

AN INQUIRY INTO THE MORTALITY AMONG PASSENGERS ON VESSELS ARRIVING IN U. S. PORTS.

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The question of the mortality among passengers on vessels coming to this country, aside from the cursory interest of the quarantine physician at the port of arrival, seems to have attracted but little attention—in recent years—from sanitarians at large; unless a case of infectious disease appeared at an inland city in a recent passenger on a steamship, in which case the matter became of considerable importance. This was illustrated in Chicago last April, when small-pox developed in an Italian who had arrived in the city April 1st, the disease appearing April 6th, he having been one of some six hundred emigrant passengers on the steamship "Alsatia," two of whom were affected with small-pox *en route*.

Thinking that an inquiry into this subject would develop something of interest, I have collected the laws relative to reporting mortality of passengers, and the official records of the Treasury Department concerning this mortality, and present them herewith for your consideration.

The Revised Statutes of the United States require (Section 4266) masters of any vessels arriving in the United States or Territories, from any foreign port whatever, to give the collector of customs a list of all passengers taken on board the vessel at any foreign port, in which list the country, age, sex, and occupation of each passenger, and the part of the vessel occupied by each, shall be designated; also, whether any, and what number, have died on the voyage.

The Statutes also prescribe (Section 4268) that in case a death shall have occurred among passengers, other than cabin passengers, over eight years of age, on board any vessel arriving in the United States or Territories, it shall be reported within 24 hours, and the vessel shall pay the collector of customs ten dollars for each of these deaths.

These laws, with those regulating the number of passengers to the tonnage, the space for passengers, food, etc., cover the legal restrictions of the sanitary affairs of the vessel. The enforcement of the latter laws are subject to the perfunctory (if any) supervision of a customs inspector. In a paper the writer presented to the American Public Health Association (Transactions, 1885, Vol. XI, "Maritime Sanitation"), the desirability of an amendment of the laws was urged, making a medical officer of the United States the inspector in such matters. Who can say that instances are isolated like the French steamship Chandernagor, which arrived at New York on April 13, 1887, with 1256 Italian steerage passengers on board, one of them ill with small-pox; in which complaints as to lack of food, water, and sufficient sleeping space, led to an investigation, which revealed that although the French law allowed her to carry 1300 passengers, our law (allowing one passen-

ger to two tons) limited her to 990 passengers. Though seeming irrelevant, these facts are introduced to call attention to the large population confined, for a variable time, on a vessel; and the favorable conditions for poor food or water, or over-crowding, etc., to propagate contagious disease.

In the "Annual Reports of the U. S. Marine Hospital Service," from 1883 to date, a table has been included giving the date of death, name of vessel, port of departure, sex of deceased, and cause of death, if reported, of steerage passengers. From these tables the figures contained in Table I have been compiled.

TABLE I.—EMIGRANT DEATHS.

Year.	Males.	Females.	Total.	Cause of Death, Unknown, and per cent. Total.	
1882	109	45	154	65.	42.2 %
1883	75	37	112	10.	8.9 %
1884	62	43	105	7.	6.6 %
1885	50	27	77	7.	9 %
1886	44	24	68	14.	20.7 %

From Table I it may be seen, 1st, that the mortality among males is almost always 50 per cent. higher than in females; and, 2d, that the mortality from unknown or unreported causes is from 6 to 42 per cent. of the total number of deaths. The first may be explained by the excess of male immigrants; the second, possibly in part to carelessness of ship's officers; but these figures are of some importance as possibly embracing deaths from cholera or yellow fever, as in several instances the vessels came from localities known to be infected. Excepting one woman, from Bremen, who died of cholera September 23, 1882, no deaths of emigrants from cholera, yellow fever or small-pox are reported during these five years.

The small number of deaths—516—occurring among so large a number of emigrants, is probably due to the fact that the majority are in the prime of life. This supposition is supported by the number dying in the different decennial periods of life, as shown in Table II.

TABLE II.—EMIGRANT DEATHS, DECENNIAL PERIODS.

Age.	Un-known.	1 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.
Total Deaths.....	5	36	43	111	107	72	68	43	29	2

These deaths are so generally distributed in various diseases that statistical tables of the cause of death would be of no advantage.

Through the kindness of the Commissioner of Customs and the chief of the Bureau of Statistics, I have secured the figures, in Table III, of the number of cabin and steerage passengers brought to this country during the past five years, and the total number of deaths *en voyage*. The figures for 1886 do not include emigrants from Canada or Mexico; and the cessation of Chinese immigration is to be remembered, averaging about 20,000 persons per annum. It would have been an interesting accompaniment to have had the aggregate number of days these passengers were on the vessels.

TABLE III.

