigs are fed, the pen in which they are kept, running about forty feet on the outside of the east wall.

In the rear of the north wall, is a ravine, which approaches the wall on its western angle, to within about ninety feet; the distance between the wall and the ravine gradually widens until it amounts to about one hundred and ten feet at the north east angle.

In the bed of this ravine is a stream, the outlet for all the waste water of the establishment, which it deposites finally in Rutter's run. It has along its course one or two springs which become dry in summer, rendering the current very sluggish, except when swollen by rain. The bed of the stream is about six feet below the base of the wall at its angle, having a fall of about fourteen feet, to the point opposite the north east corner of the enclosure, the base of which is about twenty feet above the stream. The space between the wall and the ravine is not appropriated to tillage, but is grown up with a rank weedy vegetation usually found in rich waste soils. Directly north of the ravine rises a cultivated hill side.

Hygienic condition, Diseases admitted to, or indigenous at the Alms-House, and remarks on Quarantine.

The writer of this report can with truth affirm, from daily personal observation, continued through a series of years, that the Baltimore City and County alms house, seemed to be of all other places, the field, not only for the spontaneous origin, but also for the growth and spread of disease. A medical student, coming from the country, florid with health and buoyant in spirits, would often, after a residence of a few months, become pale and dull and sickly. It seemed to be a place where no such rare exception as high health was to be found.

A morbid poison sent to these wards was like a seed sown in nutritive soil. A single case of erysipelas brought to the house, would often in a very short time, spread the infection to all the other wards, rendering it dangerous to perform the most simple operation, even that of bleeding. The slightest wound was sure to be followed by erysipelas, phlebitis, and in some instances, gangrene, and all this was attributed to hospital atmosphere. Was it the air of the wards alone, or other causes, which produced these results? The establishment affording no facilities for isolation, it was not unusual to see in the same ward, at the same time, cases of typhoid fever, erysipelas, dysentery and typhus or ship fever. And it repeatedly happened that patients admitted with pneumonia, pleurisy, or some other acute affection, were seized, before their convalescence was perfectly established, with some one of these morbid poisons, which, in the weak state of their systems, too often proved fatal. It is at best but poor humanity, to send a man to a charity hospital, to get rid of one affection, and at the same time, place him under circumstances where he is very likely to contract a much more dangerous malady. We cannot too strongly urge the board of trustees to cause to be erected, opposite each wing, on the ample grounds within the present enclosure, a house, with three or four well ventilated rooms each capable of holding two or three beds, for the advantage of isolation. The interposition of a single wall is often sufficient.

Intermittent and remittent bilious fevers were spontaneous in their origin almost every season, while the country for a mile or two around, enjoyed a comparative immunity from these affections. Besides the indigenous origin of malarious fevers, a very large number of intermittents are brought every season, and also remittents, in the autumn of some years, from the iron ore mine banks, on the Washington and Philadelphia roads. In 1844, and again in 1845, when the house was under the care of Professor Power, of the University of Maryland, the poison of puerperal fever was so intense that death was sure to ensue in the case of every lying-in woman,

the attack commencing usually, in from four to twelve hours after parturition. In each of these years, some eight or ten cases consecutively proving fatal, this ward was abandoned, the women expecting confinement were sent to the Washington College hospital, and no other cases of the kind were admitted for a period of six months. Every summer, the children suffered from cholera infantum, and where they escaped this disease, they were almost sure to perish in the winter, with pneumonia. In the whole history of the establishment, there is no single example of a foundling that has lived to the age of three years.

A very grave form of typoid fever prevailed extensively amongst the inmate of the alms house during the years 1846 and 1847 and 1848 and 1849. The cases were generally long continued, and attended invariably, by the most distressing adynamia. In the case of a man named Casper Weaver, well characterised rose colored spots were observed as late as the eighty-ninth day of the disease, and well defined lenticular rose spots were also noted, as late as the forty-fourth day, in the case of a man named Henry Hardman.

There were ten cases of typhoid fever in the medical ward of the east wing, when in 1847, the ship Rio Grande brought to our shores the first cases of typhus or ship fever, a portion of which were admitted to the same ward, affording the students of the house a rare opportunity of observing the resemblance, and at the same time the marked differences between these two very distinct affections. Repeated arrivals of emigrant ships, in the course of a few weeks, filled the wards with typhus cases.

The history of these cases demonstrates the utter worthlessness of our present quarantine regulations. Some of the individuals did not come from the ships, in which they arrived, but from houses, both in town and country, where they had been at service for one, two and in a single case, as long as three weeks after reaching our shores. In many instances they communicated the disease to the families in which they went. Now of what use is it to send the sick to a quarantine hospital, if the others, and almost always the larger portion of the passengers, are permitted to mingle in the community with the seeds of the disease in their systems? There can be no doubt about the benefits of an efficient quarantine in preventing the spread of small pox and ship fever, the contagious and infectious nature of which are beyond all question.

When a vessel arrives at any of our ports with a single case of ship fever or small pox on board, *all the passengers should be sent to comfortable quarters provided for them on shore, at some place suitable for the most perfect isolation, until the full time has elapsed when the disease would be likely to happen in any of the others.* The ship should be quarantined, for a period sufficient to undergo the most thorough purification and ventilation, before she be allowed to come into dock. This can never, or next to never, be accomplished un-

der the present system, or so long as a vessel is allowed to bring both emigrant passengers and a cargo, for the interest of the shippers would suffer, and their goods must needs be brought to market. The raw materials sent to Europe are very bulky, and fill our vessels on their outward voyages, but the manufactured articles brought back, occupy comparatively a small compass, leaving an abundance of spare room in the returning ships. There is no reason therefore why vessels should be allowed to bring both emigrant passengers and freight at the same time, for if they were restricted to one or the other, there would be a large surplus of unappropriated room, still left, in the homeward bound merchantmen.

An arrangement requiring a few days probation, for passengers taken from vessels, having contagious diseases on board, would be far better for the poor emigrants, and at the same time protect the people of our country against the possibility of a wide spread pestilence; for it is not at all improbable, unless some means are taken to prevent so deplorable a national calamity, that this typhus or ship fever may at last become fixed upon us, as it has been upon the people of Ireland for more than a century.

A crowded ship, just arrived from a long voyage, with privation, pestilence, disease and death on board, the passengers with only a meagre supply of unwholesome food and impure water, is of all other places, the hot-bed for the generation of morbid poisons, and it is not at all improbable, that if the present system is continued, some new and as yet unheard of disease may spring from this source. The captain of a vessel ought to be compelled in all cases to see that every passenger takes suitable and sufficient stores; for what can a poor emigrant, who has never been at sea, know about the preparations requisite for a long and precarious voyage? Many of those who came to us in 1847, had nothing to eat but a miserable bread, the quality of which was horrible beyond description. It was offensive both to the sight and smell, and resembled the sour and filthy meal from the floor of a neglected chicken coop.

Vessels are coming constantly to our shores freighted with the poisons of erysipelas, typhoid fever, small pox, typhus or ship fever, dysentery and scarlet fever. Dr. F. Donaldson, who had charge of the quarantine hospital in the autumn of 1847, exhibited ulcers of payers patches, such as occur only in typhoid fever, which he had taken from the intestines of patients who died covered with the eruption of confluent small pox, showing that the two diseases existed in the same individual at the same time. In an Irish family named Mackatee, who came to the alms house, from the ship Richard Anderson, in the summer of 1847, there were two individuals, a mother and daughter, both of whom suffered from typhoid fever and the poison of ship fever at the same time, showing that these two diseases may also co-exist.

The European governments are relaxing the rigor of their quarantine laws, because yellow fever, plague and other diseases, the importation of which they once dreaded, are now regarded as neither infectious nor contagious: but there is no reason why we should imitate their example, since the position of this country, in these respects, is entirely different from any other on the face of the globe. The diseases we import are proved to be both infectious and contagious. From the old world emigration is constantly pouring out, while with us it is always flowing in.

If emigration is regarded as a common benefit to the whole country, then surely the evils of the system should be corrected by the representatives of the people at large. A quarantine ought to be just as much under the direction of the general government as the collection of revenues or any other function which it has to perform. Laws regulating emigration and a system of quarantine are so intimately connected, that neither can be perfect, so long as they are separated. Municipal authority alone, can do nothing to remedy the evils connected, with the quarantine regulations, as they now exist. A uniform system is required for all the Atlantic cities. It should become the business of Congress, who having the power to prescribe the mode in which emigration should go on, ought also to interpose its authority, to save our fair land in all time from the possibility of pestilence; an evil, not less dreadful than famine, and far more desolating than war.

Typhus Cases from the City, admitted to the Alms-House.

During the prevalence of the epidemic typhus before referred to, as occuring amongst the free blacks of the city, in June, 1849, eighty-three cases in all were sent to the alms house—of these forty-three were females and forty males, their ages ranging from five to seventy-five years. Thirty-nine of these cases proved fatal. They were all blacks, with one exception, an Irish woman, who was brought from Pitt street, near Harford run. One other case of a girl aged about ten years, daughter of one of our most prominent citizens, was observed in the city. The first case sent to the alms house was that of James Glover, admitted on the 29th of May, and the last, that of Richard Born, who entered the hospital on the 6th of July. The cases were far more fatal in the beginning than at the close of the epidemic. Of the first eighteen cases admitted, all died, and of the last twenty, nearly all recovered. It was highly infectious, and several of the resident nurses died. The mystery is, why the blacks alone should have suffered. The cases came from Strawbery alley on the east, Run alley on the west, Biddle alley on the north, and intermediate points. L alley, near the centre of the city and directly back of the public stores, was entirely depopulated. Was this disease spontaneous, or did it originate from the typhus

poison brought to our shores by emigrant vessels, and diffused through the city in a modified form? This is an interesting question, but one we are not prepared to answer.

Fearing that this very malignant typhus might become general amongst all classes, and seeing that our city was threatened with an invasion of cholera, which had converged from from its points of origin as far as Cincinnati on the west, and as near as Philadelphia on the east, and believing that to prevent both diseases, it was highly desirable to have the filthy lanes and alleys from which this typhus came, speedily cleansed, the physicians of the alms house caused the following notice to be published in the different daily papers.

BALTIMORE ALMS-HOUSE, June 16, 1849.

To the Editors of the Baltimore Patriot:

Various and contradictory statements having been made through the daily press of our city, relating to a fever which has lately been introduced into the medical wards at the Baltimore Alms-House, we deem it our duty to say, that this fever is a highly malignant Typhus; infectious in its character, and accompanied in a large majority of cases, by intense jaundice, in this respect resembling Typhus Icterodes of systematic writers.

It has come to us only in the past three weeks, during which time forty-six cases have been admitted, and of these the very large proportion of twenty have proved fatal; the remainder are still under treatment.

It has been brought alike from every section of the city, and as yet has only occurred amongst the free blacks.

Thus far it has been much more grave amongst males than females, owing probably to differences of sex, habits and occupation.

The large majority of cases have been fatal between the third and seventh day, and in some instances they have died a few minutes after admission and three days from the date of seizure.

This disease is by no means confined to the worthless and abandoned, as stated in several of the daily papers, but has, on the contrary, frequently happened in individuals of temperate and industrious habits, whose means were adequate to provide them with wholesome food and sufficient clothing.

