

CHOLERA IN LANCASTER AND COLUMBIA IN 1854

INTRODUCTION

In this age of medical science "miracles," nearly every school child knows contagious diseases are caused by microscopic organisms such as "germs" or bacteria. Indeed, some diseases are caused by substances too minute to be seen by the microscope; among these are the viruses which cause rabies, smallpox, yellow fever, hog cholera and dog distemper. A century ago plagues and epidemics wiped out large portions of the population in many towns and cities. Dreadful as were these disasters, the inability of competent scientists to reveal the source and nature of the silent destroyer proved more frightful. Troubled and beset by the brigands of fear and ignorance, masses of people awaited helplessly the ravages of demons and evil spirits which were supposed to fill the atmosphere. Prior to the dawn of the seventeenth century, the idea that many kinds of living creatures sprang from putrid matter, mud, dew, and rotting wood along the water was generally accepted. Men of science abandoned this theory when experiments proved that insects were hatched from eggs laid near putrid water.

But these scientific investigations still did not explain the origin and character of organisms too small to be seen by the naked eye. When Leeuwenhoek's microscope began revealing micro-organisms, the old argument commenced anew, with most people returning to the notion of spontaneous generation. If flies and mice and toads did not rise out of mud and rotting organic matter, then surely the tiny forms wiggling under the lens **did** have their origin in non-living matter!

The germ theory of contagion was hardly new; Lucretius, about 60 B.C., suggested diseases are contagious, and Ovid, writing several decades later, observed,

"Bodies rot on the ground, blasting with their stench, and spreading contagion far and near. No one can control the pest, which fiercely breaks out upon the very physicians, and their arts do but injure those who use them. The nearer one is to the sick and the more faithfully he serves them, the more quickly is he himself stricken unto death."

Fracastro in 1546 suggested in his *De contagione et contagiosis merbis et curatione* that each disease has a specific cause, the infection being "**invisible seeds of contagion.**" A century later Athanasius Kircher came to the conclusion that infectious diseases were caused by micro-organisms, a theory further expanded in 1762 by Plenciz who stated that if a specific germ does cause a specific disease, each disease has its own period of incubation.

Nevertheless, the germ theory was still a scientific curiosity until the nineteenth century Jacob Henle, in 1840, published his essay on "**miasma and contagion**" which stated clearly that infectious diseases were caused by specific microorganisms. But Henle couldn't isolate his specific germs, and his statement rested unread and unsold on dusty shelves. Henle's influence was not in vain, for his brilliant student, Robert Koch, in 1883, was able to report that he had discovered the cause of cholera — a common vibrio which he called **spirillum cholerae Asiaticae**.

While the world's medical scientists were speculating on the cause of infectious disease, many medical men were only a step ahead of the unlearned masses in their presumptions that miasmatic atmosphere (air carrying infectious particles from putrid and dank sources) was the villain.

In the stream of advancement of science appear many pioneers who have contributed greatly to the scientist into whose hands fell the responsibility for consummating the efforts of his predecessors. Dr. John Light Atlee was such a pioneer. His natural curiosity and scientific attitude drove him to seek further into the cause of the fearsome cholera which struck the Lancaster County institutions and the borough of Columbia in 1854. He was not content to make official reports; he had to examine cholera patients' rice-water discharges under his microscope, and he went still further; he drew a sketch of the minute bodies he thought to be the causitive elements, having deduced that they were different from known cells and elements. The sketch was submitted to Dr. T. Heber Jackson of the University of Pennsylvania School of Medicine. We may assume from reading Dr. Jackson's report on the cholera epidemic at Columbia that the professor's mind was the scene of a debate raging between the theories of miasma and contagion. Doubtless a scientist of brilliance and integrity, Dr. Jackson apparently could not perceive the possibility of contagious disease being transferred from one infected person to another. Though persons who drank water possibly contaminated in the river-front reservoirs fell victims to cholera, why did those persons who used supposedly pure well water also become diseased?

In his monumental and highly-advanced study of cholera, Ely McClellan, M.D., Assistant Surgeon General, United States Army, in 1874 anticipated many of the findings to be substantiated later by Drs. Pasteur, Koch and a small army of modern scientists. McClellan established three categories of medical opinion:

1. A vast majority of medical men who are unanimous in pronouncing the disease to be Asiatic cholera of foreign origin, and using the synonym individually most acceptable, such as cholera, cholera epidemica, cholera spasmodica, cholera asphyxia, serous cholera, and malignant cholera.

2. A respectable number of intelligent men who recognize the cholera in a fatal form, but who believe it to be American cholera, endemic rather than epidemic, having its origin in local and malarial influences.

3. A third group who reject the cholera hypothesis, and pronounce the disease to be pernicious bilious fever of an algid type or congestive malarial fever.

The army surgeon also urged quarantine and sanitation as the main preventatives of cholera. In 1832 the cholera epidemic in North America originated with

the arrival of thousands of Irish emigrants aboard ships infested with cholera, and in several months over 1800 cholera deaths were reported in Montreal. In succeeding epidemics, lack of proper quarantine procedure was fully responsible for transmission of the disease from Europe and Asia to North America. Recognition of these facts precluded a potentially dangerous epidemic in New York when the medical and port officials prepared to receive the cholera-laden ship *Moravia* on August 31, 1892, in addition to five other ships from Hamburg and one from Liverpool and one from Glasgow, all with cholera aboard. The measures employed reduced deaths in quarantine to forty-four, and prevented any secondary infections in the city. For the first time cholera had been controlled, and no longer was the dread killer a menace to the United States. Dr. McClellan was a staunch advocate of strict sanitation, both personal and municipal. He felt that no epidemic could endure where conditions of cleanliness and purification of water supplies prevailed. McClellan insisted that a good preventative measure for any disease was the systematic removal and destruction of all organic debris in and around residences, stables and public buildings. He urged generous use of disinfectants such as carbolic acid, sulphate of iron, lime and chloride of lime. Soiled clothing should be sterilized with superheated steam. Water supplies, if contaminated, were the chief villains in spreading disease, observed Dr. McClellan, and therefore should be treated with extraordinary caution. Although ten years before the cholera discovery by Koch, McClellan asserted "to produce cholera from water, it is essential that the water must have received a portion of the organic matter from the dejecta of an individual who is infected with the disease." To persons who came in contact with cholera victims the army surgeon suggested a good diet, strict personal habits, sufficient rest, and if necessary, sulphuric acid lemonade. To the theory that flies may be carriers of cholera-poison, Dr. McClellan subscribed fully.

The claim for discovery of the precise vibrio which causes cholera must go to Robert Koch of Germany, but Americans can be proud that our physicians and scientists were the first to control epidemics despite that much of their energies were spent in fighting tradition.

We know now that the cholera epidemic in Columbia was caused by one or both of two agencies: physical contamination from the person or clothing of the emigrants left at the town, and by water supplies containing the germs. It is probable that spread of cholera at the Lancaster County hospital was due to poor sanitary habits on the part of those persons attending the victims; it isn't likely the attendants washed their hands and arms thoroughly with hot water and strong soap between each contact with their charges, and with the clothing and vessels of the inmates.

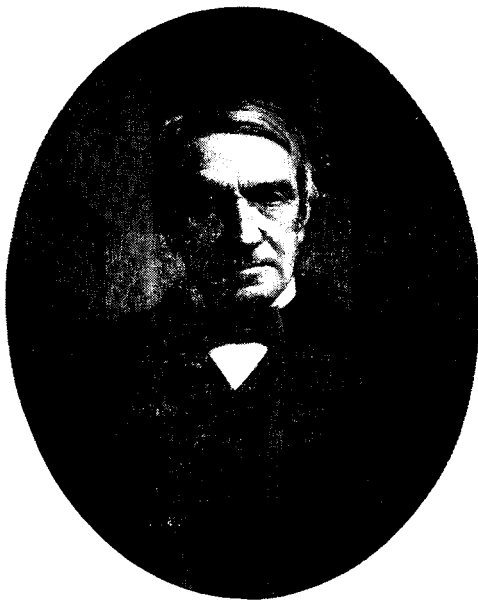
The cholera epidemic of 1854 is a part of the social and medical history of Lancaster County. It was a terrible human drama repeated thousands of times in towns and cities throughout the world. It was a human drama involving the most noble characteristics as well as the most selfish actions of mankind. Here was fear and panic and superstition. It is not a pleasant story and in many instances the account will bear heavily upon the sensitivities of gentle persons. It was the dawn of modern bacteriology, presaging Man's liberation from the silent destroyer. While dedicated men of science probed and sought the truth, others cursed the princes of night

The essays and reports following are in this form:

- I. Report of John Light Atlee, M.D., 1855
- II. Editor's Notes on the Atlee Report
- III. Supplement: Modern Knowledge of Cholera by John L. Atlee, M.D. and William A. Atlee, M.D.
- IV. Report of T. Heber Jackson, M.D., 1855
- V. Editor's Notes on the Jackson Report
- VI. Local Lay Opinions on the Cholera

We are grateful to John L. Atlee, M.D. and William A. Atlee, M.D., great-grandsons of the author of the Atlee Report, for examining the Report, and furnishing the supplement on cholera as it is known today. Others who have been of considerable assistance are Samuel X. Radbill, M.D., of the American Association for the History of Medicine, Philadelphia; Oscar Davis, M.D., Lancaster County Director of the Pennsylvania Department of Health; Frances R. Houston, librarian of the School of Medicine, University of Pennsylvania; and Alene Lowe White, librarian of the Western Reserve Historical Society, Cleveland, Ohio.

JOHN WARD WILLSON LOOSE, *Editor*



JOHN LIGHT ATLEE, M.D., LL.D.

Born November 2, 1799. University of Pennsylvania, M.D., 1820. President, Lancaster City and County Medical Society, 1852, 1866, 1876. President, Pennsylvania Medical Society, 1857. President, American Medical Society, 1882. Died October 1, 1883.

REPORT OF JOHN LIGHT ATLEE, M. D.

MAY 26, 1855

DR. A. SHELLER,

Chairman of the Committee on Epidemics of the Lancaster City
and County Medical Society.

DEAR SIR: During the year 1854, the city of Lancaster, with but little exception, was remarkably exempt from Epidemic diseases. In the months of February and March, catarrhal fever, to some extent, prevailed, complicated, in a few cases, with pleuritis and pneumonitis; but which yielded readily to the usual medication. As the spring advanced, there were also cases of vernal intermittent fever of the quotidian, tertian, and quartan type, both simple, and in not a few cases, complicated with neuralgias of a like character.¹ These cases existed chiefly, if not exclusively at the eastern and southern extremities of the city, around which portions the river Conestoga winds its course, at various distances of from three-fourths to one-fourth of a mile, having two mill-dams upon it; which, however, but slightly overflow its natural banks.

There were also many cases of intermittent or periodical neuralgia, without regular paroxysms of fever, which were attributed to a miasmatic cause.² Both forms of disease yielded readily to the ordinary treatment by quinine, cinchonine, or Fowler's solution, after proper alvine evacuation.

During the early part of the summer, and extending into the hot season, there were less than the usual number of cases of cholera infantum,³ and where the disease did exist it was more amenable to treatment.

Of diarrhoea and dysentery there were also fewer cases than had existed for several previous years. Of the latter disease, the cases were generally simple, and yielded to the treatment; which, in my hands, was chiefly confined to opium and its preparations, after a thorough evacuation of the stomach and bowels by mild emetics and laxatives, assisted by cold diluent drinks, the free use of ice, and an absolute diet.

In many cases a miasmatic influence was manifested, by a regular recurrence of paroxysmal fever, generally of the tertian type; and which required the use of quinia or cinchonia, to be combined with the anti-dysenteric treatment to secure the patient. I did not remark that, at any time, the use of these medicines aggravated the local inflammation; but on the contrary, by removing one of the debilitating causes of disease, promoted a more rapid recovery from dysentery.

