

# THE SANITARY ADMINISTRATION OF PASSENGER STEAMSHIPS, ESPECIALLY THOSE THAT ARE INFECTED.

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At the meeting of the American Medical Association in 1887, the writer presented a paper in which he reviewed the mortality among the passengers on vessels arriving at United States ports, the national statutes requiring that the masters of vessels arriving from a foreign port should specify in their transmitted lists of passengers the names, ages and causes of mortality of those that had died on the voyage. In order to stimulate the steamship companies to surround their passengers with everything needful for their sanitary welfare, another section of the statutes required the payment, by the vessel, of ten dollars for each death among immigrants over eight years of age. Reference was made to the fact that the law regulating the number of passengers proportionally to the tonnage of the vessel, that regulating the space allowed for each passenger, that regulating the quality of the food and the general legal supervision of the sanitary affairs of the vessel, were not properly enforced because the statutes provided that the collector of customs should appoint and direct one or more inspectors of customs to see that the laws were complied with. It did not seem to be any reflection on the qualifications of those officials to say that they were unfitted to discharge duties that necessitated an education in sanitary science. Statistical tables were given that showed that from six to forty-two per cent. of the deaths occurring among the passengers were from unknown causes; and it was also shown that though the mortality varied from four to six-tenths of one per cent. per thousand passengers carried, still as these passengers were on the vessels for a probable maximum average of twelve days, such a rate of mortality would in the course of a year approximate that of an average city. As the travellers were presumably in better health than those constituting the population of such a city, the mortality rate was rather high.

How far the ship's surgeon was responsible for the condition reported, was not altogether clear. The health-officer of the port of New York, in his annual reports for 1890 and 1891, said: "The carelessness or ignorance of medical officers of passenger steamships continues to give rise to endless anxiety." As the compensation of these officials varies from twenty to fifty dollars per month, it may be imagined that it is difficult to obtain medical men of high standing and with good professional qualifications, who are willing to retain the positions.

It was suggested by me at that time that the enforcement of the general legislation relating to the hygiene of ships should be transferred from the Customs Department to the Marine-Hospital Service. But the question of the improvement in the selection of the ship's surgeons is not so easily settled.

During the past fall while cholera-infected vessels were arriving at the port of New York, the extent of the professional competency of the ships' surgeons was shown by their management of their cholera patients during the voyage. Most of these officers transferred the sick at once to the ship's hospital, some making special arrangements for nursing and local disinfection. But there seemed to be no fixed method of procedure for their guidance.

On looking up the subject, no regulations were found

that would guide the surgeon in the event of an outbreak of a contagious or infectious disease among the passengers or crew. The regulations of the Navy regarding this subject are of a general character. The National Board of Health issued rules and regulations for securing the best sanitary condition of a vessel, including that of their cargoes, passengers, and crews. These rules comprised the exclusion, as far as possible, of all persons or things known to be infected, the maintenance of the cleanliness of the ship both preliminary to loading and during the voyage, and the destruction or removal of all causes of disease by ventilation, fumigation or other disinfection. The only specific rule in the series that applied to the sanitation of the ship during the voyage was that providing for the burning of the bedding, wearing apparel, etc., of passengers affected with cholera, yellow fever, plague, small-pox, or typhus fever.

The Marine-Hospital Service issued a hand-book for the ship's medicine-chest for American vessels, but it does not specify any plan of campaign in the event of the appearance of an infectious or contagious disease on board ship.

The Revised Statutes provide that the master of a vessel bringing passengers to our ports must maintain cleanliness, and clean the decks with chloride of lime or other good disinfectant.

Reference to several of the more recent works on hygiene has been equally fruitless in showing the existence of any code for the guidance of the ship's surgeon in cases of special emergency.

The National Board of Health prepared a circular for steamboats on the Mississippi River giving directions to the masters of those vessels for their guidance during the existence of an epidemic. The bilge was to be pumped out daily until the discharge was free from odor and discoloration; the hold was to be well ventilated; decaying wood was to be scraped and painted; lime wash and copperas were to be used freely in the hold and bilge, about the boiler-deck, the water-closets and the urinals; soap and hot water was to be freely employed; when the weather permitted the cabins and state-rooms were to be sunned and aired for six hours daily. Hospital quarters were to be established near the stern of the boat and attendants were to be confined therein. If a passenger was taken ill in a cabin he was to be at once transferred to the hospital, his cabin disinfected by sulphur fumigation, and the cabins on either side were to be vacated. These rules are excellent, and but little amendment would be necessary to make them applicable to ocean vessels.

The first essential for the preservation of the health of the passengers on an ocean steamship would be to avoid taking passengers from an infected district. A clause could be inserted in all contracts for passage providing that, in the event of the appearance of an epidemic disease in the locality where the intending passenger resided, the contract would be null and void if the steamship company so desired. That such a clause is necessary is apparent when it is recalled that several steamship companies claimed that their contracts with immigrants necessitated their furnishing transportation after the President's recent proclamation of a twenty-day detention of all immigrants.

The ship's surgeon should inspect each of the immigrants before they are allowed to go on board the vessel. Necessarily any one suffering from a contagious or infectious disease would be excluded, and any un-

vaccinated person would be vaccinated. During the voyage the surgeon should inspect the emigrants each morning and evening. He should be required to inspect the closets, urinals, bath-rooms, and the steerage daily, seeing that all of these places are ventilated whenever possible, and disinfected when offensive.