The point of importance at present is its infectious character. Two strong and healthy women, residents of the house, and employed as nurses, have taken the infection and died. To guard against the further spread of this disease we would advise—

That the municipal regulations relating to cleanliness and public hygiene be rigidly enforced.

That all assemblages of the people of color be avoided, as far as practicable.

That colored persons employed as domestics in private families be enjoined, for the present at least, not to visit their friends in the various sections of the city.

THOS. H. BUCKLER, M. D.

H. WILLIS BAXLEY, M. D.

This statement appearing at a time when there was much inquiry as to the general health of the city, attracted some attention, and induced immediate action on the part of the city authorities. The Mayor, under the direction of the board of health, caused all the lanes, alleys and byways to be put in a thoroughly wholesome condition. The merchants had the wharves, then in a very filthy condition, cleansed and sprinkled with lime at their own expense.

Epidemic Cholera at the Alms-House.

On the first day of July, an old man, named John Kramner, an inmate of the Baltimore City and County alms house, suffering from an ulcer, was attacked with unequivocal symptoms of cholera, but recovered. He slept in the attic, but spent the greater part of his time in the yard.

At about 2 o'clock on the morning of the 7th, a man named Peter Snowdenburg, who had likewise been an inmate of the house for some time, was attacked by cholera and died.

On the 11th, the disease made its appearance on the women's side of the house. The females attacked were Mary Monroe and Martha Morrison, both of whom died after a few hours' illness.

On the 12th, two new cases occurred, one on the men's side and the other on the women's, both proved fatal. On the 13th, a man was attacked and died, and on the 14th, ten cases appeared on the men's side of the establishment, and three on the women's.

In regard to these cases it may be remarked, in a word, that they were all old residents of the establishment, and had contracted the disease on the spot.

A rumor obtained currency at the time, that the disease was brought from Philadelphia, where it prevailed, by a poor English traveller named Alexander Wirt, who died at the alms house soon after his admission. In order to arrive at certainty, if possible, in this matter, the writer called on Prof. Smith of the University of Maryland, through whose intervention the man had been sent to the alms house, who stated that a poor man called at his office for medical aid. He seemed extremely ill, and threw himself or fell upon a lounge in the office soon after he entered, in a state of exhaustion, and vomited what had the semblance of rice water discharge. His whole appearance led the doctor to believe that he was in the collapse stage of cholera, and would soon die. Indeed he had fears that he would die before he left the office. Under the influence of a powerful stimulant he partially recovered, and was removed in a carriage to his lodgings, where he was refused admittance and was finally sent to the alms house. He died in two days after his admission, without manifesting any signs of cholera, of double pneumonia. A post mortem examination, made a few hours after death, confirmed the correctness of the diagnosis. Cholera not hav-

ing been suspected in this case, it is to be regretted that no examination was made of the intestines.

It is not likely that Professor Smith could be mistaken, and it is therefore probable that this was a pneumonia supervening on an attack of cholera, an accident which has been observed and noted by Tardieu and others as a sequence which sometimes happens. Still it is hardly possible that a man could recover, under such very adverse circumstances, from a state even approaching that of collapse. Admitting howeve that this man had cholera, it does not account for the appearance of the disease at the alms house, since he was admitted on the afternoon of the 7th, some twelve or fourteen hours after the attack of Snowdenburg, and seven days after the case of John Kramner.

Precautionary Measures.

Previous to the appearance of cholera most earnest and emphatic directions were gvien to have the whole establishment thoroughly cleansed, so as to remove all exciting causes of the disease from within. The direction was carefully complied with so far as ventilation, removal of nuisance, and cleanliness were concerned. Indeed the direction seemed useless, for every thing within the four walls, considering the class of patients admitted, was remarkably clean.

Fully impressed with the belief that the disease was dependent for its spread on some local cause as yet undiscovered, the trustees were requested on the 14th to meet at the alms house on the following day (Sunday,) in order to authorize the depopulation of the establishment. It was proposed to provide the inmates with tents upon a healthy part of the farm, and to subject the house and grounds to a thorough purification. The board adjourned without final action until the following Wednesday, (18th,) when, no preparations having been made, and the disease having greatly increased, the plan of removing the inmates was deemed inexpedient.

Under the direction of the board, the cholera patients on the male side after this date (the 18th of July,) were assigned a place in the upper story of the black hospital.

Source of Malaria Ascertained.

The writer of this report was sadly puzzled at not finding any local cause to warrant the spread of the disease within the enclosure, and on the morning of the 19th, determined to investigate the subject fully, made for the first time a survey of the premises on the outside of the wall surrounding the establishment. He commenced his scrutiny on the east wall, and discovered the cess-pool connected with the black hospital overflowed and in a very filthy condition. Continuing the inquiry, he found that the drainings from the extensive pigstye after covering a large surface of rank grass and half rotted

weeds with a highly putrescent and offensive matter ran into a filthy pool from two to three feet deep. It contained one or two dead pigs, and seemed to be in a state of rank and pestilent fermentation, having on its surface a greenish slime and innumerable air bubbles. The next object was a large surface covered with the overflowing contents of the men's privy and the washings from the dead-house, and, mingling with these, came the drainings from a foul looking ditch running parallel with and about twenty feet from the north wall to a pond directly back of the wash-house. This pond contained a highly putrid water filled with infusoria, and was about thirty feet wide by forty long, and from one to three feet deep. It was connected with another of smaller size, which received the drainage from the cess-pool common to the west side of the house. Three ditches ran into it from the north wall; one connected with the pipes leading to the water-closets in the west wing of the main building, another receiving the filthy water from the wash-house, and a third, the drainings from the cess-pool on the gable wall of the four story stone building. The run along the course of the ravine, being obstructed in many places, formed pools of stagnant water. In short, a large part of the space included between the ravine and the wall on its north side, was one putrid and pestilential mass, capable of generating under the ardent rays of a mid summer sun, the most poisonous and deadly exhalations. Did this contribute to the spread of cholera among the inmates of the institution?

The inmates of the alms house when the cholera first made its appearance numbered, whites, 407; blacks, 153, . .	560
Admitted during its prevalence, ...	108
Born in the house, ...	1
	669

Inmates discharged during the same period, ...	56
Eloped, ...	76
Died of cholera, ...	86
" " other diseases, ...	21
Remaining, ...	430
	669

Of these, one hundred and fifty-five were attacked with cholera, and eighty-six died.

The following table exhibits the number of cases and deaths on each day during the prevalence of the disease, and shows the relative proportion of attacks and deaths among the white and colored inmates of the establishment. While the ratio of attacks was about alike amongst the whites and blacks, in the latter, the propor-

tion of deaths was much the largest. This, however, is no test of the relative fatality of this disease in the two races, since a large number of the colored inmates were broken down by, and barely convalescent from, the malignant typhus before noticed. Indeed it was this class alone, that suffered from diarrhœa (cholerine) during the latter part of June, prior to the invasion of cholera.

Date Of Attack, 1849.	No. of Cases.	Deaths.	White Cases.	Coloured Cases.	Whites Dead.	Coloured Dead.
July 1	1	0	1	0	0	0
7	1	0	1	0	0	0
11	3	1	3	0	1	0
12	3	1	2	1	1	0
13	1	0	1	0	0	0
14	13	3	11	2	2	1
15	8	5	4	4	3	2
16	9	3	5	4	1	2
17	10	4	7	3	1	3
18	11	8	8	3	4	4
19	12	4	10	2	3	1
20	10	8	6	4	7	1
21	12	6	10	2	4	2
22	11	3	6	5	2	1
23	9	6	8	1	3	3
24	11	5	8	3	5	0
25	3	6	2	1	4	2
26	2	3	2	0	2	1
27	4	1	3	1	0	1
28	3	6	2	1	4	2
29	3	4	2	1	3	1
30	5	1	1	4	1	0
31	2	1	2	0	0	1
August 1	0	1	0	0	1	0
2	2	0	2	0	0	0
3	2	1	2	0	1	0
4	2	4	2	0	3	1
5	1	1	0	1	1	0
8	1	0	1	0	0	0
	155	86	112	43	57	29

No cases of simple diarrhœa or cholerine are included in this table. It relates only to those who were put to bed and regularly treated for cholera, which was marked in nearly every instance by extreme severity. Many of these cases survived the seizure only two or three hours.

On the female side of the establishment, there were on the 1st July,

Women, ...	269
Children, ...	53
	322

In this department sixty-two were seized with cholera, and thirty-eight died.

The males at the same date numbered,

Men, ...	225
Children, ...	13
	238

And on this side ninety-three took the disease, and forty-eight died.

The number of each sex admitted, discharged and eloped during July, bore a very uniform ratio to the proportion on the two sides at the beginning of the month. It appears therefore, that while nearly one half of the males were seized with cholera, more than four-fifths of the opposite sex escaped. Now this is precisely what might be expected, if the malarial influence, already alluded to, exercised any control over the disease, for the men having out door occupations were most exposed to atmospheric influences. Besides, it has already been shown, that the west side of the establishment was protected by numerous trees, several out buildings, and by the greater comparative elevation of the corresponding portion of the north wall, and that it occupies the high ground, while the male department enjoyed no such defences.

On the other hand, no argument can be drawn from the differences of sex, for we shall soon show, that in a very exposed suit of apartments on the women's side, the disease was far more fatal than in any room occupied by men. Nor can any thing be said as to the better habits of the females, because they were in common with the males equally the victims of intemperance, and equally broken down by poverty and want.

The following tables indicate the number of inmates who took the disease from the 1st to the 20th, and the places from which they came.

Of the forty-three cases happening on the male side from the 1st to the 19th, inclusive,

21	were seized with cholera outside of the buildings, but within the enclosure.
7	in the hospital,
5	" cells,
6	" surgical ward,
4	" black hospital,
43	

Of the twenty-nine cases which occured from the 10th to the 20th on the female side,

4	were seized	with	cholera	in the hospital,
2	"	"	"	garret,
9	"	"	"	yard,
1	"	"	"	children's room,
3	"	"	"	black hospital,
2	"	"	"	lying-in room,
1	"	"	"	old cells,
7	"	"	"	lower new cells,
29				

After the discovery of the supposed local causes of the disease, on the 19th, an order was given that all the windows of the establishment having either a north or east exposure, should be closed at sun-set. Until this date, the weather being warm and the wards crowded, the windows of most of the apartments had been kept open at night. This order having been rigidly complied with, the result, with one exception, was that after this date, (19th) fewer cases occured in the different hospitals, while a larger proportion of seizures happened amongst those who were exposed to the air without. The exception referred to occurred in the lower new cells.

It will be remembered, that in the four story building, running from north to south near the west wall, the basement has a communication by means of a door opening towards the north, a short distance from the cess pool, and only a few feet removed from the hopper before described. *In the lower new cells of this basement were fourteen lunatics and three attendants, all of whom were attacked with cholera, and all died. In the cells of the story next above, with no opening to the north, there were eighteen lunatics and three attendants, not one of whom had the slightest symptoms of cholera.*

On the third floor, or childrens room, there was but one seizure, which happened in the person of a nurse, who spent much of her time out of doors. And in the fourth story, or chronic hospital, no sign of the disease appeared. The last ten deaths, in the lower new cells, happened between the 19th of July and the first of August, when the hopper, connected with the water-closets, was found overflowed and in a very filthy condition, owing to some obstruction in the underground outlet.

