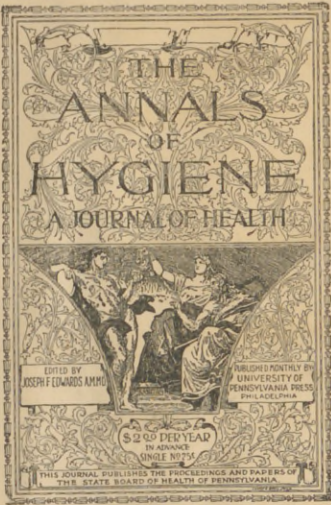


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ON THE CHOLERA EPIDEMIC IN MOJI, JAPAN, IN THE  
TWENTY-EIGHTH YEAR OF MEIJI.

BY W. F. ARNOLD, M.D.,  
United States Navy.

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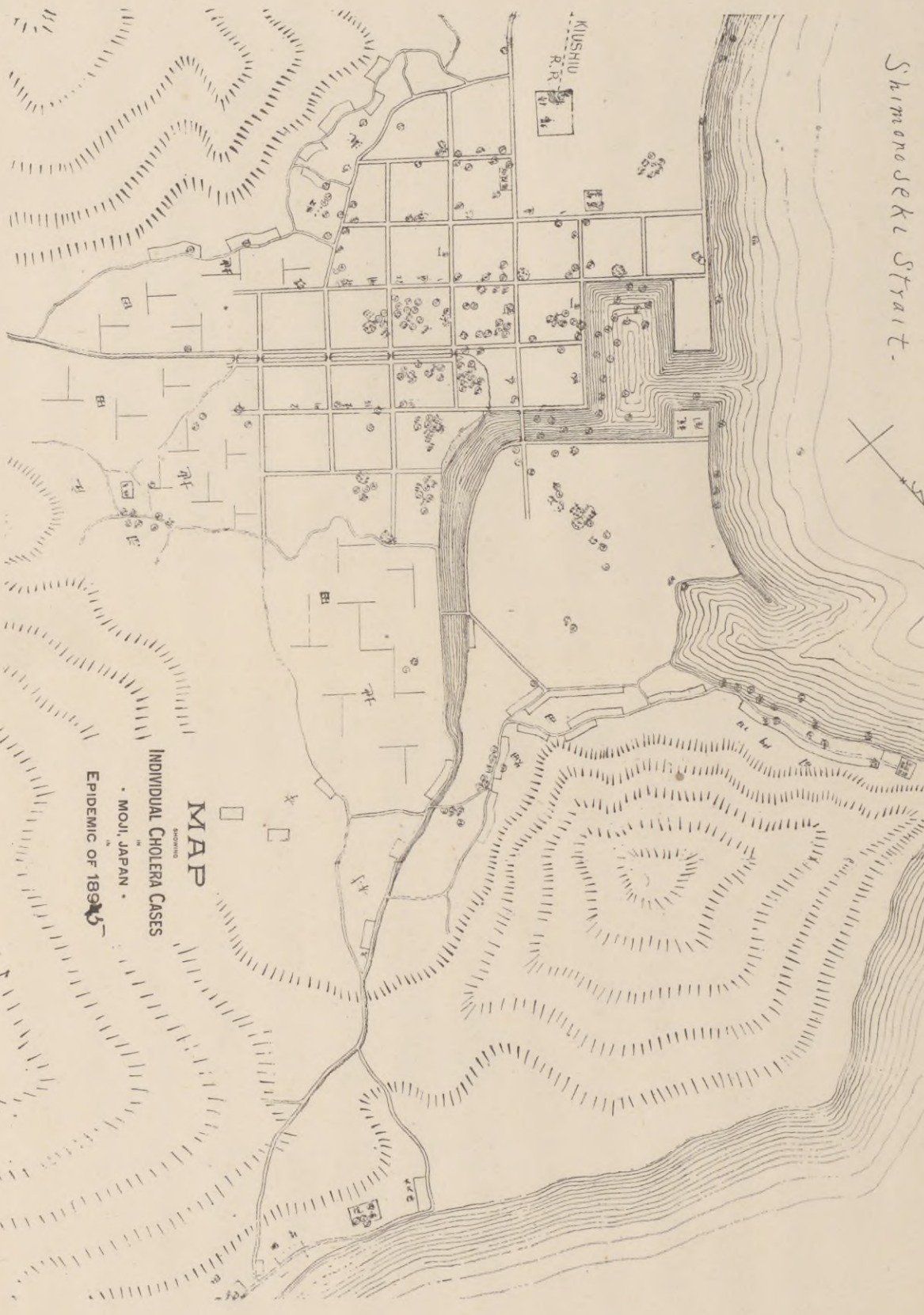
*presented by the author.*







