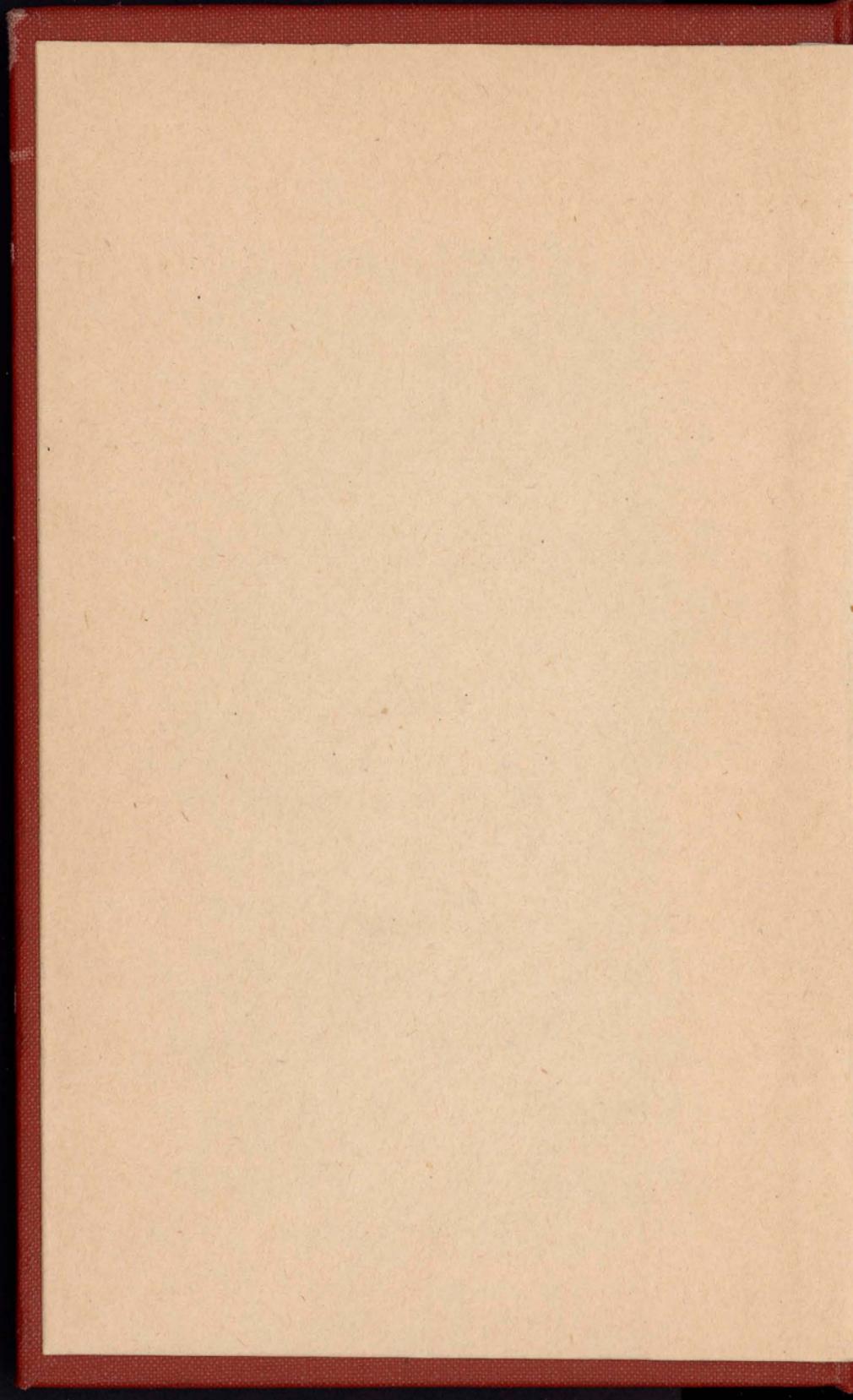


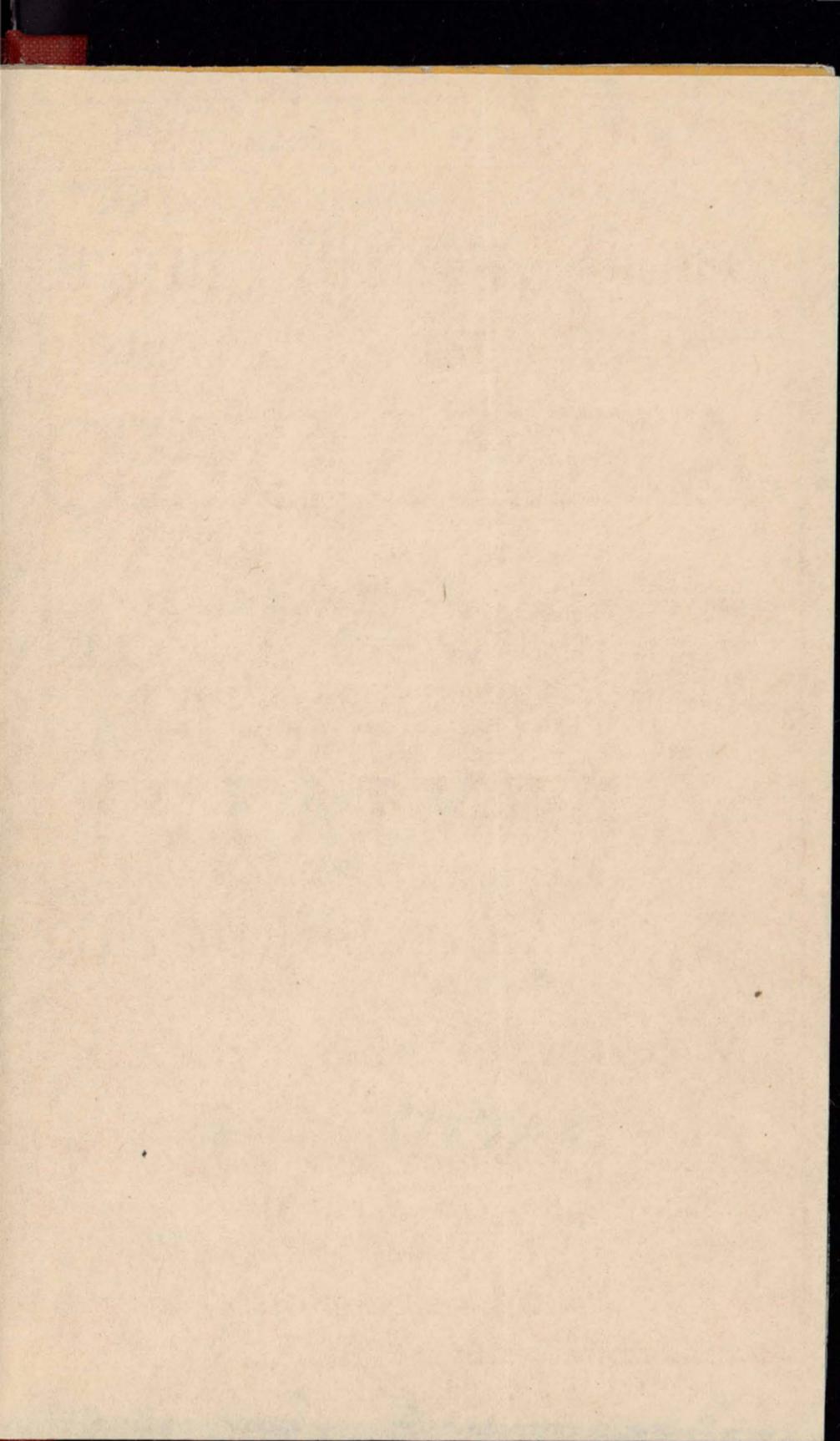
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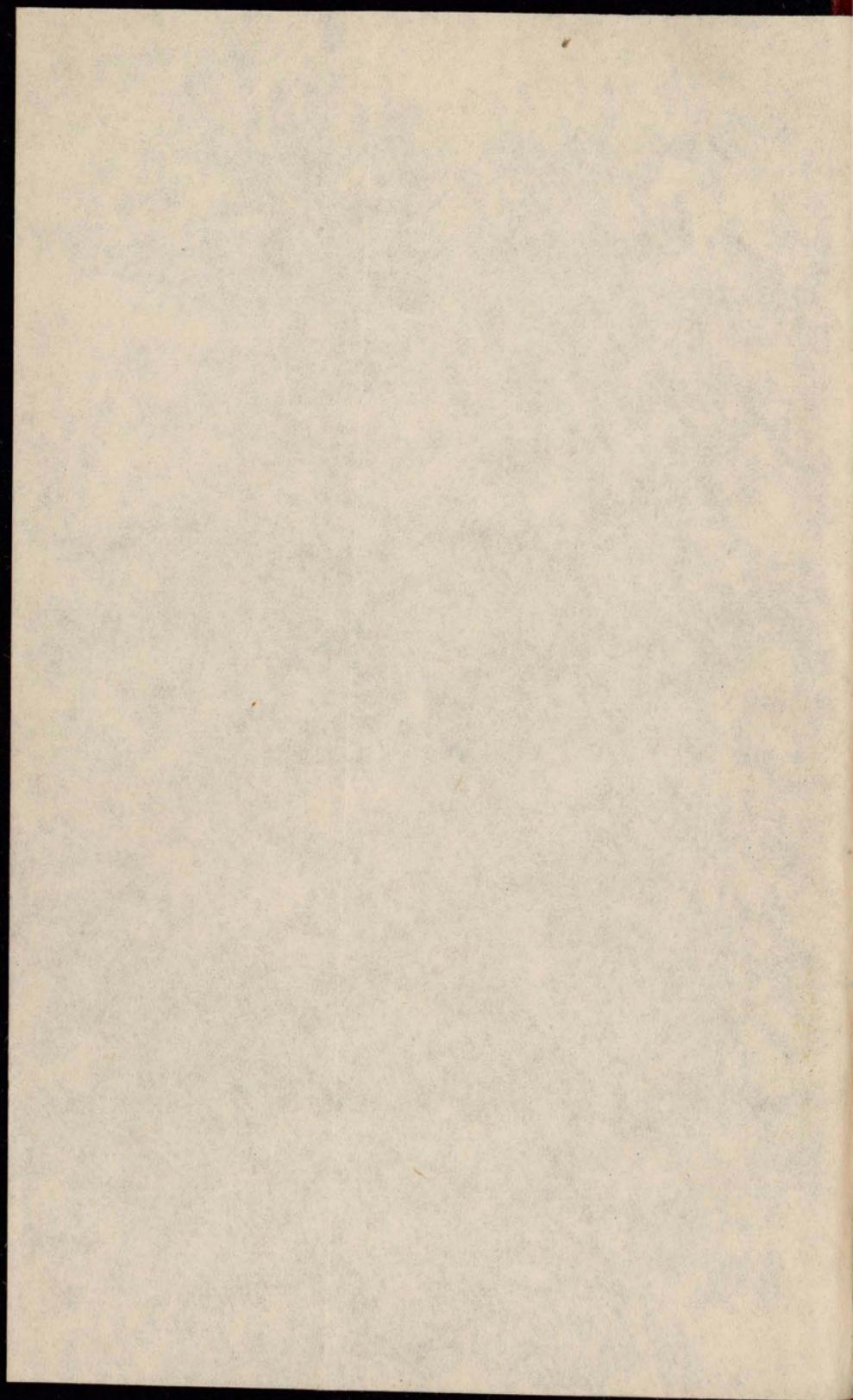
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# HISTORY OF THE CHOLERA.

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The term Cholera literally means an overflow of bile, from two Greek words,  $\chiολη$ , bile and  $\rhoειω$ , to flow. Technically its classification belongs to diseases of the digestive tube. In this category it has three distinctive appellations—cholera morbus, cholera infantum, and cholera asphyxia. This last is the fearful epidemic known as Asiatic Cholera. It is epidemic as opposed to endemic: that is to say, affecting the many rather than the few—people of all nations and classes generally, rather than persons of certain habits and grades particularly.

## ITS ORIGIN.

Upon this point the Commission and the medical gentlemen who have made the most thorough investigation appear to disagree. The report of an Egyptian Commission of Inquiry professes to have discovered what geologists would term the matrix of the cholera, and they certainly make out a very good case in support of their hypothesis. They aver that its origin is in that sterile part of Arabia, flanking the Red Sea, called the Hedjuz, wherein stands the holy cities of Mecca and Medina. The *London Court Journal* gives the following results, elicited by their investigations:

“The annual pilgrimage to Mahomet’s tomb congregates on this burning desert eight hundred thousand pilgrims, who live in the midst of the most indescribable filth. They die like rotten sheep, and are not even buried, but shuffled under a foot or so of sand, which is easily blown off the corpses. Some two millions of sheep are offered as sacrifices, all the offal of which is thrown under the burning sun to help the miasma. The pilgrims wear the same garments from the beginning until the end of their sacred journey; and as if this

were not sufficient help to originating and spreading disease, the clothes of one who chances to die, no matter of what disease, are carefully preserved and distributed as memorials among the relatives and friends.

“Here we have at least all the predisposing causes, according to the most logical reasoning, for the institution and propagation of cholera; but, in addition, we have also the vouched for fact that this year the cholera did break out in this nest of putridity, carried off one hundred thousand pilgrims in the course of a fortnight, and spread to Egypt, with a result which everybody knows. The Egyptian sanitarians argue that here we have the nursery, the hot-bed where the successive visitations of cholera westward have been generated, and whence they have been propagated; and if they will not succeed in earning universal belief, we can hardly find grounds for denying their minor postulate, that here, at least, the present incursion of cholera found its source.”

#### ANOTHER THEORY OF ORIGIN.

The cradle of that pernicious disease, which has again entered the gates of our land, is East India. For at least a century it has been recognized in that portion of the globe, as an entirely local disease, and looked upon as a consequence of great public disasters, more particularly of inundations. From time to time it extended, and diffused itself over a larger tract of ground, following in its course chiefly rivers or the principal avenues of commercial intercourse. On occasions, in the year 1816, as stated by Jameson, in Calcutta alone, there were no less than 21,876 deaths; in Bombay 14,000; and that 8 per cent. of all deaths recorded, were ascribed to that pernicious disease, five per cent. of which came upon the European troops. From 1820 to 1828 inclusive, the disease, somewhat different from its subsequent course, made strides to the east and west, paying a visit to China and Persia, receding, however, from its expansion. But in the year 1829, it took a westward course, and established itself on the European borders (Ovenburg and Astrochan,) and then marched over Europe, but was temporarily arrested by unfavorable seasons. From Astrochan through

the valley of the river Volgo—a distance of 356 verst—it reached Moscow in two months, and from thence overran Russia within one year. The revolutionary war then raging between Prussia and Russia, (1831) was conducive of a more rapid approach of the disease to the northeastern borders of Prussia, where Russian and Prussian troops were brought in contact. Henceforth, the disease ravaged Germany and the adjoining countries, northwest, southwest and west, reaching London and Paris, early the following year. Almost simultaneously with London, the disease appeared in Ruebeck, whence the tide of emigration took its direction, and from this port spread over the Western hemisphere in 1832. The successive visitations in 1834, 1837, 1849 and 1854, observed substantially the same course and peculiarities.

#### AN AMERICAN PHYSICIAN'S OPINION.

Carroll Durham, M.D., holds the following language :

“Like all invasions, and all epidemics, cholera comes from the East, marching westward. It is known to have existed in the delta of the Ganges since 1629. But in 1817 it appeared in Hindostan, as a widespread and terribly fatal epidemic. From Calcutta and Jessore its progress was westward, although it spread also into China and the Indian Archipelago. In July, 1821, it had reached Muscat, in Arabia, and in 1823, it touched the Georgian frontier of Russia. Thence it spread northward through Russia, Poland and Austria, extending in July, 1831, to St. Petersburg and Cronstadt, and in October, to Berlin, Vienna, and Hamburg. In October, 1831, it appeared in Sunderland, England, having been brought from Hamburg. It extended to London in February, 1832, appearing first in the immediate neighborhood of the shipping. From England it crossed to France, breaking out March 23d, in Paris, where in one month it carried off 20,000 persons. It was conveyed in an emigrant vessel from London to Quebec, where it appeared June 8, 1832. A few weeks later it became epidemic in the city of New York, and prevailed with great fatality until late in the autumn. It re-appeared in 1834, but in a less degree. In 1847 and 1848, cholera again invaded Europe from the

East. December 8, 1848, the packet ship *New York* arrived at quarantine, at Staten Island, N. Y., having on board a number of passengers sick with the cholera. Several had died on the voyage. From this infection cholera prevailed at quarantine for several weeks, and two or three cases, which were traced to this vessel, occurred in New York.

“Again, February 13, 1849, cholera broke out on board the packet-ship *Liverpool*, on her way to the port of New York. There were fifty cases, of which forty died. During the succeeding months of spring and early summer, several vessels successively brought the disease to the quarantine; but it did not become epidemic in the city of New York until June, 1849. It prevailed until October. In the summer of 1854, it was again epidemic in New York, and now threatens us again.

In June, 1865, it was announced that cholera was prevailing at Mecca, and on the route from Mecca to Alexandria. It was very fatal at Alexandria, Cairo, and Constantinople. It extended to Jerusalem, and along the shores of the Mediterranean and Adriatic, reaching Marseilles and Paris, from the latter of which, by way of Havre, the cases brought to New York in the month of October, 1865, by the *Atalanta*, were exported to us.”

#### OBSERVATIONS ON DISEASE.

It was in 1665 that the great plague devastated London. It appeared in Europe forty-five times during the seventeenth century, but it only raged violently in England three or four times during that period. About the time of the plague a disease prevailed called the “plague of the intestines,” similar to the Indian cholera. In 1829 the plague broke out in the Russian army in Bulgaria, and cholera soon afterward appeared in the Russian southern provinces. During the Crimean war there was a malignant fever, similar to the plague, in Odessa, and the cholera broke out at the same time in the Russian army. The recent plague of St. Petersburg came from the north of the Himalayas, and passed through Tartary and Siberia to

European Russia, the same route which the plague followed in 1333, when it destroyed a fourth of the population of Europe, and three-fourths of that of England. It is singular that while the plague was passing through Russia, recently, the cholera broke out in Arabia, passing through Egypt, on to Constantinople, Jerusalem, Malta and Tuscany, and even reached Marseilles and Paris. In 1832, 1834, 1849, and 1854 the cholera visited the United States. From 1849 to 1852 a particular epidemic prevailed in Europe and America. Since 1854 the prevailing diseases in America have been in the lungs, throat, and nasal passages, and influenza, pneumonia, and consumption have been destructive. During 1856 and 1857 diphtheria was fatal. From 1661 to 1664 the diseases prevalent in England were ague; from 1664 to 1666, lung affections and the plague; from 1667 to 1669, small-pox and fever; from 1669 to 1672, cholera and dysentery; from 1673 to 1675, measles, cough, and catarrh. During the second quarter of the present century there was a tendency in London to diarrhœa and diseases of a choleraic character, which were more fatal from 1827 to 1831. Diarrhœa continued fatal up to 1837.

#### FROM 1629 TO 1832.

The earliest mention of a cholera and a specific disease was in 1629. Its ravages were extensive, but are very little known. The first time that the disease, as an epidemic, created any widespread alarm was in 1764, when it swept through India, hurrying to a sudden death thirty thousand natives and one thousand Europeans. This was quiet work, however, compared with its fatal devastations in 1820, when one hundred and fifty thousand persons became its victims in one Indian Presidency alone—that of Bombay. The following year it demanded the sacrifice of fifty thousand lives in the single city of Bassorah. On its way through Europe in its first visit, Austria was the greatest sufferer, three hundred and thirty-eight thousand persons having died in the Empire of this plague in 1831; of that number two hundred and forty thousand were Hungarians. Next year it reached Great Britain on its

way here, and thirty thousand victims perished in that country.