Five cases of cholera, not enumerated in the table, occurred at the alms house under the following circumstances: The family of the overseer consisted of Capt. Jackson, his three daughters and a small boy, all of whom occupied rooms in the third story of the centre building, having a northern exposure. Capt. Jackson whose

custom was to sleep with his chamber *windows open*, took cholera in its worst form, but recovered. His three daughters and the youth escaped. They were positive in their declarations that they were in the habit of sleeping with their *windows closed.*

Four of the resident medical students occupied apartments in the second story of the centre building with a northern exposure, and the remaining four were lodged in a large room having a southern exposure. Of the four students whose windows looked to the north, three were attacked with cholera. The four whose windows looked to the south, escaped.

Mr. Bain, the apothecary, Valentine, the coach driver, and the turnkey, occupied rooms on the north side of the corridor in the east wing. Bain was attacked with cholera,—the other two escaped.

The family of Mr. Branson the clerk, consisting of three members, occupied rooms on the south side of the corridor in the west wing and escaped. Thus out of twelve persons who slept in rooms with a northern exposure five took the disease, while the seven whose rooms looked to the south, escaped. Mr. Branson, besides performing the duties of clerk, acted as overseer during the illness of Capt. Jackson, and was conspicuous for his attentions to the sick, during the entire prevalence of the disease.

Some difficulty was experienced in finding workmen willing to undertake the task of removing the impurities back of the north wall, so that they remained in the condition in which they had been discovered until the 23d, when three free negroes, Lynch and Fennel, night men, and Bond a hod carrier, tempted by high wages agreed to do the work.

A deep trench was first made along the course of the ravine, and from this ditches were dug so as to let off the contents of the various pools, which were thoroughly washed out by directing on them, from the force pump which supplies the house, a jet of water about three inches in diameter. The exposed surfaces were then covered with several hundred bushels of unslacked lime over which was laid a deep stratum of fresh earth.

The process of washing out these pools was completed on Wednesday the 25th; when the disease suddenly declined, from eleven cases the day previous to three. The work of spreading lime and throwing on fresh earth, was finished on Saturday the 28th, after which date, only eighteen cases happened, and by the 9th of August, the disease had entirely disappeared.

On Sunday the 29th, Bond and Lynch were both seized with cholera, and were visited at their homes by the writer, in conjunction with Dr. Feinour, their regular physician. Fennel escaped the disease and was again employed on the 5th of August to remove the filth before described near the north basement door of the four story building. All three of these workmen had families, and oc-

cupied separate houses in Sarah Ann between Cove and Chatsworth streets. Sarah Ann, a narrow, compactly built and populous street, had been thoroughly cleaned and sprinkled with lime about two weeks prior to the seizure of these men, both of whom recovered, after very protracted attacks, without communicating the disease to others.

Reference to the map exhibiting the ground plan of the alms house, will show that the hospital for colored men on the east wall, was more exposed to the sources of miasm than any other part of the establishment devoted to the sick. When the removal of the cholera patients to this building took place, some requested to be left where they were, while others not objecting, were removed to the black hospital. A large proportion of the cases left in the ward of the east wing recovered, and all who were transfered to the room devoted exclusively to cholera patients died. The cases subsequently admitted and treated in this exposed situation were marked by greater severity, and the proportion of deaths was larger than it had been prior to the removal from the general hospital. This fact was particularly noticed by Prof. Power, who visited the institution daily during the prevalence of the disease and rendered very valuable assistance.

The school children who occupied rooms in an exposed situation on the east wing were taken to the city and generously sheltered by Joshua Vansant, president of the board, and Mark Grafton one of the Trustees. Each of these gentlemen devoted a portion of his own private dwelling to this humane purpose. One of these children was seized with cholera in the city, and in this condition carried back to the alms house.

During the prevalence of the disease, there was a much larger daily attendance than usual of medical students and others, some of whom were led by curiosity, and many by a desire to be useful, and yet (with the exception of the two laborers whose cases have just been noticed,) in no single instance was any one attacked with cholera, who had not passed one or more nights at the house. May not this immunity be accounted for if we admit that the malarial influence, exerted any power in producing cholera, by the fact that it was at night when the air was chilled and the earth heated, that the malarial exhalations took place.

A man who came from the mine-banks with slight rheumatism and a nervous system, depressed by the malarial influence of that region, was seized with cholera the day after his admission, but recovered.

There was not the slightest panic during the prevalence of the disease, and constant intercourse was kept up between the inmates and their friends in town.

Dr. Edward Dorsey, volunteered his services to fill the place of Dr. Wysham, who had been seized with cholera; and Dr. Wm. Grafton succeeded Dr. Murdoch, also attacked by the disease.

John C. Brune, one of our leading merchants, and James McHenry, a gentleman of fortune, not only volunteered their personal services as nurses, but also their ample means, if required, in aid of the sufferers. Mr. McHenry came repeatedly to the institution during the prevalence of cholera, surveyed the premises outside of the wall and seemed particularly interested in determining the cause of the disease.

It has been shown that during the month of July seventy-six persons eloped, and fifty-six were discharged by the board, most of whom came to reside in town, and in several instances they were seized with cholera, and in this condition carried back again to the Alms-House. The foregoing facts are noticed for the purpose of showing that notwithstanding this constant and unrestricted intercoue, the disease confined itself to its favourite haunts.

Theories Tested.

Before the removal of the nuisances the various cholera theories were tested as far as practicable. Saucers containing solutions of acetate of lead, nitrate of silver and other delicate reagents, were placed on the margin of the pond, and at various other points back of the north wall ; and numerous strips of chemically pure paper wet with solutions of these salts were hung out at night over the different pools. Paper prepared with Schonbines' solution of iodide of potassa and starch were also used to test the presence of ozone. Duplicate experiments were instituted in the city at the same time, but without any very satisfactory results in either of the trials, the changes which occurred being nearly alike at the two places.

With the view of testing the cryptogamic and animalcular theories, plates of microscopic glass attached to threads by means of sealing wax were dipped in solutions of sugar, starch and gum acacia, and hung back of the north wall and in the cholera hospital. Other plates of glass were covered over with glycerine, remarkable for its property of remaining fluid for a long time when exposed to the air, and these, like the former, were suspended in various places about the establishment. Sugar and starch were selected because of the known tendency of vegetable germs to form on these compounds, and it was supposed if animalcula existed in the air that some of these would of necessity be caught on the moist and tenacious glycerine. These plates of glass, having been thus treated, were carefully examined by Dr. Christopher Johnston, aided by powerful lenses, but he was unable to detect the slightest trace of vegetable germs, animalcula, or microscopic organisms of any sort.

METEOROLOGICAL TABLES.

The following Meteorological Tables were obligingly kept by Dr. Thos. Edmondson, at his residence, which is situated to the right of the road leading to the Alms-House, on a hill having an elevation of one hundred and sixty feet above tide-water, and about twenty above the average height of the ground on which the Alms-House stands.

It will be seen that they were kept the month preceding, during and succeeding the prevalence of Cholera. Dr. Edmondson is remarkable for the accuracy of his observations, and has the honor of being the first who successfully applied the Electro-Galvanic force in producing the rotary motion of a wheel. He assures me, in a note, that during the prevalence of Cholera, there was no deficiency of electricity in the atmosphere.

METEOROLOGICAL TABLES.

June—1849.	Self-Register about Sunrise.	Barometer 10 o'clock A.M. and	Thermometer attached.	Simpiesometer 10 A. M.	Dew Point, open air and the	Temperature 10 A. M.	Wind 10 A. M.	And 3 M. P.	Weather during the Morning, and	The Afternoon.	Quantity of water fallen in inches and 1-100.	Barometer 3 o'clock P. M. and the	Thermometer attached.	Temperature open air 3 P. M.	Simpiesometer 3 P. M.
1	61	29.96	65	28.65	63	68	S. W.	S. E.	Rain—Cloudy.	⅓ Clear.	0.69	29.89	65	72	28.55
2	63	29.89	67	28.55	68	74	E.	S. E.	Clear.	⅓ Clear.		29.83	68	80	28.50
3	65	29.84	68	28.50	70	75	S.	S. E.	Cloudy.	Clear.		29.78	70	78	28.45
4	62	29.76	70	28.45	78	83	S. W.	S. W.	Clear.	Clear.		29.66	72	89	28.35
5	66	29.91	72	28.50	59	73	N. W.	N.W.	Clear.	Clear.		29.88	72	78	28.50
6	57	29.98	70	28.60	45	66	N. E.	N. E.	Cloudy.	½ Clear.		29.87	71	75	28.50
7	60	29.73	70	28.40	58	65	N. E.	E.	Rain.	Cloudy.	0.63	29.67	71	71	28.35
8	65	29.61	71	28.30	73	80	S.	S. W.	Cloudy.	⅓ Clear.		29.60	71	80	28.00
9	60	29.72	71	28.35	49	65	E.	E.	Cloudy.	Cloudy.		29.70	71	71	28.35
10	56	29.82	70	28.45	50	61	N. E.	S. E.	Rain.	Cloudy.	0.19	29.84	71	67	28.50
11	55	30.14	70	28.75	49	65	E.	S. E.	Clear.	Clear.		30.11	68	68	28.85
12	50	30.19	68	28 80	50	67	S. E.	S. E.	½ Clear.	Cloudy.		30.14	67	67	28.70
13	56	30.16	66	28.75	51	65	S. E	S. E.	Cloudy.	Cloudy.		30.13	67	69	28.75
14	61	30.11	67	28.70	63	71	S. E.	S. E.	Cloudy, Clear.	Rain at night.	0 08	30.03	67	77	28.65
15	60	29.93	68	28.55	71	80	S. W.	S. E.	Clear.	Cloudy.		29.84	69	88	28.55
16	66	29.87	70	28.50	73	79	W.	W.	Cloudy.	Clear.		29.87	70	84	28.50
17	63	30.11	71	28.60	61	75	N. E	E.	Clear.	Clear		30.08	72	82	28.60
18	63	30.23	73	28.75	61	77	S. W.	S. E.	Clear.	Clear.		30.19	73	80	28.17
19	57	30.17	74	28.70	63	83	S. W.	S. E.	Clear.	Clear.		30.10	74	83	28 65
20	65	30.06	75	28.60	74	84	W.	S. W.	Clear.	Clear.		29.99	75	93	28.55
21	70	30.04	77	28.55	81	89	E.	W.	Clear.	Clear.		29.98	78	95	28.55
22	72	29.99	80	28.50	87	93	S. W.	S. E.	Clear, hot day.	Clear.		29.82	80	95	28.40
23	72	29.89	81	28 40	80	89	S. W.	W.	Clear.	Clear.		29.82	82	96	28.35
24	72	29.80	82	28.30	73	85	S E	S. E.	Clear.	Shower.	0.04	29.72	83	85	28.25
25	68	29.78	81	28.30	77	83	N.W.	N.W.	Clear.	½ Clear.		29.70	82	92	28.25
26	69	29.83	81	28.35	76	84	N.W.	W.	Clear.	⅓ Clear.		29.78	81	88	28.30
27	65	29.89	80	28.40	70	83	E.	S. E.	Clear.	Clear.		29.83	81	87	28.35
28	72	29.89	81	28.30	76	83	S.	S.	Cloudy, show'r	Rain.		29.72	81	81	28.25
29	70	29.70	80	28.25	76	82	N.	N.	½ Cloudy.	Cloudy.		29.70	81	83	28.20
30	69	29.84	80	28.35	77	84	S.	S. E.	Cloudy.	Clear.	0.32	29.75	80	83	28.25
Mean,	64	29.93	71	28.54	67	77					1.95	29 87	74	80	28.44

Wind.			Weather.	
N. W.	5.	Observations.	Clear.	31. Observations.
N.	2.	"	⅓ Clear.	6. "
N. E.	5.	"	⅓ Cloudy.	1. "
E.	8.	"	Cloudy.	17. "
S. E.	19.	"	Shower or Rain.	7. "
S.	5.	"	Hot day.	1. "
S. W.	11.	"	Water fallen 1 inch and 95 hundredths.	
W.	5.	"		

METEOROLOGICAL TABLES.