Shimonoseki Strait.



MAP  
SHIMONOSEKI  
INDIVIDUAL CHOLERA CASES  
• MOJI, JAPAN •  
EPIDEMIC OF 1894

**On the Cholera Epidemic in Moji, Japan, in the  
Twenty-eighth Year of Meiji.<sup>1</sup>**

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BY W. F. ARNOLD, M.D.,

United States Navy.

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**T**HE following pages are a literal translation of a report that was prepared for me by the chief of police of Moji, a comparatively new city on the Island of Kiushiu, just inside the Strait of Shimonoséki from its inland sea end. It is the terminus of the railroad whose company's public-spiritedness is referred to hereinafter; and its commercial importance is very considerable.

I visited it in the course of some investigations that I made under a detail upon special service from the Navy Department of the United States in December, 1895; and this report was voluntarily prepared for me by the official mentioned, whose personal history I did not inquire into at the time, and which I was unable to get afterwards.

It is submitted in the belief, in the light of my experience with many such officials in Japan in the course of the detail of duty referred to, that it is fairly representative of the work done

<sup>1</sup> Following the Chinese method of designating each emperor's reign by a descriptive name, which sets forth characteristics desired, *Meiji* ("Enlightened Rule") has been applied to the period of Japan's present ruler with perhaps the greatest truthfulness ever attained in this system of chronological predictions. Indeed, it may well be doubted whether the whole literature of prophecy contains a better example of fulfilment. Anno Domini 1895 is designated in this case.



in general by that altogether admirable body of men, the national police of Japan.

All parenthetical explanations and all foot-notes have been inserted by me. The translation is by Dr. A. Nakagawa, Tokio, Japan.—W. F. A.

The cholera cases in Moji, from its first appearance on March 8 until its last on November 1,—that is, in a period of 239 days,—were as many as 412. An average will give 1.7 *per diem*.

The entire number of houses in Moji is 2720, of which one-eighth have furnished cases (literally, "are diseased houses"); 271 houses furnished, each, 1 case; 37, 2 cases; 13, 3 cases; and 14, 4 cases.

Considered with reference to the population, which is 18,831, there will be one case of cholera for forty-five persons.

(A classification according to the streets of the town is omitted.)

Surely in producing so much disease, extinguishing so many precious lives, and demolishing so much property, there must have been circumstances to account for everything.

A man—Matsutaro Yamabe—that lived temporarily in this town, by the occupation of a daily laborer, became a daily laborer in the employment of the commissary department of the Imperial Japanese army at Bakwan (the commonest Japanese name for Shimonoséki, which is also called Amanagaséki, meaning, "The Red Horse Barrier"), and was working at loading and unloading the vessels returning from China and carrying army people and coolies on board them.

On March 7 he came near a person aboard a ship who was suffering from severe vomiting and diarrhœa, and his spirit at once felt very unpleasant. On the morrow—the 8th—he went back to his home and was suddenly seized with vomiting and diarrhœa. After two days of illness he died. This is truly the alpha of cholera cases in this town.