FROM 1832 TO 1854.

Since the advent of the Asiatic cholera to this country, in 1832, we have never been a year without a few cases of it, in a modified form. In New York city, the years 1834, '39 '40, '44, '45, and '48 had distinctive cases of the more malignant type; but except in the first named year (1834), its presence was not seriously felt, or its poison endangeringly diffused. The year 1849 began a new cholera invasion, and from that time there have been regularly every year decided cases of malignant cholera. In order to draw such conclusions as figures can suggest on this head, the following table is annexed, setting forth the number of deaths by the three classes of cholera in New York city from the ravaging visitation of 1849 to and including the year 1864:

Year.	Cholera.	Cholera Morbus.	Cholera Infantum.
1849.....	5,071	241	926
1850.....	57	744	713
1851.....	3	102	721
1852.....	374	238	915
1853.....	33	72	922
1854.....	2,509	301	1,525
1855.....	19	39	1,135
1856.....	8	50	1,381
1857.....	11	42	1,308
1858.....	5	51	1,579
1859.....	9	62	1,364
1860.....	17	79	1,669
1861.....	12	93	1,207
1862.....	9	84	1,280
1863.....	9	112	1,525
1864.....	12	73	1,311

#### RESUME OF WHAT CHOLERA HAS DONE.

The first epidemic crossed the continent of Europe during the year of 1831, and was announced in England by a few

scattering cases in October of that year, and in the latter part of the following winter (1832), and as soon as the warm days of summer arrived, the malady assumed all the characteristics of an epidemic, and during that season it killed 21,000 inhabitants of the British Islands. On the 26th of March, 1832, the epidemic was first announced in Paris, and during the subsequent thirteen months it destroyed 20,000 people in that city. During the first week in June, 1822, the cholera was found prevailing in a crowded emigrant ship in the St. Lawrence river; a few days later, viz.: the 8th of June, it was announced in the city of Quebec. June 24th the epidemic had reached the city of New York, and at the same time emigrants having cholera were arriving from sea. Very speedily thereafter, it was announced at Albany, Troy, and various towns and cities along the lines of water communication and the principal commercial routes of the Northern, Middle, and Western States. It killed 3,513 persons in New York. The epidemic of 1834 seemed to obey similar laws of progression, and there appeared to be a tendency of the malady to become naturalized or protractedly prevalent in various places and under conditions of marked insalubrity. Since the days of the great plague, of a former century, there had been no such terror from pestilence throughout the civilized world. On the continent of America such ravages of an epidemic had been deemed hardly possible. But another great epidemic was destined to destroy more lives than the first.

In the month of July, 1848, the cities of Alexandria and Cairo, and the villages in the delta of the Nile were ravaged by epidemic cholera, which had slowly made its way from the eastward. In the village of Tantah, in the delta, where 195,000 pilgrims from Mecca had just arrived, 3,000 perished. It is worthy of special remark in this place that cholera had been fearfully fatal in eastern Asia, and after devastating the towns on the Caspian and Black Seas, it reached the city of Moscow during the year 1847. So fatal was that epidemic in the crowds of pilgrims who had assembled in the vicinity of Mecca, that from two to three thousand perished in a single night on the road to Arafat, the very place which was

again the scene of similar ravages from the same malady in the spring of 1865. In September the epidemic reached the city of Hamburg, and various ports on the German Ocean. September 22d, 1848, cholera made its advent on shipboard in the Thames, at London, and a few cases of the malady occurred in most of the ports between Hull and Glasgow, before the beginning of winter. The wave of epidemic pestilence had manifestly reached the British Islands, but it remained in abeyance, with only occasional outbursts here and there, in filthy, crowded quarters, until the warm days of the spring of 1849. On the 2d of December, 1848, persons sick with cholera were landed from an emigrant ship at the Quarantine Hospital on Staten Island. Sailing from the port of Havre the 9th of November, the epidemic exhibited itself the 16th day of the voyage, and before reaching the port of New York it killed fourteen of the passengers. About the same time, other emigrant vessels with cholera on board, arrived at New Orleans, and the first case of cholera in that city occurred on the 5th of December. Before the end of the succeeding month of January, an epidemic was so fully established that nearly 1,400 had perished by it. Two weeks after the appearance of the first case of cholera at New Orleans, the malady reached Memphis; January 5th it appeared at St. Louis; January 20th it reached Nashville, and during that month a few cases occurred at Cincinnati. The valley of the Mississippi was thus selected as the earliest seat of the second great epidemic cholera, and this circumstance was manifestly connected with the commerce of the western rivers by steamboats. The first cases were on the steamboats at each of these places. But at an early period in the spring, viz.: May 11th, the epidemic had gained foothold in the city of New York, in the purlieus of the Five Points. Rapidly gaining headway, the visitation became wide-spread and very fatal previous to the beginning of July. Its rapid extension throughout all the chief routes of water communication and the centres of commercial intercourse have become facts of history—facts which teach important lessons. Previous to the succeeding New Year, cholera killed 5,071 inhabitants of the city of New York.

In Great Britain the same epidemic destroyed nearly 70,000 lives. In Russia in Europe, nearly 600,000 perished.

The slighter epidemic wave which touched our shores in the summer of 1854, had a history very similar to that of the still slighter visitation in 1834. Whether we regard this as a fourth and independent epidemic, or as a secondary afflux of the great wave of death which swept over the Continents in 1849, it taught precisely the same practical lessons as all the previous visitations of cholera. In 1834 the epidemic killed 971 persons in New York, and 2,509 in the summer of 1854.

On the 11th of May, 1865, the first case of cholera at Alexandria in Egypt was announced in the north-western district of that city, near the railway station, a filthy suburb inhabited by 20,000 Arabs, Greeks and Maltese, who were living in gross neglect of every hygienic law. From this point the malady gathered strength and assumed the characteristics of an epidemic. On the 25th of June the deaths from cholera in that city were occurring at the rate of 200 per day. But previously to the latter date the same epidemic had been announced at Cairo and other places on the Nile and in its delta. At the same time, and previously, Mecca and Medina in Arabia, and the vast caravans of the Moslem pilgrims that were crowding the thoroughfares and encampments of that region, had become hotbeds of the cholera. By midsummer it was estimated by the Pasha of Damascus, that of the 700,000 pilgrims who visited Mecca in the month of May, more than 40,000 perished from cholera. Before the middle of August, 80,000 persons had perished from cholera in Lower Egypt alone. Sweeping around the eastern coast of the Mediterranean, the epidemic quickly reached the ports of Beyrout, Jaffa, Alexandretta, and Smyrna, and appearing at the Naval Hospital, near the gates of Constantinople, the 8th of July, it soon insinuated its deadly poison throughout the crowded and filthy quarters of that city, and in the course of a few weeks was destroying a thousand lives daily. The island of Malta and the city of Ancona, on the Gulf of Venice, were reached by the epidemic early in August, and it commenced its

ravages there, although the absolute quarantine and sanitary cordons of those places had attempted to defy its approach. At the same time, and probably at a date considerably earlier than this, the same malady was rife in the city of Bagdad and on the borders of the Persian Gulf; and at later dates it spread to Jerusalem, Damascus, Trebizond, and Varna, eastward; and later, to San Severo, Albarete, Palermo and Valentia. At the last-named city the epidemic was fully announced about the middle of August. During the months of August and September the epidemic visited Marseilles and Toulon, in France; and Catalonia, Gibraltar, Barcelona, and Madrid, in Spain; and at about the same dates reached Odessa and various ports on the Black Sea. During the last weeks of September, the epidemic began to manifest itself in Paris and in Southampton, England, and their surrounding districts.

#### IN CALIFORNIA.

The visitation of the epidemic to California is first dated from the fall of 1850, when that disease broke out nearly at the same time at Carson Valley, among the Overland immigrants, and in the city of Sacramento, (18th October.) At the last-named place it raged with great violence for more than a month, and subsided in the early part of December. Dr. H. Gibbons of this city estimated the rate of mortality at one per cent. per day. Awful proportion! In San Francisco, owing to its fortunate locality, cholera never could find itself a home. The largest amount of deaths in the beginning of December, 1850, when the cholera reached its achme of violence, did not exceed four per day. By Christmas that disease had entirely disappeared from our city, though it yet prevailed to a limited extent on the steamers arriving from Panama and from Nicaragua to 1853 and 1854.

#### CAUSE OF THE CHOLERA.

One of the primary opinions is that cholera is undoubtedly caused by imperfect drainage. In large cities this is particularly the cause. The scientific drainage of great

cities applies itself to the dispersal of the waters that fall upon or collect within their soil, as well as of the waste and deposit of their inhabitants. The latter, as more visible and offensive, usually get some attention paid to their removal; but the former are quite as important and as deleterious unless properly led away. In both respects modern foresight is shamefully behind that of antiquity. The Pontine marshes are not a blot on old Rome. And, to come nearer, would the Egyptians ever have left undrained such a series of shallow ponds as stretches behind Fort Hamilton, loading the summer air with ague, and costing Uncle Sam in three years' hospital outlay enough to buy and cleanse those stagnant pools? The Cloacæ of Rome still show, after the lapse of two thousand years, a solidity of construction and a skill in engineering that amazes latter-day pigmies. And no modern nation, except the amphibious and molling Dutch, have ever done a work of drainage equaling that performed by the Pharaohs for the Marcotic lake.

The French, with their executive and generalizing faculty, have applied the resources of hygiene and of engineering to this problem with more boldness than any other modern people. Who can forget the magnificence with which Victor Hugo lights up the subterranean gloom of Paris, and paints in shuddering *clair-obscur* its vast network of sewers, which boats may thread and armies traverse. London, too, has scented the importance of this ill-odored subject, and is constructing vast works, at imperial cost, to exorcise the foul demons that have so long undermined her health and morality. But New York, brilliant and beautiful above ground, still refuses to know on what pestilential foundations she rests—still shows how "*desinit in piscum mulier formosa superne*"—still trusts that her dead offal may bury its dead, and not corrupt the living with it—still dances over a mud and filth volcano, till the eruption of plague shall confound and terrify her into decency.

Will the reader follow us into these underground caverns, and learn how they have been built up by negligence,

arched over by greed, and left as a perpetual ulcer of pestilence under as fair a spot as earth's surface shows?

A map of the hydrography of New York island, prepared with great labor and cost by that accomplished engineer, Egbert L. Viele, shows the original sand-spit enlarged on each side by a breadth of made ground, pierced in the neighborhood of the Tombs by a profound water-chasm, and channeled, in different parts of its surface, both in the upper and lower town, by important streams winding over much of its face, and discharging, usually through extensive marshes, into the North and East Rivers. Death has occasionally resulted immediately from this shameless recklessness in this regard. Four or five years ago two young men, standing at the corner of a street crossing the Bowery, New York city, suddenly vanished, dropping thirty feet into an old well which had been "improved" by planking over the mouth and piling a mass of earth directly upon the rotting boards. In due time the trap went down, and one victim never ascended alive. In the Tombs prison of the same city it has happened more than once that fate has outstripped justice, and the key that locked in at sunset a hale man, though a rascal, has turned at morning to disclose a gasping wretch, done to death by the pestilent exhalations of a single night.

#### LOW SITUATIONS.

It is well known that liability to visitations of fevers and cholera, depends in no small degree on low situations, and proximity to river-banks or stagnant water. It was said, in reference to the intimate relations between the activity of the disease, and the proximity of the river Thames, London, that two causes were at work in such a locality. First, increased humidity; and, secondly, and more especially, the large evaporating surface of foul water, by which noxious effluvia are continually given off, and poison, to a certain extent, the atmosphere through which they are diffused. Generally speaking, the mortality from cholera has been greatest in the lowest levels, owing, as may readily be supposed,

to their imperfect drainage, and, consequently, to the greater humidity and impurity of the air of such places.

During the cholera season of 1849, in New York, Dr. Rotton noted the fact of the great mortality from the disease among the occupants of cellars, and hence, it became his invariable practice to have such persons, when attacked, immediately removed. He does not know of a single case of recovery of those who were not removed. Rotherhithe, a district of London, on the south bank of the Thames, has been the favorite haunt of the cholera in successive periods of its appearance from 1831-2 to 1854. Its sewerage was deplorably defective, being by open sewers connected with the river. Malignant cholera spread to a much greater extent on the line of open sewers than in the other poor and densely inhabited places. In other districts, we are told that the line of habitations, badly cleansed, and suffering from defective drainage, formed the line of cholera cases in 1831-2. The reports of the medical inspectors, appointed by the Board of Health in London, in 1854, concur in showing that wherever cholera has become localized, it was found to be connected with the aggregation of filth from one cause or another.

#### IMPURE AIR.

Some of the most frightful ravages of cholera on record were owing to the direct pulmonary poisoning by impure air and animal effluvium, accumulated for want of suitable ventilation. Examples of this nature have been furnished in all parts of the civilized world—in the East Indies, at Karra-chee, among the troops, at Juggernaut, among the native population, also in the crowded and ill-ventilated barracks; in England, among the brickmakers at Southal, the hop-pickers at East Farleigh, the pauper children at Tooting, the lunatics in the Wakefield Asylum, the convicts at the Wakefield Old Prison, the inmates of the Millbank Penitentiary, and of the Taunton Workhouse. At a time when no case of cholera had occurred in the neighborhood of Tooting, and when, indeed, even diarrhoea was not at all prevalent in the village, three hundred of the inmates of the establishment

were smitten with the secret pestilence, and of these no less than one hundred and eighty died. The girls, whose dormitories were the most overcrowded and the worst ventilated, suffered more severely than the boys. The essential cause of all this mortality was declared to be, "the inordinate crowding of the establishment." The numbers crowded together into the dormitories were so great, that each boy had only one hundred and fifty cubic feet, and each girl one hundred and thirty-three cubic feet of air allowed for respiration, and some of the apartments were, at the same time, so faultily constructed—there being windows on one side only—that no effective ventilation could possibly be kept up.

#### HEAT.

Dr. Chapman has published numerous papers in the London *Medical Times and Gazette* upon the employment of his favorite remedy for different complaints. He has lately written an article upon the cholera, in which he lays down the following propositions :

"The primary cause of cholera is, as a general rule, the excessive heat of hot climates, and temperate climate in summer when cholera prevails. The proximate cause of cholera is of precisely the same nature as that of summer or cholera diarrhoea, but it is far more developed, and consequently its action is proportionately more powerful and intense."

#### CHOLERA LANDMARKS IN NEW YORK.

As New York City, from its position, is pretty certain to be visited by the dreadful scourge, anything respecting its condition will prove of interest. Surely it must be instructive to note the quarters in which cholera has in former years made its first appearance. The first epidemic of this disease in New York, broke out in the vicinity of Cherry and Roosevelt streets, appearing also at the same time in Reade, Washington and Duane streets. Of course the Five Points, which had then all the peculiar characteristics it has since lost, was violently attacked, as well as the whole region of the Sixth Ward. A section of Laurens street, between Grand and

Broome, expressively called "Rotten Row," became another center. The same may be said of Corlears Hook, and anybody who has been up town in cars of the First and Second avenues, might recall spots which promise to become cholera favorites.

In the epidemic of 1849, the first appearance was at Nos. 21 and 23 Baxter street, and next at Nos. 8 and 10 Mulberry street. The physician of the first established cholera hospital gives this picture of the spot where the disease first broke out:

"No. 20 Orange (now Baxter) street, lies 30 or 40 yards in a southeasterly direction from the Five Points. The entrance to the rear lot is gained by an opening scarcely two feet wide, or more than six feet in length, pierced through the front house. Passing through this a distance of forty feet, you reach the rear lot, on which are two old and ruinous tenements, one a prolongation backward of the front house, and the other standing across it at right angles; the adjoining house an extension backward in the same manner, thus cutting off almost completely the admission of fresh air. The small area that is unbuilt upon is covered with black pools of filthy water. The apartment where the first case occurred is a basement or cellar in one of these buildings.

\* \* \* At my first visit on the 16th of May, five human beings, one man and four women, lay upon the floor in different stages of cholera. There was nothing under them but mud and filth, and nothing over them but a few rags of the filthiest description. Civilization and a great city could scarcely afford a parallel to the scene."

For two weeks the disease stayed in this locality; then appeared in a filthy quarter in Stanton street, afterward in the region west of the New York Hospital on Broadway—the same quarter now occupied largely by wholesale dry-goods houses, and traversed continually by street-cars of two or three lines, where smallpox and typhus have raged, with scarce an intermission, for nearly two years.

The cholera in 1849 showed a like beginning in other cities. In Philadelphia it appeared in two districts where cleansing had been inadequately performed; but the work

was taken hold of in such earnest that 2,700 privies were cleaned, 340 houses cleaned by authority, 188 ponds drained, 66 rag and bone shops closed, and 6,000 sources of disease in all removed, so that in that city but 747 persons died, while in New York the number was 5,071. In Boston the disease commenced and remained in three or four narrow lanes in the northern and most crooked portion of that crooked city.

Citizens whose homes are on the avenues and the spacious cross-streets have no idea of the nooks and holes where cholera may delight to make its fearful dwelling-place. Pass up Cliff street, above Frankfort, and the place will be reached, lying in a rude triangle inclosed by Cliff, Frankfort, and Vandewater streets. Through a tenement house on Vandewater street is a narrow alley (four feet wide) which forms the only communication with five other houses, standing first three, then two behind them, a small court, in which is their common privy, being between. Those furthest back from Vandewater street abut against four others, which in turn touch three others fronting on Cliff street, while stables and tan-vats conveniently occupy the angles, and a soap factory faces them all from the further side of Cliff street. Cholera might naturally enough make its headquarters here.

#### CHOLERA IN OLD HAUNTS OF DISEASE.

Dr. Laycock, in his highly interesting Report on Health, states that the cholera of 1831 in England selected nearly all the old haunts of the plague, and appeared to possess a predilection for the old haunts of disease. "It is a singular coincidence," he remarks, "that while the cholera commenced in the Haymarket, near the traditional spot of the plague under consideration (in 1604), and probably near to that of 1551, the first death from cholera took place also in the parish of St. Michael, Spurriengall, and on June 5th." It was in this parish, and on June 4th, 1604, that the first death from the plague occurred. The first case that occurred in Edinburgh in 1848, took place in the same house, and within a few feet of the same spot where the epidemic of 1832 commenced its course. On its reappearance in

the town of Pollockshaws, it snatched its first victim from the very same room and the very bed in which it had broken out in 1832. Its first appearance in Bermondsey was close to the same ditch in which the earlier fatal cases occurred in 1839. At Oxford, in 1839 as in 1832, the first case occurred in the county jail. This return to its former haunts has been observed in several other places, and the experience in foreign countries has been similar. At Groningen, in Holland, the disease in 1832 attacked, in the better part of the city, only two houses, and the epidemic broke out in these two individual houses on the visitation of 1848. But it was observed, that while in both epidemics, those of 1832 and 1848-9, the disease was localized in precisely the same districts, several of them having changed places in the relative degree in which they have suffered. The earliest case of cholera in Chelsea (near London), in 1848, is said to have been in Whitehall Court, and there it continued to exist until the end of the epidemic in 1849. The first case in 1854 was in the same place, perhaps also in the same house, in both visitations. A very similar fact is presented by Augusta Court, in which the three earliest fatal cases of cholera, in Chelsea, occurred in February, 1832; and which being revisited in 1854, continued to furnish victims to the pestilence throughout the early duration of the outbreak.