August—1849.	Self-Register about Sunrise.	Barometer 10 o'clock A M. and	Thermometer attached.	Simpiesometer 10 A. M.	Dew Point, open air and the	Temperature 10 A. M.	Wind 10 A. M. and	3 P. M.	Weather during the Morning, and	The Afternoon.	Quantity of water fallen in inches and 1-100.	Barometer 3 o'clock P. M. and the	Thermometer attached.	Temperature open air 3 P. M.	Simpiesometer 3 P. M.
1	63	30.01	75	28 45	51	73	N. E.	N. E.	Clear.	Clear.		29.96	76	79	28.40
2	58	30.07	75	28.50	56	75	E.	E.	Clear.	Clear.		30.05	75	81	28.50
3	60	30.06	76	28.50	64	77	E.	E.	Clear.	Clear.		30.00	76	81	28.45
4	64	29.94	76	28.40	64	82	E.	S. E.	½ Clear.	½ Cloudy.		29.89	77	87	28.35
5	67	29.92	78	28.35	63	82	S.	S. E.	Clear.	½ Clear.		29.87	79	87	28.30
6	70	29.84	78	28.30	71	79	S.	S.	Show'r, Cloudy	Clear.	0.03	29.78	79	85	28.25
7	66	29.92	77	28.35	51	78	N.	S. E.	Clear.	Clear.		29.87	79	84	28.30
8	65	29.95	79	28.35	68	81	S. E	S. E.	Clear.	Clear.		29.78	80	85	28.30
9	73	29.71	79	28.15	70	82	S. E.	S. E.	½ Clear, show'r	Cloudy.	0.34	29.60	80	82	28.10
10	67	29.73	78	28.20	60	77	N.W.	N.	Clear.	Cloudy.		29.74	78	80	28.20
11	60	29.92	76	28.35	56	71	N. E	N. E.	Clear.	Clear.		29.91	76	76	28.35
12	59	29.98	75	28.45	51	72	N. E.	N.W.	Clear.	Clear.		29.94	76	81	28.40
13	58	29.93	75	28.40	57	75	S. E.	S. E.	Clear.	Clear.		29.86	76	86	28.30
14	63	29.67	75	28.15	67	74	S. W.	S. W.	Cloudy—Rain.	Rain.	0.40	26.60	75	70	28.15
15	59	29.80	72	28 25	53	70	N.W.	N.W.	Clear.	Clear.		29.76	73	75	28.25
16	57	29.90	72	28.45	50	72	E.	S. E.	Clear.	Clear.		29.86	73	79	28.30
17	60	29.94	73	28.40	64	75	E.	S. E.	Clear.	Cloudy.		29.90	75	85	28.35
18	67	29.87	73	28.30	66	68	N. E.	E.	Rain.	Rain.	0.31	29.85	74	70	28.30
19	64	29.92	74	28.40	65	75	E.	E.	Cloudy.	Cloudy.		29.92	75	79	28.40
20	61	29.97	74	28.40	67	72	S.	S. E.	½ Clear.	Clear.		29.93	75	79	28.35
21	68	29.95	75	28.40	70	80	S. E	S. E.	Cloudy.	Cloudy.		29.90	76	86	28.30
22	65	30.00	76	28.40	56	80	N.W.	S. E.	Clear.	Clear.		29.92	76	88	28.35
23	70	29.76	77	28.20	70	81	S. W.	S. W.	Shower.	Cloudy.	0.03	29.72	78	84	28.20
24	64	29.94	76	28.35	53	75	N.W.	N.W.	Clear.	Clear.		29.90	77	83	28.30
25	60	30.02	77	28.45	60	73	S.	S. E.	Clear.	Clear.		29.96	78	83	28.40
26	61	29.97	77	28.45	63	81	S. E.	S. E.	Clear.	Clear.		30.04	77	83	28.40
27	61	30.08	77	28.45	65	78	S. E.	S. E.	Clear.	Clear.		30.02	77	82	28.40
28	64	30.03	77	28.40	61	78	E.	S. E.	Clear.	Cloudy.		29.96	78	82	28.35
29	69	30.00	77	28.40	64	76	E.	E.	Rain—Cloudy.	Rain.	0 23	29 96	78	77	28.35
30	70	30.02	78	28.40	70	77	S. E.	S. E.	Clear.	Clear.		29.95	78	83	28 30
31	69	29.87	78	28.25	69	80	S. W.	S. W.	Clear.	Heavy show'r	0.73	29.79	79	74	28.25
Mean,	64	29.92	76	28.36	62	76					2.07	29.88	77	81	28.32

Wind.		Weather.	
N. W.	7. Observations.	Clear.	39. Observations.
N.	2. "	½ Clear.	4. "
N. E.	6. "	½ Cloudy.	1. "
E.	13. "	Cloudy.	12. "
S. E.	23. "	Shower or Rain.	10. "
S.	5. "	Water fallen 2 inches and 7 hundredths.	
S. W.	6. "		
W.	0. "		

METEOROLOGICAL TABLES.

July—1849.	Self Register about Sunrise.	Barometer 10 o'clock A M. and	Thermometer attached.	Simpiesometer 10 A. M.	Dew Point, open air and the	Temperature 10 A. M.	Wind 10 A. M.	And 3 M. P.	Weather during the Morning, and	The Afternoon.	Quantity of water fallen in inches and 1-100.	Barometer 3 o'clock P. M. and the	Thermometer attached.	Temperature open air 3 P. M.	Simpiesometer 3 P. M.
1	70	29.70	79	28.25	65	80	N. W.	N.W.	Clear.	Clear.		29.67	80	86	28.20
2	61	29.86	75	28.40	51	69	N.	N.W.	Clear.	Clear.		29.86	76	74	28.40
3	57	30.06	74	28.60	48	71	N. E.	N.W.	½ Clear.	Clear.		30.01	73	74	28.55
4	57	30.10	72	28.60	43	71	N. E.	E.	Clear.	Cloudy.		30.05	72	73	28.60
5	58	30.07	71	28.60	41	70	E.	S. E.	Clear.	Clear.		30.02	71	73	28.55
6	59	30.07	71	28.60	53	77	S. W.	S. W.	Clear, Cloudy.	Rain at night.	0.10	30 03	73	85	28 55
7	67	30 07	74	28.60	73	80	S. W.	S. W.	Cloudy, show'r	Rain at night.	0 20	30 01	74	82	28.50
8	70	29.99	75	28.55	76	80	S. E	S. E.	Cloudy.	Rain.	0.32	29.96	76	80	28.50
9	68	30 02	76	28.55	71	77	S. E.	S. E.	Cloudy.	Clear.		29.98	76	81	28.50
10	69	30.05	74	28 60	67	73	E.	E.	Cloudy, Clear.	Shower.	0.07	30.01	76	81	28.55
11	71	30.12	77	28.60	77	81	E.	S. E.	½ Cloudy.	½ Cloudy.		30.10	77	85	28.60
12	70	30.16	79	28 65	70	85	S. W.	S. W.	Clear.	Clear.		30.10	79	93	28.55
13	72	30.04	81	28 50	70	89	N.W.	S W.	Clear.	Clear.		29.95	82	97	28.40
14	75	29.85	83	28.30	70	90	N.W.	N.W.	Clear, Gust.	4½ P. M.	0.56	29.81	83	90	28.25
15	58	30.14	75	28.60	47	65	N.W.	N.W.	Clear.	Clear.		30.10	76	73	28.55
16	57	30 14	76	28.60	58	74	E.	S. E.	Clear.	Clear.		30.09	76	77	28.55
17	58	30 04	75	28 55	54	75	S. W.	S. W.	Clear.	Clear.		29.98	76	80	28.50
18	60	30.02	75	28.50	60	77	S. E.	S. E.	Clear.	Clear.		29.96	75	83	28.45
19	65	30 08	77	28.55	71	84	S E.	S. E.	Clear.	Clear.		30 02	78	85	28.50
20	72	29.98	78	28.45	70	84	W.	S. W.	Cloudy.	Rain.	0.46	29.88	79	78	28.35
21	71	29.68	79	28.20	72	84	S. W.	W.	Cloudy, Gust.	2 P.M.,Clou'y	0.62	29.65	79	75	28.20
22	65	29.86	77	28.35	60	75	N.W.	N.W.	Clear.	½ Clear.		29.85	77	79	28 35
23	62	30.00	77	28 45	56	78	N.	S. E.	Clear.	Clear.		30.00	78	84	28.45
24	65	30 15	77	28.60	62	75	E.	E	Clear.	Clear.		30.07	77	81	28.50
25	67	30.07	76	28.55	63	75	E.	S.E.	Rain—Cloudy.	Cloudy.	0.07	30.00	77	80	28.50
26	71	29.87	77	28.35	74	80	S. W.	S. W.	Rain—Cloudy.	Rain, 4½ P.M.	0.59	29.80	79	87	28.25
27	76	29.88	78	28.45	70	81	N.W.	S. W.	Cloudy.	Cloudy.		29.92	78	89	28.35
28	63	30.00	77	28.45	54	64	N.	N.	Shower.	Shower.	0.10	29.96	76	65	28.40
29	58	29 98	75	28.45	64	74	S.	S.	Clear.	Clear.		29.93	77	83	28.40
30	66	29.92	76	28.40	72	80	S. W.	S. E.	Clear.	Clear.		29.83	78	86	28.30
31	72	29.88	78	28.35	69	83	W.	N.W.	Clear.	Cloudy.		29.87	78	81	28.35
Mean,	65	29.99	73	28.49	66	77					3.00	29 95	76	81	28.44

Wind.		Weather.	
N. W.	13. Observations.	Clear.	37. Observations.
N.	4 "	⅓ Clear.	2. "
N. E.	2. "	⅓ Cloudy.	2. "
E.	9. "	Cloudy.	15. "
S. E.	14. "	Shower or Rain.	11. "
S.	2. "	Gust.	2. "
S. W.	15. "	Water fallen 3 inches.	
W.	3. "		

It is to be regretted that no observations were made as to the direction of the wind during the night; but as the Alms-House is only two miles and a quarter from the river, and comes within the range of the land and sea breezes which prevail almost constanly in fair summer weather, from the water during the day, when the land is heated, and in the reverse direction at night; the inference is, that on clear nights, the current of air, must have been very uniformly, from the west and north, towards the river.