From that day to the 18th day of this month there were seventeen people who got sick of this same disease. But at that time, as the season was not regarded as the cholera season, and as the town's doctors did not diagnose it as cholera, merely hastily reporting the cases as infectious, the chief of Kokura Hospital was summoned by telegram and sent to make the diagnosis. He reported that it would be hard to determine its real

nature without autopsies, but that he was certain as to the infectious nature of the affection.

At last, the director and vice-director of the Fukuoka Hospital were despatched ; they performed autopsies upon two bodies and diagnosed them to be genuine cholera cases.

Upon this the patients were removed to the cholera hospital ; isolation was enforced ; disinfection was carried to its utmost extent to prevent further spread of the virus ; and the vigilance of the police force was fully aroused.

At this time the arrival (at Shimonoséki, just across the strait of this name) of the Peace Embassy from China occasioned extreme vigilance on the part of the police force of Moji, which was at that time numerous ; and from March 20 thorough municipal cleaning and disinfection in all localities was carried out ; and, on the side of individual attention, policemen were instructed to call at every house several times a day to inquire about the health of its inhabitants. If there were any cases in which doubt existed as to the nature of the disease, physicians were immediately summoned. Among other things, the closest of attention was paid to eatables.

In reward of these measures, from March 19 until April 8—twenty-one days—there was not a single case of cholera : the disease had disappeared.

The above is to be regarded as the first period of this epidemic in this city ; therefore the cholera days were eleven. Hence, 1.4 persons *per diem*.

*Period II.*—From April 8 to May 25,—forty-eight days,—twenty-six patients. Average, *per diem*, about 0.5 person.

The cases of this period had their origin in the ships employed in government service. About nine-tenths of the cases arose thus ; the rest were brought from infected towns, such as Hiroshima and Kuré (the chief port for transports carrying troops, and the principal naval station, respectively), and were not transmitted from cases of the first period. They are of a radically different origin.

The occupations of the patients of this period were for the most part those of coal-carrying coolies, who add to excessively hard labor habitual overeating and too great indulgence in *saké* (a mild distilled liquor produced from rice). They are almost ignorant of what constitutes personal hygiene ; and they do not know that indigestible food and bad water can occasionally be



the source of this disease. Therefore, however much one may call their attention to hygienic topics, the effect is that of the east wind upon the horse's ear;<sup>1</sup> and our well-intended instructions and advice are mostly thrown away on them. But sometimes their co-workers, who have been in perfect health until yesterday, are suddenly attacked (literally, "invaded") by the disease; they are laid low; symptoms are developed in due order; they become delirious; and they die in agony.

Seeing these things, it was impossible that sensations of fear should not arise; and by degrees they were brought to see that heedless eating and drinking were causative in this disease.

But their dwelling-places are very much crowded; ventilation is bad, of course; even the amount of light is insufficient; the houses are not clean either without or within; and the only water that they had to drink was bad, and must be regarded as a factor in contagion. So it was very necessary to remove the dirt, and to supply pure water, in order to protect them against infection. Consequently, not alone satisfied with cleaning that part of the town thoroughly, it was undertaken to stop the source of infection through water; and the wells that belonged to the Shioda and Iroha companies (guilds of coolie laborers) were nailed up and the use of water from them was prohibited. Of course, they were instructed to use boiled water for drinking, and also for washing utensils for food. The water from wells in the different parts of the city was examined, and those that were found to be bad were sealed up, and any use thereof was prohibited.

The Kiushiu Railroad Company supplied hot water and tea to the coolies, from May 1 onward, in localities east of Shirakizaki to Shiohama. From that date the effect became gradually apparent, and the root of the malady was severed; so that after the beginning of June all cases with the coolies are to be ascribed to personal carelessness. (A table showing the amount of hot water and tea distributed by the company at nine stations, up to September 30, is omitted. The average daily amount was 4860 gallons, costing  $10 \frac{40}{100}$  *yen* for fuel. The total amount given was 656,000 gallons to 62,265 persons. Cost 1591 *yen*, besides expenditures for buildings, which was 270 *yen*.)