Kent and Mew-streets, Southwark, on the south side of the Thames, London, which were severely visited at an early period of the last epidemic, were also among the first seats of cholera in 1832. Dr. Acland relates that, with one exception, every yard and every street in St. Thomas's parish, Oxford, England, which had been attacked by cholera in 1832 and 1849, was revisited in 1854. It is evident from these and many more analogous facts, that, although we are unable to explain all the conditions for the development of cholera, it is impossible for us to deny the great influence of locality on its production.

#### IN BERLIN.

No surprise need be felt that Berlin was scourged with the cholera in 1831, and again with still greater severity in 1837.

Putting aside drainage, the Prussian capital is, in the width and general arrangement of the streets, and the better ventilation of the houses, superior to the French; but yet the proportionate mortality from cholera was much greater, or at the rate of nearly 2 1-2 to 1 in 1831, in the former than in the latter city—which, as commonly described, was so great a sufferer. In the second attack (in 1837), the mortality was still heavier in Berlin, or, as the difference between 1,426 and 2,174 deaths. Berlin was then so far behindhand in the comforts of life, as not to have water conveyed in pipes into the city and the houses. Three hundred thousand people have taste enough to be in dreamy ecstasies at the singing of Madame Pasta, or the dancing of Taglioni, and have not taste enough to appreciate or feel the want of a supply of water in their kitchens, sculleries, drains, sewers, and water-closets.

#### NARCOTIC POISON.

The narcotic poison that is the remote cause of cholera, possesses a deadly enmity to the electric life that exists in both the blood and the body of human beings. The poison of opium produces, says Dr. Stevens, a similar deadly effect on the life of the blood and the body, consequently, the experience derived from thousands of fatal cases, proves that the inhuman invention of adding the poison of opium to the poison of cholera is, when used by itself, or with brandy, or chalk mixture, the certain means of causing death in every severe case of the new disease. For even in the less severe cases, where the patients do not become collapsed, the primary calm produced by the deadening effect of the opium is followed by a reaction in the vascular organs, in the form of a symptomatic fever, that is nearly as fatal as the collapse-stage of the true cholera.

#### IMPURE WATER.

The effect of impure water is shown in the ravages of cholera in two of the southern districts of London. It is related as follows:

“These districts (comprising nearly a fifth of the popula-

tion of the Metropolis) have been notorious for the great severity with which cholera has visited them. Throughout these districts, during the epidemics of 1853-4, there were distributed two different qualities of water; so that one large population was drinking a tolerably good water, another large population an exceedingly foul water; while in all other respects these two populations (being intermixed in the same districts, and even in the same streets of these districts) were living under precisely similar social and sanitary circumstances. And when, at the end of the epidemic period, the death-rates of these populations were compared, it was found that the cholera mortality in the houses supplied by the bad water had been three and a half times as great as in the houses supplied by the better water. This proof of the fatal influence of foul water was rendered still stronger by reference to what had occurred in the epidemic of 1848-9.

For on that occasion the circumstances of the two populations were, to some extent, reversed. That company which, during the later epidemic, gave the better water, had given, during the earlier epidemic, even a worse water than its rival's; and the population supplied by it had at that time suffered a proportionate cholera mortality. So that the consequence of an improvement made by this water-company in the interval between the two epidemics was, that whereas, in the epidemic of 1848-9 there had died 1,923 of their tenants, there died in the epidemic of 1853-4 only 611; while among the tenants of the rival company (whose supply between the two epidemics had been worse instead of better), the deaths which in 1848-9 were 2,880, had in 1853, 1854, increased to 3,476. And when these numbers are made proportionate to the populations or tenancies concerned in the two periods respectively, it is found that the cholera death-rates per 10,000 tenants of the companies were about as follows: for those who, in 1848-9, drank the worse water, 125; for their neighbors who, in the same epidemic, drank a water somewhat less impure, 118; for those who, in 1853-4, drank the worst water which had been supplied, 130; for those who, in this epidemic, drank a comparatively clear water, 37."

Dr. Sutherland, in his report to the General Board of Health on the cholera epidemic of 1849, says, that the injurious effects of unwholesome water had been manifest in nearly every affected place—and adds, that a number of most severe and fatal outbursts of cholera were referable to no other cause. Since that time, much additional evidence of a confirmatory character has been collected. Two examples are recorded by Dr. Acland, in his valuable and interesting “Memoir on the Cholera in Oxford”—the parish of St. Clements, which suffered a large mortality in 1832, when the inhabitants had filthy water from a sewer-receiving stream, and an insignificant mortality in 1849 and 1854, when the water was derived from a purer source. The other case is that of the county jail, in which cases have occurred in every epidemic, whilst the city jail, which is not far from the other, has uniformly escaped. The only apparent difference between the two establishments in 1854, seems to have been that the supply of water for the use of the county jail, and of which the soup and gruel were made, was pumped from a filthy well-pool, within ten feet of one of the prison drains. No sooner were the supply pipes disconnected with this impure source, than cholera and diarrhoea ceased. It appears from an elaborate inquiry by the General Board of Health, at the close of the cholera epidemic of 1854, that the contrasted effects of the disease on the people of two large sections of the population, are only explicable by the fact that one division, comprising a population of about 268,171 persons, drank impure water; whilst the other, numbering about 166,906 persons, used a clearer, and comparatively pure water. The mortality from cholera among the drinkers of impure water—of water impregnated with the sewerage of the metropolis, and containing in solution a large quantity of saline matter, derived from the intermixture of sea-water—being at the rate of 130 to every 10,000; that of the drinkers of the pure water being only at the rate of 37 to every 10,000 persons living.

In the report on Epidemic Cholera in London, in 1854, by Dr. Sutherland, much interesting information is afforded

on the influence of water upon the spread of the disease. The deduction from the microscopical and chemical examination of the water used in the houses and neighborhoods where the disease was most prevalent, by Dr. Hassall, was: "That there is no water supplied to the metropolis that does not contain dead and living organic matter, animal and vegetable. But the Thames Ditton water, supplied by the Lambeth Company, is by much the purest of the waters, while the Southwark and Vauxhall water is one of the worst, and the waters of the other companies might be arrayed in a series between these two." From an inquiry instituted by the Registrar-General, the following results appear: "In 26,107 houses that derived the water from Ditton, 313 deaths from cholera occurred in ten weeks. In the 40,046 houses that received the impure water from Battersea, 2,445 persons, it was ascertained, died from cholera in the same time. The deaths in the latter districts exceeded by nearly 2,000 the deaths that would have occurred if cholera had only been as fatal as it was in the houses that derived their water from Ditton." Dr. Sutherland makes the following remarks upon these results: "When it is considered that the sanitary condition of the population does not materially differ, except in the quality of the water supplied by the two companies, it is difficult to resist this statistical evidence of the predisposing effect of the Battersea water, and of the loss of life which has arisen from its use."

The deleterious effects of impure water are not seen in cities or large towns alone: they occur in small villages, sometimes in the solitary farm-house—any place, in fine, in which the pump or draw-well is in the midst of a farm-yard or filthy court: receiving the surface-drainage of heaps of stable manure, pig-sties, &c. How often do we notice, says Dr. W. J. Cox, green, slimy, stagnant pools, in the close vicinity, and affording the sole water-supply, of cottages. Such a state of things does not often occur in this country; but in too many instances there is a neglect to obtain an adequate supply of pure water, the penalty is paid in the frequent occurrence of bowel-complaint, and the sudden inroads of epidemic cholera, which makes its attacks without

any other apparent provocation. In the new settlements of the West, the enterprising pioneer and his family often pay a tax in the shape of disease, and not seldom of life itself, from the use of bad water or its imperfect supply; and in new towns other schemes of improvement are tried, before sanitary measures, both for present and future protection, such as paving, drainage, and a supply of good potable water, are thought of.

Dr. Cox tells us, that water tainted with various organic matters, whether gaseous, as carbide or sulphide of hydrogen, or solid, as putrescent vegetable fibre, or vitalized, as algæ, confervæ, hydræ, fungi, infusoria, &c.—is a very frequent cause of severe visitations of bowel complaints during the summer months. Several instances came under his own observation, in 1853 and 1854, of the aggravation of epidemic diarrhœa from this cause. “That water falling on a growing soil, and running off to lie in stagnant pools, is sure to become tainted with animal and vegetable life, is well known; and when to this is superadded the circumstances of the said soil being highly charged with effete organic products, the water thus collected must necessarily be highly impure, and most unfit for human consumption.”

#### POVERTY A CAUSE.

The poor suffer great privations and submit to many inconveniences; and the cleanly among them deserve more consideration than they receive. Even in the homes of poor men whose wives are really cleanly, the former see with aching hearts the approach of washing day. When this needful sanitary operation is performed once a week it is a time of discomfort and unpleasantness: but in most tenemented dwellings there is a washing on almost every day of the week. Quarrels arise among the numerous inhabitants of a house respecting the day on which they can have the use of the lines and drying apparatus in the space which is often far too small and very inconvenient. It is by no means an uncommon practice, in order to save fuel, time, and so on, for one woman to leave the hot, dirty water in which her clothes have been washed, for the use

of another family; the mischief of this in cases where skin and other disorders are prevalent, is evident. It is not unusual for the clothes in which the sick have lain, or in which persons have died, to be kept waiting for the washing day in the rooms in which families live, or in the wash-house, which is accessible from the various apartments. There is also a frequent scarcity of water. Nuisance doctors should make it their business to look into such details of human life as these; and where the requisite supervision is neglected should insist upon its observance. Until the dirty habits of some of the poor are corrected, and the cleanly encouraged, there will always be apprehensions of cholera in such summers as we have this year, originating in the foulness of crowded and filthy rooms. When we take into consideration the modern style of building, the confined space in the rear of houses allowed for air, the compensation for narrow sites, afforded by increased height in the houses, whereby the circulation of air is checked and obstructed, the frequent removal of refuse will appear essential to the healthy condition of the inhabitants.

#### IS CHOLERA CONTAGIOUS.

In this connection we cannot do better than quote from the very thoughtful treatise of Dr. Brigham:

“That some cities and fortresses, which established rigorous quarantine regulations, have escaped the disease, is very true, but it is also true that other places, immediately adjoining those which were attacked, have escaped, notwithstanding that every precautionary measure had been omitted. It is further true that numerous countries, cities and fortresses have adopted and enforced the most severe and preventive regulations—that they adopted them early and enforced them with rigor—and yet the disease appeared among them. All that quarantine enactments can do toward preventing the spread of a disease from one country to another has been done in Russia, Austria, and Prussia.

“In Russia immense lines of troops were drawn to arrest its progress; St. Petersburg was entirely surrounded by *cor-*

*dons sanitaires*; but all these regulations, enforced by a powerful and despotic Government, were unable to prevent the approach and the spread of cholera throughout the Russian Empire. The efforts of Austria were equally unavailing, for in a short time the disease passed her *triple cordons* and invaded the country from Poland. Prussia employed 60,000 of her best troops to enforce her rigorous restrictions, and travelers bear testimony to the severity with which they were enforced. And what have been the results? (Turning to *The American Journal of Medical Sciences* for May, 1832).—‘An immense expenditure of money, the suspension of commerce, a stop put to industry, multitudes deprived of the means of acquiring subsistence, and whole families rendered favorable subjects for the disease; but no stop to the extension of the disease—on the contrary, its progress was rendered more fatal. As an instance of this, Breslau may serve as an illustration, and a warning to other cities. That city contains 90,000 inhabitants—active, commercial and industrious, many of them manufacturers and artisans. A quarantine of twenty days, with the difficulties, almost insurmountable which it entailed, was established at the borders of the province, and maintained with a rigor which might serve as a model to other nations. But in the midst of this apparent security, a woman living in a damp part of the town was attacked by the cholera, and in a few days the disease spread. The most minute researches on the part of the public authorities could not discover any communication between this woman and any stranger or goods suspected of being infected. But when the disease spread, the authorities saw too late the deep injury their sanitary measures had inflicted.’

“Taught by lamentable experience, Russia, Austria and Prussia have withdrawn their cordons, and acknowledge not only their inutility, but that they are productive of immense evils. Indeed, all the nations of Europe are abandoning severe quarantine regulations, and it is to be hoped that the cities of the United States will not adopt them, but place all their reliance, for the prevention of the disease, on the

removal of those causes which in all countries have appeared to produce it."

## NON-CONTAGION DISCUSSED.

I. The great numbers attacked simultaneously, and who had previously had no intercourse with the sick—a fact which all writers on cholera admit—cannot be accounted for without supposing the disease to be simply epidemic.

II. The general exemption from the disease of medical and other attendants on cholera cases :

1. Dr. Jameson says that of between 250 and 300 physicians engaged in cholera practice in Bengal, only *three* took the disease.

2. At Bombay, *none* of the hospital attendants were attacked, though they were assisting the patients day and night.

3. The Madras report shows that, in the hospital of the Royals, only 1 out of 101 attendants were attacked, and at the receiving hospitals for cholera patients at Trinchinopoly, St. Thomas du Mount, and Madras, the attendants were numerous, and sometimes shared the same bed with patients; yet not *one* took the disease.

4. At Berhampore *none* of the native attendants on the cholera hospitals were affected.

5. A letter addressed to the Medical Council of Moscow by eight chief physicians to the hospitals of Astrakhan, says: "We have all, without any precaution, touched and rubbed the sick; and we have daily visited the hospitals crowded with cholera patients, where we have respired their breath, yet we have neither contracted the disease, nor conveyed it to our families. The attendants who nursed and applied frictions to the patients—who put them into baths, changed their linen, and performed other offices for the sick—remained free from cholera. In the military, as well as in the civil hospitals, the linen and clothes of cholera patients were transferred to other patients without being previously fumigated or ventilated, and, nevertheless, those who wore those garments did not become affected with cholera. Several nurses and mothers, having cholera, suckled their children

both during and after the disease; yet the latter were not attacked."

6. Dr. Lefevre, physician to the British Embassy at St. Petersburg, reports as follows:

"In private practice, among those in easy circumstances, I have known the wife attend the husband, the husband attend the wife, parents their children, children their parents—and in fatal cases, where, from long attendance and anxiety of mind, we might expect the influence of predisposition to operate; in *no instance* have I found the disease communicated to the attendants."

7. During the prevalence of the epidemic at Moscow, 587 persons affected with cholera were admitted into a hospital, where there were already 860 patients laboring under other diseases. *Not a single one* of the latter took the cholera.

Dr. Zudkoff, of Moscow, who had formerly been a contagionist, declares that he saw, to his astonishment, that all the attendants, and all the soldiers, handled the sick, and supported their heads while they vomited, without using the least precaution, and without contracting the disease.

8. Mr. Searie, who attended a very large number of patients in Warsaw, where he had charge of a hospital for the poor, writes that *not one* of the attendants, *not one* of the nurses, *not one* of those who handled the dead, fell a victim to the scourge.

9. In Berlin, 409 houses were visited by the epidemic, and in 273 of these only one individual in each house was affected, while in the remaining 136 four or five suffered in each. Such is the density of the population in the quarters of Berlin so attacked, that the census assigns 4,200 families, with an average of four persons to each family, to those 409 houses, being an aggregate of 16,800 residents who lived in immediate contact with cholera. Of this mass only 803 were stricken with the disease, or about 1 in 18 persons.

10. In the Marine Hospital of St. Petersburg, of forty-three attendants on cholera patients, *not a single one* was affected, and in the temporary hospital in that city, of fifty-eight attendants *only one* was attacked, and he after drinking *kwass* while very warm.

11. Those engaged in post-mortem examinations of cholera cases have not been attacked by the disease. Such examinations have everywhere been made without any precautions, and with perfect impunity.

12. Dr. Foy of Warsaw, and ten others, *inoculated themselves* with the blood of cholera patients, tasted their dejections, and inhaled their breath, without receiving the disease.

13. As to the capability of merchandise to convey, and afterward to communicate, the infectious germ of cholera, the Central Board of Health in a communication to the Privy Council, remark:

“There is, perhaps, no question in the whole range of sanitary police on which so many and such irrefragible facts can be brought to bear as on this—derived, too, from the most authentic sources.

“Seven hundred and thirty ships, laden with hemp and flax, from infected ports of the Baltic, arrived at the different quarantine stations in this country between the 1st of June and the 31st of December, 1831. Many vessels also arrived laden with wool and hides; yet *not a single case* of cholera occurred among any of these ships outside of the Cattogat Sea, nor among the people employed in opening and airing their cargoes in the lazarets. At the hemp and flax wharf of St. Petersburg, where several thousand tons of these articles arrived during the spring and summer from places in the interior, where cholera existed at the time of their shipment for the capital, the persons employed in ‘bracking’ or sorting, and who generally passed the night among the bales, did not suffer so early in the season, nor so severely, as other classes of the general population. The same observation holds good with respect to all the ropewalks of St. Petersburg and the Imperial manufactory of linen cloth at Alexandrofsky, where all the yarn is spun from flax bracked and hackled on the spot.”

14. Down to the 29th of February, 1832, Mr. Aspinwall, American Consul at London, reported to this Government, that *only one* medical practitioner had died of cholera in England, although at a moderate computation, 1,000 or

more, had been in constant attendance on cholera patients. And, according to *The Medico-Chirurgical Review*, for April, 1832, not a single medical man was affected by the cholera in Sunderland, Newcastle, or Gateshead, England.

#### THE NON-CONTAGION HYPOTHESIS.

When the cholera prevailed in its most virulent form among the armed vessels and transports of the East India Company's fleet in the waters of Tennasserine and Pegu, in 1852, no case occurred among the medical officers or hospital attendants. At that time, the writer, having medical charge of a war-steamer, freely handled the persons and clothes of cholera patients, inhaled their effluvia, and mingled his breath with theirs—with the impunity he expected. So likewise did his assistants. No precautions were taken against contagion, because contagion was never thought of among men who annually renewed their acquaintance with cholera. We believe that physicians and nurses are less liable to the disease than other classes of persons, because, by constitution as well as habit, perhaps, they are less liable to that sort of anxiety and alarm—because in the midst of the disease their minds are actively and wholesomely employed—and because they are continually impressed with the importance of hygienic care, and necessarily inured to the practice of it.

Cholera is strictly an *epidemic*, existing by force of a mysterious poison diffused through the atmosphere. Whether the influences which produce this poison are “telluric,” “electro-magnetic,” or “animalcular,” we know no better now than we did 50 years ago. Cholera moves in the form of a volume, or field (of greater or less extent) of such poisoned air. Its rate of progress is comparatively uniform, and its track not more eccentric than may be accounted for by the influence of prevailing winds. As soon as it reaches any given place, all the persons residing in, arriving at, or passing through that place, who may be *predisposed* by certain conditions, hereinbefore stated, become the selected objects of its attack, however widely they may be scattered, and without regard to their possibilities of communicating

with each other; it is sufficient that they are included in the Choleraic atmosphere. Cholera is never brought—*it comes*. If passengers sailing from a port of France, where the epidemic prevails, arrive in an American port, whither it has not yet come, bringing with them the germs of the disease alive in their own systems, those germs will not grow and spread in the new and healthy air, but will wither and die out for want of their natural pabulum—the Choleraic atmosphere.