In the beginning of August, cholera asphyxia⁴ made its appearance at the Lancaster County Hospital, and subsequently at the Almshouse. As an account of its invasion may throw some light upon the etiology (**aetiology**, the study of cause of disease) of this myterious scourge, I beg leave to give a brief history of it. I

had charge of these institutions in the months of May, June and July and during the whole of that period, such had been the health of their inmates, that hardly a case of acute disease existed among them. In 1832, in October and November, the cholera prevailed there with its usual fatality and; when the disease first made its appearance, last summer, in Philadelphia, the stewards of both institutions were promptly and earnestly advised to adopt every precaution, which experience has suggested, to prevent the occurrence, or to mitigate the violence and guard against the spread of the disease. Both houses were thoroughly cleansed and whitewashed from the attic to the cellars; the out-houses were purified by lime; the sewers cleansed, and all decomposing animal and vegetable matters carefully removed. On the 1st August, when I handed over the care of these institutions to my son and successor, both of them were perfectly healthy and free from endemic or epidemic disease. There was neither diarrhoea nor dysentery, nor, indeed, any premonition of what was about to occur.

On the 2d of August, Patrick Tute, an Irish emigrant, arrived in the cars from Philadelphia at the railroad depot in this city, in a state of collapse from malignant cholera⁵; and without any notice to the medical officers of the hospital, was immediately taken out there and placed in one of the wards. He died in less than an hour after his admission. On the 4th August, John Carr, an Irishman, who had been brought from Columbia on the 1st, with symptoms of diarrhoea, died with all the symptoms of cholera asphyxia. On the morning of August 8th, Mary Bush, long an insane inmate of the hospital, was found in a state of collapse in her cell when the attendants opened it, and died in a few hours; and from this time the disease prevailed with greater or less severity until the 30th September; in which time fourteen deaths occurred among the old inmates of the hospital, in addition to six brought from Columbia. Of these deaths ten occurred among the insane, who were unable to notify the attendants of the existence of premonitory symptoms; and, who, therefore, in a great majority of the cases, were either approaching a state of collapse, or had already fallen into it, before their situation was known. On the part of the stewards and attendants, the utmost vigilance was adopted to detect the earliest appearance of premonitory symptoms. Medicines were prepared for administration by them in the absence of the physicians, and exhibited the moment there was any known manifestation of the disease; but such was the state of mental apathy and imbecility among this class of inmates, many of whom had been there for years, and had their constitutions enfeebled by confinement and chronic disease, that recovery was almost hopeless from the first moment that their cases were discovered. In a majority of them, the opening of their rooms in the morning revealed the dreadful invasion of the disease during the night.

For the first two weeks of the existence of the disease in the hospital, no case occurred in the Almshouse — the one building being separated from the other about forty feet, with an intervening fence.⁶ On the 19th August, C. Longenecker, an old inmate of the Almshouse, but able to attend to the light work on the farm, was attacked with cholera, and died on the 20th. From this time until September 4th, there were twelve deaths among the old inmates; all of whom had constitutions enfeebled and broken by chronic disease and intemperance.

Of the whole number of cases which occurred in both institutions, I find it impossible to obtain an accurate account. Owing to the vigilance of the stewards and nurses many of these were arrested at the onset, by the timely administration of the ordinary means, of which camphor, capsicum, opium and catechu, were the principal. The diet was rigidly restricted to good, wholesome bread, rice, tea and coffee, and animal broths. On the only two occasions when potatoes were served at dinner, they were followed by a more general prevalence of the premonitory symptoms.

In addition to the cases originating in the two houses there were eight cases brought from Columbia during the prevalence of the cholera there, all of them in a state of collapse when brought here; of whom, as has been already mentioned, six died and two recovered.

These institutions are situated just outside the city limits, about one mile southeast from its centre, on a high, limestone bluff, about one-sixth of a mile north of the Conestoga River. It was remarked that during the prevalence of warm southerly winds, blowing directly from the river, there were more cases of the disease; and it was at the southern end of the hospital, overlooking the river, that the insane patients slept, among whom was the greatest mortality. It ought also to be stated that, owing to the faulty construction of these wards, a perfect ventilation cannot be secured.⁷

As my object is not to give a particular description of the disease, but to refer more especially to its etiology, the great importance of which in all zymotic⁸ diseases must be manifest. I will now introduce a few cases which in my opinion bear very decidedly upon this point.

In the early part of August last, Mrs. Gainhuer, Sen., (sic) of this city, having been informed by telegraph of the illness of her daughter, who kept a boarding-house in Cleveland, Ohio, went there in company with her sister, Miss Traxler. On her arrival, her daughter was in a state of collapse from cholera, and survived only an hour. Mrs. G. was informed that a physician, Dr. Lutz, who boarded with her daughter, and who had been attending cases of cholera in that city, had died of the disease in the house, a few days before; and that she had been unremitting in assisting his wife in nursing him and his child, who died three days afterwards, also of cholera.⁹ On Friday, the day after the elder daughter's death, another daughter residing with her, took the disease and died on Saturday evening. A hired girl took cholera the next morning, and died on the same evening.

As soon as Mrs. G. could dispose of the furniture and all the effects, except the clothing and some of the bedclothing of her daughter, which she brought with her to Lancaster, she returned home with her sister, Miss Traxler, and an infant granddaughter, five months old. She reached here on Thursday, August 10th; and her sister on the same day took the child to her brother's house at Paradise, a village ten miles east of Lancaster. Mr. Traxler's wife and child were ill of bilious remittent fever,¹⁰ which was then somewhat prevalent in that portion of the Pequea Valley. Owing to this circumstance, the more immediate care of the child devolved upon Mr. Traxler and the aunt. It became sick on Friday the 11th; and was brought back to Lancaster on the 12th, and died at Mrs. Gainhuer's on the 16th.

The exact nature of its disease I have not been able to ascertain, more than that it had vomiting and bowel complaint.

On Tuesday, August 15, the third day after the removal of the child from Mr. Traxler's, he was attacked with symptoms of malignant cholera, sank into a state of collapse before midnight, and died on Wednesday night. He was seen by Dr. Lefevre, Hoover and Sample, Jr. (Joseph H. Lefever, George J. Hoover and Samuel R. Sample), who had no doubt of the character of the disease. No others of his family took the disease, nor were there at that time any known cases of cholera in the neighborhood.

On the following Saturday, August 19th, Mr. Gainhuer, aged 86, who although very aged and somewhat feeble, had, until that time, enjoyed tolerable health, and employed himself in his garden, was attacked with symptoms of malignant cholera about four o'clock P.M., and died at ten o'clock the next morning. On the following day, August 20th, his daughter, Angeline, aged 28, while attending the funeral of her father in the evening, was attacked with cholera, and died at ten o'clock the following night. These cases were seen by two of our most respectable and intelligent physicians, Drs. P. Cassidy and H. E. Muhlenberg, both familiar with the disease and pronounced it malignant cholera. On Sunday, August 27th, Miss E. Traxler, the sister of Mrs. G., who had been at Cleveland, had taken the infant to her brother's, had returned with it to Lancaster; had again returned to Paradise after her brother's death, and washed the clothing both there and in Lancaster, was attacked with unequivocal symptoms of the disease, and died at ten o'clock the next morning.

It has already been stated that the clothing and some other effects of the daughter, deceased at Cleveland, had been brought to the house of Mr. Gainhuer, in this city, and it was said at the time, that a dress belonging to the deceased sister was worn by Angeline at her father's funeral.

The house occupied by Mrs. Gainhuer is in a high and healthy quarter of this city, but thinly built up, and having in its immediate vicinity no stagnant water nor sources of miasma. No cases of cholera existed in or near the city at that time, except at the hospital; nor were there, at any time, any cases in that part — the northwestern portion of it. From the dread of the disease which Mr. Gainhuer's case inspired, the house was very much insulated, and few except the immediate friends of the family visited it.

In addition to the above cases, permit me to state some facts relating to the outbreak of the cholera at Columbia. An interesting report of the disease was published in the April number of the **American Medical Journal** for 1855,¹¹ by T. Heber Jackson, M.D. From this report, and from other reliable sources of information, it appears that some weeks before September 8th, when it appeared as an epidemic, "the inmates of a house in Front Street, not far from the place of its reappearance, were attacked by the disease in its most fatal form, and several fell victims to its violence . . ."

From a careful and unprejudiced survey of the above facts and circumstances, it now appears to me that but one conclusion can be arrived at — one, until now, opposed to my own opinion as to the etiology of cholera, viz: That a specific poison, emanating from the bodies of the sick, was eliminated, which produced a similar dis-

ease in those who were exposed to it. Call it contagion, infection, or by any other name we please, it has the same characteristic properties as the poison of smallpox, of measles, and of scarlatina — that of reproducing in those susceptible of its influence the same specific disease. It will be asked, why, if contagious, did it not spread extensively when the first cases appeared in the several places mentioned above? To answer this question is one of the great difficulties in the investigation of epidemic diseases. From the time of Hippocrates we have been striving to reach the solution; and as yet we can only arrive at the conclusion of Dr. Alison, in his able review of the "Exciting Causes of Epidemics," (*British and Foreign Medical-Chirurgical Review*, January 7, 1854) that there must be powers appointed by nature for thus influencing human life, which are "not yet dreamt of in our philosophy."

It is universally admitted, that of all the known contagions, that of smallpox is the most certain in its liability to produce its specific effect. Yet, at one time, we see it spreading with alarming rapidity throughout an extensive population, and attacking all who are susceptible of its influence, whether they come into apparent direct contact or not, and despite all our efforts to limit it; while at another time, it is comparatively easy to insulate and circumscribe its ravages. This is also the case with measles and with scarlatina; and we ascribe this rapidity of extension and development to what we call an Epidemic Constitution of the atmosphere.

The same, I believe, is true of cholera; but I am inclined to think that there are circumstances favorable to its extension, which time and close observation will make known to us; and which will enable us, if not to exterminate, at least to render it less general and fatal.

Among the circumstances which most favor the development of this *idio-miasmatic* poison, are those which, to adopt Dr. Miller's nomenclature, produce the *koino-miasmatic*, viz: heat, moisture, putrefying animal and vegetable substances, insufficient ventilation, insufficient and improper diet, and want of personal cleanliness. Whenever these latter exist in an eminent degree, we have the poison of cholera most rapidly and fatally developed. The facts above stated prove this. Owing to the measures adopted to remove all the known causes of disease at the Lancaster County Hospital and Almshouse, although situated in a district occasionally visited by miasmatic disease, of three hundred inmates, most of them of bad constitutions, but twenty-six deaths occurred. When, however, any circumstances beyond control operated as an exciting cause of disease, the number of cases increased. Thus, the south wind, blowing directly from the Conestoga River, invariably had that effect, by elevating the temperature and altering the hygrometric state of the atmosphere.

This was the case at Columbia. For several days preceding the outbreak, and especially on Friday and Saturday, the 8th and 9th September, when it spread with most fearful rapidity and violence, the weather was intensely hot and sultry, the thermometer ranging from 82° to 92° F., the south wind blowing from the river; the water very low and highly charged with putrefying animal and vegetable matter. On Sunday morning there was rain, with the wind from the east, northeast, and at 6 p.m. north, the thermometer fell to 62°; there was a pause in the career of the pestilence which continued until Tuesday, when the wind again changed to the south, and the temperature became elevated.

In the Gainhuier family, and in their locality, there were no circumstances to favor the rapid and general development of the specific poison. That portion of the city was perfectly healthy, and the family were surrounded by the ordinary comforts of life. Here, for want of its proper ailment, we see the disease limited to those who were most exposed to the specific poison, which in my opinion was brought in the clothing from Cleveland, or about the persons of those who had been there.

That cholera is contagious is the opinion of many who have had a large experience in its treatment, and are eminently qualified observers. Of these I would name only Copland, Watson, Simpson, and Alison of Edinburgh, and Graves of Dublin; and if Copland be correct, we have been deceived upon this subject since its first appearance in India in 1817. (Copland's Dictionary of Practical Medicine, **Pestilence, choleric**). Upon referring to the **original** reports of the District Medical officers in India, sent to the office of the East India Company in England, he found that they embraced a mass of testimony which to his mind was conclusive upon the contagiousness of cholera; yet those whose duty it was to make up the general reports for publication, whether from preconceived opinion, or from a different view of the testimony, strongly opposed this idea, and attributed the diseases exclusively to atmospheric influences.

Dr. Edward Castleton, the reviewer of Dr. Berg's masterly report on the cholera, (**British and Foreign Medical-Chirurgical Review**, January 7, 1854), as it appeared in Sweden in 1850, and at one time a decided non-contagionist, acknowledges his present conviction to the contrary; and thinks that ere long the majority of the profession will be forced to the same conclusion.