On the appearance of any contagious or infectious disease the person affected should be isolated in the hospital with the necessary attendants. The bedding should be burned, and the clothing disinfected by immersion in boiling water and suitable disinfectants for half an hour.

If there is any reason, as in the case of cholera, and of typhoid or typhus fevers, to suspect the food or water-supply, no uncooked food should be issued and all drinking-water should be boiled. If the ship's condensers have sufficient capacity the water-tanks should be separately emptied, then steamed under pressure by a temporary pipe-connection with the boilers, and then filled with the condensed water. The application of this latter procedure would have prevented most, if not all, of the cholera cases that developed at the New York quarantine among the passengers and crew of the steamships from Hamburg.

If the disease appearing among the passengers is contagious, as small-pox, typhus fever, or yellow fever, the occupants of the steerage or compartment in which the disease appears should be made to go on deck at the first opportunity; the compartment should be closed; the vessel stopped so as to turn her full head of steam into the compartment, though in the case of a small compartment stopping the ship may be unnecessary, and steam turned in for two hours at least, without opening the compartment except to permit the entrance of a machinist if necessary to make the requisite pipe-connection, the steam heat should be turned on so as to dry the compartment. Dr. A. N. Bell showed more than twoscore years ago that this procedure was quite feasible in a naval vessel, and with the modern appliances in a passenger steamship the entire plan here outlined could be completed in a day.

With this disinfection of the water and food supply, and of the part of the vessel in which the disease first appeared, the only remaining nidus for disease would be in the passengers themselves. By daily muster of the passengers their condition could be carefully supervised, and isolation could be practised in the case of any suspected person. The liberal use of lye and solutions of quicklime, which the experiments of Kitasato and Cornet have shown to be as efficacious germicides as bichloride of mercury, would supplement the steam disinfection.

The regular inspection of passenger steamships by competent medical officers of the United States would ensure the enforcement of the existing statutes to which reference has been made; and the attention of the steamship companies being thus directed to the necessity of sustaining a certain hygienic standard, would probably result in the selection of more experienced physicians for appointment as ship's surgeons. The ship's passengers and crew are a community of which the surgeon is the health officer; he may isolate and disinfect, supervise absolutely the food and water supply, and in a limited area exercise an authority far greater than has sufficed to enable health-officers ashore to stamp out contagious or infectious diseases that threatened the welfare of the community for which they were responsible.

## Clinical Department.

### TWO CASES OF SUNSTROKE.

BY E. CHANNING STOWELL, M.D.

I AM allowed to report two cases of sunstroke which were brought to the accident-room of the Massachusetts General Hospital and entered the service of Dr. Edward N. Whittier. Neither of the men were drinkers. Both were young and vigorous. One received some alcohol on the way to the hospital. Its effect others must determine. Alcohol in large quantities in sunstroke must always be hazardous.

The cases were of interest for the high temperatures; the almost marvellous effect of ice; the non-administration of alcohol; the use for heart stimulation of atropine and strychnine alone; the nervous manifestations; the curves of the temperature and pulse; and the complete recovery.

CASE I. A. P. G., about thirty-two, single, born in Scotland. In Boston about four months. Had been working as assistant to the cook in a basement restaurant on Court Street. For two days had been feeling dizzy. On the morning of June 14th, dizziness again came over him, but he tried to fight it off. At noon he left the hot kitchen to walk on the street and get the benefit of the air. He remembered walking on Tremont Street, and that is all. The police saw him stagger and fall in front of the fruit-stand at the Tremont House. They picked him up and found his temperature at the station-house was 110° F. They put a bag of ice on his head and brought him in the patrol-wagon to the Massachusetts General Hospital.

Seen in accident-room at 1 p. m. Skin of hands and arms dry and hot. Pupils moderately contracted; reacted to light. Breath hot, but sweet. Lips ashy pale. Muscles loose, flaccid. Completely unconscious. Well developed and nourished. Muscular. Temperature by rectum 107.8°. Stripped on table. Rubbed with ice from head to toe by several attendants. Ice packed about neck, over carotid, laid in groins, and packed into axillæ. Pulse at entrance had been soft, moderately full, about 110. After rubbing about fifteen minutes with ice, pulse became small, thready, 160; respiration, which had been easy at entrance, became broken, with spasm and groaning at expiration, though inspiration was easy. Temperature 105.5° by rectum. Now the skin became covered with goose-flesh, and the fingers twitched slightly. Head in spasm turned to right; eyes thrown up and toward right; pupils now somewhat dilated. Pulse grew weaker and somewhat irregular. One-sixtieth of a grain of atropia and five minims of ergotole were given subcutaneously. Had a small, involuntary defection. Rubbing with ice continued until about 1.50, when temperature by rectum was 99°. Muscular spasm had increased. Arms bent and rigidly held across chest. Legs drawn up and flexed on abdomen. Respiration moaning. Pulse at wrist almost imperceptible; at apex, with stethoscope 140; lack of booming quality to first sound. One-sixtieth of a grain of strychnine was given subcutaneously. Pupils dilated; eyes rolled up; lids shut tightly; disliked the light. Now dried off and laid on dry bed covered with blanket; ice-bag to neck. Skin cold everywhere except over head.

Now, although for a moment he seemed to become quieter, it did not last, and the worst spasm of general muscles and respiration occurred. In about twenty