But if that atmosphere accompanies them, then the germs will flourish and be propagated. This is why the cholera did not extend to London in 1831, or New York in 1848, “although it had been introduced, and persons had been exposed to its infection. The *cases* had been *brought*, but the *epidemic* had not *arrived*. On the other hand, “it spread like wildfire in Paris, in 1832,” because the epidemic brought its own cases along with it. But the presence of the choleraic atmosphere is an essential condition of the *spread* of cholera. Without it, a few isolated cases of aggravated cholera morbus, in individuals rendered peculiarly susceptible and sympathetic by their local and personal accidents, are the worst that need be feared, and we believe that such examples of cholera morbus, occurring during the prevalence of an actual epidemic, constitute a large proportion of the whole number of cases counted as true cholera. Upon a prepared nervous system, it is most natural that the fiercer disease should beget its *kind*, even though the progeny may be of weaker powers.

All attempts to prove that the disease was *imported* into Sunderland and England, in 1831, failed; and the opinion that it was not imported at all became very general, not only at Sunderland, but throughout England, and especially among members of the medical profession. On the 28th of April, 1832, at the last meeting for that session of the famous Westminster Medical Society (the members of which, by their profound learning and their intimate acquaintance with the disease, were as well qualified to decide this important question as any other body of men in the world), the prolonged discussion “on the nature, character, and treatment

of Cholera Morbus" was concluded by the adoption of the following resolution:

"That the Westminster Medical Society, having devoted the uninterrupted space of six months to the serious and dispassionate consideration of the malady which has been prevailing in England since the latter end of September last, and especially in the Metropolis, and having heard the several arguments, depositions, doctrines, and facts, of the many members practically, as well as theoretically, engaged in that important inquiry, declare that, in the opinion of the majority of the Society, the evidence brought forward to prove the said malady to be a contagious-disease *has completely failed*; and that *every circumstance* which has come to the knowledge of the Society shows the disease in question to have begun, progressed, and ended in the ordinary way of every other *epidemic* disorder:"—that is, a disorder which falls at once upon great numbers of people.

It is impossible to realize how an intelligent being can pass by the subject of cholera without a thorough investigation; every man ought to know all that is known by physicians of its origin, and how to prevent its attacking him; to pass it by as a matter which he cannot comprehend, is to acknowledge one's self a fool or a suicide.

When cholera first appeared, and typhus fever was only an occasional visitant to some filthy district of the city, there was some apology; but now, that 500,000 of our population are, by their abodes and habits of living, offering as food for the pestilence, and are now awaiting the warmth of another season, we hope most earnestly that our people will shake off their apathy, and try and realize their ignorance and their danger. If God ever designed that selfishness should bring its own punishment, surely there is fear of a terrible reckoning for New York. The owners of tenant houses may secure twenty per cent. this season, but the organic law is destined to prove a hard master; perhaps the landlord and the tenant will go the same way.

Diseases are produced by laws unerring in their action as those by which the body is formed or health restored. Just as certainly as the merest mite that dances in the sun-

beam, the moss that covers the root or tree, the tiny humming-bird, lordly man, the ponderous elephant, the mighty whale, and the infusoria of the ocean, all originate from eggs and seeds, just as certainly are the infectious diseases produced in the same way.

Yellow fever is the product of closely confined warmth and moisture; it originates directly from these two conditions! united, they produce a vegetable fungus, of microscopic size, which is inhaled by human beings, and thus produces the disease. It is always brought to this city in the holds of vessels from warm climates only. It is never propagated from a single person to another; but it may be brought to any place, where the necessary conditions of atmosphere exist, by clothing or cargoes in bulk; and thus other centers of propagation for these vegetable fungi may be formed, precisely as we form mushroom-beds from mushroom-spawn in a damp and dark cellar; or toadstools spring up in the same place, or at the root of a tree in the forest. Frost at once destroys yellow fever, therefore it is of vegetable origin.

Cholera is not produced by a vegetable fungus or moss; it originates in human filth. Wherever human beings congregate in close quarters and in vast numbers, in a confined atmosphere in this country, there either typhus fever, malignant dysentery, or cholera infantum of our summers are produced. Asiatic cholera is produced by an animal germ. It came first to this country in a ship, in June, 1832. It first appeared in Quebec, passed to Montreal by the 14th, and was in New York on the 25th.

Cholera is defective vitalization of the blood, or want of pure air, producing defective nutrition. This causes relaxation of the contractile powers of the blood-vessels of the body. The entire tract of intestines opens its myriad blood-vessels, and all the albuminous or flesh-making material passes off from the bowels. It is rapid cholera infantum, only it preys upon the adults chiefly. Not a single case of cholera occurred on board the *Atalanta* in its spacious cabins, during all the terrible death-scourging among the poor steerage passengers. What can be more convincing?

There was filth and confined air, animal poison in its highest degree, depressing the aeration of life renevation of the blood; not producing typhus fever, but cholera. The solids of the human body are relaxed, when the blood loses its life-giving power, and animalcules can act readily, perhaps enter the blood-vessels themselves.

#### HOW TO ALLAY FEAR.

Cholera is, to a great extent, a nervous disorder. Where dread or panic prevail, there the pestilence will rage. Fear will cause at once the premonitory symptoms. It will become very important, then, to calm the nervous and unreasonable alarm of the ignorant classes. They should be shown that cholera is a disease, easily managed if it be met early enough, and that there are simple and effective remedies for the premonitory symptoms. For this purpose an excellent plan which has been followed successfully in Europe—that is, the employing a certain number of *volunteer visitors* to go about from house to house in the poor wards to inquire where these warning symptoms are prevailing, (which are generally neglected or unnoticed by the poor,) and to administer simple remedies; or if that is not practicable, to show the people where these can be obtained; to give advice and instruction and encouragement, and perhaps leave sanitary tracts bearing on this matter. Such persons might do much to quiet apprehension and meet the cholera, when almost alone it can be resisted, in the painless diarrhoea which precedes it.

Along with these visitors should be established *Cholera Dispensaries*, especially for cholera patients, where advice, medicine and treatment could be given at all hours of the day and night, gratuitously, to the poor. It must be remembered that it is the ignorant and needy classes who will suffer most from the pestilence.

#### THE INFLUENCE OF FEAR

If anything could render cholera contagious it would be the enervating influence of panic—as when, wanting a contagion of its own, it rides on the contagion of fear. For fear

diminishes the nervous power, depresses and enfeebles the action of the heart, detracts the blood from the extreme vessels, and deranges the secretions.

“Fear,” says Dr. Falconer “diminishes the power of the heart, and enfeebles the pulse—sometimes to such a degree that the blood does not flow on opening a blood-vessel. Fear also arrests the natural secretions, and renders those who are frightened more liable to be attacked by contagious diseases.”

“The tendency of fear,” says Dr. Brigham, “is to produce and spread spasmodic complaints, and to become epidemic during great public calamities. It not only disposes a person to be affected by a contagious disease, but actually produces a disease, and symptoms similar to the premonitory symptoms of cholera.” He calls attention to the fact that a person whose mind is constantly on the alert to detect some symptoms of disease of the stomach or bowels, who anxiously watches the effect of everything he eats or drinks upon the organs of digestion, will be very certain to create in them a morbid sensibility, which will be followed by indigestion, diarrhœa, or other derangements; and suggests that there is great reason to apprehend that many, very many cases of cholera, if not produced by fear alone, are aggravated by it to a dangerous degree; and cases of “common cholera” are transformed through the influence of fear, into the malignant and fatal. “At the present alarming time, no duty of medical men, and of all those who have influence over the faith of others as regards the epidemic, seems more imperative than that they should steadily endeavor to quiet public alarm, and constantly abstain from creating any fear about the prevalence of the disease and its contagious nature. Hundreds will die of *common cholera*, if they are not assured, and made to believe, that the disease which affects them is not *the cholera* which their fears suggest. In such cases every look, question and action of a physician is very important. He has it in his power, not only to endanger the lives of the sufferers, but to spread around a far more dangerous contagion than that of cholera—the contagion of fear; to drive from the bed of sickness the anxious relatives and useful

attendants, palsy the hand of charity, and create in those who are obliged to attend upon the sick a disposition to a disease closely allied to, if not identical with, malignant cholera; for the passion of fear falls in and unites with the disease, and attacks and paralyzes the same organs."

A man was once journeying in the interior of Turkey, when he met the Pestilence. "Where are you from?" he asked. "From killing 2,000 people in Smyrna," replied the Pestilence. "That's a lie," said the man, "I know that you have killed 6,000 there." "No," said the Pestilence, "I killed 2,000, and Fear killed 4,000."

Adults exhibit a much more lively susceptibility to cholera than children, the apprehensions of the latter not being so easily excited. It has been observed that the little ones enjoy a remarkable exemption from the disease; and its attacks are to be looked for, for the most part, among the most intelligent children of five or six years and upward, who have derived from what they have heard or read, a depressing anxiety respecting it—as of some invisible, mysterious, and fearful calamity, which is stealing upon them and those who are dear to them. In children, fear, like other passions, is soon effaced; but it is also more sudden and powerful in them, and far more likely to operate dangerously upon their delicate and susceptible nervous organizations when, by their intelligence and imagination, they are in a condition to entertain it.

#### EFFECT OF THE WAR.

The terrible ordeal through which this country has recently passed, has produced a harvest of weakened constitutions, through physical and mental suffering, that invites an epidemic to gather them to an eternal rest; and possibly never in our country's history were we in a condition or position less prepared to meet a scourge. If the missiles of destruction have not battered down our houses, nor applied the torch to them, nor encircled us season after season, with fortifications, the war has wrought effects far more terrible than these, and can be found in every house and family—pale, cadaveric faces, shrouded in mourning, meet us every-

where; thousands of sickly, insufficiently nourished women and children, formerly strangers to want, are at this time crowding our dispensaries and other associations for relief. Owing to the exorbitant high price of almost all the necessaries of life, it is next to impossible for the masses to obtain sufficient nourishment, or to be comfortably clothed or sheltered; high rents result in crowding to a still greater extent the already overcrowded tenement houses; these influences, above all others, are calculated to render citizens less capable of resisting the cholera or any other epidemic.

#### IN THE HOUSES OF THE RICH.

From a study of the history and the predisposing causes of cholera, we turn to the practical questions: How may we ward off the disease; or how, if it come among us, may we circumscribe its extent, and moderate its malignity?

Preventive measures may be collective, undertaken by the State, for the common good; or individuals, set on foot by individuals or single families, for their own benefit.

In cities the sewers receive the refuse from houses. If the sewers were properly constructed, this refuse would never stagnate in them. But even so, decomposition of organic matter must continually go on in them, evolving noxious gases. To prevent these gases from flowing back into the house through the waste and soil-pipes, stench-traps should be placed in these pipes. They consist of an elbow formed in the pipe, and in which water remains, constituting a barrier to the backward flow of the gases. But this is an effective barrier only so long as the gases are subjected to no upward pressure. If the gases be subjected to such pressure, they bubble up through the water in the trap, and pass into the house through the outlets of bath-tubs, wash-basins and closets. Now, it is notorious that in but few sewers is the flow of matter unimpeded. No provision is made for the outlet of gases from the sewers. The gases accumulate, and, by this accumulation, and by the heat evolved in their generation they become subjected to pressure. They bubble up through the stench-trap, and pervade the house. Thus the city houses of the rich ventilate the sewers! The refuse is

discharged into the sewers, only that it may there be converted into poisonous gases, and be received again, in that form, into houses. The more completely, under these circumstances, a house is provided with the "modern conveniences," the more deadly a habitation is! In many houses there are, besides the main stench-trap already described, secondary traps under each basin, closet, or sink. In these cases, the portion of pipe intervening between the main-trap and the secondary traps becomes a "closed chamber," in which the poisonous gases forced up from the sewer are confined. Any increase of temperature, or from the heat of the house, will expand these gases, and cause them to bubble up through the secondary traps, and into the house, as before.

These most serious dangers may all be obviated by *ventilating* the sewers or the waste-pipes. The latter can be done for himself by every householder. It is only necessary to connect with his waste or soil-pipe, just below the uppermost trap, a small pipe, which shall be led up through the roof, and shall open into the atmosphere, allowing the gases to escape. This will prevent any pressure of gases below the traps. Personal observation and experience have convinced us of the great value of this ventilation of waste-pipes. On a large scale, ventilation of sewers in English towns has reduced the mortality from typhus to one-half its former amounts. It should be noted that, as many of the predisposing causes of cholera are the same as those of typhus and of diphtheria, so preventives of the former are also preventives of the latter hardly less deadly maladies.

#### FIRES AS A PREVENTIVE.

Light fires as a preventive of the dreaded Asiatic cholera. The apparent recent tendency of fevers, whether epidemic or contagious, prevailing among the inhabitants of large cities, and in some localities in the country, is now sought in the habits of social life. Thus:

Dr. Parkin, late Medical Inspector of the cholera in the West Indies, believes that he has discovered a cause for the greater prevalence of certain diseases now than formerly, in the fact of the general substitution in dwellings

of furnaces for the more genial and healthful old-fashioned grates and fire-places. Many of the facts mentioned by Dr. Parkin, in his work on "The Causation and Prevention of Disease, London, 1859," seem to corroborate this theory. Birmingham and other large manufacturing cities, it seems, enjoy an almost complete exemption from fevers and other diseases produced by bad air. The reason assigned is the number of factory fires.

Dr. Parkin further states that the postmaster of Torre de tre Ponti (a town in Italy situated on the margin of the Pontine Marshes,) and who appeared to enjoy perfect health, thus accounts for the circumstance: "I have resided," said he, "more than forty years in this place, and I have never had the fever. The only precaution I take is, not to leave the house until the sun is somewhat above the horizon; to return home before nightfall, and *then to light a fire*. I live well, and take wine—that is all my secret." The natives of some parts of Africa, also, says Dr. Parkin, speaking from personal observation, adopt the same practice, "as I had an opportunity of observing, with a party of untutored Africans, captured in a slave ship and located on one of the estates in Jamaica."

Another example given as having been observed by Dr. Macculloch, says that a superintendent engaged in directing the cutting of wood in Africa, erected twenty earthen furnaces on the spot where his men were employed, lighting them every day. Before this he had always from forty to forty-eight of his workmen sick, but in a very short time the invalids were reduced to twelve, then to four, and finally to one. Dr. Acton, also, relates another similar instance of a man, whom he found in one of the most unhealthy corners of the Pontine Marshes, where he had been employed for several years in making charcoal from turf. During this period he had never been afflicted with any disease—though surrounded by victims of the pestilential fever of the Pontine Marshes—and, when questioned respecting a circumstance so extraordinary, ascribed it to the fact of his making it a particular point to return home

before sunset, and to keep up a continual fire until morning.

Napoleon had fires lighted for sanitary reasons, the moment his troops encamped. Unquestionably the modern practice of heating dwellings by furnaces tends to vitiate the air sooner than the use of the open fires and grates. In fever and ague districts of this country, old inhabitants learn the value of these suggestions.

#### EFFECT OF WATER.

We have heretofore referred to the importance of pure water in the treatment of cholera. The matter has attracted attention, and we particularly notice an able article by Dr. Louis T. Pim, in the *St. Louis Republican*. The basis of the article in question was an experiment made during the prevalence of cholera at St. Louis, in 1849, with a view of ascertaining what kind of insect life water, under different circumstances, was likely to produce. Six bottles being thoroughly cleansed, were filled as follows :

No. 1. With hydrant water only.

“ 2. Hydrant water, admixed with charcoal.

“ 3. Hydrant water, admixed with lime.

“ 4. Hydrant water, admixed with wood ashes.

“ 5. Rain water, as taken from the cistern.

“ 6. Hydrant water, thoroughly filtered through sand and gravel.

All the bottles were uncorked, with a gauze covering to protect the necks from the admission of insects.

No. 1. Became thick and of a dark green hue in 24 hours.

“ 2. The same.

“ 3. Not so much deteriorated, lasting 36 hours before becoming offensive.

“ 4. About the same as No. 3.

“ 5. Became black and putrid in 40 hours.

“ 6. The hydrant water filtered through sand and gravel was as sweet at the expiration of 17 days as when first exposed.

This experiment simply proved that rain water did not become putrid so soon as hydrant water from the Mississippi,

and that hydrant water, filtered through sand and gravel, remained sweet and good about ten times as long as unfiltered rain water, placed under similar circumstances.

The theory adopted by Dr. Prim is that the changes in the color, consistence and odor of the water tested, arose from the decomposition of animal or vegetable matter, or both, and that this foreign matter was one of the causes of cholera. In the case of the filtered water these substances were removed, and the gentleman who made the experiments declared that the filtered hydrant water was used exclusively in his family during the cholera seasons of 1849 and 1851, and although he lived in a neighborhood where the scourge raged with great virulence, there was not a case or symptom of cholera in his family during that time. It is admitted by the writer that infusoria as well as vegetable matter may be seen in water after it has been kept at rest in the sun's rays for a period of twenty-four hours and exposed to the atmosphere, but the quantity of decomposable matter found under ordinary circumstances is regarded as wholly insufficient to account for the sudden changes noted in the above table.

Glancing at the recorded history of cholera since it first made its appearance in an epidemic form, and following its course around the globe, the fact is deduced that water is the medium by which it is transported from place to place. Its line of march is chiefly confined to large bodies of water, and its movements are "explained by the myriads of ova or eggs that are borne by currents of air, which, falling into water, the proper matrix for their development into animalcular life, become the poison to that element, and cholera is the result of its use. In the vast ærial ocean that surrounds the globe there are counter-currents of air which carry the eggs to different parts of the globe simultaneously; and while the substratum deposits its contents in a continuous line along the earth's surface, the superimposed currents bear them to remoter regions, and in opposite directions. Water is essential to the existence of animal life, and whether used in the desert or on the mountain-top, on ship-board or on the banks of the Mississippi, when filled with these dead and putrid animalcules, cholera will surely be the result."

Our conclusion in the premises are, that cistern water of ordinary purity is an almost certain safeguard against cholera, and if that cannot be had, it is proper to boil, filter, or otherwise purify water before drinking it, especially when cholera is about. All sanitary measures are proper, in view of the approach of the dread Asiatic Scourge, but we must be particularly cautious as to what we drink.

#### PRECAUTIONARY RULES AND DUTIES

1. Avoid all causes of excessive nervous exhaustion; avoid intemperance in eating and drinking; live upon a nourishing diet, and keep the digestive functions in a healthful condition.

2. Avoid and discourage panic and needless anxiety when the epidemic is announced, remembering that in its premonitory stage, cholera is generally curable, and that all the exciting causes of the malady can be avoided.

3. Promptly second the efforts of the public authorities in all enlightened plans for protecting the public health, especially in all that relates to civic cleanliness, the abatement of nuisances, and the proper care and feeding the poor.

4. If in business, or charged with any public or philanthropic duty, do not forsake your post of personal or official labor, except when suffering from premonitory symptoms of cholera or other sickness.

5. Aid and encourage the removal and prevention of the localizing and exciting causes of cholera throughout the district in which you reside.

6. Give particular attention to the drainage, dryness, and cleanliness of your premises and the neighborhood, and see to it that the water supply is both *pure and sufficient*.

7. Inculcate habits of personal neatness.

8. Avoid the employment of purgative drugs, except when prescribed by your physician.

9. Avoid and prevent effluvia from excrementitious matters, sewers, privies, or chamber vessels. Frequently and thoroughly disinfect these sources of fever poison.

10. Insist upon the utmost cleanliness and purity of every portion of your apartments, furniture and domicile.

11. Thoroughly and frequently ventilate every apartment in the dwelling, even to the cellars, closets and vaults. This should be aided by fires in open fire-places, wherever available.

12. Carefully protect the body against sudden alternations of temperature. Wear flannel, and when exposed to changeable temperatures, or suffering any disorder of the bowels, wear a broad flannel band extending from the top of the hips to the middle of the body.