Let us endeavor, casting aside all preconceived opinion, to arrive at the truth. The sooner it is known, the sooner shall we be enabled to contend against this fell destroyer. It is only by the careful collection of facts in the history of any epidemic, and the logical deduction from them, that correct principles can be formed, and successful practice established. The means of investigation are rapidly multiplying. Chemical analysis and microscopic investigation are continually exposing the errors of earlier observers, and unfolding new views of the phenomena of healthy and diseased action. Perhaps, with these additional aids, some Jenner may arise whose genius will discover the poisonous element of cholera, and teach us how to neutralize its virus, and to lessen its mortality.

Much has been written upon this subject, both by contagionists and those advocating the theory of atmospheric or telluric influences, as epidemic causes. It is not my object to enter into this discussion. One fact, however, may be mentioned, which I would recommend to the attention of future observers. During the existence of cholera at the hospital, several portions of the rice-water discharges, both from the stomach and bowels, and from different patients, were carefully examined by a powerful microscope, magnifying about seven hundred diameters, and in all of them were discovered extremely minute bodies, differing in appearance from epithelial cells; and from the known physiological and pathological, histogenic and phytogenic elements. An accurate drawing of them was made and exhibited to Prof. Jackson,¹² of the University of Pennsylvania, and I regret that I cannot at this time append a copy of the drawing to this report.

During the latter portion of the year our city enjoyed unusual health, with the exception of some cases of dysentery and intermittent fever, in the southern suburbs, which were not characterized by any phenomena of special importance.

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II

EDITOR'S NOTES ON ATLEE REPORT

¹ Vernal intermittent fever, in 1854, was considered a malarial fever, often called "fever and ague", and occurred in the spring or early summer, hence the designation "vernal." At this time the agues were divided into species named **quotidian** (paroxysm occurred same hour every day), **tertian** (paroxysm occurred same hour every other day), and **quartan** (paroxysm occurred same hour every third day), with the occurrences manifesting themselves at forenoon, noon, and afternoon, respectively. Early physicians classed the quotidian and tertian agues as vernal fevers, and quartan agues as autumnal intermittents, regarding the autumnal agues as being the most severe. Since the determination of the causes of malarial fever, physicians know these diseases as **aestivo-autumnal**, or malignant malaria; **tertian** and **quartan**, according to the type of malarial parasite causing the disease. (From Thomas Watson's *Lectures on the Principles and Practice of Physic*, London, 1858; and Oscar Davis, M.D., Lancaster County District Medical Director of the Penna. Dept. of Health, 1958)

² Miasmatic cause of disease was the theory prevalent until the dawn of the twentieth century that infectious and poisonous particles were given off into the atmosphere by decaying and putrefying organic matter, often found along damp places, such as swamps, along stagnant pools and low-level streams. The particles, being air-borne, were transported by wind currents, thus infecting persons far from the actual putrilage.

³ Cholera infantum, an old medical term, sometimes called "Summer Complaint," is a form of acute catarrhal enteritis which attacks very young children, and which resembles cholera morbus in adults, though the former is more serious.

⁴ Cholera asphyxia was used at one time as a synonym for malignant epidemic cholera.

⁵ Malignant cholera, another synonym for cholera, probably came closest to the professionally acceptable term, malignant epidemic cholera. Cholera must be designated carefully, because cholera morbus, cholera nostras and sporadic cholera are not true forms of cholera, but are acute gastro-intestinal catarrhs, with cholera-like symptoms.

⁶ The County Hospital was located at this time in Building No. 2, erected in the early 1830's. About 1866 this structure was enlarged by the addition of a building perpendicular to it, the whole of which is now called No. 2. The County Almshouse, in 1854, was located in Building No. 1, immediately west of No. 2. It was erected in 1800-1801. From the Minutes of the Board of the Directors of the Poor, under date of September 3, 1854, mention is made of the twenty-eight deaths caused by cholera during the month of August. The Board resolved that each steward have authority to hire such nurses and assistants as they would require to attend the sick without regard to cost, and that the superintendent be directed to carry out any sanitary measures that the Medical Board may direct. Under date of December 2, 1854, the Board praised the work of the personnel in handling the cholera patients, and gave gifts of five dollars to each of the five principal employees. (L.C.H.S. Papers, Vol. 55, pp. 97-123)

⁷ Several additions made to the County Hospital closed off exterior walls and prevented adequate ventilation. Rooms in the 1866 hospital addition were seven feet, three inches wide and ten feet long.

⁸ Zymotic diseases are contagious diseases.

⁹ Dr. Lutz does not appear in Cleveland directories during this period. From Samuel Orth's **History of Cleveland**, Vol. I, page 196: "It is not improbable that sporadic cases of cholera occurred occasionally in the city during (the period of 1849 to 1853) . . . but the disease did not rise to the dignity of an epidemic until 1854, when it once more claimed attention. The board of health . . . reported the first case of the disease on July 4th. The epidemic was, however, very limited in extent, and the mortality was small. The daily reports of the board of health were discontinued on September 15th, and the sexton of the cemetery reported the total number of interments from cholera as sixty-seven . . ."

¹⁰ Bilious remittent fever, as it was known in 1854, appeared as three types: hepatic (liver), gastric (digestive system) and congestive (impeded action of heart and lungs by depression of nerve activity). It was considered a disease of hot climates, occurring only in the summer. Later physicians came to regard remittent fevers as malarial fevers, separating the congestive type and assigning it to the pernicious malarial group. Inasmuch as remittent fevers occur in the late summer and early autumn, they are classed among the aestivo-autumnal fevers.

¹¹ Dr. T. Heber Jackson's report is cited in its entirety in this paper.

¹² The library of the School of Medicine, University of Pennsylvania, does not have the drawing or any reference to it.

CHOLERA

Definition: Cholera is a highly fatal acute, specific, infectious and contagious disease of the gastro-intestinal tract caused by *Vibrio comma*, characterized by, a profuse, watery diarrhea, vomiting, muscle cramps, suppression of urine, and collapse.

History: Cholera has been endemic in lower Bengal, India from time immemorial. From this source, it has repeatedly spread and swept over large portions of the world.

America was seriously involved in 1832, 1848 to 1854, 1865, 1866 to 1873. Minor epidemics have occurred from time to time in Europe, especially in Russia, where an epidemic focus apparently exists. During World War I numerous limited outbreaks occurred in the Balkans and in Mesopotamia.

In India and China cholera ranks with plague in magnitude. In 1934, 287,000 cases of cholera were reported in Asia and the adjacent islands, and 147,000 deaths occurred — a mortality rate of over 50 per cent.

Epidemiology: Man is apparently the only source of the disease and his excretions convey the infections to others, directly or indirectly.

People in contact with patients may become infected directly by contaminating the fingers and introducing vibrios into the mouth. The mouth and gastro-intestinal tract is probably the only port of entry. Flies and cockroaches may convey infections from feces to food. Uncooked vegetables fertilized by human feces are washed in contaminated water, and constitute another source. Probably the most important conveyance of infection is polluted drinking water. Contaminated streams spread infection to a large number of people. Hamburg, Germany, was infected in this manner in 1892. The Hamburg accident did much to direct general attention to the importance of pure water supply.

An interesting and important observation in this connection is that cholera vibrios introduced into river waters in localities previously free from cholera, survived much longer than those placed in water which had been repeatedly or continuously contaminated with feces of cholera patients. Bacterioidal or the self-purifying property of the large rivers of India was mentioned by Mark Twain. Phenomenum is now ascribed by some, to the presence of bacteriophage in the water. Healthy carriers constitute a great problem in the control of cholera. No matter how strictly isolation and quarantine are enforced healthy individuals who harbor virulent vibrios in their intestines, often escape detection and carry infection to remote districts, and may eventually be stricken themselves.

Etiology: The cholera vibrio or comma bacillus was discovered by Koch working in Egypt in 1883. Bacillus is very small, measuring about 2 microns long and 0.5 micron in thickness. It is often curved, especially in young cultures and resembles a comma, from which it derives its name. The organism is actively motile due to flagellum at one end, which is often several times longer than the body. No spores are formed.

Pathogenesis: Cholera vibrios gain entrance into the body only through the mouth. Many are killed by acidity of the stomach. Inasmuch as there is a variation in different individuals in regard to acidity in the stomach, this may account for some of the differences in the susceptibility. The rapid multiplication of vibrios in the intestine with the probable liberation of toxins often causes diarrhea promptly. Soon afterward, the invasion of the epithelial lining commences, from which time the onset of the disease dates. Vibrios are often found deep in the crypts and may penetrate into the muscle wall of the intestine. Some medical authorities believe vibrios occasionally invade the blood stream. Extensive inflammation and subepithelial edema of the intestinal lining results in the shedding of particles of tissue, and the characteristic "rice-water" appearance of the stools.

Symptoms: The incubation period is short, from sixteen to twenty hours to several days. The length of the incubation period was in inverse proportion to the size of the ingested inoculum. Several clinical forms of the disease depending upon the severity are recognized:

- (a) The ambulatory type in which the diarrhea is always fecal in character and malaise is the chief symptom.
- (b) Moderately severe type is exaggeration of the mild type.
- (c) Severe, algid type in which collapse occurs.

Diagnosis. In epidemics the cases are usually easily recognized. Definite diagnosis can be made by finding the comma vibrio in the stools.

Differential Diagnosis: Acute food poisoning may cause symptoms very similar to those of cholera.

Prophylaxis: Is theoretically easy to control from the epidemiological point of view. Isolation and quarantine and control of infected excreta are important.

Personal Prophylaxis: Consists chiefly in avoidance of the introduction of infection into the mouth. The hands should be carefully washed. Food and drink must come from an uncontaminated source, or be boiled.

Vaccination: Is a helpful prophylactic measure.

Prognosis: The average mortality some years back was 50 to 60 per cent. With the aid of modern methods of intravenous fluids and new antibiotics, the mortality rate has been considerably decreased but cholera remains a very serious disease, with a significant mortality rate. The mortality rate varies in epidemics in localities.

In April of 1954, there was a report of an outbreak of cholera in Calcutta. This report was published in "The Lancet", April 17, 1954. There were thirty patients with bacteriologically proved cholera. In 23, treatment consisted of intravenous saline infusions, 7 received Oxytetracycline, also. Four of the thirty patients died, so that with the present day therapy, it can be seen that the previous high mortality rate is decreasing.

Lancaster, Pa.

JOHN L. ATLEE, JR., M.D.

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REPORT OF T. HEBER JACKSON, M. D.

1855

It is only by carefully observing and recording the conditions under which epidemic cholera prevails, that we can hope to discover its cause, and the laws by which it is governed. With the hope of contributing some materials for this purpose, we have drawn up the following report:—

It is no easy matter to follow distinctly the progress of an epidemic when it prevails extensively in a large and populous city; but in a small town, its origin and progress can be more readily traced, and we shall endeavour to do this in regard to the disease as it occurred in the town of Columbia, Lancaster County, Pa., during the month of September, 1854.

It will be useful to consider, briefly at least, the situation and aspect of Columbia, and all such conditions as might reasonably be supposed to have exerted an influence upon the development and propagation of the epidemic in that town. To this end, the reporter avails himself of a communication from Dr. A. Clarkson Smith,¹ of Columbia.

“Columbia is situated on the north bank of the Susquehanna, forty miles above the Chesapeake Bay, and is the terminus of two canals and three railroads. The town lies on a gentle slope inclining to the northwest. Just above the town, high, bluff hills jut out into the channel of the river; while below, another ridge, running parallel with the one above, separates it from the town of Washington. North and northeast there is a valley of the most fertile land in the country. Our population is made up of representatives of almost all nations. The German and Irish, however, compose the principal portion of the foreign population. Of the latter, there are many. The railroads, canals, coal-yards, and commission warehouses give employment to so many persons of this kind, that, in their vicinity, they generally compose the bulk of the population. As a general rule, these persons drink freely of alcoholic stimulants.”