<sup>1</sup> This is a common simile in Japanese. It is often a pure metaphor also; and a usual associate is a phrase that means "water in a frog's face." Foreigners, under the immense difficulties that the language extends to them, avail themselves readily of these phrases; and one soon comes to think that a word is less the sign of an idea in these idiographic tongues than—shall one say it?—in modern French.

*Period III.*—From May 27 to June 13,—eighteen days,—ninety-eight cases ; 5.4 cases *per diem*.

In this period the disease was very severe, as will be seen from the fact that sixty-five out of ninety-eight cases died. In this period the virus had ramified to the four corners of the town ; and from the beginning of this time downward for more than 100 days without interruption there developed many cases of cholera that sacrificed several hundred lives and destroyed (literally, "threw to crows") a considerable amount of property. Such a state of affairs must have had an obvious cause.

Thus, on May 22, at the return of the Sixth Division (Japanese *Shidan*, the Imperial Japanese army following the German model of strictly local recruiting), there were gathered together here from all parts of the *Ken* (prefecture) persons of all conditions to welcome the troops. The city was much crowded, and the thought of personal hygiene was drowned in the voice of welcome. It so happened that the boys' festival season came around at the same time, and there was naturally much excess in eating and in drinking. In addition to these things, the virus brought home by the soldiers and coolies was directly and indirectly sown broadcast, and rekindled the at one time nearly disappearing epidemic, and urged it to attain the magnitude it reached.

Thereupon, as a first measure of prevention, the delegates from different towns and parts of the *ken* (literally, "welcome delegates") were ordered to go back to their respective homes, except a few who were allowed to remain as the representatives of all. Influential people of the city, the hotel-keepers, and the proprietors of tea-houses and of other shops where eatables were served, were called together and instructed in the best procedures of preventing the further spread of the epidemic. Extreme vigilance was enforced by the police.

On the other hand, the coal-merchants and other rich people were asked to contribute money ; and from June 12, at two stations in the old town and at another in Sakaecho, boiled-water establishments were set up, and the boiled water was given out to those who were not able to boil the water that they drank. Further, quarantine officers, police officers, town officials, and others were despatched to all parts of the city, to make open-air speeches and to advise the utmost attention. As a result of such efforts, the epidemic showed a decline after June 13. (Another



omitted table and note gives total supply 650,000 gallons, at a total cost of 1450 *yen*. It is stated that it went mostly to coolies, but it was also distributed to sailors and to others aboard ships in port.)

*Period IV.*—From June 13 to July 20,—thirty-eight days,—forty-eight cases ; 1.2 cases *per diem*.

The measures and efforts of the preceding period were manifest in this ; so that in this rainy season of the year only forty-eight cases occurred.

*Period V.*—From July 21 to September 12,—fifty-three days,—211 cases ; 4.3 cases *per diem*.

This period of fifty-three days coincided with the most fearful season of the year,—viz., the hottest part of the year. Moreover, the virus of the disease had sunk deeply into the earth, and it was very difficult to remove it.

Then the coolies came back (from China) in great numbers. Those that belonged to this *ken* alone numbered more than 2000. These people brought the virus of the disease afresh ; and directly and indirectly they contributed to the spread of the disease. Under such circumstances, it was impossible by preventive measures to stamp out the disease, and we had to be contented with limiting its spread.

During these efforts of prevention and of disinfection, there were a number of people (officials connected with the work) who were infected while in the discharge of their duties. One was a police officer ; another a policeman ; seven others were nurses, coolies, and the like. Other officials were attacked with diarrhœa ; indeed, few of them were exempt from it.

*Period VI.*—From September 13 to November 1,—fifty days,—eighteen cases ; 0.4 case *per diem*.