13. Be prudent in the use of food and beverages, being particularly attentive to quality and digestibility.

14. Bear in mind the fact that a painless diarrhœa is the most invariable precursor of cholera, and that if not immediately and properly treated, it will more probably terminate fatally than favorable.

#### RULES TO BE OBSERVED IN CASE OF ATTACK.

1. Soon as attacked by the premonitory diarrhœa or any symptoms of cholera, seek immediate repose in a recumbent position, where warmth and a pure atmosphere will be enjoyed. Immediately procure competent medical attendance.

2. Let the excrementitious matters from the sick be disinfected in the vessel soon as voided, by means of carbolate of lime, sulphate or proto-chloride of iron, coal-tar, carbolic acid, or permanganate of potash; and let no person directly use the privy into which such materials are emptied while cholera is prevailing. Wherever practicable let the evacuated matter be deeply buried in the earth, and immediately covered with quicklime, or coal-tar and gravel.

2. Let all the vessels and clothing that are used by the patients, be immediately cleansed with boiling water and soap or alkaline chlorides, or permanganates.

4. Preserve the utmost degree of personal cleanliness of the sick, and of their attendants.

#### ON CLEANSING AND DISINFECTING.

Putrefaction and the effluvia from effete organic matter, are among the most active and preventable of the *localizing causes* of cholera and fevers. To prevent such evils, and

destroy noxious exhalations, is the chief object of all the processes of cleansing and disinfecting. Water is the universal agent of cleansing. The true value of baths, clothes-washing, scrubbing, and flushing, will never be properly appreciated until the relation of these homely duties to the prevention of infection and disease is more generally understood. Sewers, house-drains, water-pipes, and water-closets, should be frequently *flushed* with water—let on in the largest practicable volume—for thorough cleansing; water-closets, privies, and waste-pipes in houses should be *flushed* in this manner every day.

Infected clothing and the utensils used in the sick room should be washed or scalded in hot water the moment they are removed from use. It is recommended that the clothing of the sick with that disease should be immediately plunged into boiling water, or soaked in a weak solution of chloride of lime, or permanganate of potassa. Of the former, 1 oz. to the gallon of water is sufficient; or of the latter, a few grains, or just sufficient to give the water a slightly reddish tint; this is a powerful disinfectant, and if boiling heat cannot at once be applied to the contaminated garments, the permanganate fluid should be employed. Soap and other alkalies are valuable aids to water-cleansing.

*Currents of fresh air*, and all methods of ventilation, cleanse by oxidizing and drying. Ventilation, therefore, is no less a purifier than water. Drying tends to arrest putrefaction, therefore it purifies, and should be effectively applied wherever practicable, particularly upon the walls and floors of domestic apartments, in closets, cellars, court-yards, and stables. The application of *quicklime* rapidly promotes the drying of places upon and near which it is spread. It also arrests putrefaction.

#### HOW TO USE DISINFECTANTS.

1. *Quicklime*.—to arrest putrefaction, to act as a rapid dryer, and to decompose certain moist and hurtful affluvia, strew the dry lime upon the earth; or, distribute upon plates, etc.

2. *Chloride of Lime*.—Employ this for same purpose as quicklime, also as one of the cheapest sources of chlorine. One pound of this substance will usually disinfect about 1,000 gallons of fluid sewerage. To mix immediately with offensive materials, it may, for convenience, be combined with water in proportion of 1 lb. to the gallon.

3. *Chloride of Zinc. Proto-Chloride of Iron, Sulphate of Iron, or Nitrate of Lead*.—Make a saturated solution of the salt, and use such solutions diluted in eight or ten times the quantity of water.

4. *Chlorine Gas*.—When required more copiously than it would ordinarily be given off by the Chloride of lime or Labarraque's solution, the following ready methods may be resorted to for generating it:

*Quick Method*.—Pour diluted hydrochloric, sulphuric, nitric, or acetic acid upon chloride of lime, zinc, or soda. This may be done gradually by means of a glass or lead syphon, or by the capillary syphon of lamp-wick, dropping the acid upon the chloride, if desirable to evolve the chlorine steadily for many hours.

*Chlorine water* may be readily prepared by mixing two tablespoonstul of common salt in two teaspoonsful of red lead in a quart of water, and add half a wine-glassful of sulphuric acid. It will give off gas as needed. It must be borne in mind that chlorine is irritating to the lungs. It is believed not to disinfect and destroy the cholera poison itself, but it arrests putrefaction and destroys many noxious gases.

5. *Nitrous Acid Gas*.—This is prepared by putting a mixture of nitrate of potassa, (saltpetre,) and sulphuric acid in an iron or porcelain dish. It must not be breathed.

6. *Coal Tar*.—To be used in sinks, sewers, privies, and bed-pans, by directly applying it, and allowing it to be washed away. It serves an excellent purpose when painted frequently upon the interior walls or sides of stables, prison cells, privy vaults, etc. Carbohc acid is derived from coal-tar, and is more convenient for use in the sick room. Dilute it.

7. *Bromine*.—Is a powerful disinfectant; to be employed by physicians.

8. *Permanganate of Potassa*.—To be used as an immediate and most effective disinfectant. Dilute the saturated solution of this salt in from 10 to 500 parts of water, according to the requirements for the occasion. It is the neatest and most effectual of all the disinfecting fluids, and can be used in less quantities than most others. A few drops of the solution will instantly disinfect a quart of drinking water.

9. *Heat*.—Boiling water or steam to be employed in cleansing as the most certain means of disinfecting contaminated clothing, etc.

10. *Charcoal*.—As a disinfectant or deodorant for extensive use in masses of putrescent material, and for local purification, fresh charcoal is of acknowledged value. The British Sanitary Commission in the Crimea, ordered whole shiploads of peat charcoal, which they used in the progress of their work of purification in the hospitals, barracks and camps in the East. A Report of that Commission states that “perhaps the best deodorizing compound was one used by the inspectors in all their works. It consisted of *one part of peat charcoal, one part of quicklime, and four parts of sand or gravel.*” But it may properly be stated in this Report that charcoal does not seem to disinfect or destroy the cholera poison. The ships which were employed in transporting charcoal from Constantinople to the Crimea were ravaged by cholera.

The following advice concerning disinfection has recently been promulgated by order of the Privy Council of the British Government:—

“In the ordinary emptying of privies or cesspools, use may be made of perchloride of iron, or chloride of zinc, or of sulphate of iron. But where disease is present, it is best to use chloride of lime or Condy’s fluid. Where it is desirable to disinfect, before throwing away the evacuations from the bowels of persons suffering from certain diseases, the disinfectant should be put into the night-stool or bed-pan when about to be used by the patient.

“Heaps of manure or other filth, if it be impossible or

inexpedient to remove them, should be covered to the depths of two or three inches with a layer of freshly burnt vegetable charcoal in powder. Freshly burnt lime may be used in the same way, but is less effectual than charcoal. If neither charcoal nor lime be at hand, the filth should be covered with a layer some inches thick of clean dry earth.

“Earth, near dwellings, if it has become offensive or foul by the soakage of decaying animal or vegetable matter, should be treated on the same plan.

“Drains and ditches are best treated with chloride of lime, or with Condry’s fluid,” (permanganates,) “or with chloride of iron.”

“Linen and wearing apparel, requiring to be disinfected, should without delay be set to soak in water, containing per gallon, about an ounce either of chloride of lime or of Condry’s red fluid. The latter, as not being corrosive, is preferable. Or the articles in question may be plunged at once into boiling water, and afterwards when at wash be actually boiled in the washing water.

“Woolens, bedding, or clothing which cannot be washed, may be disinfected by exposure for two or more hours in chambers constructed for the purpose to a temperature of 210 to 250 degrees Fahrenheit.

“For the disinfection of interiors of houses, the ceilings and walls should be washed with quicklime water. The wood-work should be well cleansed with soap and water, and subsequently washed with a solution of chloride” (permanganates) “of lime, about two ounces to the gallon.”

In presenting these practical suggestions, it is not intended to unwarrantably exalt the value of disinfecting agents. With reference to the whole subject the remark adopted in a manual published by the U. S. Sanitary Commission: “That there is no substitute for *fresh air* to meet the physiological requirements of respiration and health, should be indelibly impressed upon every mind. Better that all substances at present employed as disinfectants and deodorants were at once prohibited, than that such agents should practically tend to be regarded as *substitutes for a pure atmosphere*.”

## PREVENTIVE AGAINST CHOLERA.

Much depends on each individual as to the mode of life adopted, during the winter, as a preventive to cholera. In the first place, eat nothing but the most wholesome, digestible and nutritious food, avoiding everything likely to derange the bowels. Abstain from an excess of alcoholic drinks. It is a great popular error to suppose that drinking plenty of whisky or brandy is in any way a preventive against epidemics, but more particularly cholera. Avoid excessive study or labor; sleep in well-ventilated rooms and keep the house well ventilated and dry, and at a moderate temperature. Dress warmly, particularly about the abdomen. A very good plan is to wear flannel over the bowels. Abstain from excessive pleasure; keep regular hours, retiring at a seasonable time. Take moderate outdoor exercise, but regularly every day. Pay particular attention to water-closets, and see that they are kept clean.

Chloride of lime should be thrown into them once a week, and if in a boarding-house or very large family, where there are many using them, it should be used twice a week. Cathartics should be avoided as much as possible, as when the bowels are once deranged it is difficult to get them right again, more particularly when there is any epidemic in the atmosphere. Water should be boiled and filtered, not through charcoal but through regular filtering-paper, which can be obtained from any druggist. By all means don't be induced to take the various patent medicines advertised as preventives and cures for cholera.

Such is the well-founded assurance of personal security from cholera, when the principles of hygiene and the means of proper care are practically understood, that no physician of good judgment and intelligence fears to visit any city or place where cholera prevails, or to remain at his post of professional duty in the midst of an epidemic of the disease, for he knows that the exciting causes of cholera are avoidable, and that its premonitory stages can be very certainly arrested if the general health and personal habits are good. Nothing could better illustrate the value of proper atten-

tion to personal health and daily habits. In short, *Cholera as a pestilence must be regarded as a preventable disease.*

## THE CHOLERA CONFERENCE

At Constantinople, Turkey, received recently from the French representatives the following proposals in regard to the stoppage of all sea communication between Arabia and Egypt in the event of another epidemic.

1. That the Ottoman Sanitary Commission, now in the Hijaz, should report on the health of the pilgrims.
2. The presence of several vessels of war to interrupt maritime communication.
3. An organized surveillance over the Egyptian coast to prevent any disembarkation in infringement of the prohibition.

The manner of carrying this plan into execution was set forth as follows:

1. In the event of cholera breaking out among the pilgrims, the members of the Ottoman Commission, assisted, if need be, by other medical men appointed *ad hoc*, shall report the fact to the local authorities, and to the vessels of war stationed at Jiddah and Yembo, and shall also transmit the intelligence to Europe.
2. On the declaration of the said medical men, the local authorities shall interdict, until further orders, all embarkation, and shall invite all pilgrims destined for Egypt to proceed thither by land.
3. At the same time the vessel of war shall send away from the ports of embarkation all steamers and sailing vessels which may be found there, and shall exercise a strict surveillance in order to prevent any clandestine departure.
4. On advice being received of the presence of cholera among the pilgrims, the Egyptian authorities shall forbid the entry of all arrivals from the Arabian coast, commencing from a point to the south of Jiddah to be determined. Further, they shall assign to the suspected vessel, after re-visitalling them, in case of necessity, a locality on the coast of Arabia—Tor, for instance—where they shall perform quarantine.

5. With regard to the caravan, it must be stopped, as is usual, several days' march from Suez, where it shall be visited by a medical commission, and shall not be allowed to enter Egypt until its sanitary state is declared free from danger.

6. As respects the pilgrims destined for India or other countries beyond the Red Sea, it will be best, in order to avoid the risk of a partial embarkation, to subject them to the same general rule, namely, to make them wait till the end of the interdiction. However, it may be possible to assign them a particular spot some day's journey to the south of Jiddah, where they may embark.

7. The prohibition to embark shall cease fifteen days after the last case of cholera declared in Hijaz.

Objection was made to these requirements by the English, Russian, Turkish and Persian delegates, but there was a majority in favor of them, in spite of a declaration on the part of the Turkish government that it could not engage to carry out the scheme. At the last meeting, however, on the 3d instant, several modifications were made in the French proposals, owing to the strong objections urged by the English delegates on behalf of the Indian pilgrims. By paragraph three, as it now stands, the ships of war are to send away all steamers and sailing vessels from the ports of embarkation only; and paragraph six has been altered as follows:

“With regard to the pilgrims destined for India, or other countries beyond the Red Sea, it would be best to assign them a special point for embarkation several days' march to the south of Jiddah, unless the authorities judge that they may be embarked without risk at Jiddah.”

#### DISINFECTANTS ON SHIPBOARD.

The following is a new and improved method of fumigating and disinfecting vessels, which is thorough and reliable. The old plan of burning tar is not sufficient to destroy the infection of cholera: Large shallow pans are made of sheet-lead, by bending the edges upward, and numbers of them are placed on the floor and elsewhere in the hold, and state-

rooms, (if there be any,) and cabin. A layer of manganese is then spread in each, some two hundred or three hundred pounds being used for a single vessel. The hatches, and all other openings to the outer air, are fixed ready to be closely battened down in a moment's time. Then hydrochloric acid is poured on the manganese, twenty or thirty carboys being necessary. This is done as rapidly as possible, as the deadly gas begins to generate immediately, and the operator hurries to the deck, the hatches are battened down, and he leaves the ship. All trunks, boxes, and chests are previously opened of course, so that the gas can have free access. Chlorine forms in immense quantities and permeates everything, perfectly neutralizing all infection, killing all insects and animal life, and deodorizing everything impure or diseased. If by any accident a fire should be burning, the gas extinguishes it at once. The man who puts the acid on the manganese must not tarry, of course, or he would be killed by the gas in less than ten minutes. The vessel is thus left alone for some hours, after which the hatches are opened, ventilators put up, the gas blown out, and the ship is as pure as when first built. Of course, it is necessary to transfer the passengers to some other vessel, or to land them while the process is going on. Moreover, before the whole vessel is fumigated, each passenger selects a suit of clothes from his wardrobe, tickets it, and these suits are hung up in a special room, which is closed and fumigated by the same process. Then the passengers bathe, and those with beards shave their faces, if they shave at all, and evacuate the bowels, dress rapidly in their purified clothes, and are immediately transferred to another ship.

#### QUARANTINE.

This word originates from the custom of keeping a vessel with a contagious disease on board, at anchor for forty days off French ports; from the numeral *quarante*, signifying forty.

#### EARLY TREATMENT.

In 1854 certain towns in England were almost shielded from this dreaded enemy by preparing their sanitary de-

fences in time. Worcester, on the Severn, entirely escaped it. In this country it is recorded that in Philadelphia the most active measures were taken to guard the public health in the epidemic of 1849; 2,970 privies were cleaned; 340 houses were cleaned by the authorities; 188 ponds drained, 66 rag and bone-shops closed, and in all, over 6,000 distinct sources of disease removed. The consequence was that the number of deaths in that city was only 747, while in New York they amounted to 5,071! In Boston, good health arrangements kept the pestilence in the lowest and dirtiest streets, and reduced the deaths to some 633. In Baltimore very few deaths occurred.

The great desideratum for the treatment of the disease is to meet it early. The danger with the premonitory symptoms—the painless diarrhœa—is that nobody thinks anything of it. The poor are especially negligent of this warning. One symptom of the disease is the indifference it inspires. It is related that in the medical house-to-house visitations in Glasgow, before the cholera of 1854, out of 45,000 cases visited and treated, only fifty-two died; so important is the early treatment. The ratio of deaths to cases increases almost geometrically, as time is suffered to elapse between the first symptom and medical treatment. And from reports of the General Board of Health of London, it appears that out of 30,000 cases treated early, of which 6,000 were developed cholera, only 280 went to the state of collapse. This is the fact which justifies the excellent plan already suggested—the house visitation and treatment. The great matter with the poor is to provide remedies quickly, and to lead them to guard immediately against the diarrhœa. For other persons, the medical advice is, as soon as this forewarning symptom is perceived, that they should go directly home, with as little effort as may be, and at once place themselves in a reclining posture, and check the diarrhœa with any ordinary opiate or other medicine, till their medical adviser can be summoned. At this stage of the disease there is but little danger. The number of deaths to cases treated at this period are wonderfully small.

## PERSONAL AVOIDANCE OF THE CHOLERA.

Dr. Sayers holds that if the people understood the single fact that cholera always is preceded by certain premonitory symptoms, such as lassitude, languor, debility, and a diarrhœa, and that in this stage of the disease it is nearly always curable, if the proper precautionary measures are taken, it would tend to allay the popular terror. At this stage of the disease, it is of the first importance to pay attention to the first symptom, which is diarrhœa. At the very first approach, the patient should assume a horizontal posture and retain it, with the hips higher than the shoulders, and under no circumstance assume the perpendicular, even for a moment. Absolute, positive rest is needed, the body being kept in a warm condition. Any artificial means can be used for that which may be necessary. The main thing is the horizontal position, and perfect rest at the very commencement of the disease. If the patient is down stairs when taken, let him stay there or be carried up. If he is out visiting, let him stay at his friend's house. Keeping this position for forty-eight hours, in the majority of instances, the disease will pass over, and the patient, on recovery, need make no very great changes in his mode of life. Of course, if he has bad habits, he should reform them; eat and drink rationally, and attend to business as usual, but not overdo it. In the present state of the atmosphere, when pestilence is abroad, the system is rendered more liable to exhaustion, and he should husband his strength by avoiding violent exercise.

## VARIATIONS IN THE SYMPTOMS.

The general features—what one may term the contour—of Cholera *Asphyxia*, that compendium of the prominent phenomena from which, in all latitudes, seasons, localities and classes, the disease may be easily and certainly made out, being sharply defined and uniform, the same symptoms, nevertheless, vary infinitely on the degree of their intensity, “according to circumstances” internal or external to the individual—from the simplest diarrhœa with little pain and no

cramps, and no graver derangement of the circulation and temperature of the surface than occurs from the operation of an ordinary purgative, up to the overwhelming attack of a prostration so paralyzing that the person stricken has scarcely become sensible of pain when the secretions are suppressed and the heart's action sinks suddenly. Sometimes the premonitory symptoms are protracted, and the patient has a week or more of warning, in the form of diarrhoea, uneasiness, and a sense of heat and "thrill" in the stomach and bowels; in some cases, not diarrhoea, but *obstinate costiveness*, prevails. Sometimes he "falls dead in his tracks," like the men in the army of the Marquis of Hastings. At Bellamy, in India, a tailor was attacked while at work, and died in his working attitude, cross-legged on his mat; and a merchant, concluding a bargain, vomited twice and instantly expired. At Mecca, individuals in perfect health were suddenly stricken to the earth, vomited, turned cold, and died. Between these two extremes the merciful admonitions are of various duration, from a few hours to a few days; in the large majority of cases the disease takes from six to twenty-four hours to fully develop itself, and terminates by death or convalescence in from one to two days from the inception of collapse.

Sometimes the patient sinks at once, after discharging a small quantity of colorless fluid by vomiting and stool; sometimes the vomiting and purging are preceded by the spasms. Sometimes the matter vomited, instead of being colorless or whey-like, or like seething of oatmeal, is green, and the dejections instead of being thin, and whitish and muddy, are red and bloody, or they may even consist of a greenish pulp, like half-digested vegetables.

