

another attack, and in localities in which it might be deemed necessary, to place the local powers in the hands of a few intelligent and influential inhabitants, perhaps connected with parochial and other local Boards, nominated by Government *to do the special work of prevention*, and to carry out rigorously the relief measures of the General Board of Health; to undertake these duties for the safety of the people, not as a parochial function, but as a most important public trust, to be exercised for a present emergency, and for no other purpose; and to perform these duties only so long and no longer than the emergency required. In this way every objection on the part of the people to the *parish* aspect of the preventive measures would be done away with, the parochial authorities would be relieved from great difficulties, and an adequate extent of aid might be afforded without endangering the independence of the working classes in the laudable attempt at saving them from the ravages of pestilence.

SECTION VIII.

EXTRACT FROM REPORT, ON THE OUTBREAK OF CHOLERA ON BOARD THE AMERICAN SHIP "AMERICAN EAGLE."

THE circumstances connected with the outbreak of Asiatic cholera on board the emigrant ship "American Eagle" appear to me to afford strong proof of the necessity for substituting a system of well-arranged sanitary regulations for preventing, as far as possible, the localization of epidemics on board merchant vessels, instead of the expensive, inefficient, and dangerous system of quarantine now in use. Besides the saving of sickness and life, this case presents an example of the greater saving of time, or, in other words, of money, by the substitution of sanitary for quarantine regulations.

A large vessel which, in an ordinary season, might possibly have carried its crew and passengers across the Atlantic in safety, is laid in dock, close to an epidemic locality (which, moreover, ought to have had no existence there). The stagnant water of the dock leaks into the vessel, and becomes offensive; the ventilation is very defective; an overcrowded population of emigrants is placed on board; their food is unwholesome, and the personal habits of many of them filthy. Possibly all these circumstances might have been inoperative in ordinary seasons; but, during a prevailing epidemic constitution, they become matters of immense importance. Cholera strikes the ship, just as I have seen it again and again strike a similarly circumstanced locality on shore, although few places on land have been altogether so badly situated as this ship has been. The plan of procedure on land is to spread the population, by taking them out of the infected localities. This is absolutely necessary to their safety; while those who are removed, and all in the neighbourhood, are placed under strict medical inspection. Every needful sanitary precaution in the way of cleansing, ventilation, &c., is also enforced. But suppose the "American Eagle"

had arrived in England from a foreign port. If there had been no cholera here; she would have been put in quarantine; her overcrowded population kept in her. No system of medical inspection, or sanitary amendment, would have been possible. I am warranted in stating, from experience in similar cases on shore, that a large proportion of the crew and passengers would have perished in a very short time under such treatment.

Every person of common sense must recognise that the methods adopted at Plymouth in the case of the vessel in question were infinitely superior to such a barbarous expedient as leaving a large number of our fellow-creatures to perish, under circumstances in which death comes in one of its most fearful aspects, and beset with more than ordinary terrors. Had proper care been taken to preserve the neighbourhood of the docks in a proper sanitary state, we have every reason, from experience, to believe that an epidemic centre would not have existed there; and had the requisite precautions been taken on board of the "American Eagle," it is equally certain that the crew and passengers would have escaped cholera. But after the neglect has been committed, and the consequences have shown themselves, it is surely a mark of ignorance as well as of inhumanity to subject the sufferers and their friends and fellow-passengers to all the dangers and horrors of a pest ship, in order to ward off some imaginary danger from people at the port where the vessel arrives.

The present case illustrates forcibly the origin of presumed instances of importation of the disease. Should cholera break out in Plymouth or its neighbourhood, a presumption of *importation* might be advanced; and in after years, when all the circumstances are forgotten, the arrival of the "American Eagle" at Plymouth, the dispersion of the passengers, and the appearance of cholera in the town, would, no doubt, be placed in the relation of cause and effect in the narrative; but let it be remembered that cholera had shown itself in the neighbourhood of Plymouth *before the arrival of the ship*, and that a man, who had actually been in Plymouth, had died of the disease.

The case of the "American Eagle" further shows the importance of preventing the sailing of an emigrant ship, or any other vessel, when cholera has broken out on board. Had this vessel put to sea with her depressed and overcrowded population, a large sacrifice of human life would have been inevitable. The greater purity of the air at sea, and the getting out of the epidemic atmosphere, which the ship by sailing might, perhaps, soon do, may appear at first view to be reasons for her putting to sea with all possible despatch. But this view is a fallacious one, and, if acted on, would involve the certain destruction of numerous persons. Every man, woman, and child, under the circumstances which are here supposed, has been breathing a poisoned atmosphere. That some portion of the poison is already in the system of many of them, and has taken hold of them, is unequivocally shown by the prevalence of the premonitory diarrhoea. To the full development of the disease in every one of those persons nothing is wanting but favourable conditions. Such conditions are combined and concentrated in the intensest degree conceivable in an emigrant ship at sea under the circumstances supposed;—all more or less predisposed to disease; the disease actually existing in some; filth, overcrowding, imperfect ven-