In the last part of the preceding period there had been from five to ten cases daily ; so that at any time now there were fears of recrudescence of the disease, unless some effective measures were taken against it. Otherwise we had merely to wait for the cold season to come before the epidemic should cease. Therefore it was determined to enforce thorough (literally, "big") cleaning of the whole town, and to exterminate the virus of the disease. From the beginning of this period for a week the town was divided into fourteen wards, and seventy-five officers in all were distributed to them. Both the inside and the outside of the houses were cleaned, and the sewers and drains were fully cleared

and lime was scattered universally. Thus it was a cleaning in the sense of a disinfection.<sup>1</sup>

Further, all hotels, tea-houses, and shops selling eatables were made to close at 10 o'clock P.M.; and elsewhere excesses in eating and drinking were prohibited. Extreme measures were enacted, as the result of which the epidemic almost entirely declined.

Since then only eighteen cases were found, which can for the most part be ascribed to careless individual habits and excesses.

From the above, it appears evident that, although direct contagion is much to be feared, the contamination of the soil and a bad water-supply are efficient factors in its spread; and that excesses in eating and in drinking are the occasions; and that without these two the contagion need not be so much feared. If in this town there were provisions for a good water-supply, the best system of drainage, and, if there were no coolies nor laborers with their ignorance, obstinacy, and inclination to great excesses, should the virus, which is a thing to be dreaded, be introduced, it could not have attained this extent and magnitude.

That such is the probability may be seen from the following tables:

TABLE I.—ETIOLOGY.

Persons coming from infected places . . . . .	28
“ careless in eating and drinking . . . . .	236
“ in contact with affected individuals in their houses . . . . .	105
Not traceable . . . . .	43

TABLE II.—OCCUPATIONS.

Coal carriers . . . . .	155
Daily laborers . . . . .	62
Boatmen . . . . .	68
No occupation . . . . .	52
Carpenters . . . . .	14
Peddlers . . . . .	7
Petty merchants . . . . .	18
Miscellaneous laborers . . . . .	27
Officials . . . . .	5
Military coolies . . . . .	2
Railroad official . . . . .	1
Army surgeon . . . . .	1

<sup>1</sup> The gunboat to which I was at that time attached rode out at anchor a typhoon just above Moji; and a boat that was sent ashore from her was weather-bound in that town for several days. The cleaning operations detailed puzzled the boat officer not a little; nor from his story could I understand their extensive scope at that time.

At present I have some reason to think that this gale greatly decreased the epidemic by its marked effect in lowering the temperature. This will be more fully treated elsewhere.



(A table giving places of registration is omitted.)

Report of the Moji Cholera Hospital.

The old cholera hospital in this town was imperfect in construction and too small to admit a large number. Therefore at the local expense we constructed a new hospital. This building was begun April 1 and completed on the 20th; on May 8 it was opened.

Deaths <i>en route</i> to hospital . . . . .	72
“ on the day of entrance . . . . .	34
“ on second day . . . . .	68
“ on third “ . . . . .	40
“ on fourth “ . . . . .	14
“ on fifth “ . . . . .	13
“ on sixth “ . . . . .	13
“ on seventh “ . . . . .	8
“ on eighth “ . . . . .	2
“ on ninth “ . . . . .	3
“ on tenth “ . . . . .	1
“ on eleventh “ . . . . .	3
“ on twelfth “ . . . . .	1
“ on thirteenth day . . . . .	2
“ on fourteenth “ . . . . .	1
“ on fifteenth “ . . . . .	0
“ on sixteenth “ . . . . .	2
“ on seventeenth “ . . . . .	0
“ in cases treated at home . . . . .	12
“ total number in hospital . . . . .	174
Recoveries . . . . .	120

Those enumerated as having died on the same day in which they were brought to the hospital are not counted as having received treatment there. They were concealed until the last stage, or else they were *foudroyant* cases brought in in a moribund condition. They died immediately on being brought into the hospital; and there was no time to treat them in the strict sense of the term.