The river flows with a gentle current, and for a considerable distance above and below the town is quite shallow. The surface is studded with innumerable islets covered with a rich vegetation, which adds much to the beauty of the scene, though not, perhaps, to the salubrity of the locality. Above Washington, and a short distance below the town, a dam has been constructed for the purpose of backing the water into the canal. This structure is provided with an outlet or sluice. Above the dam — in that section of the town bordering upon the river, and west of north — is the “basin” which empties its contents, by means of the outlet-lock, into the river. Between the dam and the outlet-lock are the “reservoirs” from whence the hydrants are supplied. The condition of the river, the

basin, and hydrant-water will engage our attention when we come to investigate the possible causes of the appearance of cholera in Columbia. "For several weeks previous to the appearance of cholera, remittent fever had been unusually prevalent. It began generally with bilious diarrhœa, or when this looseness of the bowels was not found, there was an extraordinary susceptibility to the action of cathartic medicine. The great prevalence of remittent and intermittent fever had left many persons debilitated, and in a condition the most susceptible to the action of any epidemic influence which might chance to come upon them. As a general rule, persons thus debilitated were first attacked by cholera." Some weeks previous to the appearance of cholera as an epidemic in Columbia, the inmates of a house on Front Street, not far from the place of its reappearance, were attacked by the disease in its most fatal form, and several fell victims to its violence. This building was destroyed by order of the town authorities,² and no new cases occurred until Wednesday, the 6th of September. "At this time," writes Dr. Smith, "the emigrant train, west, left at our depot two German emigrants, sick with cholera. One of them died during the night; the other, a boy, seemed to recover from it, but afterwards died with what, I have no doubt, was ship fever; the vessel in which they crossed the Atlantic having had that disease, with cholera, on board. On Friday evening two cases occurred among our own citizens, both of whom were unhealthy men; one of these having suffered with diarrhœa for two weeks previously. At midnight, it made its appearance in almost every section of the town, and at daylight there were thirty cases, all of which proved fatal during Saturday. Of those who fell under my care, I recognized many whom I had noticed in the room with the German emigrants during their illness. Most, if not all of these persons had diarrhœa the day previously, but as there was nothing to alarm them, paid no attention to it until too late. Most of them were sinking into collapse when first seen by the physicians."

The class of the community chiefly affected by the disease was composed of German labourers. But on this fatal night all portions of the town, all classes of people were compelled impartially to contribute victims to the merciless pestilence. By referring to the accompanying plan of the town, this will clearly appear. A panic now seized upon the citizens, and many of those whose means enabled them to leave, fled from the devoted town. By Monday, it is calculated that more than half of a population, numbering some 5,000, had left, and numerous persons left daily, until the week was far advanced. It is necessary to mention this, lest the erroneous conclusion might be drawn, that the working class was much more obnoxious to the disease than they really were. It is fair to presume, from the history of the epidemic during Friday night and Saturday, that, had all the citizens remained, no distinction of class would have availed as a protection, but all would have suffered alike, in proportion to their numbers. Upon those whose health was vitiated by intemperance, and the many privations attendant upon poverty, the arrows of pestilence might be expected to fall with fatal effect; but it did not appear, on Friday night and the succeeding day, that these conditions served to invite or determine the direction of their flight.

It is proper, now, to investigate the cause of the appearance of cholera in Columbia. This town is peculiarly liable to those morbid influences which are

supposed to generate malarious diseases. Accordingly, we find the physicians of the place report the almost constant prevalence amongst them of intermittent and remittent fever, and, did the statement need confirmation, it is to be found in the appearance of the inhabitants. An unusual continuance of dry and very warm weather had lessened the volume of the river to a degree unknown for years; had exposed and promoted the decomposition of the vegetable matter on its banks and islets, and diminished the rapidity of its current. And, in addition, it is stated in a Columbia paper that "the canal had been made the receptacle for animals dying in the cars while being transported to the eastern markets, thrown in during the night, and washed to the shores to putrefy in the blazing sun." The sluice being closed, by direction of the Tide-Water Canal Company, the escape of the double products of animal and vegetable decomposition was most effectually prevented. Upon the sluggish waters of the river, therefore, and upon its banks and islets were to be found, in even greater than usual abundance, the noxious properties, which, co-operating with a uniformly high temperature, are so generally supposed to generate malarious diseases. And there were very many sick with bilious fever, intermittent and remittent; and there were likewise many cases of bilious dysentery and diarrhoea. This might have been anticipated. The history of this year, so far, differed in no essential respect from that of former years. For the same causes, real or apparent only, had always been present at this season of the year, in a state of greater or less intensity, and like diseases, as effects, attended. In degree, as in kind, effect answered to cause; for the condition of the river and its precincts being such as to afford more than the usual amount of miasmata — "for several weeks previous to the appearance of cholera, remittent fever had been **unusually** prevalent." Cases of the diseases mentioned, continued to occur up to Friday, when the cholera broke out; they then disappeared, and reappeared only when the cholera epidemic was abating.

In former years, the diseases peculiar to the several seasons were impressed with the leading characteristics of the malarious fevers; this was true in regard to pneumonia, functional derangements and organic lesions of the stomach and bowels, and also entero-mesenteric fever. But now, cholera has entirely superseded the malarious fevers, and is, by no means, impressed with their characteristics. The two diseases are essentially different, and will hold no intercommunication. Are they, then, effects of the same cause? The hygrometric and thermometric condition of the atmosphere continued the same; the state of the river, of its putrid burden and noisome shores, was unaltered — at least there was no apparent change; and yet the usual and concomitant fevers have suddenly disappeared, and, in their stead, is this strange pestilence! Some were satisfied to assign miasmata as a sufficient cause. Strength, though not actual confirmation, will be lent to this hypothesis by a knowledge of the following curious phenomenon: On Friday, about noon, a southeast wind began to blow — of course, blowing over the river directly into the town. On the afternoon of this day, the first case of cholera occurred. This wind prevailed steadily until Sunday morning, when it changed

to the northwest, blowing in a direction directly from the town to the river. A very sensible diminution in the number of new cases was observed at once, and when the wind veered to the original quarter (southeast), as sensible an increase was perceived. This curious coincidence (?) was noticed **at the time** by several. Indeed, it was a matter of general remark, and the "direction of the wind" was being constantly questioned with marks of deep interest and solicitude. But remarkable as this may appear, before it is determined that emanations from the river, wafted into the town by this southeast wind, were productive of the cholera it will be worth while to remember that during a long series of years Columbia had been exposed to precisely the same influences, the same combination of circumstances, and yet remained happily free from cholera. It is not denied that the condition of the river air, probably impure, may have afforded a suitable nidus for the disease, and that the wind, by wafting the exhalations — the blastema, so to speak — into the town, may have thus exerted a powerful agency in the advancement of the epidemic. Moreover, if the river and its shores are to be accused of having generated the cholera poison, why and how did the people of Wrightsville, on the opposite bank from Columbia, escape? especially when, as on Sunday, the strong northerly wind was blowing. And yet escape they did, without a single case. In addition to this, it is to be observed that Washington, on the same side of the river with Columbia, and distant only one or two miles, also escaped. When the cholera had disappeared from Columbia, a few cases were reported in Washington.

It may be said that Washington was below, and separated from the area of the peculiar miasmata, by the dam. But few would care to repose upon such a protection. We have already described the position of the basin and canal; by some it was contended that their impure waters mingling with the river water, and being then pumped up into the reservoirs, and used by the inhabitants for drinking, and for culinary purposes, were alone concerned in generating the epidemic.³ But it was well known to all the physicians that very many who confined themselves, from habit, to the use of pump-water, were attacked with fatal effect. This is surely a sufficient refutation. Perhaps the most popular explanation was that which attributed the appearance of the malady to **cont.gion**. There is much to be said both for and against this hypothesis. In favor of the affirmative it may be urged that the appearance of the epidemic was subsequent to the arrival of the two emigrants, one of whom died of the disease; that many of those who were in attendance upon these aliens were amongst the first to be attacked; and, lastly, that many cases can be instanced, in which, owing to peculiar circumstances, the disease **could** have been contracted in no other conceivable way than by contagion.

The first proposition, that of the sequence of the local epidemic upon the arrival of the imported cases, is true enough. Unless taken, however, in conjunction with, and supported by other and more weighty facts, it is really worth nothing; for it is obviously unfair to conclude that, because the cholera appeared **after**, it must have depended for its existence upon the arrival of the emigrants.

But this argument for contagion acquires importance when taken in connection with the next fact, viz: that many of those attacked had communicated directly with the sick emigrants. "Of those who fell under my care," says Dr. Smith, "I recognized many whom I had noticed in the room with the German emigrants." But "at **midnight**" the cholera made its appearance in **almost every section** of the town, and by **daylight** there were **thirty** cases, all of which proved fatal during the same day." Now, amongst these **thirty cases**, what more likely than that some, or even "many of those seen in the room with the German emigrants," should have been found? Doubtless, there were **many more** drawn by curiosity, or more laudable motives, about the emigrants who were **not** attacked. But, above all, it is worthy of notice, that cases of Asiatic cholera had occurred in Columbia previous to the arrival of the emigrants; and if contagious **now**, the disease did not appear to be so at that time.

After the arrival of the reporter in Columbia, on Sunday the 10th, he neither heard of, nor was himself conversant with any case that could be fairly traced to contagion. Of all the physicians (except the much to be lamented Dr. Cochran, who was seized on the first, and died on the second day of the epidemic), officers of the sanitary committee, and nurses in attendance upon cholera patients in private practice, or at the Town Hall, but **one**, a nurse, was attacked! And yet all these were most zealous and constant in attendance upon the sick. The emigrant who died of cholera, died on the night of the day on which he reached Columbia; no one of the citizens was attacked before Friday evening. Is this, then, to be considered the duration of the incubative stage of cholera, if contracted by contagion? Perhaps the period of incubation varies — for, between midnight and **daylight**, there were thirty cases. But did the disease spread as those known to depend upon contagion are propagated, viz: from one to another, at appreciable intervals of time? No: "at midnight it made its appearance in almost every section of the town, and by morning there were thirty cases!"

Surely, this malignant disease which thus, in a few hours, invaded the whole town, could not have been produced by contagion, which requires either actual contact, or at least the reception into the body of some emanation from an individual affected with a similar disease.

But all of the thirty cases had not been in contact with the emigrants, and it is probable that not more than two or three had been so actively engaged about the persons of the sick, as were the numerous physicians and nurses, and yet but one of the latter died! Moreover, it is necessary that these poisonous emanations from the person of one labouring under a contagious disease, should not only be inhaled, or otherwise effect an entrance into the body, but that they should likewise undergo some change, in which the body participates before it can become a new focus of contagion. This change requires time, which varies much according to the susceptibility of the individual. But, on Friday night, thirty were seized almost simultaneously.

Contagious diseases do not seize upon great numbers at once, but progress from case to case. Therefore, it does not appear that the disease was simply contagious, nor that the cause of its extensive spread was of an epidemico-contagious

character. Doubtless, there was some modification of the atmosphere favourable to the extension of the disease **in the town**, but this appeared to be connected with some **local** condition, for those living in the country and near to the town, escaped altogether. In company with Dr. Smith, the reporter visited many individuals in the country adjacent to, and within a mile or two of Columbia; these were affected with various ailments, and one, a gentleman advanced in years, and liable to derangement of the bowels, appeared to have cholera; but he readily recovered under the use of simple measures. The reporter believes this to have been the only case of the kind in the country. Communication with the country, during the first three or four days of the epidemic, was indeed very limited.

Still physicians from the town visited their patients in the country, living near to Columbia, and yet the disease, if portable, was not conveyed to any one.

Hence, it would appear that the cause of the appearance and spread of malignant cholera in Columbia, was manifestly connected with the air and locality; that it was eminently endemico-epidemic.

Before quitting this subject, it will be proper to give some individual cases which would appear to favour the doctrine of the contagiousness of Asiatic cholera: "A gentleman from Bainbridge visited this place during the prevalence of cholera, returned home, a distance of seventeen miles, took the disease and died. His family fled, and he was left in charge of a friend who also took it, as did another who assisted in his burial. Neither of these persons had been to Columbia, nor at any place where they could have contracted it save from his person." Isolated cases of this kind by no means prove that cholera is contagious, though they serve to render it probable. They should not, however, be regarded apart, but in connection with the host of facts rising up on every side to prove the opposite, and amongst which so vast a multitude, a few eccentric phenomena might well be supposed the result of accident. Hundreds left Columbia during the height of the epidemic, some of these died of the disease away from home; but, so far as the reporter could learn, in only one or two cases did there appear to be a communication of the disease to others.