tilation, unsuitable food, panic. The concentration of these conditions, which it requires extraordinary care and skill to prevent, accounts for the fact, that outbreaks of epidemic diseases on shipboard are usually much more extensive and fatal, in proportion to the numbers attacked, than outbreaks in courts and alleys on shore. No matter how pure the atmosphere into which the ship may sail; this purer atmosphere cannot be got to the unhappy passengers. There is no possibility of substituting it for the poisoned atmosphere which is in the ship, which she carries with her, and which her overcrowded population continues to breathe. In port the affected individuals may be removed from the ship, may be dispersed, and placed in a comparatively pure atmosphere, while the ship itself may be thoroughly purified. By these means the progress of the disease is arrested in the persons already affected, and the further extension of the disease is stopped; but nothing of all this can take place at sea. To send a vessel to sea with cholera on board is to follow the example of those Guardians of the Metropolitan Unions, who persisted in keeping their pauper children in the poisoned atmosphere of Drouet's establishment at Tooting, obstinately refusing to remove and disperse them, the result being that 180 perished.

The ship "American Eagle" is of about 1000 tons burden. She left London on the 31st of May, with a cargo and a number of emigrants on board, for New York. She touched at Portsmouth, and took in about half a dozen passengers, which made the whole number of souls aboard 370. Of this number about ninety were German emigrants, who had come over from Rotterdam after having remained there a single night or two, the cholera having been prevalent in that city at the time, and the poorer class of emigrants sleeping in the low class of lodging-houses.

Two or three Germans, who had come over from Rotterdam, are reported to have died of cholera in London, near the place where the "American Eagle" was lying before she sailed.

At the time of her leaving dock all were well on board except a little child, of German parents, which had diarrhoea, of which, however, it recovered, under the treatment of Dr. Brown, a retired medical practitioner of London, who was on board as a passenger to the United States. The German emigrants had been in London for three or four days before the vessel sailed.

The father of the child already mentioned was the first person attacked with cholera. He was taken ill on the 1st June, very suddenly, and when Dr. Brown saw him he was already collapsed, and died in twelve hours from the period of attack.

On the 2nd of June there was no fresh case.

On the 3rd of June one of the sailors took ill. This man had been ashore at London several days without leave, and had been intoxicated. He assisted in sewing up the body of the first patient who died, but, except in this act, he had no communication with the steerage. He died after an illness of twelve hours.

It may be proper to state that the first fatal case happened in a weakly man, who had exhausted himself very much while in London, by attention to his baggage, and moving it from place to place.

Another fatal case took place in an Englishman, who slept in a

berth nearly opposite the first case. He was seized at 11 p.m. on the following morning.

On the 4th of June *four fresh cases occurred*. Two of these were Germans. They slept in the steerage, but their berths were at some distance from any of those in which the preceding cases occurred. Both of them died after an illness of about sixteen hours. Another fatal case occurred in a sailor who slept in a separate fore-castle from the one where the first sailor was attacked. This man was not known to have had any communication with any affected person. He died on the 6th.

About the period when this man was attacked a good deal of bowel complaint began to appear on board, and the captain, with great judgment and humanity, put into Plymouth on the 5th of June. Had he not done so, I am fully of opinion, for reasons already stated, that a very great sacrifice of life must have inevitably ensued.

On the 16th there were no fewer than eight new cases of cholera, three of which—an Englishman, an Englishwoman, and an Irishwoman—died after about six hours' illness. On the 7th of June two Englishmen died. On the 9th (yesterday), when I went on board, there had been twenty-one cases—thirteen deaths, six recoveries, and two under treatment. There were also twenty-five cases of severe diarrhoea under treatment. All these cases will apparently recover; but the epidemic influence, I am sorry to say, has, up till to-day, shown no disposition to abate in activity, for the cases of diarrhoea have been increasing in number; and another German, an old man, was seized with cholera this morning, and at mid-day was in the stage of collapse, in which, I fear, he will die.

I have much pleasure in stating that the authorities in Plymouth have done all in their power to alleviate this great calamity. The "Tyne" hulk was immediately sent by the Admiral to receive the sick and passengers; and an additional medical man, Mr. Fox, was put on board this hulk to take charge of the whole. The authorities permitted all such as chose to come on shore to do so; and as many as one hundred persons have thus been withdrawn from those agencies which appear to have localized the epidemic on the ship and passengers.

The cabin of the "American Eagle" is fitted up with comfort and elegance, and not one of the passengers in it has suffered from indisposition.

The steerage runs under the cabin, and nearly the whole length of the ship. A portion at the stern has been separated as a store-room, into which there are stern-lights, which also answer for ventilation; and there is a wooden grating at the upper portion of the partition, through which air can pass from the store-room into the steerage.

The following are the dimensions of that portion set apart for the passengers:—

Length, 155 feet; breadth, 35 feet; height, 8 feet; superficial area, 5425 feet; total cubic contents, 43,400 feet. This cubic space *includes* that portion occupied by the baggage of the passengers, as well as all that space occupied by the erections for berths, the bedding, &c.

Four ranges of berths, each intended to accommodate two persons, extend the whole length of the ship, interrupted only by the hatches,

two in number, one of which is about eight feet square, and the other about six feet square.