Regulation of Diet.

On the 11th of July, rules of diet were fixed for all the inmates of the establishment. All articles likely to form fermenting compounds in the alimentary canal were excluded; vegetable soups and boiled cabbage, prominent articles at dinner, were no longer allowed, and the laboring hands were restricted to the use of fresh meats, boiled or roasted, with rice, potatoes and bread at dinner, and for breakfast and supper, bread with strong tea and coffee. The baker was directed to add to the excellent wheat bread which he was in the habit of preparing, a quantity of sulphate of allumina, sufficient to give to each adult, at every meal, about five grains. The alum was given in this mode, because of its known effect, in preventing fermentation. Every man without exception being accustomed to exhilerating potations, out of the house, was allowed each day a wineglassfull of whiskey, and all the laboring hands were compelled to go to their rooms, and lie down to rest, for one hour after dinner. Notwithstanding the rules of diet, many of the inmates were in the habit of eating freely of half ripe apples, which they obtained from several trees within the enclosure. Some who eat this fruit took the disease and others escaped.

Treatment.

It would be inconsistent with the object of this report, and occupy too much space, to give a detailed account of the various plans of treatment. It may be well to remark, however, that the tincture of guiacum and valerian, were regarded as the best stimulants, and that a pill, containing the eighth part of one grain of acetate of morphia, with four grains of acetate of lead, given every half hour, was found to be the best astringent. Sick stomach, was often relieved by administering one or two drops of medicinal hydrocyanic acid, in a tablespoonful of camphor water; and active vomiting was sometimes arrested, by applying over the stomach, a bat of cotton, wet with chloroform. A combination of charcoal, wood-naptha and kreosote was used, under the impression that the disease might depend on a process of fermentation in the alimentary canal, but the trial of these agents was not followed by any benefi-

cial result. Pounded ice was given, freely, to the patients in all stages of the disease. As soon as reaction had been established, the cases were put on a permanent treatment, consisting generally of camphor, capsicum, and calomel, of each two grains in a pill every four hours.

These remedies, were given to the nurses in every ward, with mustard and tincture of capsicum for external use. When the attack happened at night, the treatment invariably commenced before the patient was sent to the cholera hospital. In plethoric subjects, bleeding was found of great service when adopted at the very onset of the disease. Arresting the return blood, in the extremities (hœmostasis) by means of ligatures applied to the arms and thighs, was sometimes attended with benefit. Nearly every death happened from collapse. The supervening inflammation of the stomach and intestines, was almost invariably relieved by ice, diluent, saline drinks, and cups applied on each side of the dorsal and lumbar vertebra. In all cases of enteritis local depletion from these regions will be found more efficacious than it can ever be from the abdomen, for obvious anatomical and physiological reasons. The relation with the arterial supply, through the mesentery to the intestines is more direct, than where cups are applied according to the usual method, over the abdomen. The same is true with regard to topical bleeding from the dorsal parietes of the thorax, over the summit of the lungs, except in inflammation of the pleura costalis. The painful cramps attendant on cholera, were invariably relieved, by placing over the muscle laboring under this involuntary tonic contraction, a bat of cotton wet with chloroform.

Morbid Changes in the Solids.

The pathological alterations, corresponded in almost every essential particular, with the lesions noticed by Tardieu and others. After death from collapse, the mucous membrane of the intestines was found excessively blanched and the isolated follicles of the ileon invariably enlarged, from the size of millet seeds to that of large peas, produced doubtless, by the accumulation of albumenoid matter in the substance of the follicles. When washed and exposed to a bright light these enlarged bodies presented an opalescent appearance, and in several instances resembled iridescent pearls, hanging from the surface of the mucous membrane. When death happened after reaction had been fairly established, the mucous membrane of the stomach and intestines was excessively injected, thickened, intensely red, when washed and exposed to the air, and sometimes, softened.

Cholera as it Appeared in 1832.

All the information that can be obtained in relation to cholera as it appeared at this institution in 1832, is, that there were 502 inmates in the establishment when the disease first broke out; of this number 211 were attacked, and of these 78 recovered, and 133 died. The excavations which have been described, as containing the filth back of the north wall, were made several years prior to 1832, by order of the board, as the records of the alms house show, for the purpose of saving manure, and were probably in the same neglected condition at that period, as they were found to be in 1849. The pig-pen occupied, at that time, its present position on the east wall.

Conclusions.

It has been shown, in the last epidemic, that those who were least exposed to the miasm enjoyed the greatest immunity from cholera; that a partial removal of the fruitful sources of malaria was marked by a great reduction in the number of cases; and that with the entire restoration of the establishment, to a proper sanitary condition, the disease entirely ceased. It is fair then to conclude that but for the existence of the local impurities, cholera would never have visited the alms-house. But it would seem that the removal of these causes of malaria, not only prevented the further spread of cholera amongst the inmates, but what is more important, that the general health of the establishment has also been greatly improved, as may be seen by the following letter from Dr. James Turner, who is at this time one of the visiting physicians to the alms-house.

BALTIMORE CITY, October 10th, 1851.

DR. T. H. BUCKLER,

DEAR SIR:

It affords me great pleasure to comply with your request in furnishing my observation and experience of the indigenous diseases occuring at the Baltimore Alms House Hospital. During the years 46, 47 and 48, whilst a resident student of the house, our wards were never clear of typhoid fever; and this occuring principally among the inmates of the institution. So pregnant was the house of this particular disease, that scarcely any who came to be residents, escaped—among the students this was particularly obvious—and if they were so fortunate as to escape typhoid fever, they were sure to have some milder form of disease,—dysentery, &c. During the same time, erysipelas was very common, occuring among the inmates; at one time, so poisoned was the atmosphere of our wards, that chronic ulcers of years standing became affected, and two deaths occured from phlebitis, occasioned by simply bleeding the patient. In spite of all the precautions used, a few cases of puerperal fever occurred. Dysentery was another form of disease from which we suffered a great deal. Many

cases proving peculiarly obstinate and fatal. Thus much for those years. Since March 1850, I have held the post of resident physician. My experience during the eight months has been this: of typhoid fever, no single case has occured having its origin in the house; of erysipelas, but few; of puerperal fever, but two; of dysentery, comparatively few compared with those admitted from the city. Among the students, officers of the house, and family of the overseer, (which is much larger than usual,) but two cases of dysentery have occurred; and no case of typhoid fever since 49. It has been a subject of remark this great falling off of the indigenous diseases, and how to account for it is the query. In the general management of the house, diet, clothing, labor, &c., no change has taken place. The number of inmates increases every year, and when we would naturally look for an increase of disease in the same ratio, we find less. In the absence of all other reasons to account for these facts, we are we think rationally led to the conclusion, that the causes which existed prior to 1849, having in a great measure been removed, the effect has ceased. In a word, I mean that the ravine at the back of the north wall, into which is emptied all the offal, filth, &c., of the institution is now properly attended to; and as far as possible kept well drained, and disinfectants freely used. One *striking fact* I would call your attention to; of the eight resident students in the house; the four, N B. Ward, Sylvanus Mills, Thomas Murdoch, and myself, who had typhoid fever, occupied the two rooms on the north side of the centre building with windows opening *north;* the other four occupied one room on the *south*, and escaped. The same condition of things must unavoidably exist to a certain extent outside of the wall, as it is the only way the drainings from the houses can be carried off. The two cases of dysentery mentioned as having occurred this year, were in the persons of Mr. Arnold, our apothecary, and a daughter of Mr. Westwood, the overseer, whose apartments were also on the north side of the houses. Another fact is well worthy remark; the improved appearance of the complexion and general condition of the pauper inmates, also the healthy ruddy hue that characterizes most of the students, officers, &c., about the establishment, evincing without doubt, some change which has greatly added to the general health of the institution.

Hoping that these facts may prove of satisfactory interest,

I remain dear Doctor, your sincere friend,

JAMES H. TURNER, M. D.

The obvious conclusion to be drawn from Dr. Turner's letter, is, that the miasmatic exhalations, must have had a large share in the production of the indigenous diseases which prevailed so extensively at this establishment, until the Autumn of 1849. The malaria acting probably as the strong predisposing cause of ill health, exerted its influence by depressing the nervous system and lowering vitality, so as to interfere with a healthy performance of all the different functions. Thus predisposed, the inmates were rendered not only more susceptible to the impression of morbid poisons, or to the action of any other exciting causes of disease; but at the same time, their chances of recovery were greatly diminished, owing to the weakened state of their vital powers of resistance. A proof of the correctness of this opinion is, that the inmates of the establish-

ment, when laboring under inflammatory disease, would rarely bear bleeding, antimony, or any other depressing agents.

Mode of Correcting the Malaria.

To remedy completely these sources of malaria for the future, the board are earnestly advised, to have an under-ground sewer constructed, along the course of the ravine, from its head, opposite the north-west angle of the wall, quite down to Rutter's run, and connected with this main trunk, smaller sewers should be made to receive the drainings from every opening on the north wall. They should be constructed with eliptical sides, and sufficiently wide and high within to admit the body of a man, in the attitude of stooping to work. An opening should be left at the head of each sewer, so that the water from the force-pump could be let on at any time, for the purpose of washing them out.

If the present arrangement of the excavations, outside of the wall, has for its object, the saving of manure, this can be much more effectually accomplished, by constructing, on the low ground along the line of the proposed sewer, a covered reservoir, in which all the waste matter from the establishment would be deposited. A large amount of the ammonia and other fertilizing ingredients, which are now lost by evaporations would thus be saved, and the waste land between the ravine and the north wall, might be utilized. It would be well also to remove the pig-pen, from its position on the east wall, to some spot distant not less than a quarter of a mile from the buildings devoted to the sick.

Health of the Neighborhood.

A case of cholera occurred on the Franklin road, where it enters the valley of Gwynn's falls, about half a mile above the Alms-House, on the 20th of July, in the person of a child, aged about four years, daughter of Mr. McMann, who had charge of one of the five mills. No communication had taken place with the inmates of the Alms-House, where, as has been shown, the cholera poison had reached its greatest degree of intensity. About twenty feet from the house, and directly opposite the apartment in which the child slept, with the window open at night, was a pig-pen in a very filthy condition. In a village, intermediate between this spot and the Alms-House, no sign of cholera appeared amongst a population numbering about sixty, and the surrounding country enjoyed the most perfect immunity from the disease.

Prevention of Cholera in the City.

The Council was convened for the express purpose of adopting measures calculated to prepare the city for the expected invasion of

cholera, and in furtherance of the object for which they came together, after making such provisions as seemed, at the time, most expedient, they appropriated five thousand dollars, to be disbursed by his Honor, the Mayor, under the direction of the Board of Health.

But little or nothing was done, in carrying out sanitary measures, until the 16th of June, when the notice relating to the existance of an epidemic typhus appeared in the evening Patriot. The day following this announcement, Col. Stansbury, Mayor of the city, and Dr. Monmonier, city physician, with great promptitude, visited the Alms-House, for the purpose of enquiring into the history and origin of this new disease. The Board of Health went earnestly to work, and in a very short time all the filthy streets, lanes and alleys, from which this typhus came, were thoroughly cleaned and sprinkled with lime. The appearance of epidemic cholera at the Alms-House, gave a fresh impulse to the work of purification, and induced a strict adherence to the sanitary measures previously adopted, so that all the avenues of the city were kept in the most perfect order.