To attempt the description of a disease which has been so frequently and faithfully portrayed by able writers, that one conversant with their writings cannot fail to recognize it, would be superfluous. It will be sufficient to mention some modifications under which the disease appeared in Columbia. Premonitory symptoms were present in nearly all the cases, for periods of time varying from several days to a few hours. The advent of the disease found many labouring under bilious diarrhoea; many also, weakened by recent attacks of remittent fever; "and, as a **general** rule, persons thus debilitated were **first attacked** by cholera." The characteristic discharges from stomach and bowels were present in all the cases; in some profuse; in most, however, remarkably moderate, and yielding with unusual facility to the agents employed to arrest them. But the welfare of the patient oftentimes did not appear to be promoted by their suspension, nor could a favourable prognosis be founded upon the circumstance of their being small in quantity. While thus mild in the particulars specified, the case frequently presented all the other worst symptoms of the disease, viz: a rapidly failing pulse; hurried

respiration; anxious express of countenance; altered tone of voice; increasing coldness, and diminishing resiliency of skin; great restlessness, and violent cramps. The nervous symptoms were the most prominent. Hence, the poison may be supposed to have acted directly upon the nervous system, without its usual irritant action on the mucous membrane of the alimentary canal; or else, that the effusions really took place into the bowels, but were retained. Opportunity to determine the last by actual inspection did not offer; but the physical signs failed to indicate the presence of a large amount of fluid in the bowels. The altered voice, when present, was regarded as most unfavourable. The cramps were chiefly confined to the muscles of the lower extremities, but in some extended to the dorsal, abdominal, and in a few to the brachial muscles. These spasms induced extreme suffering. When reaction succeeded to the stage of collapse, it was usually attended with the greatest danger, from the liability to cerebral congestion; this was more especially the case with children, of whom many were attacked.

In the treatment of this disease — many agents, of the most diverse characters — many methods, some with, some without a reason, or a good one — were tried. But, from the results, could be gleaned no argument in favour of the empirical practice. Indeed, the success of rational treatment was most gratifying — inasmuch as many were saved, who, for the lack of it, could not have recovered. In the stage of collapse, even, means were sometimes found to restore to the blood its lost elements, and cause the heart again to propel its life-giving contents to the exhausted capillaries. Such general measures as experience and observation had recommended, were adopted by the Sanitary Committee; these it is unnecessary to enumerate. By the delegates from the College of Physicians of Philadelphia, the resident and visiting physicians, a series of instructions were drawn up, and, by the Sanitary Committee, printed for general distribution. A notable improvement in the health of the town followed their publication, from which, perhaps, a faithful compliance with the instructions may be inferred. (?)

It would be alike tedious and unprofitable to mention all the means and drugs employed in the treatment of the disease.

In view of the great discrepancies that exist as to the pathology and nature of the disease, that treatment was the safest, and no less successful, which was based upon indications drawn from the symptoms. If the physician was so fortunate as to see a case in its incipency, he seldom experienced difficulty in arresting its progress. The diarrhoea, unless clearly to be traced to the presence of irritating ingesta, was met at once, and successfully with astringents, the particular article of the class used being determined by the preferences of the physician.

Opium, or some one of its preparations, was almost always used in conjunction with a mineral or vegetable astringent. Large opiate enemata were used with the greatest advantage when everything else had failed. It may be observed now that throughout the treatment of the disease, perfect rest and quietude in bed were deemed essential to success.

In large or small doses, some preparation of mercury was very generally employed, and that throughout the attack. In the first, second, and third stages, to restore the secretions, especially that of the liver; in the fourth stage, that of

reaction, as a sedative, and for its general alterative action.

Unfortunately, a large number of patients were, when first seen by the physician, already in a collapsed state, and the end, not far distant, was but too frequently fatal. Nevertheless, some even of the worst of these recovered under judicious management. The great object in this stage was to prevent the further loss of the serum of the blood, to allay nervous irritability, and support the system until it could react. To accomplish the first indication, the most powerful astringents were used, preferably by injection; while, to supply the waste already sustained, ice-water in small quantities at a time was freely given, a salt of soda in small doses being added from time to time. Very large doses of opium were given in this stage, without inducing any impression whatever; when carried still further, a comatose condition was induced, which would cease in a short time, if the narcotic was discontinued.

Though the application of friction and warmth to the surface was markedly disagreeable to some, many yet seemed to derive relief from their use. These applications oftentimes seemed to lessen nervous excitement, to have a quieting, soothing effect upon the patient; and certainly, were the most useful of all the agents employed for the relief of the cramps. These spasms were most rebellious in spite of all that could be done to control them. Bandaging failed to afford more than very temporary relief. Beef-tea, animal broths, salted to the taste of the patient, and likewise various stimulants were given to support the strength and equalize the circulation, so far as the condition of the blood would permit.

Perhaps sufficient caution is not used in the exhibition of stimulants. In some cases — those in which the blood, robbed of its serum, has become of the consistence of a syrup — it is vain to think of deriving advantage from stimulants. If the stomach will tolerate the intrusion of dram after dram of alcohol, and quickly recurring doses of ammonia, what good will their presence in the stomach effect? Can they impart normal fluidity to the blood, or enlarge the caliber of the arterioles and venules. Even if they could greatly increase the force and frequency of the heart's action, which, fortunately, they cannot, would it not be dangerous to employ them. For a fluid of the consistence of that now found in the heart and large bloodvessels, cannot be forced through the capillary system, without rupture of these delicate vessels and consequent extravasation. Moreover, the blood in this condition is not fitted to fulfil the functions for which it was designed; therefore, care should first be taken to repair it, and it will then circulate readily enough. But, in those cases in which the discharges have not been very large, internal and external stimulants may be used with advantage. But here something is wanted which will produce a sudden and powerful impression upon the whole system; and, to this end, the reporter believes nothing will be found to surpass the hot salt-bath in efficacy. In conjunction with Dr. Smith, the reporter made frequent trial of this agent, and the result was highly pleasing to both. It was not until the epidemic had continued some days, that this agent was had recourse to, otherwise it would have been employed much more frequently.

“In the stage of collapse,” writes Dr. Smith, “the hot salt-bath was more efficacious than anything I am aware of. Seven apparently desperate cases re-

covered after being immersed in it. One of these had been in collapse full thirty hours." The water should be raised to a temperature the highest compatible with safety. Prior to the immersion, the patient should take some stimulus, whatever has proved most grateful to his stomach. On removal from the bath it would be well to repeat the excitant, while, at the same time, friction with coarse towels should be practised, and the patient enveloped in blankets. Heated bricks, wrapped in some coarse material, which has been steeped in water, should be disposed along the person of the patient beneath the bed-clothes. For adults, it is necessary that the temperature of the bath should exceed 98° Fahr. Children, having a delicate cuticle, and being much more impressible, do not need so high a temperature. The patient, subjected to this treatment, more especially if a child, should be closely watched, lest reaction run too high; or, having lasted a short time, should begin to be followed by depression. This did not happen in any of the cases seen by the reporter, but it is well enough to be on our guard against the possibility of its occurrence.

It is well known that patients in the third stage of cholera, though with a cold surface, suffer extremely from hot, or even warm applications, hence the use of the hot bath is not unattended with pain. This, though to be regretted should not deter us from employing it when it is indicated. In children, when the disease could not be cut short, it was a comparatively easy matter to conduct them through the first three stages of cholera: but the fourth was fraught with the greatest danger. "The difficulty in managing children in this disease was not in checking the vomiting and purging, nor even in rescuing them from collapse (a simple astringent mixture, and placing them in the hot bath, being mostly sufficient to accomplish these purposes), but in preventing an attack of congestion of the brain, which often proved fatal." By the early employment of topical depletives, of derivatives, and the alterative action of mercury and ipecacuanha, this morbid condition was sometimes overcome. The reporter believes general bloodletting was practised in only one case, and then at so late a stage of the attack that but little hope could be reposed in any remedial measure whatsoever. When the cholera made its appearance in Washington, Dr. Smith made use of venesection, and the result is given below in a quotation from his letter to the reporter:—

"In the second or serous stage, I know of no remedy equal to the lancet; and I am only sorry I did not use it when the epidemic first made its appearance, so as thoroughly to have tested its efficacy. It was not until after the disease ceased to prevail as an epidemic that I determined to try its effects, and in five cases in which bleeding was practised all rapidly recovered. I was called to see a young married lady, of full habit, who had had diarrhoea for forty-eight hours, and the morning I visited her had the characteristic serous discharges from the stomach and bowels, attended with most distressing cramps in the extremities. Altogether, it was as severe a case of the second stage of cholera as I saw during the epidemic; and feeling assured she would die under the ordinary treatment, I determined to try the effect of bleeding. The blood was drawn in a full stream from a large orifice, and when she had lost 16 fl. oz. she complained of feeling faint. The vein was closed, and gr. $\frac{1}{4}$ morphine sulph. given. After this, she had not another cramp;

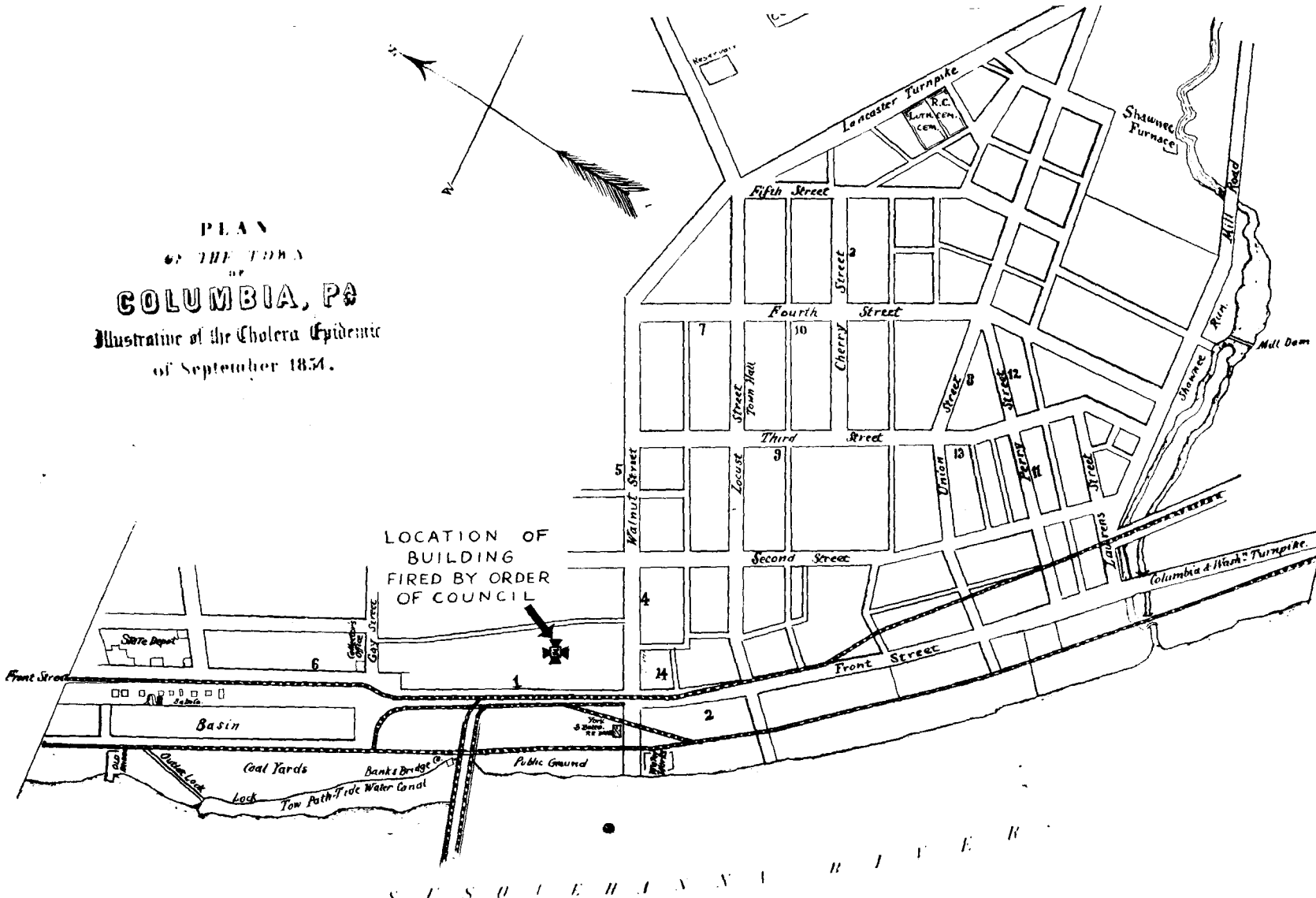
TABLE OF DEATHS SHOWN ON MAP ON OPPOSITE PAGE