Year.	Cabin Passengers.	Other than Cabin Passengers.	Total.	Total Deaths.	Emigrant Deaths.	Per ct. of Emigrants to Total Deaths.
1882	121,571	747,573	869,144	578=.6%	149	26
1883	118,137	594,378	712,515	465=.6%	115	25
1884	124,540	524,931	649,471	392=.6%	108	28
1885	106,362	428,647	535,009	209=.4%	72	34
1886	99,690	334,613	444,303	175=.4%	70	40

If we roughly estimate each passenger to have been on the vessel twelve days—rather below than above the average—we can approximate the annual mortality per thousand. In Table III, in the column headed total deaths, the mortality per thousand passengers is given, six- to four-tenths of one per cent.; this would give an approximate annual mortality per thousand of .18 to .12 per cent., if the passengers remained on the vessel for a year instead of one-thirtieth of that time. We therefore see that though, at first glance, the mortality per thousand seems small, for the time the passengers are on the vessel, it is within four to ten per cent. of the average mortality (22.5 per cent. per thousand) of our American cities.

One reason that the mortality should be low is, that only in exceptional cases would any passenger—either cabin or steerage—start on the voyage if ill. Also the majority of immigrants, who constitute the greater proportion of the passengers, are in the prime of life, so the mortality is less influenced by the heaviest contributors to its increase in cities, those under 5 years of age and over 55.

The most important fact revealed by Table III is the disproportion of the deaths of "other than cabin passengers, over eight years of age" (or emigrants), to the total deaths, varying from 25 to 40 per cent. thereof. Either the mortality among cabin passengers is extremely large, or there is a heavy mortality among emigrant children under 8 years of age, who are not included in the list of emigrant deaths as returned to the customs officials.

When the causes of death are known an examination demonstrates nothing satisfactory, for it is not possible to ascertain, with the data now at hand, the influence of the vessel as a genetic or exciting factor in disease. Such knowledge can only be obtained by the continued investigation of steamship surgeons.

As from 75 to 60 per cent. of these deaths are from unknown or unreported causes, it would seem desirable that an amendment should be made to the law requiring a report of the death of passengers, to the effect that the cause of death shall in all cases be specified, if known.

Aside from the statistical value of such information, its utility would consist in permanently recording the mortality on each vessel; and if this was due to local causes, prompting an investigation and relegating the cause to "innocuous desuetude."

MEDICAL PROGRESS.

SURGICAL TUBERCULOSIS.—In an article on this subject PROFESSOR R. VOLKMANN gives a masterly review of surgical tuberculosis, beginning with, *I. Tuberculosis of the Skin and Connective Tissue.*

1. Lupus is a genuine tuberculosis of the skin, though it is to be considered a special form of tuberculosis, which attacks by preference persons who are slightly or not at all hereditarily infected. Clinically it is characterized by its great tendency to local relapse, in contradistinction to other tuberculous affections of the skin. Between the latter and lupus there are intermediate forms, and the prognosis of these as compared with lupus is more favorable as to local permanent cure, but worse as to later appearance of tuberculous processes in other localities, tissues and organs.

2. *Tuberculous Ulcerations of the Skin*, to be distinguished from lupus, answer mostly to scrofulous ulcerations of older authors. They are most frequently found in children and young persons, but are not very common if we except those cases in which they develop secondarily from tuberculous gland abscesses and tuberculous joint- and bone-fistulas. They are almost without exception permanently cured by surgical interference, without local relapse.

3. *Primary Tuberculosis* and its *primary* tuberculous abscesses, of the deeper, especially *intermuscular*, *parossal* and *para-articular connective-tissue* layers, are very rare, and must be diagnosticated with the greatest reservation. In the great majority of cases these abscesses are connected with specific bone, joint or gland affections, these forming the primary disease. The present treatment of these abscesses by free incision and scraping out generally shows this relation plainly. When it cannot be demonstrated on the operating table, it must not be forgotten that, particularly in bone, the tuberculous foci from which those apparently primary cellular tissue tuberculous and para-articular abscesses arise, are often exceedingly small, and may be easily overlooked; and, further, that the abscesses not infrequently appear so late that meanwhile the original bone affection is already healed.

This holds particularly good for the congestion abscesses of spondylitis (tuberculous caries of the vertebral column). In favorable cases these abscesses may heal by a kind of primary union and without relapse after free incision, washing out with antiseptics, drainage and compression for a few days. Out of 57 freely opened congestion-abscesses in spondylitis with gibbus formation during the last few years, 23 healed by first intention, the drains being removed after a few days. This shows that the abscess was not longer supplied with pus and products of disintegration of tuberculous tissue from the bone.

4. As a *primary affection* tuberculosis of the connective tissue is found chiefly in the panniculus adiposus of small children. There develop at once or in rapid succession, a number of small flat knots under the skin (gommes tuberculeuses), which soon