There being no regularly organized sanitary police, whose duty it would have been to enquire into the condition of private alleys, courts, out-houses, &c., it was supposed that vast quantities of domestic filth, capable of generating disease, still existed on the rear of many blocks of buildings in the various city squares, and accordingly the writer of this report, sent the following communication to two of the daily papers :—

"BALTIMORE, *July* 26th, 1849.

"CHOLERA OR NO CHOLERA!—'*An ounce of prevention is worth a pound of cure.*'—Epidemic cholera would seem to depend not on a single, but two concurrent causes. The first is probably general, and widely diffused over a vast extent of country, but requiring in every instance, some local influence to ignite this epidemic poison and bring it into action.

"The general producing cause of cholera has puzzled the philosophers both of heathen and Christian lands. It stands now as it did in 1817, when it first made its irruption from India, a hidden mystery, except to Him alone who seeth and knoweth all things.

"Of the general source of cholera, then, we have nothing to say. The local causes which give activity to the poison, and determine its malignity, are sufficient for our present purposes. These we believe to be animal or vegetable matters, one or both, acted on by heat and moisture in such a way as to cause their decomposition, and the consequent evolution of noxious and deleterious gases.

A single collection of filth, may act as the tinder to light up the Cholera poison, and become the focus, for the spread of disease, through a whole neighborhood. In 1832 there were nine deaths from Cholera during a few days, in a cluster of houses included in about half the square bounded by Hamilton, Centre,

Charles and St. Paul streets. When the local cause of this group of cases was inquired into, it was ascertained that a number of pig-styes were kept by some free negroes, whose houses were only accessible by narrow alleys running into St. Paul street. The filthy condition of these places beggars description.

"Ruxton Lane, now Balderston street, where the cholera first appeared in 1832, was one of the filthiest parts of the town.

"Several cases of mild cholerine have already appeared in the square bounded by Franklin, Centre, Park and Howard streets, and if the residents of that square will look to it, a local cause will be discovered.

"Cases of Cholerine have also occurred in the square west of the infirmary, and it would be well for the occupants of houses in that quarter to examine the condition of a sewer which crosses that square, and also to inquire as to the cleanliness of the vacant lots south of Pratt street.

"Owing to the enterprize of our city authorities, the streets, as well as the public lanes and alleys, were never in a cleaner or more wholesome condition than at this time. But while municipal authority may do much, it cannot accomplish every thing. Private energy is required to complete the work and render the city free from all causes which provoke disease. As a means, then, of completing the task of purification so well begun, we would recommend, *that meetings be held in the various wards, and that the city be blocked off as is done every Autumn for political objects, that two persons at least be appointed for every square, whose duty it should be to examine the various premises connected with different houses, both public and private; to see into and report upon the condition of private alleys, cellars, cess-pools, stable-pits, vacant lots and commons, and have removed from any and all of these, such matters as are likely to engender disease. Wherever water is standing in pools, let them see that it is let out, and that the grade of gutters, where stagnant water collects in puddles, be so arranged that it may run off.*

"*Let them see especially that every pig-sty within the limits of the city is removed, and that the places occupied by them be cleansed and well covered with fresh earth, lime, or some other disinfectant.*

"When the front part of a house seems clean, let it not be presumed that the premises in the rear are in an equally good condition. Some persons may have their curbstones whitewashed, and lime sprinkled in front of their doors as a cholera barrier, while the rear of their establishment is in a shocking state of neglect—imitating, in this respect, the habits of some who, washing their faces every morning, imagine that, the rest of their person is perfectly clean.

"In New York, it has been observed that cholera prevails to the greatest extent in the neighborhood of slaughter-houses, factories and various other establishments where heaps of refuse animal or vegetable matter have been suffered to accumulate.

"In Mississippi and Louisiana, cholera has prevailed to the greatest extent on some plantations where the process of ginning cotton is done in the immediate neighborhood of their negro quarters, and where the seed has been suffered

to accumulate in masses and under circumstances favoring vegetable decomposition.

"Local causes were ascertained to exist at the Baltimore Alms-House, and the removal of those causes has been marked by an abatement of the disease.

"Against our argument that a double cause is required to produce cholera, it may be urged this disease has prevailed in Russia in the depth of winter, when the whole country was deeply covered with snow, conditions unfavorable to the production of malaria. In Russia, an isolated dwelling is a rarity, all the inhabitants of that country, with few exceptions, living in villages. The people are ignorant, and filthy in their habits, and their houses heated by large stoves; and it is well known that animal and vegetable matter will run into fermentation and putrefaction as easily by the heat of a ten-plate stove as under a tropical sun. The habit of placing dough in a chimney-corner for the purpose of making light bread, furnishes a familiar illustration of the commencing process of fermentation. Under almost every Russian roof, the causes calculated to generate an *oikeio-miasm* are ever present and ready, like so much tinder, to light up the general cholera poison.

"The search which is here proposed, would fall lightly on all, and might be readily accomplished in a single morning.

"Whenever persons are found too poor to pay for cleansing their premises, let the liming and white-washing be done at public cost.

"Let the work of purification, both public and private, be thorough, and if cholera should visit us at all, it will at least be so mild and manageable in its form, as to be disarmed of all its terror. MEDICUS."

Adopting the suggestion, contained in the foregoing communication, his Honor, the Mayor, issued the following call on the citizens to hold ward meetings for the objects specified:—

"MAYOR'S OFFICE,
Baltimore, August 2d, 1849.

NOTICE.—In accordance with the request of a number of my fellow citizens, and in view of the approach of the fearful scourge which is desolating the land, I hereby most respectfully call on the citizens of Baltimore to assemble in their respective wards, at their usual places of meeting, on Monday evening, the 6th of August, at 8 o'clock, and appoint sanitary committees, lay off the wards in blocks, or adopt such other measures as may tend effectually in concert with the Board of Health, to preserve the health of the city.

ELIJAH STANSBURY, *Mayor*."

The daily press ever ready to advocate measures of public utility, earnestly advised the appointment of block committees. Accordingly meetings were formally held in most of the wards, and informally in all the others; and generally, committees consisting of two

or three persons, were appointed to examine the premises connected with the various blocks of buildings. It would occupy too much space to enumerate many of the impurities which were developed and removed under this volunteer system of police; it may be remarked, however, that innumerable instances came to the knowledge of the committees showing a total disregard of the most obvious hygienic rules. Dr. John Hanson Thomas and J. H. Luckett, members of a committee in the eleventh ward, discovered, in the northern section of the city, that there were more pigs than people regularly fed and lodged, within the compass of a single square.

The Board of Health, held daily meetings during the months of June, July and August, and were extremely active in improving, as far as practicable, the sanitary condition of the city.

The following is an abstract from the official record of their proceedings:—

"*June* 2d, 1849.—It was resolved in consequence of the apprehensions of the citizens, relative to cholera, that we purchase a quantity of lime to be distributed under the direction of the public officers.

"*June* 4th, 5th *and* 6th.—It was resolved that three carts be employed to assist in cleaning up the city, and removing nuisances on private lanes, alleys, lots, &c., where no owner could be found, and that lime be purchased from Col. Stansbury, for the purpose of disinfecting the city. It was also resolved, that the Board meet daily, during the excitement of cholera.

"*June* 7th, 8th, 9th, 11th, 12th, 13th, 14th, 15th *and* 16th.—Present, during these days, at regular Board meetings, all the members, actively engaged in notifying the owners of property, concerning nuisances, and in purifying the city, and in removing Blacks to the old Small-Pox Hospital, fitted up for cases of typhus fever.

"*July* 1st, 2d, 3d, 4th, 5th, 6th, 7th, 9th, 10th, 11th, 12th, 13th *and* 14th.—Present, Dr. Monmonier, J. F. C. Hadel and Dr. Chaisty. The number of notices during June and July, against nuisances, and for filling up vacant lots and yards, and purifying cellars, yards and premises, was extraordinarily large, and great quantities of lime were distributed for the correction of nuisances.

"Signed, E. J. Chaisty,

"*Assistant Health Commissioner.*

"*July* 16th, 17th, 19th, 20th *and* 21st.—Present, all the members, and daily meetings held as usual, and active exertions made to cleanse and purify the city."

It is to be regretted that no record was kept of the number and character of the nuisances removed.

Notwithstanding all the precautionary measures adopted some impurities were, as a matter of course, overlooked, and three cases occurred about the same time, presenting such unequivocal symptoms of cholera, as to leave but little doubt as their true character.

The first two cases happened on the south side of Second street, one door east of Gay, and directly opposite the Commercial Exchange. The subjects were a German woman over forty, and her son, upwards of twenty years of age. They were well at 8 o'clock, P. M., on Saturday, the 28th July; the woman died at 11 o'clock that night, and the son at 8 o'clock the following morning, and both were buried before 12 o'clock on Sunday the 29th. It may be stated on the authority of a Mr. Sinners, who lived next door, that a few days before the death of these individuals, some ten cart-loads of filth, were removed from the cellar of the house, in which they had lodged, for several months; that directly in the rear lived a dog and bird fancier, whose dwelling and court were in a very objectionable condition; that the sink connected with the Exchange buildings, was overflowing; that the rooms over the Merchants' Bank, where a number of pidgeons had been kept for years, were very filthy, and that not half a square off, some forty pigs were fed on a back lot, which was deeply covered with animal and vegetable matter. All of these causes contributed to render the air of that neighborhood, extremely offensive, particularly at night.

The third case was that of a Charles Ronning, who kept a fancy store on Market street, and resided at No. 29 Holliday street, directly opposite the City Hall. He was attacked on Sunday, the 29th of July, at 4 o'clock in the afternoon, and died after an illness of some five hours duration, at about 9 o'clock in the evening. He was attended by Dr. Schmidt, Homœopathist. For several days previous to the attack, he had been engaged at home nursing a sick child, and had eaten nothing likely to produce cholara morbus, on the contrary he had taken nothing for many days, except boiled eggs, meat, bread and coffee. He occupied the back room in the second story, with windows opening on a court, or yard, in which was a sink that had overflowed and ran out into Dukehart's alley, which was also in a very filthy condition. The child died ten days after the father, of Summer complaint, (cholera infantum,) which had originated probably from the same local causes. Dukehart's alley, was one of the few places, the cleaning of which had been overlooked by the authorities.

A gentleman, named James Alexander, from Flemmingsburg, Ky., died of cholera at Barnum's City Hotel, on the 15th of September, 1849. He contracted the disease at Cincinnati, where it then prevailed, and was attended, during the attack, which lasted about twelve hours, by the writer, in consultation with Drs. Power and Baxley. The hotel was crowded at the time with strangers, none of whom were aware of the existence of such a case, or suffered any ill consequences from their proximity. Independent of the above cases, and the existence of the disease at the Alms-House, there is abundant evidence, that the cholera atmosphere pervaded this region, from the fact, that mild cholerine prevailed in almost every section of the

city, and a large number of persons suffered to a greater or less extent with an undefined sense of oppression or uneasiness in the abdomen.