1. Francis Bradley, Front Street. Friday afternoon. Died in a few hours.
2. E. A. Howard, Front Street, Friday evening. Died Saturday.
3. Mrs. Wm. Hippey, Cherry, between 4th and 5th Streets. Friday night, visited No. 1 on Friday afternoon. Died Saturday at 8 A.M.
4. Dr. R. E. Cochran, Walnut Street. Saturday morning early, had diarrhoea two days previously. Died Saturday at 12 m.
5. Margaret L. Hagan, Walnut Street. Friday night. Died Saturday at 8 A.M.
6. James Keely, Harkin's Tavern. Friday night. Died Saturday at 10 A.M.
7. Mrs. S. Felix, Fourth Street. Friday night. Died Saturday : 1 P.M.
8. Mrs. S. Atkins, Union Street. Friday night. Died Saturday, at 12 M.
9. Mrs. Richards, Third Street. Friday night. Died Saturday.
10. Robert Spratts, Fourth Street. Friday night. Died Saturday morning.
11. Peter Remler, Perry Street between 2d and 3d. Friday night. Died Saturday night.
12. John Gheen, Perry Street between 3d. and 4th. Friday night. Died Saturday.
13. Lorenzo Krab, Third Street between Union and Perry. Saturday. Died Sunday.
14. J. J. Strickler, Herr's Hotel. Saturday morning. Died Saturday.
15. H. H. Lichty, Locust Street. Friday night. Died Saturday.
16. Samuel Hinkle, Union Street. Saturday morning. Died Saturday.
17. Mrs. S. Lysle, Lauren's Street. Saturday morning. Died Saturday.
18. John Gilbert, Perry Street. Saturday morning. Died Saturday.
19. Miss Ann Harnly, Locust Street. Saturday morning. Died Saturday.
20. Mrs. C. David, Union Street. Saturday. Died Saturday.
21. John Boyd, Locust Street. Saturday. Died Saturday.
22. Chas. Benner, Union Street. Saturday. Died Saturday.
23. — Weaver, Minnich's Tavern. Saturday. Died Saturday.
24. Chas. Jackson (col'd). Saturday. Died Saturday.
25. Webster Fox (col'd). Saturday. Died Saturday.
26. Mathias Neidinger, Union Street. Saturday. Died Saturday.
27. German, boy, Name and residence unknown. Saturday. Died Saturday.

The reporter has not marked on the plan the position of the residences of the last thirteen cases given in the table; he could only ascertain the street in which each lived.

The total number of deaths from cholera, as reported, was 127.

PLAN
 OF THE TOWN
 OF
COLUMBIA, PA
 Illustrative of the Cholera Epidemic
 of September 1854.



the purging and vomiting ceased, and with the above-mentioned combination of soda and water, she rapidly recovered. Subsequently, I bled four others with like results."

Should this report appear meagre and too general in its character, the fact that no notes were taken by any of the physicians will sufficiently account for it, as well as for deficiencies and errors, should any appear.

The reporter feels it is but just he should state that he spared himself no trouble in the endeavour to obtain accurate information.

On the accompanying plan of the town, has been indicated by numerals, the position of the residences of fourteen of those who were seized on the evening and night of the 8th of September. The numerals indicate also the order of succession in which the cases occurred, or rather were seen by the physicians. They took place in very rapid succession, almost simultaneously, indeed. By referring to the table, a synopsis of each case will be found.

Reprinted from the American Journal of Medical Science

EDITOR'S NOTES ON JACKSON REPORT

¹ Dr. A. Clarkson Smith, graduate of the Medical School of the University of Pennsylvania in 1852, was considered one of the area's most brilliant physicians. In 1855 when Norfolk, Virginia, was the scene of a Yellow Fever epidemic, Dr. Smith volunteered his services to that city, and after several days he too contracted Yellow Fever and died.

² The building ordered destroyed by the borough authorities was located at the rear of David Hanauer's clothing store located along Front Street, on or near to Lot No. 8 of the Old Columbia Plan. The Susquehanna Fire Company was ordered to supervise the firing to prevent the blaze from igniting nearby buildings. John Sweeny, a veteran engineer of the Pennsylvania Railroad, applied the torch to the structure. (Francis X. Ruess Papers)

³ The water supply of Columbia depended on public or private pumps and the hydrants of The Columbia Water Company. In 1823 the water company was organized but failed to furnish an adequate and pure supply of water to the customers. Water from the Susquehanna River was pumped into reservoirs along the river shore, and from there it was sent unfiltered to the town hydrants. From an editorial in the **Columbia Spy**, included in this report, we learn that the river inlet pipe extended a mere eight feet from the wharf where it picked up mostly shore wash and waste from the town gutters. In 1858 the water company made an assignment for the payment of debts, and a new organization was made, following which many improvements were effected.

LOCAL LAY OPINION ON THE CHOLERA

In times of great social peril certain forces of individualism often rise to attention, each trying to find the answer to the unknown, attempting to control the crisis, and interpreting the Cause, if not the effects. Perhaps the comments and wild suppositions of such individuals are of transient worth. But in the stream of cultural development the Thought of an Individual, the Divulgence of the Intellect, the Outcry of the Wounded Sensitivity are at once the bane of oppression, the agitator (or victim) of the masses, and the salvation of mankind.

From the chronicles of the Cholera epidemic, then, we present in edited form the thoughts of divers persons not learned in the art and science of medicine.

J. FRANKLIN REIGERT, *Engineer and civic leader*

A Lancastrian, Mr. Reigert was detached somewhat from the hysteria in Columbia. Few persons in Lancaster have been as active in numerous enterprises as the subject. He was a civil engineer for the early railroads of the county, and for the City of Lancaster. Wherever civic progress emerged, Mr. Reigert frequently was in the "thick of it," pushing with rare intellectual energy. In his career he served as engineer, politician, patent attorney, promoter for the gas works and author.

Few persons were amazed, therefore, when "A Treatise on the Cause of Cholera, An Interesting Discovery" was published over Mr. Reigert's signature in 1855. This fifteen-page pamphlet was his contribution to the scientific investigation on the cause of the dread disease which destroyed thousands of persons the year previous. So certain was the amateur scientist that he had located the cause, that he warned concerning the yellow fly he discovered:

"I cannot conceive how this yellow "plague fly" can be the effect rather than the cause of the disease, when I have discovered and pointed out the yellow cloud to others, some days previous to the appearance of the pestilence — I know it to have preceded the pestilence, and claim to be the first discoverer of this Yellow Plague Fly, as the insect origin of the Cholera or Yellow Jack, and do consider it immaterial, by what name renowned Doctors may choose to distinguish these two kindred epidemics when preceded by the same yellow fly — I do but give the facts, and expect them to counteract the spreading epidemic poison."

Reigert's impatience with those who could not accept the significance of his discovery was not entirely unwarranted, because we know now that flies and other flying insects do carry disease germs.

Quaint and rather delightful in his exposition, Reigert reported:

“About sunrise on the morning of Friday, July 30, 1852, (as my usual custom is to go early to the Hydrant to wash) I espied the **INSIDE** of the wooden spout, attached to the Hydrant in the yard, literally covered with a very small **TRANSPARENT** light dust colored, winged insect or **FLY**, the head, wings and body all the same transparent color. I at first supposed them to be small winged **ANTS**; but on closer inspection I discovered that they were perfect **FLIES**, of shape similar to **Bees**, and they were attached to the spout **DEAD**. They appeared to be about the fortieth part of an inch in length. I examined them closely with a common pocket magnifying glass, which magnified them about five times their natural size, or about an eighth of an inch.

Reigert then related how he recalled reading that several vessels bound for New York had had cholera break out when they passed a certain latitude “which indicated a cholera miasma was floating in that latitude.” Although there were no cases of cholera in Lancaster on July 30, 1852, Reigert was greatly disturbed, and he promptly instructed his household not to use hydrant water (“not telling them of the particulars for fear of alarming them”) unless the spout was first washed. The Reigert home was located near the corner of North Prince and West Orange streets, in a hollow as the author would place it “where the atmosphere is slightly damper than it is 600 or 800 yards distant.” That these **animalculae** were attracted to the wet, slimy wooden spout, Reigert was certain.

With characteristic concern for his fellow human beings, but with poorly concealed scientific delight, Reigert noticed that the very next morning, Saturday, July 31, 1852, “a man named McClean residing in the upper end of West Orange street died with a disease, pronounced by our most eminent Physicians to have been Cholera!” Another man named Gemper, who lived next to the victim and who had helped him, took ill Saturday night and died on Sunday. Within the next few days, the widow of McClean and several others in the neighborhood died. Dr. Henry A. Muhlenberg was the physician. “My dwelling place,” commented Reigert, “is 350 yards due East from the dwellings of the above named deceased.” That would place the unfortunate neighborhood in the vicinity of West Orange Street and Concord Alley, between Mulberry and Charlotte streets, near George Erisman’s doll hospital.

Inasmuch as the limestone-laden water of the hydrant seemed to kill the yellow plague flies, Reigert presumed limestone water was a certain antidote for cholera. After discussing the possible fatal effects of brewing tea in water from his hydrant, Reigert complimented himself on observing these “flies . . . of such a delicate jelly transparency . . . might in hot water become partially dissolved, and thus not be easily discovered in our drinks . . .”

A countryman from below Lancaster, about one mile to the southwest (along the Conestoga River near Wabank), informed Reigert that he noticed at 3:00 P.M., August 18, 1852, huge clouds of a dusty hue through which the sun’s rays occasionally penetrated. The gentleman, a Mr. F. Kilburn, thought the cloud probably contained floating animalcules. The clouds were passing westwardly, across West Lampeter and Lancaster townships into Manor Township. Kilburn then procured his wife’s large white damask table cloth, which he spread on a hillside facing the

East. In a few moments it was covered with very small flies of a light brownish color. Reigert reports that Kilburn was "much gratified with his experiment," but nothing was mentioned concerning Mrs. Kilburn's reaction to having her good table cloth alighted upon by swarms of the "cholera-causing" flies.

(Editor's Note: As late as the 1930's, Professor Paul C. Ehrhart reported seeing huge clouds of dust over Manor Township blot out the sun rays in late afternoon.)

Reigert couldn't find a single fly of this specie during the summer of 1853 although there were a few cases of cholera in the United States. In June, 1854, however, New York and Philadelphia were visited by the cholera, which moved Reigert to search for the fly once more. About the first of July he found the hot, dry air of Lancaster had a dingy yellowish hue. The following morning produced a fly, and this time they were quite alive, and all over Reigert's window sill. To him they appeared as moving particles of dust, and among them were a few larger specimens he thought to be "breeders."

From the fly-watching Reigert turned his attention to analyzing the state of the atmosphere. During the day the sun had a dull yellow cast, and towards evening a dingy yellow hue. This was a time of parched earth and widespread drought which extended throughout the Middle and Western states. After sundown the air, observed Reigert, seemed hazy, resembling very thin vapor clouds of a dusty hue, until 9 or 10 o'clock, P.M., when the atmosphere appeared clear and bright, despite the absence of thunder gusts or evening lightning to change or purify the air.