We have described the cramps as usually beginning in the extremities, and thence creeping gradually to the trunk; but in some cases they are simultaneous in all; and sometimes the order of succession is reversed, the abdomen being first affected, and then the hands and feet. Generally, neither the vomiting nor the purging are symptoms of long continuance; either they are checked by art, or the enfeebled body is no longer able to perform those violent motions—so that they,

together with the cramps, usually disappear some time before death. After the first emptyings of the bowels, the stools have been observed to be yellowish, turbid, or frothy, like yeast, and though generally inodorous, they sometimes emit a rank, fleshy smell. The dejections are seldom attended with much griping, and sometimes they are effected without effort or uneasiness, though generally the calls are sudden and irresistible, and the discharges expelled with alarming force. Tenderness of the belly, on pressure, is not among the most common symptoms, nor are the vomiting and purging by any means the most important or dangerous; in a great number of fatal cases, they have not been profuse, and have ceased, even without remedies, early in the attack. The cramps sometimes precede the vomiting and purging; but in the low and most dangerous form of cholera, spasm is often absent, or is present in a very slight degree. Tetanic spasms of the legs, thighs and loins, have been observed, but there is no general tetanus (lock-jaw), or even trismus. Hiccough in cholera is not indicative of danger; on the contrary, when it occurs in the interval of struggle between death and reaction, it is a favorable sign, and generally announces the return of circulation. The spasm at the pit of the stomach is often very acute, and the belly is almost always drawn toward the spine by a remarkable permanent contraction of the abdominal muscles. The pulse occasionally, though rarely, keeps up tolerably for several hours after the disease has plainly declared itself. Generally, it becomes small and accelerated at an early stage, and on the accession of spasm or vomiting, suddenly disappears from the extremities. On the cessation of the vomiting or spasm, and sometimes, apparently, from the exhibition of remedies, the pulse will return to the extremities for a short time, and then again be lost. In the less severe cases it is not wholly extinguished, though much reduced in volume, and a thread of pulse, however small, is almost always felt at the wrist, where recovery from the blue or cold stage is to be expected. The sinking of the pulse in cholera is a symptom not less characteristic than the cadaverous countenance, or the hoarse, plaintive whisper (*vox cholericæ*), or the discolored skin, or the *chilled breath*;

when it can be felt, it is generally regular and extremely feeble, "sometimes soft, not very quick, usually ranging from 80 to 100."

In the state of the skin, as in the other symptoms of cholera, striking variations are found. The surface is sometimes observed to be dry, though cold; and in a few rare cases, natural—"nay, of preternatural warmth." A rise of temperature has been repeatedly observed to take place just before death; but the development of heat under such circumstances appear to be confined to the trunk and head, and in almost all cases may be regarded as a fatal symptom. It is not indicative of any restoration of the diffused energy of the arterial system, or of any improvement in the function of respiration. The heat, in such instances, has continued well marked for some hours after death. The skin, in complete collapse, is generally insensible even to the action of chemical agents, and hence the usual vesicatories fail to blister. The application of mineral acids, or of boiling water, in this condition of the skin, produces little or no effect, and now and then a patient is found who is insensible to the operation; nor can leeches draw blood from an early period of the attack. The *blueness*, so characteristic of cholera in the East, has by no means been found an invariable, or even a very common phenomenon in England or the United States. Dr. White, one of the physicians to the Gateshead Dispensary and Cholera Hospital, states that in scarcely one case in ten, in his practice, did the discoloration assume that form; but there is often a deep, brownish hue of the face and hands. This blueness, or brownness, can often be temporarily dissipated by energetic friction. Absence of the peculiar "cold sweat" is a rare, and, we believe, a decidedly unfavorable sign.

The urine, from having been limpid and free, will become more and more scanty, and its passage will sometimes be attended with such difficulty as almost to amount to strangury; but as the collapse advances, this condition gives place to that in which the kidneys have ceased to perform their office, and there is no more secretion. Some patients complain of an urgent and painful desire to empty the bladder; but

the bladder is already empty, and, after death, is found to be dwindled to the smallest size; the desire may arise from the contraction of the posterior disk of the bladder hard against the internal meatus, as disclosed in post-mortem examinations.

The pains of cholera are agonizing to the sufferer, and at times so pitiful as to move the attendants to tears. The patient tosses incessantly from side to side, and complains of intolerable weight and anguish at his heart. As he struggles for breath, his imploring looks and gestures make you almost feel the horror that is burning and gnawing, and wrenching and strangling at his stomach and chest. At times, especially when the cramps are most severe, he rolls about and screams—and then there is that weary, weary cry for “water, water, water,” and that heart-rending, haunting wail, when the cold, bony grip of death is on him.

Violent headache is far from being a common symptom in cholera—a neuralgic pain over one eye is less rare. The cramp is invariably increased on moving. In some cases the patient declares himself free from pain and uneasiness, just when the dead-cold skin and the sharpened, anxious features, and the absence of pulse at the wrist, most surely portend speedy dissolution.

During all this mortal struggle and commotion in the *body* the mind remains clear and the perceptions unimpaired, almost to the final moment of existence. “The patient, though sunk and overwhelmed, listless, averse to speak, and impatient of disturbance, still retains the power of thinking and of expressing his thoughts, so long as his organs are obedient to his will.” Dr. Lawrie, Professor of Surgery in the Andersonian University, who closely observed the epidemic as it appeared at Sunderland, Newcastle and Gateshead, in 1832, commenting upon the declaration of the majority of medical men, that the mind is *always* unimpaired, says it appeared to him, in many cases, affected to a degree little short of what we find in concussion of the brain. He remarked this particularly in several children; when undisturbed they lay in a dull, sleepy, semi-comatose state, breathing with perfect calmness; when roused, they thought only

of relieving their distressing sensations, and called vociferously for cold water. But he does not say that he found them irrational or incoherent, or their condition was other than that which should attend upon congestion of the vessels of the brain.

#### THE EUROPEAN AND EAST INDIAN FORMS.

The points of difference between the phenomena of the European and the Indian forms of the Epidemic were intelligently stated by Drs. Russell and Barry, in a joint report to the British Government, dated "St. Petersburg, July 27, 1831," and by Dr. Lawrie of Sunderland and Newcastle, in a communication to *The Medico-Chirurgical Review*, in 1832:

1.—"The premonitory stage occurs in a much larger proportion of cases in the English than in the Indian disease. In the latter it is the exception, in the former the general rule."

2.—"The evacuations, both upward and downward, seem to have been much more profuse and ungovernable in the Indian than in the European cholera, though the characteristic of the evacuations are precisely the same."

3.—"Restoration to health from the cold stage, without passing through consecutive fever of any kind, is far more frequent in India than in Russia or England, nor does the fever in India assume a typhoid type." [Recovery directly from the cold stage, without the fever, is the rule in India; whereas, in England or in the United States, we believe that few who once have been fairly collapsed, will escape the consecutive fever.]

4.—"The proportion of deaths in the cold stage, compared with those in the hot, is far greater in India than in Western Europe."

5.—"The head is more frequently affected in the British than in the Indian form of cholera—as shown by great mental oppression and insensibility during collapse."

6.—According to Dr. Lawrie, the discoloration of the surface is neither so frequent nor so extensive in India as in England." [The blue is the common discoloration in India.

the *brown* in Europe; though in many cases in both England and this country, there has been a well-marked *purplish* change.]

THE EUROPEAN FORM NOT "SUDDEN."

M. Guérin, a celebrated French physician, in an exhaustive report submitted to the French Academy, says that "before the epidemic of cholera which ravaged Europe in 1832, it was generally admitted that this terrible scourge attacked its victims in the most sudden manner, and struck them down with a degree of violence that was only comparable to the effects of a lightning-stroke. All the writings of this period take up this view of the disease. Meanwhile, at the commencement of the epidemic of 1832, I perceived that it was quite otherwise. About a week after the appearance of the disease I wrote in the following terms to the *Gazette Medicale*:

"Most of the patients attacked with cholera have been for several days, or even weeks, laboring under a disturbed condition of the digestive organs, which did not appear sufficiently serious to them to deserve careful attention; such even have been their carelessness on this point that we have often been obliged to question them very closely in order to elicit information from them. It is only after having been asked three or four times whether they have had diarrhœa that they give a satisfactory reply. From this we conclude, (1.) That in many cases where this diarrhœa has not been noticed there is reason to suspect carelessness in observation on the part of the patient. (2.) That this diarrhœa, the precursor of cholera, should receive the careful attention of medical men, parents, and even of the authorities, who should recommend to the poorer classes—and publish the recommendations by all the means at their disposal—to pay proper attention to this state of the digestive system, and should make known to them the fatal consequences of neglecting to treat the diarrhœal attack.' This opinion, which had its origin in facts, was developed and confirmed by them. In proportion as the patients crowded into the wards of the Hotel Dieu, where I especially carried on my

observations, my convictions became more and more strengthened. Out of 600 patients questioned in the most careful manner, 540 had shown symptoms of *cholérine* (premonitory diarrhœa) before their entry into the hospital. From this I concluded, on the 12th of April:

1. "That cholera is always preceded and announced by a series of symptoms, to which, with a desire to caution the public, I have given the name of cholérine.

2. "That cholérine is the first stage of cholera.

3. "That cholera, properly so called, is only an advanced stage of the disease which has hitherto been unknown in its first or premonitory period.

4. "That it is always possible to arrest the development of the mortal stage of cholera by attacking the disease in its curable one.

"The existence of a prodromic or premonitory period in cholera is certain. The truth was accepted and admitted at the period of its announcement by the majority of physicians. The exceptions have hardly an existence, and are more apparent than real, being due to the absence of power of careful observation on the part of the patients.

"Since 1832 there have been at short intervals three new epidemics of cholera. Moreover, this dreadful malady has spread during the same period, or successively, over the various countries of Europe and Asia. Has it in every instance conformed to the laws of its first evolution? Has the prodromic or premonitory period always preceded the mortal stage of this disease? It is of the highest importance that the reply to these questions should be in the affirmative. For if this view—regarding it in its origin as one of the conquests of science and a benefit to humanity—receives from all recorded observation the character of an unimpeachable truth, it is essential that it be published in all populations and countries, as affording a sheet-anchor (*une ancre de salet*) in the perils which menace human beings. Now, having been requested by the Academy of Medicine to superintend the general report upon the epidemics of cholera, I have been placed in possession of all the scientific documents, home and foreign, relating to the subject.

“The result of an examination of these I have the honor to communicate to the Academy. Commencing with England, we find the following remarks in the report of the ‘General Board of Health,’ published in 1850: ‘Whatever doubts there may have been during the epidemic of 1832 as to the existence of prodromic symptoms (diarrhœa), the experience of the last epidemic solves the question completely. In one hospital where the first symptoms were minutely inquired into, it was found that of five hundred patients almost all, without exception, had been previously attacked by choleraic diarrhœa, of ten or twelve days’ duration. Dr. Burrows states that the replies of the patients showed that the ‘rice-water’ discharge of cholera was always preceded by others of a different, though unhealthy character. Dr. M’Loughlin states: ‘I believe I am correct in concluding, that of 3,902 cases of cholera, I have not found one without prodromic diarrhœa.’

“In France there are the same confirmations as in England. M. M. Levy found that of 142 patients, (at the hospital of Val-de-Grac,) there were only six without prodromic symptoms. In 95 cases the diarrhœa had lasted for two, three, four, and even a greater number of days. A general inquiry, instituted by the ‘Comite Consulatif d’Hygiene,’ during the epidemic of 1853, gives the following as part of its report: ‘From the 1st of November, 1853, to the 22d of January, 1854, of 974 choleraic patients admitted to the hospitals of the capital, 740 had been attacked with premonitory diarrhœa; the others appeared exempt, or were unable to give exact evidence.’ To these authentic statements I may add those which have been made by the different departments of France in reply to the questions of the authorities. Almost all the local physicians answer that cholera commences in the great majority of cases by diarrhœa and other premonitory symptoms. The cases of sudden cholera, if they really exist, do not exceed five or six per cent.”

#### HELPS AND HINTS TOWARDS A PATHOLOGICAL DEFINITION.

The consecutive fever of cholera is not an integrant and necessary part of the disease. It cannot be distinguished

from an ordinary continued fever, except by the rapidity and fatality of its course. It is the result of nature's effort to recover herself from the stunning shock that has prostrated her, and the oppression that keeps her down. Cholera is only cognizable *with certainty* during the cold or "blue" period; of the three stages, the collapse alone is true cholera. Where medical measures have been promptly, energetically and successfully employed, the essential and diagnostic symptom, sudden sinking of the circulation, has often not developed itself; and there are cases where an excited vascular action has accompanied the first tumult of the system in cholera. These are precisely the cases which yield most certainly and promptly to the remedial measures. In India it has been observed that these favorable indications chiefly appear among the European soldiers, who usually imbibe spirits freely at the commencement of the attack. During an invasion of cholera in Malacca and Burmah, in June and July, 1852, the writer of this had medical charge of an East-India Company's war steamer in the Bay of Bengal and the Straits of Malacca. The ship's company was composed of Europeans and natives—Malays and Mohammedans—in about equal proportion. Under the peculiar treatment, to be described further on, not a single case of collapse occurred among the Europeans, all of whom "indulged" liberally, the officers in wine and toddy, the men in their regular grog, twice or three times a day, and in irregular "drinks" as often as they could get them; whereas, among the natives, most of whom were abstemious, by reason of "piety" or vows, every case was collapsed; but the recoveries, even from the cold stage, amounted to eighty per cent. If the superficial veins and arteries be opened in the cold stage, the contained blood may flow out; but their walls then collapse, and no more blood can be drawn. There is no authentic fatal case of cholera on record where the circulation has not been arrested, in the extremities at least, long before death.

An increase of temperature is often observed, just before dissolution; but the development of heat in such instances is *partial*, being confined to the trunk and head, and is a

fatal symptom. This mocking warmth is generally appreciable for some hours after death. The application of boiling water to the skin, in the worst cases of collapse, produces little or no effect, and some patients are insensible to the operation; but it is certain that in a body but just dead of some other disease, boiling water will visicate readily. So extreme is the diminution, or so complete the destruction of the nervous energy of the skin, in the cold collapse of cholera, that there is less vitality there in such cases, the patient being still alive, than in the skin of a body recently dead of a *different disease*. An Eastern physician states that he has applied boiling water to the feet and lips of patients in India, without eliciting a tone or gesture of complaint.

The change in the condition of the blood—"dark, black or tarry, thick, ropy or sirupy"—is fully proved to be in the ratio of the duration of the disease, the blood more or less rapidly changing from a natural to a morbid state, as the disease advances: such is the general rule. Observe, that the blood is usually found to be less changed in those cases of cholera which are ushered in with *excitement*, than where collapse has occurred at an early period of the attack. The blood is sometimes found, on dissection, to be of as dark a color in the left as in the right side of the heart—affording reason to believe that in the whole arterial system it is equally changed. In many cases the temporal artery has been opened, after attempts to procure blood from the brachial or jugular veins had failed, and the blood in the artery was found dark and thick, like the venous blood; it flowed in a languid, ropy stream, and then the artery collapsed.

Hiccough is a favorable sign, and seems to announce the return of circulation, especially when it occurs in the intermediate moments between the threatening of death and the beginning of reaction.

While burning thirst, pain at the stomach, cramps, asphyxia, clammy sweat, cadaverous coldness, and aphonia, may all be present, vomiting and purging may be absent, and "yet" the case will rapidly run to a fatal termination. The fact is, the vomiting and purging are not only "far from

being the most important or dangerous symptoms"—it is not only true that "the danger of the case is by no means dependent on the quantity of matter discharged from the stomach and bowels," and that "in some of the worst cases this is not very considerable, and in some of the most successful it is very great"—but it is our conviction that the vomiting and purging are, in their original intention, genuine efforts of nature to relieve the engorged vessels, and restore the equilibrium of the circulation; that they constitute nature's safety-valve to the congestion; that their presence, *in collapse*, is generally a favorable, and their sudden disappearance, a very unfavorable sign. They almost invariably cease a short time before death in the cold stage; they frequently return in a notable degree at the beginning of reaction. Mr. John Fyfe of Newcastle, England, attended 579 cases of cholera; and in all these, he says, collapse never came on "until after profuse serious discharges from the bowels." Was not nature, by those discharges, struggling to prevent the collapse?—in the language of Dr. James Johnson, Physician Extraordinary to the King of England, was she not making "violent, but too often unsuccessful, efforts to restore the broken balance of the circulation, and to re-establish the secretions, by sickness and purging—the ejected fluids being *exudations*, not secretions?" Here nature cries to us for help, and shows us *how* to help her—disclosing to us the inner mystery of cholera. If we do not make haste to aid her in the direction she points out, she will exhaust herself by her own tremendous efforts.

In cholera there is every reason to believe that every species of secretion, in all parts of the body, is abolished. No known functions of the mucous membrane of the alimentary canal could form matter like that which is discharged; and as there is no circulation going on in the skin, but rather a complete state of asphyxia there, there can be no secretion of *perspiration*. The "cold sweat" of collapse is not true perspiration (like the critical perspiration of the consecutive fever), but exudation; and, viewing the skin and the mucous membrane as one continuous surface, it is just to conclude that this exudation is homogeneous throughout. "Whence,

then, and how, come these discharges? On the skin, certainly not from circulation, for there is none there; and it is more than probable that the capillary circulation of the mucous membrane of the intestines is equally absent. It would seem as if the elements of the body, composing the parts nearest to the surfaces, became subject to new affinities, forming a new substance, incapable of being retained by the membranes, but rapidly oozing through them. Two facts go to support such an hypothesis: First, the abundant new formation transuded, where no circulation exists; and second, the rapid *amaigrissement* of the body. This wasting of the body is not merely apparent, it is real; the usual roundness of the parts is taken off, and tendons and other salient points become strikingly prominent.

Of the two great classes of functions performed by the organs of which man is composed, one only is primarily paralyzed by the poison of cholera. The operations of the senses, and of the intelligence, are either left untouched or are affected but in a secondary manner. It is the *animal* that dies; the Intelligence, awe-stricken, surveys the scene of death, and trembles and wonders. These functions by which mere existence is preserved—those complicated powers by means of which we are forever appropriating, and converting into a part of ourselves, portions of the matter around us—are, all at once and all together, deranged and disabled by the blow of this terrible angel. Nutrition is annihilated; respiration becomes difficult, irregular, and inefficient, the involuntary muscles no longer perform their offices; the voluntary are contracted in painful knots by other powers than the will; the blood ceases to circulate; its physical properties are altered, its serous element suddenly thrown out upon the intestinal mucous surface of the body; the secretions are all arrested, and animal heat is no longer produced.

The victim of cholera does not die “solely of starvation, caused by vomiting and diarrhœa,” as certain doctors hold; but by paralysis of the nervous system and consequent chemical and organical decomposition of the blood. During the prevalence of cholera, there are observed among persons otherwise healthy, various anomalous affections of the nerv-

ous system—such as cramps, cold sensations of the hands, feet and legs, a peculiar thrilling in the extremities of the fingers and toes, and an oppressive feeling of anxiety in the region of the heart. After the first, or premonitory stage of cholera, bile ceased to be formed. We always find the gall-bladder full; but this filling has taken place before collapse set in. There are no signs of bilious absorption. Adult age exhibits a much more lively susceptibility to the cholera poison than early life; great numbers of children escape it, simply because they are less subject to the predisposing influence of *fear*.