Conclusion.

If the history of epidemic cholera, as it first appeared throughout this country in 1832, be compared with the invasion of 1849, it will be remarked, as one of the most striking facts connected with this disease, that it returned to every place which it had visited during the first epidemic, unless during the interval, the locality had undergone some marked change, or entire renovation. And not only so, but the last epidemic, was far more general in its distribution than the first, many places which escaped in 1832, having been visited by the disease in 1849. Moreover, since the last invasion, cholera has shown a much greater disposition to loiter about the malarious regions; this has been the case particularly at many places along the Ohio and Mississippi rivers. Even within the present month, two years and a half from the commencement of the last epidemic, there has been dreadful mortality from this disease on several plantations in the south-western States.

In view of these facts, together with all that has been shown, connected with the history of this disease at the Alms-House, it seems fair to conclude, that the immunity which Baltimore experienced in 1849, was owing entirely to the thorough purification, which the city underwent, in anticipation of the advent of cholera. Admitting this conclusion to be just, the inhabitants of Baltimore may enjoy the comfortable assurance, that they have nothing to fear from future epidemics of this much dreaded disease, provided they will see that judicious sanitary measures are properly carried out; but if they refuse to profit by their past experience, they must only expect to suffer, a well merited rebuke for their negligence. In many places, the local causes, are connected with physical conditions of country, which are in some instances, unalterable; this is the case, with many of the towns on the lakes, and in the valley of the Mississippi; as for example, the existence of Choteau's pond in the middle of the city of St. Louis: in Baltimore, on the contrary, no causes can exist unless from palpable and unpardonable neglect of the most obvious hygienic rules.

Contagion.

The whole history of cholera at the Alms-House and in the city, furnishes no single example of any case which could be traced to contagion; on the contrary, it would seem that the disease depended on some wide spread influence, which required in every instance

the operation of miasmatic or malarious exhalations to bring it into action. It was only at the cross-roads of the general and local cause, if it may be so expressed, that the disease was found, and nowhere else. If this opinion be correct, isolation, or sequestration is, of course, useless, and no possible benefit can result from quarantines or sanitary cordons, in preventing either the ingress or spread of this disease.

Influence of the Sanitary Measures on the General Health of the City.

The official report of the Board of Health shows, that there were 631 interments during the month of July, 1849, and that in the following November, of the same year, there were only 276, indicating with one exception, a greater comparative reduction in the number of deaths, than has taken place during the corresponding interval, in other years. It would appear therefore, that the sanitary measures, adopted to prevent cholera, exerted also, a happy influence on the general health of the city. This fact, together with the reduction of indigenous diseases at the Alms-House, from the same cause, are strong arguments in favor of sanitary reform.

The Board of Health, have reported thirty-two cases of cholera morbus (sporadic cholera,) as having happened during the year, 1849, and twenty-nine cases of this disease, for the year 1850.

The chart, exhibiting the medical topography of Baltimore and its vicinity, was drawn by Mr. Wm. Sides, one of the surveyors recognised by the city, and the map showing the ground plan of the Alms-House, by Dr. Wm. H. Medcalfe, formerly a student of this institution, and now actively engaged in the practice of his profession, in town.

Value of Life.

Calculations, made in England and Belgium, and other tables relating to " vital statistics," show, that the average life of man in the temperate regions, is between thirty-two and thirty-three years, and that owing to improvements in the modes of living, clothing, and other causes, the duration, and of course, the value of life, is on the increasing scale. The American Journal of the Medical Sciences, for July, 1848, contains an interesting article, by Dr. Emerson, on the mortality of Philadelphia; and Dr. Griscom has furnished statistics relating to the mortality of New York. for 1842. For this city, there are tables in the report of Dr. Wynne, to the American Medical Association, on the sanitary condition of Baltimore, and Dr. Joynes' statistics of the mortality of this city, from 1836 to 1849, (inclusive.) It would appear that the value of life in each of these cities, is considerably below the average standard, and by comparing the evidence which has been furnished, conclusions might be

drawn favorable to the salubrity of Baltimore. If, however, allowance be made for the deaths which take place amongst the large foreign population of the two more northern cities, the average duration of life, for the residents of the three places, will then be found in favor of New York and Philadelphia, and against Baltimore. The low average of life in this city, is owing mainly to the heavy mortality which takes place, chiefly amongst the poorer classes, under five years of age, after which period, the duration of life compares favorably with the more northern cities.

Baltimore, situated in a highly salubrious country, with every advantage over New York and Philadelphia, as to climate, locality and facility for drainage, and with a population less crowded and more comfortably lodged than the residents of any other place, containing so large a number of inhabitants, ought to be for all ages, classes and conditions of people, the healthiest city in the world. And why is it otherwise? Probably because of some radical fault in the Health Department. Dr. Joynes says, that owing to the mode in which the tables of mortality are kept, he found it impossible to exhibit the vital statistics of Baltimore in so satisfactory a manner as has been done for other cities. The Board of Health, together with the rest of the profession, will cheerfully bear testimony that the present system is defective. It is to be hoped therefore, that for the future, some other and better mode of registration will be adopted.

Truths Universally admitted, but not Practically Understood.

Every one should understand that it is far better to prevent, than to cure disease, and that the two grand elements upon which life and health depend, are pure air and pure water, neither of which, are second in importance, to wholesome food.

As to the Mode of Improving the Health of the City.

The atmosphere of the city is the common property of all, and there is no reason why causes calculated to render the air impure, should be suffered to exist in one locality, while from another they are removed. It is much to be regretted, and it too often happens, that when the main streets and thoroughfares of the city are perfectly clean, the lanes and alleys having on them the dwellings of the poorer classes, are in the worst state of neglect. This was the case during the prevalence of Typhus in June, 1849, when Biddle street was as clean as possible, and Biddle alley filthy beyond description. Strawberry alley, throughout its entire length, was in a sad state of neglect, while the wide streets intersecting it, seemed to be in the most perfect order.

The present plan, of cleaning the streets by contract, cannot be too strongly reprobated, since the bills of mortality, like voices from the dead, tell, for the benefit of the living, of the victims, to this ill advised arrangement, which went into operation on the First of March, 1848. For three years preceeding this date, the work had been done by the city, under the direction of the Board of Health, at a cost of some twelve thousand dollars per annum; but since '48, the same work has been let out to contractors, who of course, expected to make money by the operation, at less than five thousand dollars a year. It is easy to get at the relative advantage, to the community, of the two systems, by comparing the mortality during the month of July for three years preceeding, and for a like period succeeding the adoption of the present plan.

Mortality for July under the old plan.

July	1845	316
	1846	257
	1847	462
		1035

Number of deaths in July, since the adoption of the contract system.

July	1848	638
	1849	631
	1850	598
		1867

Now making every allowance for the increased population, from 1845 to 1850, it would appear, that, under the contract system, the city saved each year, for the month of July alone, some six hundred dollars, and lost from fifty to one hundred lives. If the expense of cleaning the city, is to go on in an inverse ratio to its size, some contractor will be found in a few years, willing to pay the corporation, for the privilege of being allowed to do the work for nothing.

The first duty of every community is, to take care of the poor and the ignorant, for the obvious reason, that they are the least able to take care of themselves, and especially to provide against the accident of sickness. A single attack of illness often consigns an individual to the doom of pauperism:—for let a man go once to the Alms-House, and feel that he accepts a gratuity, his pride is shocked, he loses his sense of independence and with it his self-respect, and he is apt to become, for the rest of his life, a mere recipient of public charities. Let the authorities see to the condition of the lanes and by-ways, and public opinion will take care of the main avenues.

But, at last, it is not so much in the streets and alleys that the causes of disease are to be found. The sources of

malaria in a city, are far more apt to be domestic in their origin, and are generally owing to collections of filth hid away in nooks and corners, in cellars, out-houses, courts and sinks, and especially in pig-styes, connected with private property, which latter, are to be regarded as the most fruitful sources of disease, and other, and innumerable causes, only to be determined by a rigid system of police, connected with the health department. Adopting the term of Dr. E. Miller, of New York,—*koino-miasmata*—for the malarious emanations which are common, in their origin; the word *oikeio-miasmata*, is proposed, by way of distinction, for the deleterious effluvia originating from domestic sources.

There ought to be a regularly organised sanitary police, whose duty it should be, to visit, at least once a month in summer, every establishment in the city, and see that it is in a proper hygienic condition. The admitted necessity, on the part of the proper authorities, for a volunteer force, anticipating the expected invasion of cholera in 1849, shows that they entertained a like conviction, as to the propriety of such a system. Would it not be well for the council to pass a law, to prohibit the keeping of swine within the city limits?

There is no excuse for having any filth or impurity in the city at any time. A man might be permitted to enjoy the luxury of living, as long as he could, surrounded by filth, and with his premises as unclean as possible, provided it affected no one but himself; but when it is explained, that his carelessness in these respects, often endangers his neighbors more than himself, he should be dealt with as rigorously, so far as the law is concerned, as though he were a thief or an assassin. No one who regards life and health, as things more precious than property, can entertain a different opinion on this point.

Some of the most important questions brought before the British Houses of Lords and Commons, are connected with sanitary reform, but with us, these questions seldom arise, and little or no attention is paid to the department of public hygiene.

Remittent Fever.

A grave form of intermittent and remittent fevers has prevailed during the present Autumn, on both sides of Jones' falls, north of Centre street bridge. Numerous cases have happened at the Maryland Penitentiary, under the care of Dr. Charles Frick, and many of the physicians of the city, have seen and treated these affections, in the streets adjacent to the falls, above the point specified. This is a new feature in the medical history of this locality, and is evidently produced by the vast quantities of filth which has been accummulating for years, and still remains undisturbed in the bed of the falls, from the end of the rock formation, as low down nearly as Gay street

bridge. This prolific source of malaria, accounts doubtless for the fatal dysentery which has prevailed in that region, for several Summers, and it is only during the past season that the poison has ripened to a degree adequate to the production of remittent fever. The influence of this poison has been felt as far as Forrest street on the east, and St. Paul street on the west. Unless this nuisance is abated, the poison will in all probability, become more intense, as well as more and more diffused during each successive season. The bed of the falls, where these accumulations have taken place, is left nearly dry in the summer months, the water having been diverted, at Belvidere bridge, first to supply the reservoirs, and next to feed the race leading to the city mills. To remedy this growing evil, it would be well to deepen the falls, so that the tide may ebb and flow as high up as Madison street bridge, or to adopt such other means of abating the nuisance, as may be deemed most expedient.

With regard to intermittent and remittent fevers, it may be stated as almost a universal truth, that beyond the alluvial formations, these diseases rarely originate from sources connected with the natural physical condition of a country; but almost invariably from causes which are induced, either by artificial interference with the natural condition of the high regions, or by domestic arrangements, often made and continued in violation of the most simple hygienic rules.

In numberless localities, on the alluvial formations, these diseases often depend solely, for their origin, on the physical condition of the country in which they occur; but in these regions also, artificial and domestic causes exert much more power than is generally supposed, and even a greater influence than in the hilly countries, for the obvious reason, that the drainage of the low lands, is generally less perfect, and consequently wherever filth exists, it is oftener found in triple union with moisture and heat.