On Monday, September 4, 1854 at 6:20 P.M., Reigert was riding on the Lancaster Turnpike in the vicinity of Fertility, near the junction of the Strasburg Road. Here he noticed the sun's rays penetrating the yellow haze in a peculiar manner, "like the rays of the Aurora Borealis, spreading then receding, with occasionally a later quivering movement." Obviously this phenomena was caused by a cholera miasma being penetrated by the rays of the sun, and now it appeared as if the miasma of insects was settling down along the Susquehanna River approximately sixteen miles due west. The next day a southwest wind blew up, and continued with stormy aspects, from the 5th to the 8th. "I felt satisfied . . . that the Cholera Miasma would be wafted into the dwellings on the East side of the river, and that the storm would spread the poisoned atmosphere throughout the Borough of Columbia."

Correspondence from other persons in Providence, Rhode Island, established the fact that a yellowish dust deposit had discolored the white-painted houses of that place during a cholera epidemic.

On June 14, 1855 Reigert again discovered the dusty cloud floating along the horizon southwest of Lancaster, and immediately he raised a cry that the pestilence would ravage along the Chesapeake Bay. During the latter weeks of the summer cholera did strike around the lower regions of the Bay. One of Reigert's correspondents at Norfolk wrote that "A most singular looking fly has made its appearance in this latitude . . . and has never been known here by the 'oldest inhabitant.' Its body is about the size of our common fly, of a yellowish color, with long delicate porous

wings, of a texture as fine as the softest silk. They fly together in swarms, and may be seen in large numbers on the fig trees — but their great point of attraction seems to be the coffins in which repose the ill-fated victims of 'Yellow Jack.'” It would appear Yellow Fever was becoming confused with cholera. The correspondent also noted that the golgotha contained many coffins on the ground, each covered with a blanket of the plague flies.

Turning from the extent and effects of pestilence, Reigert decided to have the flies identified. He got some specimens from the Lancaster area, and sent them to Dr. John G. Morris, a celebrated entomologist of Baltimore, and to Dr. Simon S. Rathvon, the famed Lancaster County natural scientist. The Baltimore scientist found the specimens to be “genuine Flies, the Genus *Musca* of Linne . . . the species you send is entirely new to me, and I can assure you that it has never been noticed, described and published by any Naturalists in the United States.” This reply was dated July 26, 1854.

Dr. Rathvon replied on October 14, 1854 that the fly belonged to the Genus *Musca*, which genus “has been sub-divided into 354 different genera, making it impossible for me now to tell to which one it ought to be referred — we may however on a venture call it *Musca Ochrapesus*, as it does not appear to have been described before . . .”

Reigert’s “yellow flies” probably were specimens of various species which might well have included *Drosophila*, lauxaniids, chloropids and others. The flies noticed on the water spout were not preserved for identification, but later specimens which Reigert sent to Rathvon and Morris, and which Rathvon named *Musca ochrapesus*, have been identified for the editor by Curtis W. Sabrosky of the U. S. Department of Agriculture’s Insect Identification and Parasite Introduction Laboratories as specimens of *Chyromya flava* (Linnaeus) of the family Chyromyidae. We are greatly indebted to Mr. Sabrosky for making an identification from Dr. Rathvon’s old description and drawings. In turn Dr. Rathvon’s nomenclature, *Musca ochrapesus* now has been noted officially as a synonym for *Chyromya flava*.

Dr. John Gottlieb Morris (1803-1895) was a versatile gentleman of Baltimore; in addition to his ministry in several churches, he was a scientist, author of note, librarian, and after his ninetieth birthday he served as president of the Maryland Historical Society.

Dr. Simon Snyder Rathvon (1812-1891) was a self-taught scientist and scientific writer of remarkable talents. He was born in Marietta, Pa., and lived in Lancaster County his entire lifetime. Dr. Rathvon was recognized nationally as a superior entomologist, and he held offices in, and prepared numerous papers for, the State Horticultural Society, Academy of Natural Sciences, American Entomological Society, Philadelphia Horticultural Society, Lancaster County Agricultural Society, and The Lancaster Linnaean Society.

EBENEZER ERSKINE, *Presbyterian minister*

Ebenezer Erskine, minister of First Presbyterian Church, Columbia, concluded that the cholera in that town was a visitation from God. On Sunday morning, October 1, 1854, the good dominie discoursed on **God in the Pestilence or Cholera A Visi-**

tation from God. The following Sabbath sermon was titled "The Blessed Dead or The Improvement of the Solemn Visitation of Providence in the Removal by Death of Some of the Most Valued Members of Our Church and Congregation. Greatly impressed by the sermons, the Board of Trustees of the church had the discourses published in pamphlet form.

Using the text of 2 Samuel, XXIV, 15. the Reverend Mr. Erskine described the pestilence which Jehovah was believed to have sent to destroy the people of Israel and Jerusalem as punishment for King David's sin. Old Testament readers will recall that David had taken a census of Israel and Judah. According to the writer of Chapter 24 of 2 Samuel, which is a later appendix of miscellaneous accounts, Jehovah permitted Satan to cause David to require the census, which was a sin. After the census was complete David is shown to have become conscience-stricken at his sin, and Jehovah gave him three choices for obtaining forgiveness: seven years of famine; three months of chase, pursued by his enemies; or three days' pestilence. The last choice was selected, and Jehovah sent a pestilence which killed seventy thousand Israelites. As the heavenly messenger was about to destroy the people of Jerusalem, Jehovah commanded the angel to cease, whereupon David prepared a huge sacrifice at the threshing floor of Araunah the Jebusite. This act stayed the plague from further destruction and appeased the wrathful god of the Old Testament.

Inasmuch as the clergyman lived in an age which knew nothing of income taxes and compulsory military conscription, the sinfulness of taking a census prompted the Reverend Mr. Erskine to dismiss the incident with "This was a sin, and a great sin, there can be no question." The minister found the question of David's sin and the innocence of the seventy thousand dead Israelites more to the point.

"David felt that it was he that had sinned and done the evil, and he entreated that as the whole blame was his, the punishment might rest on him and his household. He was honest and sincere. He made no excuse. He sought to roll off the blame on no one else, as the guilty are often prone to do; he took all upon himself. His sin had indeed been the immediate occasion of the judgment, but the people were far from the innocence which David seemed to suppose, and which the name (sheep) he applied to them would denote. Their previous wickedness was in reality the procuring cause of the calamity."

Now relating the Old Testament story to the cholera epidemic of 1854, the clergyman assured his Presbyterian flock that "this passage is full of interest and is deeply instructive."

"From it we learn that God is the author of the pestilence, that it is sent as a judgment in consequence of sin, that He alone can stay it, and that He will stay it, in view of deep humiliation and heartfelt penitence and renunciation of sin, and in answer to earnest intercession and entreaty on the part of His people. All these points are fully sustained . . . in this passage of sacred history. God sent that pestilence . . . He was entreated for the land, the plague was stayed from Israel. Does God still visit judgments upon nations, communities, families, and individuals, in consequence of their sins, when the ordinary means have failed to lead them to repentance and reformation? No one can read the records of His providential dealings with His ancient people, nor carefully watch the course of Divine Providence under the present dispensation, without being fully convinced that this is a law in the order of His providence. These judgments may assume varied forms, from the severest punitive chastisements, in the form of wars, and pestilences, and famines, and wide-spread sicknesses, and great

conflagrations, and sudden crashes in commerce and business, to the still worse form of utter abandonment of God for a time to continued impenitence and the grossest forms of impiety and wickedness."

If the most refractory individual in that predominantly Scottish Presbyterian congregation had not been shaken by that pronouncement, there was more to follow, containing fearsome references contrived to penetrate even the most resolute sinner.

"Has God been dealing with us in judgment? Has He sent upon us one of those remarkable visitations, by which He has been wont to punish and chastise the wickedness of individuals, and the crimes of nations and communities? I verily believe He has. Did ever the voice of a righteous Providence sound more loudly in the ears of any community . . . than in the ears of this, during the prevalence of that most fearful pestilence? It was alarming. Was ever the hand of Divine Providence laid more bare . . . than in that which has just passed over us? There was but little room, and we were rejoiced to see but little disposition to speculate about the vain notions of chance, or second causes, to the exclusion of the great First Cause, under this frowning providence. Whether the immediate cause of the sickness was the low state of the river, as the consequence of a long protracted and wide-spread drought; or the arrival of a train of cars freighted with disease, or both combined, yet all were made to feel that in it was the hand of God; and it was the work of Him who holds the winds in His hands, and who causeth it to rain or not to rain, as He pleases.

"At that time, as we beheld the terrible pestilence thinning by its ravages the numbers of the people; then the cry of death was heard in every street; when the very sky over our heads was mantled with darkness and gloom; when much fear and the deepest anxiety were depicted upon almost every face; when multitudes, panic-stricken, amid the greatest excitement and confusion, fled in every direction as for their lives; when the hours of daylight were too few to bury the dead; when the unattended hearse was to be seen hurrying amid darkness of the night with corpses to the place of burial; when the accustomed funeral solemnities in very many instances had to be dispensed with; when coffin after coffin was hurried to the crowded trench; when over a hundred and fifty out of a population of a few thousands were consigned to the grave during a few short days; and when bereaved mothers and heartbroken widows and desolate orphans wept and sobbed with a grief which would not be comforted; then, O then, God was acknowledged, and many a voice that was unused to prayer was heard to call upon God.

"Since the hand of God has been in this pestilence, it becomes us very seriously and attentively to inquire, Wherefore hath God thus visited us? What were the procuring causes of such a visitation? What had we done to provoke the Lord to stretch forth His hand to smite us? What called for the use of His chastising rod?

"To all these inquiries there can be but one answer — Our sins! Our sins! Our sins! Your sins! My sins!"

From this point, the Reverend Mr. Erskine began to inventory some of the sins which were to be found in practice in Columbia. He was certain that the sins of Columbia were "of a deeper dye" than even the sins of the ancient Hebrews. Among the sins being committed in Columbia in 1854 were those of revelry, drunkenness, gambling, licentiousness, irreligion, impiety, forgetfulness of God, indifference to moral obligations, practical infidelity, profanity, greed for money, a cold formal spirit among the professed people of God (doubtless a prod at those Presbyterians who voiced disapproval of experiential or emotional preachings), and vanity. Having taken care of assigning the authorship of the pestilence, and on what account

it was sent, the minister then sought to enquire for what purpose it was sent. After a considerable amount of elimination of reasons which could not be squared with the Old Testament passages, he decided the chief purpose of the cholera was to establish vividly the presence and power of God lest anyone forget. To explain the deaths of some of God's children who were among the cholera victims, Erskine discovered that the proportion of the pious dead to sinful dead was a mere six per cent. And these unfortunate people, he concluded, were removed possibly to save them from future temptations.

"Equal degrees, however, of suffering might be measured out to the righteous and the wicked in this life, and yet as to its present effects and its future results be vastly different. That which was a severe judgment to the ungodly, might be only a fatherly chastisement to the people of God. One part of a judgment may consist in the removal of the pious and the useful from a community, while they themselves may be only taken away from the evil to come, and to the pleasures which are for evermore. God could perhaps send no greater calamity upon a nominally Christian community than suddenly to take out of it all His own dear people."

Sermons in this style were heard less frequently in Presbyterian churches after James McCosh, the scholarly Scottish president of Princeton University, in the 1870's began to introduce "common sense" realism into American Presbyterianism, along with the acceptance of higher criticism and scientific research.

The Reverend Mr. Erskine selected passages from **The Book of Revelation, XIV, 13**, for the memorial discourses on the cholera dead of his church. Applying the minister's ratio of six per cent, it will be noted that eight or nine persons only among the victims of the plague in Columbia could be classed as "pious." Four of these were members of the Presbyterian Church: Dr. Richard E. Cochran, Mrs. Hannah Odell, Robert A. Spratts, and Mrs. Susan Dick. In his eulogy of Dr. Cochran, the minister presented a rather lengthy biography of the sixty-nine year old physician. During the course of his service at Columbia, the clergyman was a victim of smallpox. The kindness of the physician during Erskine's ordeal impressed the latter greatly, and the two became warm friends and associates in the work of relieving suffering.