Amongst other purposes, these hatches, if open, will answer to a certain extent for ventilation; but, in addition, there are three of the iron-tube ventilators, one of which is about eighteen inches across the funnel-shaped mouth on deck, and the other two are about fifteen inches in diameter at the same part. Of course, where these tubes perforate the deck they are much smaller in area—apparently not above one-half the measurement stated. Besides these, there are ten dead-lights, five on each side of the steerage. Each is about six inches in diameter, and circular, the glass being capable of opening inwards, so as to afford ventilation.

The total number of passengers accommodated in the steerage was 250—a number considerably below the proportion admitted by the regulation, which is, I believe, one passenger to fourteen feet superficial area: but, after all this is admitted, it will be seen that the cubic space only amounted to about 173 feet for each, including baggage. There can, in my opinion, be no question as to the defect of ventilation on board this vessel. It is quite true that, in this respect, she is better than the great proportion of our own emigrant ships; but to a practised eye the whole amount of air which it is possible to supply to such a great number of inmates, especially during the night, must appear wholly inadequate for the ordinary purposes of ventilation. I have seen no conditions on shore so defective in this matter as those presented by the ship in question, and yet the results on shore are sooner appreciated than they are on board ship. The fresh breeze to which the passengers are exposed during the day on deck is evidently their only safeguard from certain destruction.

The water-closets are very difficult to keep clean, on account of their small number and the filthy habits of many of the emigrants.

The decks were stated to me to be all cleaned every morning, and kept in as good a state as the habits of the people would admit of.

It is complained that the habits of the Germans are so very filthy, that the English and even the Irish emigrants cannot endure them. They appeared to be a quiet, orderly people, but generally not so clean in their persons as either of the other classes.

Bad diet, mental depression, overcrowding, defective ventilation, superabundant moisture (for it is impossible to keep the people from slopping the decks), and, above all, an epidemic stroke coming along with these co-existing circumstances, have, no doubt, all contributed to produce the result.

The outbreak so closely resembles an epidemic seizure of a village on shore, that, in my opinion, it ought to be considered in this light. All the early cases have been sudden, and nearly all have died; and diarrhœa is now very prevalent. This is precisely the history of an attack of cholera in a land population under unfavourable circumstances.

Under ordinary circumstances there was nothing that would have produced more than an ordinary amount of sickness, but quite enough during an epidemic to determine its localization.

A number of people seemed to have been poisoned before the usual results showed themselves; and now that most of the defective con-

ditions have been removed, the symptoms of diarrhœa are present in persons who would, without doubt, have been seized with sudden cholera had the vessel proceeded on her voyage.

The first time I went on board (yesterday) I found the whole ship undergoing a thorough cleansing. The decks, planking, and roofs, as well as the berths, have been thoroughly washed with quick-lime, and disinfected with Sir W. Burnett's liquid; the passengers having all been previously transferred on board the "Tyne," or drafted into the town.

On board the hulk all the arrangements have been made for accommodating both the sick and the healthy—at least, so far as circumstances would admit. The sick who are confined to bed are about half a dozen, and are on the lower deck; the healthy are accommodated on the deck above; but this arrangement is still very faulty, for the sick should be by themselves, and the healthy are still too crowded to be safe.*

While on board the "Tyne" hulk I summoned the German passengers together, and, through an intelligent countryman of their own, I impressed on them the need of immediate attention to premonitory symptoms, and urged on them to apply to the medical officer on board whenever they were attacked. A similar communication was also made to all the other emigrants.

The only remaining difficulty is in the matter of *food*. It would be very desirable, if it could be managed, to substitute fresh provisions for the salted meats now used. I have expressed this opinion strongly, and I believe that all persons absolutely suffering from diarrhœal symptoms will be provided with the needful change of diet; but there appears no solution for the difficulty on the part of the great bulk of the emigrants.

I suppose there is no power to compel the ship "American Eagle" to remain as long as it may be needful for safety; but I cannot help expressing a very strong opinion, that so long as any passenger is liable to diarrhœa, and for several days after this symptom has ceased, there will be absolute danger in proceeding to sea. I have protested verbally against such a step, and shall do so in writing, in order to justify the captain with the owners. He appears a humane and enlightened man, and willing to adopt, to the utmost, every possible precaution. He has done so hitherto, and I think it right to say so.

I have advised that the decks of the ship be thoroughly dried before any one is received on board, and that every available means of ventilation and cleanliness be adopted for the future.

One of Dr. Arnot's air-pumps would do the work effectually. The more I see of shipping, and the more I seek to apply physical laws to the solution of the question of ventilation, the more I am convinced that by a MOVING POWER ALONE can any effectual change in the air in the hold of a ship be accomplished. All ventilating tubes and open hatches are inadequate to the task; and while we have so very simple and cheap a mechanical power at our disposal, it is a duty to recommend and enforce its use whenever we have an opportunity.

Plymouth, June 10, 1849.

* On a representation of this to the Port Admiral, Sir William Gage, he immediately ordered another ship, the "Andromache," for the accommodation of the emigrants.