The idea of Bleeding in the stage of collapse, has its origin in an hydraulic theory totally inadmissable in cholera. There is not too much blood in the whole body, but too much at the centers and too little at the surfaces. A return to healthy distribution and *circulation* will not result from abstracting, any more than from adding, a portion of the dammed-up mass. The cessation of arterial action is not owing to the state of the fluids, but to determinate derangement in the nervous power by which the machinery of circulation has been stopped. Besides, in most cases you cannot bleed; thickened and stagnant in the vessels, the blood cannot be made to flow; and if a few ounces be squeezed from the orifices it hangs from them in long, tarry strings—to no purpose.

The experiment of Galvanizing is a kindred absurdity. The desideratum in cholera is not the *supply* or restoration of vital or nervous power, but the propulsion of that power to the surfaces from which it has receded.

#### THE FEVER STATE.

A patient, having once fairly entered the stage of collapse, is rarely restored to health without passing through a fever closely resembling the typhus *mitior* of Great Britain. The system, under the influence of the peculiar and mysterious poison by means of which the Asiatic cholera does its work, has been sunk into the lowest state of human existence. Those vessels that had ceased to pulsate, and those muscular fibrils that had been for days convulsed, contracted, and, as

it were, knotted and twisted in spasm, cannot at once resume their healthy action. The *vix medicatrix naturæ*, in resuming its efforts, seems over-eager for the restoration of the functions, and consequently sets up an exaggerated and dangerous action in every artery. After the "blue" cold period has lasted from twelve to twenty-four, seldom to forty-eight hours, the vital powers begin to rally, the circulation and animal heat to be restored, the cramps to relax, and the vomiting and purging to diminish, if they have not already ceased. The warmth returns gradually, the pulse rises in strength and fullness, and then becomes sharp, and sometimes hard. The patient now complains of headache, with ringing in the ears. The tongue becomes more loaded, redder at the tip and edges, and dryer; thirst continues, but there is less nausea. High-colored urine is passed with pain, and in small quantities. The pupil is generally dilated, and soreness is felt on pressure over the liver, stomach and bowels. The stools are no longer like water; they first become brown and thin—then dark, or black, and pitchy; and for some days the bowels continue to discharge immense loads of vitiated bile. A profuse critical perspiration may appear on the second or third day, and leave the sufferer convalescent: but more frequently the quickness of pulse and heat and dryness of skin are aggravated, the tongue becomes deeply furred, brown and dry, and sometimes hard, the eyes suffused and drowsy; there is a dull flush on the face, with stupor and heaviness. Commonly, at this time, there is low, muttering delirium, or other marked affections of the brain; dark sordes collect on the lips and teeth, the patient is pale, squalid, and low, catches his breath, is extremely restless, and moans "solemnly." The pulse becomes weak and tremulous, on the skin rigors alternate with flushes of heat. Then comes a blessed insensibility, and the patient soon sinks under the prostrating effects of frequent pitchy alvine discharges—death arriving on the sixth, eighth, or tenth day, or even later, to the very individual whom the most assiduous attentions had barely saved in the cold stage. Constipation is not an uncommon symptom in the febrile stage, and the urine is often secreted abundantly—in fact, dangerous

retentions are to be guarded against. It is probable that the duration of the consecutive fever is, in the majority of European cases, commensurate with the duration and severity of the collapse, and not materially dependent on the kind of remedies employed. But, sometimes a very mild case precedes a dangerous fever, especially in Europe; and sometimes after the severest collapse there is no fever at all, especially in India. In Western Europe the consecutive fever has been regarded as more frequently fatal, unless strictly watched, than collapse itself; and in cases of recovery from even mild forms of fever, relapses, more or less alarming, have not been very uncommon there.

#### PASSING FROM THE STATE OF COLLAPSE.

When the more formidable symptoms of collapse have set in with severity, the chances of recovery are in all cases precarious; and if the constitution has been impaired by previous disease, or has failed by reason of age, the case has always been regarded as nearly hopeless. But in childhood, youth, and vigor of life, a well-instructed, sagacious and persevering use of remedies will often be rewarded with complete success. A thread of pulse, however small, is almost always felt at the wrist where recovery from the "blue" or cold stages is to be expected. In such less formidable cases, it is never wholly extinguished, though much reduced in volume; the respiration, too, is less embarrassed, and the oppression and anguish at the chest are not so overwhelming, although vomiting, purging and cramps may have been more intense. Just where the favorable turn is taken, in the first feeble efforts at reaction, the return of circulation is often curiously announced by hiccough. Then the surface begins to grow warm, the pulse reappears at the wrist, and increases in strength and volume, and the natural hue of the skin is restored. Next, the vomiting and purging cease, or rapidly diminish—(in certain cases of recovery from extreme collapse they even return for a time, after having quite disappeared)—the cramps are relaxed, fecal matters reappears in the stools; bile, urine, and saliva are once more secreted and discharged; the voice becomes stronger and more natu-

ral—the racked and broken wretch sighs, weeps, and lives. When the vital forces have begun to rally, the physician cannot be too vigilant: he must watch nature warily, suspiciously, and prevent recurrence of collapse on the one hand, to repel congestions on the head and viscera on the other. Where the strength of the patient's constitution, or the curative means employed, are, although inadequate wholly to subdue the disease, sufficient to resist the violence of its onset, nature makes various efforts to rally, and holds out strong but fallacious promises of returning health. Or when the restorative efforts are opposed by previous organic disease, general feebleness of constitution, or the worn out energies of age, we must not calculate too confidently on any imperfect reaction that may be induced. In all such cases, the lost heat may be wholly or partially restored; if only partially, the chest and abdomen will become warm while the limbs remain deadly cold—a most evil omen; the pulse may return, growing moderate and full; the vomiting and cramps may cease; the stools may become green, pitchy, and even feculent; there may be a partial restoration of the natural excretions—and yet the patient will suddenly relapse and sink, not from violent reaction or the development of any local inflammation, but from want of energy in the vital powers to carry forward the attempts at restoration which seemed so happily begun. The sufferer may have fallen into a flattering slumber; but now anxiety and sleeplessness will return, and all the alarming symptoms be re-established. These ignis-fatui of rallying sometimes flicker for two or three days, and all that time life and death will be poised in a sensitive balance. In some of the most rapidly fatal cases warmth has partially returned to the surface, and the pulse has fluttered and flattered immediately before death. Be it remembered that the real danger is by no means in proportion to the quantity of matter discharged from the stomach and bowels. In some of the most trying cases this is not very considerable, and in some of the most successful it has been very great. Neither is cramp nor spasm a sure criterion. The great danger arises from suspended or imperfect

circulation. Restore and equalize this, and you have "cured the cholera."

#### THE DEAD.

It used to be believed, rather fancifully, that the bodies of those who died of cholera underwent putrefaction sooner than those of persons dying under the ordinary circumstances of mortality. There is no evidence of any such tendency to rapid decomposition, and people should beware of the notion. In some instances, the body—at least the trunk and head—has remained sensibly warm for some hours after death; and spasmodic twitchings of the muscles have taken place and continued for some time, in the corpse. Dr. Lawrie observed that convulsive movements were common after mental life was quite extinct; and that it was almost impossible to say "at what moment the vital motions ceased to vibrate." A body lies apparently lifeless, suddenly a convulsive shudder shakes it; its hands are clenched; if you insert your own within them, and force them open, they shut again with a spasmodic catch. Thus, those who clung to the notion that rapid decomposition is peculiar to death by cholera, are apt to bury with indecent haste; while those, on the other hand, who are ignorant and superstitious in regard to the fallacious warmth and the convulsive movements, are loth to inter until the remains have actually begun to putrify. On the 24th of July, 1832, the Special Medical Council of the New York Board of Health, presented a report in relation to the unnecessary haste with which the bodies of persons who had died of cholera had, in some instances, been interred:

"The Council," they said, "are of opinion that the dead may, with perfect safety to the living, remain unburied at least six hours [why not twelve?] even during the present warm season, and under proper precautions, for a much longer period. They also deem it expedient that the public should know that the neighborhood of the hospitals and burying-grounds has not been found, upon inquiry, to be peculiarly liable to the disease. At the public burying-ground, called the Potter's Field, where nearly 100 bodies have been buried daily, during the past week, none of those engaged

in the work have been taken ill; and of the 100 persons living in the Asylum for the Deaf and Dumb, within 200 yards of the same, not one is known to have been attacked."

#### APPEARANCES ON DISSECTION.

The appearances disclosed on *post-mortem* inspections of the bodies of those who have died of cholera, vary according to the duration and intensity of the attack, the age, constitution and previous health of the "subject," and the remedies administered; but enough of uniformity is found in the reports of the most instructed and careful observers—especially as to the points most significant, and of the first pathological importance—to serve the purpose of a description addressed to the unprofessional multitude. Enough, too, we think, to afford an accurate definition of the disease, in place of the bewildering guess-work of the text-books. In the language of the *Medico-Chirurgical Review*. "The man who would treat disease successfully, must not consider his only aim and object to be the knowledge of the various morbid changes which take place in the structure of the different organs, and of the symptoms by which they are distinguished; his researches must be directed beyond this—to the laws of vital actions, to the manner in which they are disordered, and to these agents capable of restoring them to their healthy state."

The bodies of those who have sunk in the earlier stages of cholera exhibit hardly any unhealthy appearance; the stomach and intestines are apt to be paler, and more distended with air than usual, and some explorers have discovered, fancifully perhaps, a "characteristic fœter" from the abdominal cavity. But in the more protracted cases, a greater or less degree of injection of the mucous membrane, with occasional *ecchymosis*, is the most frequent appearance. It has also been observed, in cases where the violence of the spasms proved the most prominent symptom, that the mucous membrane presented that appearance which approaches nearest to inflammation. The large intestines are sometimes filled with whitish and flaky-turpid fluid, sometimes with greenish, yellow, or tarry matter—in other words with the

characteristic discharges, or with vitiated bile, just as the patient may happen to have died in the earlier or later periods of the attack, in collapse or in the struggle for reaction. In like manner the stomach contains either the injesta in an altered state, or the same "veal-soup-like" stuff that the patient has been vomiting; or its contents may be green or dark. So, likewise, as to the vascular appearances presented by the alimentary canal, the varieties seem to correspond, with instructive regularity, to the duration, the stage, and the intensity of the attack. The mucous membrane is generally somewhat softened; sometimes of an unnatural paleness throughout, "but oftener having various portions tinted of various hues," from the pale rose to the dark brick-dust and slate-colors, as venous or arterial injection predominates; patches of *ecchymosis* and arborizations of the larger branches are frequent; but the most common appearances have been a red or purplish speckling of the mucous membrane, generally over the whole surface, but more apparent in some parts than in others. Sometimes these different appearances are scattered throughout the entire extent of the alimentary canal; at other times the stomach alone is colored and the intestines pale, or the stomach pale and different portions of the intestines darkly injected. The venous trunks of both stomach and intestines are generally found remarkably engorged. The *rule*, divested of its numerous exceptions, or rather modifications, dependent upon circumstances and conditions which the intelligent physician will not fail to take into the account of each individual case, is: Where the patient has not lingered, but succumbed early to a rapid attack—no striking vascular change, beyond general venous congestion, and turgidity of the prominent vessels.

Where collapse, in its completest form has been developed, repelling and damming the current of the blood—universal dark engorgement, with deep discoloration of the internal surface of the stomach and intestines. Where the disease has been protracted, and has reached the stage of consecutive fever—every degree of arterial injection, in addition to the congestion, from the lightest blush to the angry flush of exaggerated action and incipient inflammation. These are

*the keys* of the stages, the mad malady rings many a change on them.

The liver is commonly found enlarged and gorged with blood; but not always. In some cases it is large, soft, and light-colored, and not very turgid; in others, it is even collapsed and flaccid. The gall-bladder is, almost without exception, full of green or black bile. The spleen and kidneys are not always surcharged with blood: quite frequently they present a perfectly natural and healthy appearance. The bladder is always empty and contracted. The lungs have often been found in a natural state, even in cases where there has been much oppression of respiration. Much more commonly, however, they are either gorged with dark blood, so that they have lost their characteristic appearance and have rather assumed that of the liver or spleen, or they are remarkably collapsed, their bulk so much reduced that they lie in the hollow on each side of the spine, leaving the cavity of the thorax nearly empty.

In the majority of cases, the heart and its larger vessels are distended with very dark blood. *All the cavities* of the heart are filled with a thick, blackish treacle, and blood so dark that, when extended on a white surface, it resembles in color the piece of the darkest cherry, is often found in the arch of the aorta, and in the other great arterial trunks. The principal venous vessels are usually found engorged—the most forcible injection could not have completely filled them—and the contained blood is black and sirupy. The vessels and membranes of the brain are frequently turgid with blood, particularly toward the base. A fluid is sometimes found effused into the convolutions in considerable quantity, with more or less serum in the lateral ventricles. The blood-vessels of the vertebral column and spinal cord may be noticeably congested, and in some cases there are marks of inflammatory congestion in the larger nerves. But the cases in which the brain presents a natural appearance, and those in which the sinuses, and the veins leading to them, are stuffed with almost black blood, are of equally common occurrence.

The following, by Dr. Hamlin, condenses all that can be

said on the subject. His statements are clear, and his experience enables him to speak with confidence on the subject:

Dr. Hamlin, for many years a missionary of the American Board at Constantinople, has furnished to the *Christian Mirror* on account of his very successful treatment of the cholera in that city. His practice has extended through three visitations of this dreaded disease, in 1848, 1855, and 1865. The suggestions are so simple that we publish them, in the hope that they will do good, if the cholera should become prevalent in the United States:

DEAR SIR—The cholera, which has just left us after committing fearful ravages, is making its way into Europe, and will probably cross the Atlantic before another summer has passed. Having been providentially compelled to have a good degree of practical acquaintance with it, and to see it in all its forms and stages during each of its invasions of Constantinople, I wish to make to my friends in Maine some suggestions which may relieve anxiety, or be of practical use.

1. On the approach of cholera, every family should be prepared to treat it without waiting for a physician. It does its work so expeditiously that while you are waiting for the doctor it is done.

2. If you prepare for it, it will not come. I think there is no disease which may be avoided with so much certainty as the cholera. But providential circumstances, or the thoughtless indiscretions of some member of a household, may invite the attack, and the challenge will never be refused. It will probably be made in the night; your physician has been called in another direction, and you must treat the case yourself or it will be fatal.

#### CAUSE AND SYMPTOMS.

3. *Causes of Attack.*—I have personally investigated at least a hundred cases, and not less than three-fourths could be traced directly to improper diet, or to intoxicating drinks, or to both united. Of the remainder, suppressed perspiration would comprise a large number. A strong, healthy,

temperate laboring man, had a severe attack of cholera, and after the danger had passed, I was curious to ascertain the cause. He had been cautious and prudent in his diet; he used nothing intoxicating; his residence was in a good locality; but after some hours of hard labor and very profuse perspiration, he had lain down to take his customary nap right against an open window, through which a *very refreshing breeze was blowing*. Another cause is drinking largely of cold water when hot and thirsty. Great fatigue, great anxiety, fright, fear, all figure among inciting causes. If one can avoid all these, he is as safe from the cholera as from being swept away by a comet.

4. *Symptoms of an Attack*.—While cholera is prevalent in a place, almost every one experiences more or less disturbance of digestion. It is doubtless in part imaginary. Every one notices the slightest variation of feeling, and this gives an importance to mere trifles. There are often a slight nausea or transient pains, or rumbling sounds, when *no attack follows*. No one is entirely free from these. But when diarrhœa commences, though painless and slight, it is in reality the skirmishing party of the advancing column. It will have at first no single character of Asiatic cholera. But do not be deceived. It is *the cholera* nevertheless. Wait a little, give it time to get hold, say to yourself, "I feel perfectly well, it will soon pass off;" and in a short time you will repent of your folly in vain. I have seen many a one commit suicide in this way. Sometimes, though rarely, the attack commences with vomiting. But in whatever way it commences, it is sure to *hold on*. In a very few hours the patient may sink into the collapse. The hands and feet become cold and purplish; the countenance, at first nervous and anxious, becomes gloomy and pathetic, although a mental restlessness and raging thirst torment the sufferer while the powers of life are ebbing. The intellect remains clear, but all the social and moral feelings seem wonderfully to *collapse* with the physical powers. The patient knows he is to die, but cares not a snap about it. In some cases, though rarely, the diarrhœa continues for a day or two, and the foolish person keeps about, then suddenly sinks, sends

for the physician, and before he arrives "dies as the fool dieth."

#### COURSE OF TREATMENT.

1. *For Stopping the Incipient Diarrhœa.*—The mixture which I used in 1848 with great success, and again in 1855, has during the epidemic been used by thousands, and although the attacks have been more sudden and violent, it has fully established its reputation for efficiency and perfect safety. It consists of equal parts, by measure, one of laudanum, one of spirits of camphor, two of tincture of rhubarb. Thirty drops for an adult, on a lump of sugar, will often check the diarrhœa. But to prevent its return care should always be taken to continue the medicine every four hours in diminishing doses; twenty-five, twenty, fifteen, ten, nine, when careful diet is all that will be needed. In case the first dose does not stay the diarrhœa, continue to give it in increasing doses—thirty-five, forty, forty-five, sixty—at every movement of the bowels. Large doses will produce no injury while the diarrhœa lasts. When that is checked, then is the time for caution. I have never seen a case of diarrhœa taken in season which was not thus controlled, but some cases of advanced diarrhœa, and especially of relapse, paid no heed to it whatever. As soon as this becomes apparent I have always resorted to this course: Prepare a teacup of starch boiled as for use in starching linen, and stir into it a full teaspoonful of laudanum for an injection. Give one-third at each movement of the bowels. In one desperate case, abandoned as hopeless by a physician, I could not stop the diarrhœa until the seventh injection, which contained nearly a teaspoonful of laudanum. The patient recovered, and is in perfect health. At the same time I use prepared chalk in ten grain doses, with a few drops of laudanum and camphor to each. But, whatever course is pursued, it must be followed up or the patient is lost.

2. *Mustard Poultices.*—These should be applied to the pit of the stomach, and kept on till the surface is well reddened.

3. The patient, however well he may feel, should rigidly

observe perfect rest. To lie quietly on the back is one-half of the battle. In that position the enemy fires over you, but the moment you rise you are hit. When attacks come in the form of a diarrhœa, these directions will enable every one to meet it successfully.

4. But when the attack is more violent, and there is vomiting, or vomiting and purging, perhaps also cramps and colic pains, the following mixture is far more effective, and should always be resorted to. The missionaries—Messrs. Long, Trowbridge, and Washburn—have used it in very many cases with wonderful success. It consists of equal parts of laudanum, tincture of capsicum, tincture of ginger, and tincture of cardamom seeds. Dose, thirty to forty drops, or half a teaspoonful in a little water, and to be increased according to the urgency of the case. In case the first dose should be ejected, the second, which should stand ready, should be given immediately after the spasm of vomiting has ceased. During this late cholera siege no one of us failed of controlling the vomiting and also the purging by at most the third dose. We have, however, invariably made use of large mustard poultices of strong, pure mustard, applied to the stomach, bowels, calves of the legs, feet, etc. as the case seemed to require.

#### TREATMENT OF COLLAPSE.

*Collapse.*—This is simply a more advanced stage of the disease. It indicates the gradual falling of all the powers of life. It is difficult to say when a case has become hopeless. At a certain point the body of the patient begins to emit a peculiar odor, which I call the death odor, for when that has become decided and unmistakable I have never known the patient to recover. I have repeatedly worked upon such cases for hours, with no permanent results. But the blue color, the cold extremities, the deeply-sunken eye, the vanishing pulse, are no signs that the case is hopeless. Scores of such cases in the recent epidemic have recovered. In addition to the second mixture, brandy, (a tablespoonful every half hour) bottles of hot water surrounding the patient,

especially the extremities, sinapisms and friction, will often in an hour or two work wonders.