Ebenezer Erskine's great-great-great-grandfather was a brother of the famous Scottish theologian, Ebenezer Erskine, who founded the Secession Church of Scotland which was formed of dissenters from the Church of Scotland. The Columbia minister was born January 31, 1821, the son of John and Margaret Trainor Erskine. He graduated from Joseph Engles' Classical School and Jefferson College. After serving as principal of the Pottstown Academy in 1844-5, he entered Princeton Theological Seminary from which he was graduated in 1848. Prior to being called to Columbia in 1851, he was minister of Penn Presbyterian Church in Philadelphia. Leaving Columbia in 1857, the Reverend Mr. Erskine went to Sterling, Illinois, where he served until 1865, at which time he founded a Presbyterian College at Sterling. Simultaneously he began publication of the "North Western Presbyterian," a church newspaper. From 1869 until his retirement at the dawn of the Twentieth Century, he served the Big Spring Presbyterian Church at Newville, Cumberland County Pa.

As editor and part-owner of the venerable **Columbia Spy** during the cholera epidemic, twenty-three year old Stephen Greene was in an excellent position to reflect the sentiments and feelings of many Columbians. On Tuesday morning, September 19, 1854, Greene issued an "extra" contrived to reassure the citizens of the stricken borough that the wrath of the cholera epidemic had spent itself. The **Spy** failed to appear on Saturday, September 16, 1854 because all employees of the newspaper had left Columbia. By Monday morning, September 25, 1854, the **Spy** was back on schedule, and Editor Greene was bursting with rhetorical editorials. The following extracts illustrate the colorful style of the nineteenth century rural editor, who believed in the beauty of expression more than in short, crisp, easily understood sentences.

CUT US OFF

The cars between this place and Harrisburg ceased running during the height of the epidemic, thereby stopping off all communication except by way of Dillerville. Had our York and Lancaster neighbors treated us in a similar manner, our situation would have been less enviable than it was; but they, in the deep generosity of their hearts, seems as though they could not go to too much trouble or expense to provide for our wants. Every Columbian is most deeply sensible of this, and for the tangible expressions of their sympathy, most sincerely grateful. Those are the truest friends who stand the test in hours of adversity. We have understood that it was at the bequest of the borough of Harrisburg, that the trains connecting us were taken off. It certainly could not have been at the instance of the Railroad Company, for they by their disposal of dead animals in the canal and river, were assuredly instrumental in producing the disease. If they have not already ceased operations of this kind, it is time they do. If there is no law to prevent them there should be, and enforced to the letter.

The Columbia Spy, Monday, September 25, 1854

We feel assured that no apology is necessary for the non-appearance of our paper last week. After our issue of 9th instant, the excitement on the epidemic became so intense that we found it impossible to do anything in the office. Our hands all left on Monday. One of the Editors — the only remaining practical printer — after removing his family to York, endeavoured to proceed with the business alone, and issued an extra on Thursday evening, to quiet the panic — giving the number of deaths up to that time; but after that was prevented by sickness from being in the office, until early this week. We have labored under great disadvantage in getting out this week's paper, only one of our regular hands having returned. We trust we shall now be able to go on as usual, without interruption.

The Columbia Spy, Monday, September 25, 1854

PURE WATER

What influence the use of the river water may have had in producing or increasing the epidemic which so lately visited our town, we cannot tell; but one thing is absolutely certain, and that is, all who use water from the hydrants, incur great risk to health from the fact of the inefficient measures used to procure pure and fresh water. It is well known that the receiving pipe extends into the river but eight feet from the wharf, and consequently all the filthy wash of Walnut Street, and the shore above, is pumped directly into the reservoir, and from thence without filtering, passes directly to the hydrants and in this state is used freely by a majority of our citizens. This pipe should be extended to the distance of one hundred yards at least; then we should escape many of the impurities that now necessarily form part of our daily drink. We have no desire to find fault with any body of men, but cannot think our Water Company free from censure on this subject. We are all taxed for the water we use, and we have the right to demand that ordinary care should be exercised in furnishing it in as pure a state as circumstances will admit. The expense of lengthening the pipes would be immaterial indeed, when the consideration is taken into the account that health and life are endangered by the situation of affairs as at present. This corrective should be applied at once.

The introduction of filterers, is another improvement we would respectfully urge upon the Company. These are matters which should command immediate attention, because they are capable of being improved **now**.

The subject of a removal of the Water-house to a situation above the town is one which we believe has been discussed for some time, and which should be agitated until the change is effected. There are many reasons to be urged in favor of the arrangement, which we propose bringing forward in a future article. For the present, it will suffice to say, that **there** the water is in a moving state all the time, while here, whenever the river is low, there is frequently a stagnancy produced by the dam below which impairs the purity of the water to an extreme degree. These are public affairs, and we urge upon all the stern necessity, if the health of our citizens is to be cared for, that they should be regarded in the light of wisdom and corrected by the understanding of experience.

The Columbia Spy, Monday, September 25, 1854

From the York Pennsylvanian, 16th instant

"We may as well contradict the rumor that all classes of people have been attacked with cholera. Our information is that strictly temperate individuals, both in eating and drinking, have escaped it."

Then your information was incorrect, that's all. The above contains a contemptible slander upon many of our citizens now in their graves. The man that at such a time could give utterance to it, deserves the scorn of every right thinking individual in the community.

The Columbia Spy, Monday, September 25, 1854

A glance at the cemeteries in our borough, is sufficient to cause the most mournful reflections. Over one hundred new-made graves — the work of one week! Death has been cruel and unmerciful — unsparing and insatiable. The gray-haired sire, the blooming youth, and the prattling infant were alike taken — all hurried away, with scarcely a premonitory warning. Earth with all its allurements could not keep them; affection plead in vain; hopes for the future were blighted; hearts, crushed and bleeding, induced the agonizing cry for mercy; but Death went on, heedless of moans or tears, of sorrow or woe.

**“Leaves have their time to fall,
And flowers to wither at the north wind’s breath,
And stars to set — but all,
Thou hast all seasons for thine own, Oh Death.”**

The Columbia Spy, Monday, September 25, 1854

EXCERPTS FROM SANITATION COMMITTEE REPORTS

The undersigned beg leave to present to you a statement of their receipts and expenditures, together with other interesting information.

J. M. WATTS
HENRY SUYDAM
HARFORD FRALEY
GEORGE BOGLE, *Treasurer*
J. W. FISHER, *Secretary*

It may be thought by some persons that some of the items in the account of expenses are large, especially that for nursing &c., but it should be borne in mind that at the time the cholera broke out, many of our citizens left the town, and many of those who remained did not feel free to take any active part in attending upon the sick; so that the Committee were compelled to employ a large number of nurses to attend not only in the hospital (set up in the Columbia Town Hall), but in different parts of the town, and to keep them employed both day and night; and we found that such service could not be obtained except by the payment of what under other circumstances, would be deemed exorbitant prices.

The amount paid out for Police will doubtless strike many persons as quite large; but . . . about half of our citizens were absent, and we deemed it necessary for the protection of their property to employ a large and efficient police force. Yet, strange to say, out of a long list of absentees, on whose account alone special watchmen were employed, we have been able to realize but about \$92, whilst citizens of other towns have contributed their hundred; and even thousands without being asked for a cent.

CONTRIBUTIONS AND COLLECTIONS

Hon. Thaddeus Stevens	\$ 50.00	Dobbin & Fulton,	
Hon. Simon Cameron	20.00	Baltimore American	505.13
Hon. Isaac E. Heister	50.00	R. S. Reed and others	65.00
C. Boughter, Esq.	50.00	Nathaniel Ellmaker, Esq.	25.00
Reah Frazer, Esq.	25.00	H. R. Knotwell,	
John and George Haldeman	100.00	Chestnut Hill Iron Ore Co. ..	210.00
A. Cummings and others	391.00	Isaac Thomas	2.00
Samuel Schoch, Esq.	100.00	Geo. Palmer, Morgan's Corner	5.00
Scull, Thompson & Co.,		The Buck Post Office,	
and others (Phila.)	875.00	George Wolf	10.00
Paschall Morris & Co.,		Dr. W. K. Mehaffey	20.00
and others (Phila.)	668.25	J. R. Eby, Harrisburg	25.00
Freed, Ward and Freed,		Stephen Miller	2.00
and others (Phila.)	177.00	Collection from Wrightsville ...	48.12
Anonymous Company	100.00	Musselman & Watts	50.00
Tobias & Son Co.	312.00	Cash from Citizens of	
E. C. Reigart, Esq.	20.00	Columbia for Police	92.00
J. B. Mitchell, Esq.	120.00	Cash from Catholic Clergy	
Mr. Thaw, Phila.	5.00	of Philadelphia	6.00
Joseph Yeager, Esq.	50.00	Cash on account of provisions	
Joseph Yeager, Esq., as president,		sold at store	192.43
Harrisburg RR Co.	100.00	Collection from Citizens	
Watson H. Miller	5.41	of Lancaster	546.43
John W. Forney	20.00	Amount for provisions in	
Christopher Hager	20.00	Wrightsville	45.13
J. Frantz and others	101.75	John Ashworth's Note	12.00
Barber & Bro., Baltimore	25.00		<hr/>
John Barber	15.00		\$5291.65
G. Sehner, Lancaster	10.00	Appropriation from	
J. B. Weidman, Lebanon	20.00	County Commissioners	160.00
			<hr/>
			\$5451.65

EXPENDITURES

Nurses' Hire	\$ 345.21	Beans	6.70
Lime, rosin, tar, &c. for burn-		Mackerel	8.00
ing in the gutters to make a		Printing, Spy Office	16.92
pall of smoke, and for spread-		Coal, much used for making	
ing along streets	114.77	a smoke pall	501.79
Digging graves	49.49	Wood for fuel	303.63
Coffins	142.50	Medicines, vendor not identified	15.40
Hauling	301.95	Railroad fares	15.00
Hospital expenses	62.26	R. Williams, apothecary,	
Horse Hire	32.00	for medicines	9.09
Flour, approximately 60 barrels	529.44	W. J. Shireman, apothecary,	
Potatoes, 70½ bushels	81.07	for medicines	10.70
Store Account	16.06	McCorkle & Dellet, apothecary,	
R. Dick	22.33	for medicines	64.23
Kauffman & Price	1.41	William Elder, apothecary,	
		for medicines	27.61

Rental of store room belonging to Samuel Mathiot	65.00	Physicians Bills:		
Sundry Invoices	94.02	Spencer	\$250.00	
D. Herr, for boarding physicians	89.25	Smith	100.00	
Loan to John Ashworth	12.00	McCorkle	50.00	
Groceries purchased in Philadelphia by H. Fraley	150.00	Bodder	200.00	
Groceries purchased in Lancaster	351.73	John	100.00	
Groceries purchased in Wrightsville	45.13	Chester	100.00	
Police and watchmen	174.75	Reutter	33.25	
Distribution of funds to the poor	579.06	Filbert	33.25	
Additional provisions purchased	326.57	Bruner	50.00	
Beef and pork	60.23			913.25
				<hr/>
				\$5528.55

Though it would appear from the foregoing excerpts that the Sanitation Committee spent more money than it received, subsequent unidentified receipts and minor disbursements show that the Committee met all its obligations, and their final statement was made in January, 1857.

Spokesmen for the Sanitation Committee apparently were not entirely pleased with the response of Columbians, nor were they unmindful of the "inflation" caused by the shortages of fuel, flour, provisions, and wages during the critical week. Flour was being sold for \$8.50 to \$9.00 a barrel in September, 1854, according to commodity reports, and that was the rate paid by the Committee, which hardly indicates inflation. Investigation of other commodities and their market prices of that time tends to acquit most merchants and vendors of taking advantage of dwindling supplies. Research does not reveal the wages paid per hour to nurses and watchmen.

The Sanitation Committee expressed its gratitude to generous contributors by newspaper notices. In addition to the collections of money noted before, the citizens of York and Wrightsville sent hundreds of dollars worth of provisions to Columbia. Mayor Kieffer of Lancaster set up his own collection bureau in the city and made his own accounting:

Amount collected \$546.43

Disbursements:

H. Gast, for horse and wagon	\$ 4.00	
J. Scheirebrand, potatoes	31.00	
Henry Scheriff, beef	116.29	
Jacob Foltz, marketing and expense	100.09	
F. Kilburn, marketing and expense	48.67	
Jonathan Dorwart, collecting funds	5.00	
C. R. Frailey, fowls	35.00	
Among the funds collected were two \$5 counterfeit notes	10.00	
Discount on \$65	1.43	351.73

Balance on hand\$194.70