Amongst the artificial interferences, likely to induce sources of malaria, may be enumerated, obstructing or changing the course of streams, draining of marshes, making excavations connected with mining and other operations, forming new land by encroaching on a water line, and filling up ponds, the construction of canals, &c. &c.

The domestic sources of miasm in rural districts and country villages, result most frequently from the custom of having the farm-yard, out-houses and garden, too near to the dwelling, either of the employer or the employees, in the various operations of husbandry. The accidental or intentional maceration of vegetable matters, as the rotting of weeds, or the preparation of hemp, or a compost, often takes place where the residences, of either the farmer or his workmen, are brought within the sphere of the malarious poison.

Every farmer, and more particularly one who resides in the fever districts, should have the barn-yard and out-houses removed at least

three hundred feet from his residence, surrounding which latter, some four or six acres of land should be kept mowed or grazed, in order to keep down redundant vegetation, and over this space, it might be well to sprinkle, twice or thrice, during the end of Summer and the beginning of Autumn, a peck or two of sulphate of lime, (*plaster Paris.*)

In September last, the writer of this report, visited three cases of remittent bilious fever, at the residence of Mr. Patrick Lynch, situated, as figured in the map, on one of the necks of land, extending down to an arm or inlet, on the east side of the Patapsco river. Between the dwelling which these individuals occupied, and the out-houses, distant not more than twenty yards, was a pump and horse-trough, surrounded by an extensive puddle of greenish looking water, which ran over, and mingled with a large heap of half decayed weeds. The garden, directly adjacent to the house, was thickly over-grown with a rank neglected vegetation. The proprietor assigned as the cause of these attacks, the creek or inlet, distant about three hundred yards. Is it not probable that the domestic causes just described, had a large share in the production of the disease?

Five cases of remittent fever, were observed during the present Autumn, at a house adjoining the residence of Mr. Wm. Bouldin, Surveyor, who lives in a salubrious country, on the old Harford or Plank road, about one mile in a north-east direction, from a populous district of the city. In the immediate vicinity of the house, in which these cases occurred, were two or three pig-pens.

Suggestions, as to the Mode of Furnishing the City, with an Adequate Supply of Pure Water.

It is very probable that much of the sickness which occurs in the city, during the Summer and Autumn months, may depend on the quality of the water, which is consumed by much the larger portion of the community. The use of impure water, tends to depress the nervous system, and acts as one of the strongest predisposing causes of disease.

The ordinary current of Jones' falls, is much smaller now, than it was when the Water Company was first established, and when Baltimore was a mere village. The obvious reason is, that the country on both sides of this stream, has, in process of time, become open and cultivated, and the water which was once deposited in the form of dew, on the abundant foliage which skirted its banks, is now lost, owing to the retained heat, in the cultivated hill-sides and exposed surfaces, by which, at this time, it is every where surrounded.

Almost every one must have observed, during the extremely arid, concluding Summer and commencing Autumn months, of the past season, as well as at similar periods in other years, that the hydrant

water became very offensive, when suffered to stand, for six or twelve hours, and that a precipitate or sediment, invariably formed at the bottom of the vessel, which contained it. This was owing to the great quantity of organic matter, both animal and vegetable, suspended in the hydrant water, at those periods, and the presence of these ingredients went to show, that much of the water pumped up into the reservoirs, must have been mere surface washings which occur after rains, and not the water which had undergone the most perfect filtration, by having soaked through the earth, and then issued in the numerous springs, which combined, form the ordinary limpid current of Jones' falls. It will be at once perceived, that under the present arrangement, a resort to the flood water is indispensable, since the uniform and ordinary current would furnish, especially in dry weather, a quantity quite inadequate for the various purposes to which it is devoted. Every one knows, that the flood water of the falls, differs as much from that of the ordinary current, as rain gathered in a puddle, or from the roof of a house differs from spring water. Now while the falls water contains ordinarily, as before stated, a sufficient quantity of the sulphates, derived from the earth through which it has passed, to obviate the formation of any soluble salt of lead, it by no means follows, that the water, after copious rains, can be conveyed with equal safety, especially through new pipe, since the quantity of mineral ingredients, contained in the mere surface drainage, must be comparatively very small. The importance of this view of the case, will be better understood, when it is remembered, that rain water, cannot be carried with safety through lead-pipe, unless the surface of the metal, has been previously protected, by bringing in contact with it, a weak solution of some sulphate, especially alum.

Whenever new lead pipe is introduced, a solution of alum ought in every instance, to be passed through the tubes before they are used for domestic purposes, the necessity for the protection, growing out of the variable conditions of the falls water.

On both banks of the falls, within four miles of the city, are several factories, and from two to three thousand inhabitants, to say nothing of pigs and horses, a large quantity of the waste matters, from all of which, are washed by heavy rains, into the bed of this stream.

To obviate for the future, these precarious variations, in both the quantity and quality of the water, the company are earnestly advised to have surveys made, with the view of ascertaining the practicability of throwing into the bed of Jones' falls, in any desirable amount, during dry seasons, the water of either Gwynn's or the Great Gunpowder falls. Should the company procure the right to appropriate a part of the water of Gwynn's falls, it could be obtained at a very trifling cost, by making a race or canal along the declivitous grade of the railroad from Owing's mills to Green Spring,

where it would follow the natural channels to the city, and add very considerably, during dry seasons, to the volume of water in the bed of Jones' falls.

If this plan is impracticable, water may be procured in any abundance from the Great Gunpowder, where it is crossed by the railroad, or from a point about five miles lower down on the river, near the residence of Micajah Merryman, from whence it might be brought by means of an aqueduct, and thrown into Roland's run, where it would find its way, by this natural channel, to the bed of the falls. The acclivity of the ridge, on the line of the railroad above Timonium, could not be overcome by backing the water in the bed of the river, (as proposed in the survey made by Mr. Randall, and to be seen at the Register's office,) without deluging the railroad, and also many thousand acres of the adjacent valley. But might not this acclivity be surmounted by a series of mammoth water rams, or force pumps, which, operated on by an artificial fall of six or, at most, nine feet in the current of the river, would throw the water to the required elevation, on some of the surrounding hills, from whence a canal might be made, after the fashion of an ordinary mill-race, to convey the water about seven miles, and throw it into the bed of Roland's run, at or near Rider's switch, on the railroad? Five miles lower down, at the point before referred to, there is no obstacle to backing the water in the river, to any required elevation from whence a canal might be made, along the south side of the hills which skirt the valley back of Hampton, in which direction, the distance from the Gunpowder to Roland's run, is less than three miles, and the elevation of the ridge, which separates the water flowing into one stream from that which finds its way into the other, is, it may be presumed, in the absence of positive data, less than ninety feet.

The Water Company cannot be too strongly recommended to have constructed, in some of the deep gorges along the falls, beyond the populous districts, one or more large ponds or lakes, capable of holding water sufficient to supply the city for a period of three or four months, and to have the effluent reservoirs supplied from this source.

But all the plans proposed, are at best tentative and incomplete, and are only suggested because they can be carried out at a very trifling cost, compared with that of introducing the Gunpowder water the whole distance by an artificial canal, to accomplish which, would be opposed to the interest, and far beyond the means, of the Water company.

As to the plan of introducing the water of the Patapsco, along the line of the Baltimore and Ohio Railroad, for a long time agitated, and recently recommended by a writer for one of the daily papers, it may be remarked, that if this were done, and the water brought to

town, it would have at the inner depot, an elevation of only about forty feet above tide; which would, at least, involve the necessity for a very complicated hydraulic arrangement, to supply the more elevated districts of the city. Admitting that all this were accomplished, it might answer very well for a few years, but as the population increased, the supply would prove insufficient, and it would be necessary, at last, to bring in the water of the Gunpowder. The plan of pumping water up from the Schuylkill, answers very well in Philadelphia, where the city is nearly level, but here on the contrary, there are elevations of one hundred and sixty feet to overcome.

In view of the certainty, that Baltimore will contain, in twenty years, nearly, or quite half a million of inhabitants, it is proper, that her citizens, should be fully alive to the fact of her almost unparalelled progress, in order, that they may project all the public improvements, on a scale, commensurate with the great destiny which awaits her.

Would it not be well for the authorities, to decide at once, to borrow on the credit of the city, an amount sufficient to buy out the Water company, at a liberal rate, and to introduce the Great Gunpowder, a pure, fresh, and inexhaustible mountain stream. The cost would fall lightly on all, and would be much more cheerfully met, than the high rates which are now paid, for an impure article. According to the survey of Randall and De La Roche, made several years since, by order of the council, the water of this river, might be furnished to all parts of the city, from a head, two hundred and twenty feet above tide, and in quantity, sufficient, if required, for three millions of inhabitants.

Reference to Sidney's map of Baltimore county, will illustrate what has been said, and serve to show at the same time, that the proper point to tap the Gunpowder, by a canal, is not at Jessop's Mill, seventeen miles from the city, as proposed in the survey, but at Micajah Merryman's farm, distant, only about twelve miles. At several places on this gentleman's estate, and especially near his mill seat, the valley of the Gunpowder is extremely narrow, with high hills on each side, so that a dam of sufficient height, could be readily constructed. Backing the water at this point, would not interfere with the railway, and the length of the required canal, would be five or six miles shorter, than by the plan proposed in the survey. The four miles of lime-stone ridge, which was considered the great obstacle to making the canal along the line of the rail-way, would be avoided. And the indemnity required, by individuals owning the water-power, along the line of the river, would be greatly diminished, since the Warren Factory, and other valuable mill seats, on the five miles of this stream, between the points proposed, would not be interfered with. So that taking every thing into account, if the estimated cost of the seventeen miles of canal, over a difficult route,

was according to the survey, one million and a half of dollars, the expense of making a similar canal, only twelve miles in extent, over a line where the facilities are much greater, ought to fall very far short of that sum.

If the present Council will see, that this project is carried out, they will do more for the cause of temperance, for the personal comfort, health, longevity and morals of their fellow citizens, than can be accomplished by all other modes in half a century. With a well regulated Health Department, and an abundant supply of pure water, Baltimore would be, without doubt, the healthiest city in the Union.

The whole cost of the work, would, in all probability be paid, twice over, in the next ten years, by the property, which an abundant supply of water, would save from loss, by fire. And the waste water thrown into the head of the basin, from a sufficient elevation and in a proper direction, would in all probability establish a current sufficient, during the ebb-tides, to exert a material influence in deepening the harbor, just as the main channel of the river is kept open by the running current of the Patapsco. But these financial considerations are of very trifling importance, compared with the advantages before enumerated.

The water of the Gunpowder river secured to the city, the next step would be, to change the direction of Jones' falls and throw its current into the channel of Herring run. If this were done the inundations a portion of the city has experienced on several occasions, would be effectually prevented for the future ; the deposits of mud which occur, after every freshet, at the mouth of the harbour, would be obviated ; the large and constantly increasing sums for the construction and repair of bridges might be saved by filling up the bed of the falls ; and the health and value of property in the northern sections of the city, would be greatly improved.

ERRATA.

Page 12, line 9 from bottom, for "payers patches" read "Peyer's glands."

Page 23, line 5 from bottom, for "glycerine" read "glycerin."