*Thirst.*—In these, and in all advanced cases, thirst creates intense suffering. The sufferer craves water, and as sure as he gratifies the craving, the worst symptoms return, and he falls a victim to the transient gratification. The only safe way is to have a faithful friend and attendant who will not heed his entreaties. The suffering may be, however, safely alleviated and rendered endurable. Frequent gargling the throat, and washing out the mouth, will bring some relief. A spoonful of gum Arabic water, or of camomile tea, may frequently be given to wet the throat. Lydenham's White Decoction may also be given, both as a beverage and nourishment, in small quantities, frequently. In a day or two the suffering from thirst will cease. In a large majority of cases it has not been intense for more than twenty-four hours.

*Diet.*—Rice water, arrowroot, Lydenham's White Decoction, crust water, camomile tea, are the best articles for a day or two after the attack is controlled. Camomile is very valuable in restoring the tone of the stomach.

*The Typhoid Fever.*—A typhoid state for a few days will follow all severe cases. There is nothing alarming in this. It has very rarely proved fatal. Patience and careful nursing will bring it all right. The greatest danger is from drinking too freely. When the patient seemed to be sinking, a little brandy and water, or arrowroot and brandy, have revived him. In this terrible visitation of the cholera we have considered ourselves perfectly armed and equipped, with a hand-bag containing mixture No. 1, mixture No. 2 (for vomiting), etc., a few pounds of pounded mustard, a bottle of brandy, a paper of camomile flowers, and a paper of gum Arabic.

I lay no claim to originality in commending this course of treatment. I have adopted it from suggestions of able and experienced physicians. Having been the only doctor of many poor families living near me, I have tried various remedies recommended by physicians, but I have found none to be at all compared with the above. During the recent

cholera I cannot find that any treatment has been so successful as this.

*Contagion.*—The idea of contagion should be abandoned. All the missionaries who have been most with the malignant cases, day after day, are fully convinced of the non-contagiousness of the cholera. The incipient attacks which all have suffered from are to be attributed to great fatigue, making the constitution liable to an attack.

C. HAMLIN.

#### CHANCES OF AVOIDING THE CHOLERA.

A correspondent of the New York *Express* offers the following sensible and practical suggestions, tending to allay unreasonable apprehensions of danger from cholera in New York, and Brooklyn as well, which, as they are justified by the past and the present, will, we believe, be found to hold good in the future :

In the first place, it is said that New York is a very unhealthy city, especially at present. But the life-insurance men of the city tell us that they lose fewer lives here than elsewhere in proportion, while the agents of New Jersey, Connecticut, and Massachusetts say the same thing, and prefer making insurances here. These are certain tests, statistical pecuniary facts that may give relief. The politicians may have made mistakes.

In the next place, when the cholera previously visited the city a very small per cent. of the population, especially of the acclimated, cleanly-living population, were sick, and, of course, not anything like so large a per cent. died—less than one per cent. died. Again, it is the testimony of some of the best physicians in the city, and having the most extensive practice during and upon the cholera, that very few if any died who slept in the second story, and that all who slept in the third story were exempt. There may be exceptions to this, but they are certainly few, and the idea is worthy of note and application. It came out some years ago in connection with another matter without reference to cholera.

Finally, is an attack of cholera so likely to prove fatal as is usually supposed? By no means. A physician, worthy

of the utmost confidence, says that having charge of a hospital in which one hundred and forty-nine were attacked, *he did not lose one*. The course pursued was, as it always should be, to place the patient on the back in bed, as soon as first attacked; but on plenty of clothes, and put clothes, wrung out of hot water, with plenty of mustard on them, on the feet, legs and over the bowels. Keep the patient quiet and warm from the very first moment of attack, and in ninety-nine cases in a hundred the disease will make no further headway. If medicine is taken it had better be under the advice of a physician. To review :

First. It is not probable cholera will visit us at all. Second. If it does occur, the healthiness of the locality of New York will deprive it of its terrors. Third. The percentage of the cleanly part of New York people who will be attacked will be small. Fourth. Those who sleep, and, still better, live on the second story, can hardly expect to be attacked. And, fifth. The disease is very easily controlled in the outset.

In conclusion, we beg to remind the reader that the foregoing hints are only the skirmishers, to keep the enemy at bay until the "regular army," the active, intelligent physician, can get on the field. *Send for him at once, then*. Remember that an ounce of prevention is worth a great many pounds of cure in this disease, and that it, of all others, demands immediate, prompt, and active treatment, which we insist can only be afforded by a medical man.

THE END.

To be Issued Nov. 17.

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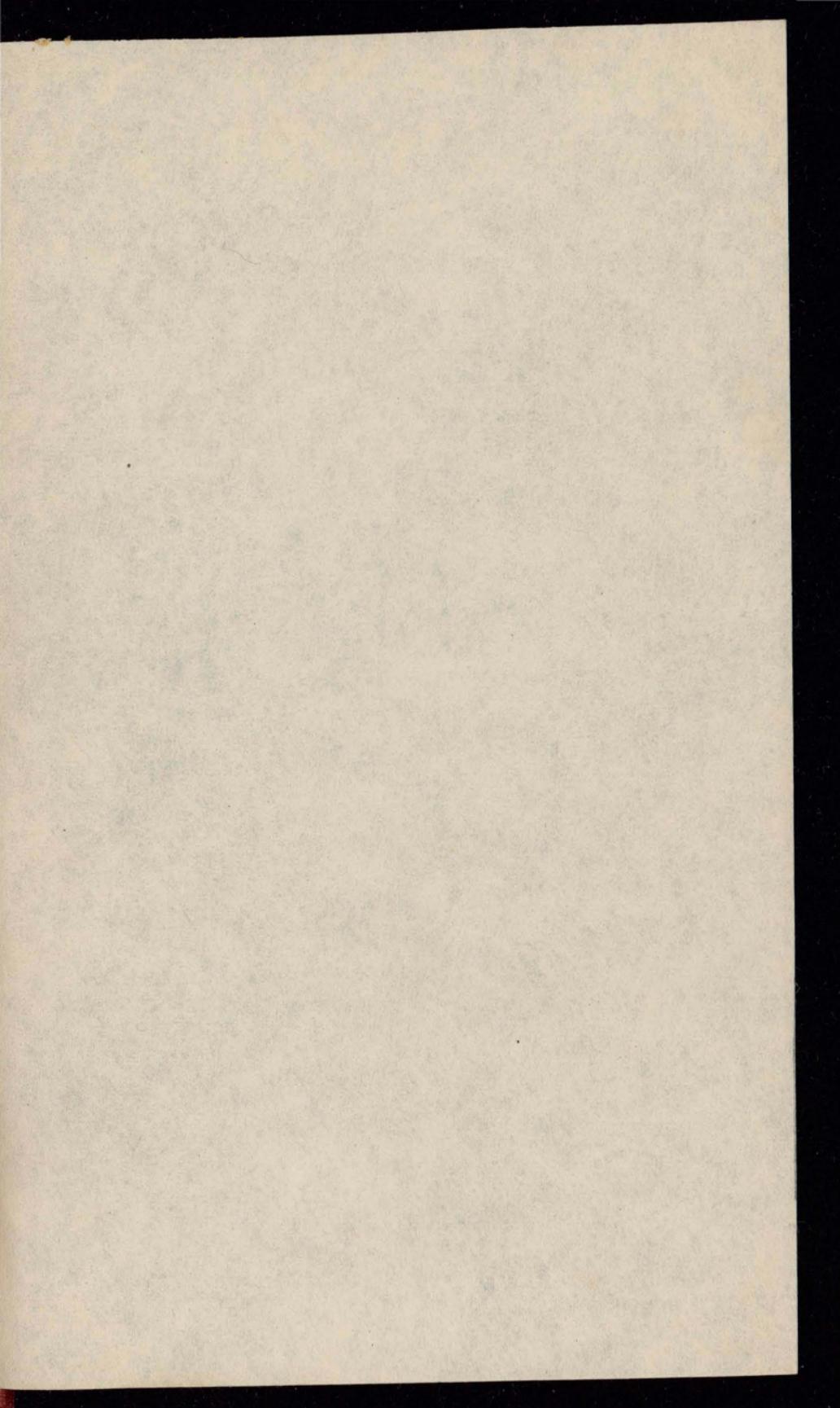
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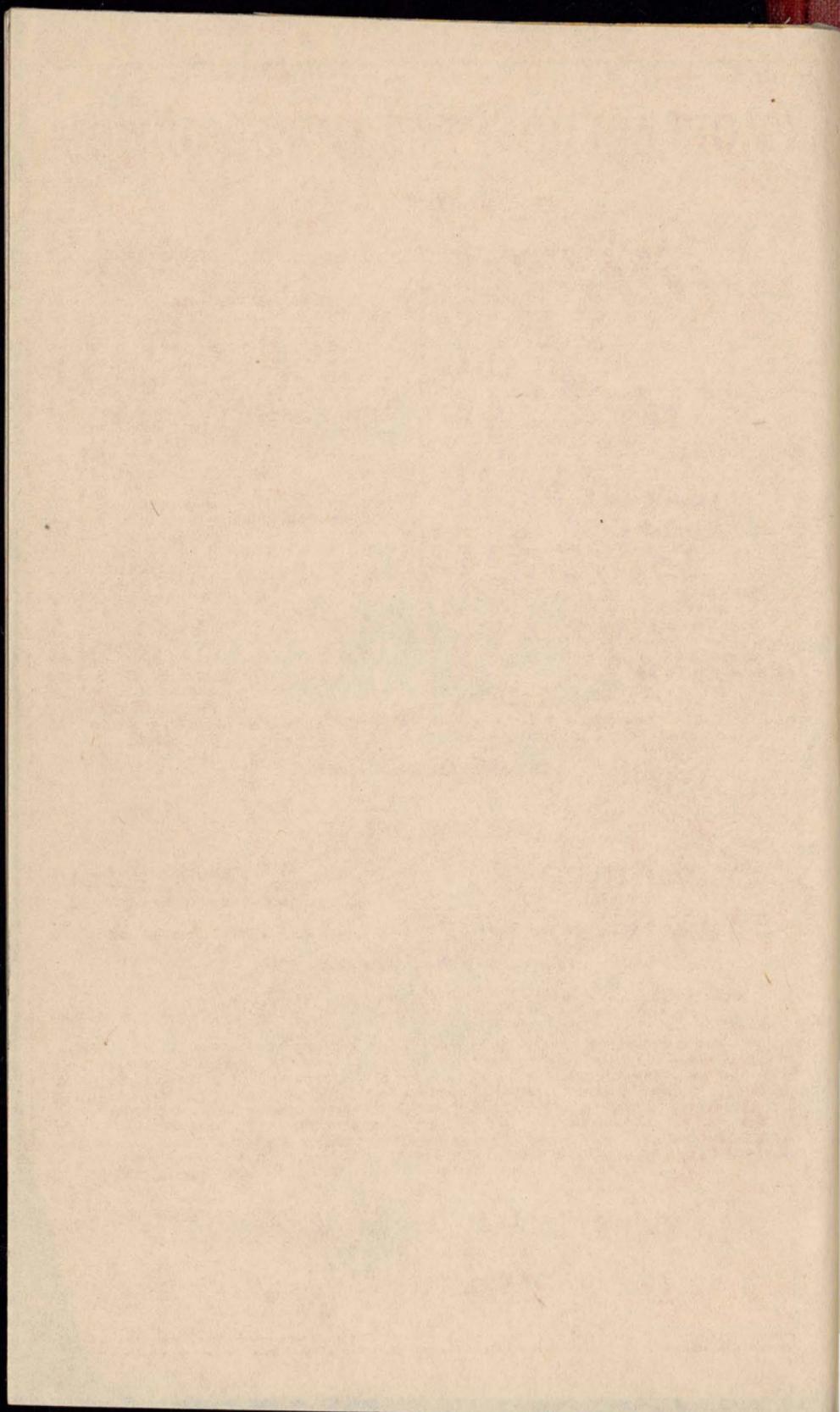
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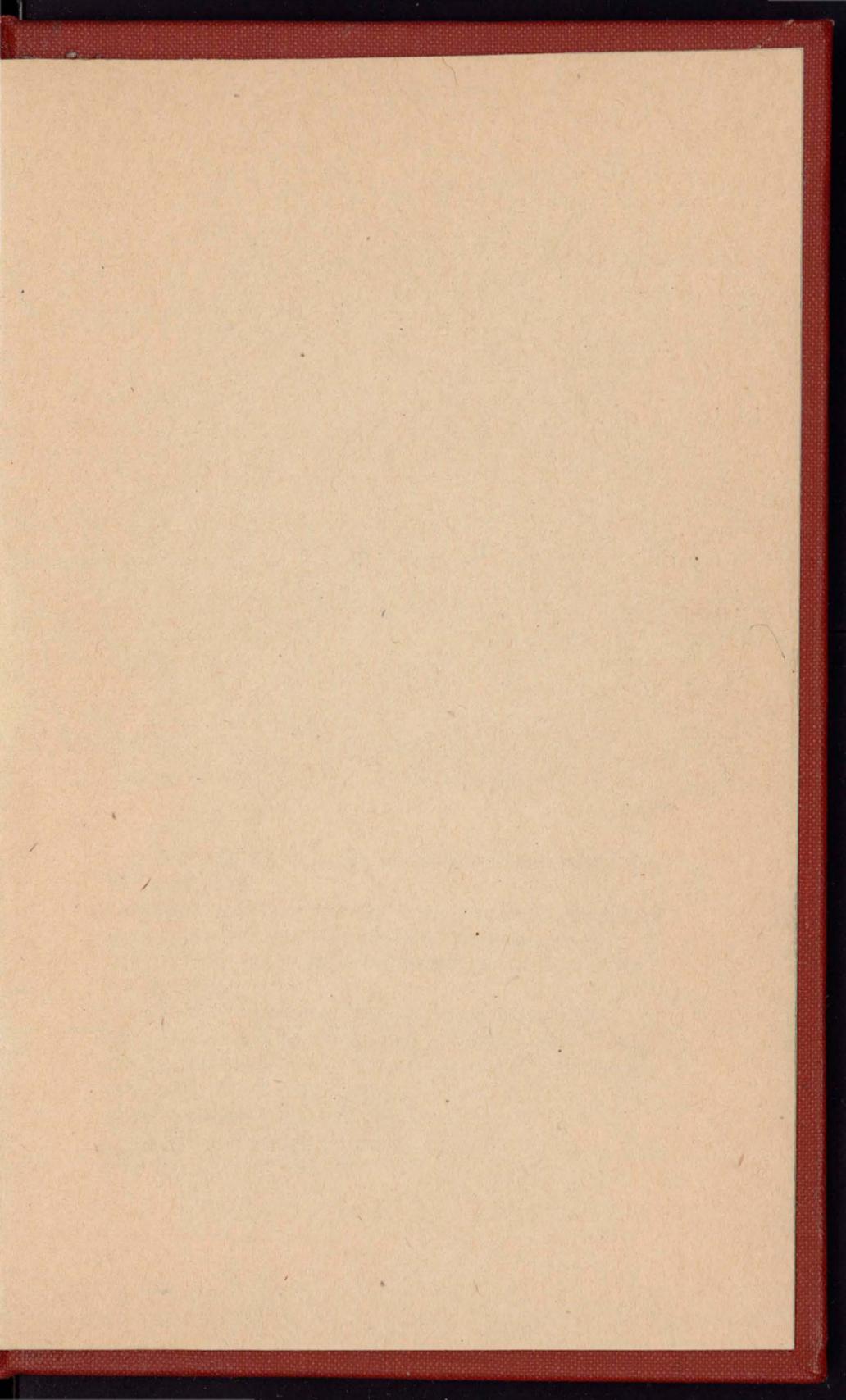
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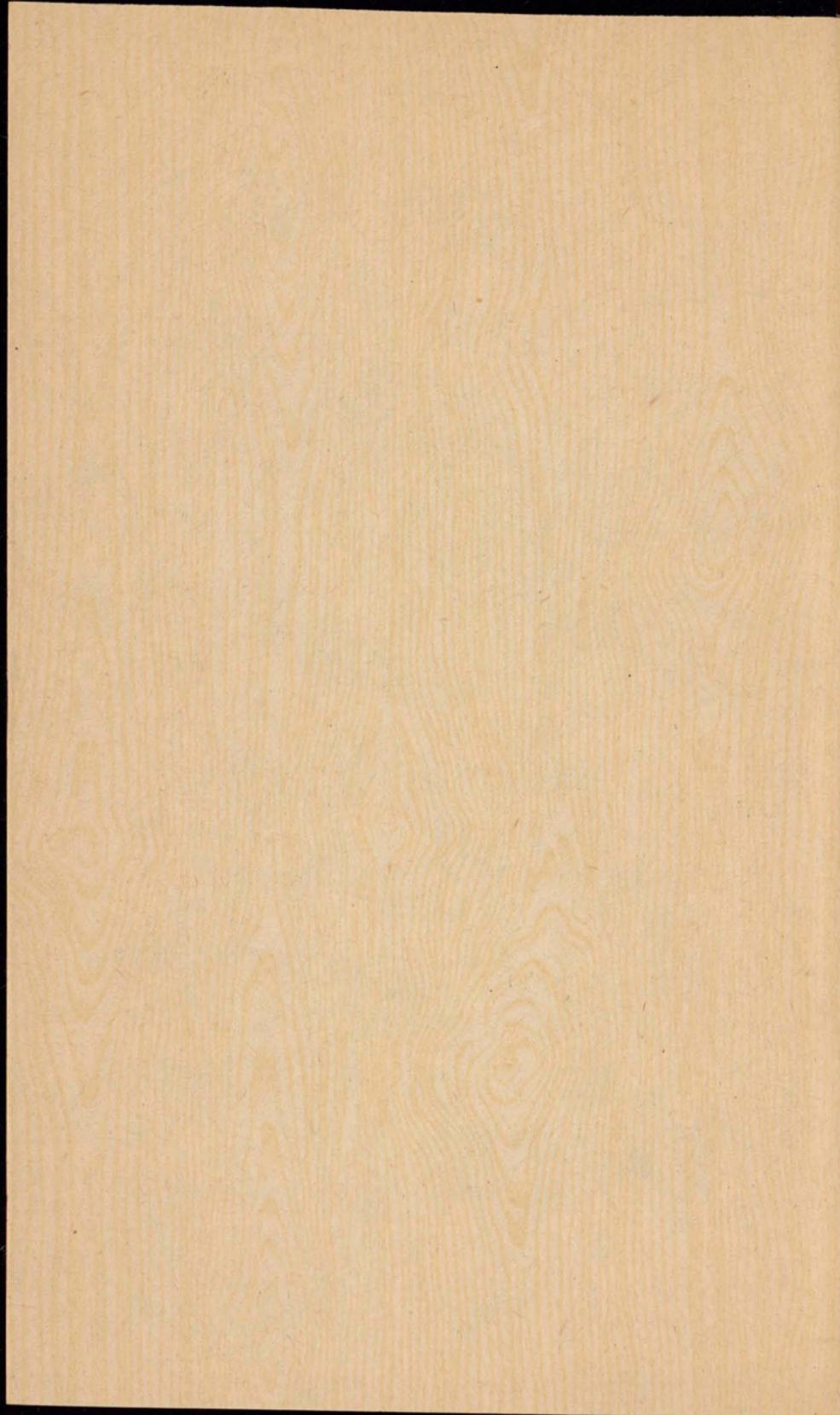
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