

WEEKLY ABSTRACT OF SANITARY REPORTS.

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TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL,
U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C., December 21, 1888.

Abstract of Sanitary Reports received through the Department of State from foreign countries during the week ended December 21, 1888, and information received through other channels.

(Published in accordance with section 4, act approved April 29, 1878.)

England and Wales.—The deaths registered in 28 great towns of England and Wales during the week ended December 1 corresponded to an annual rate of 17.8 a thousand of the aggregate population, which is estimated at 9,398,273. The lowest rate was recorded in Hull, viz., 13.2, and the highest in Cardiff, viz., 27.9 a thousand. Diphtheria caused 8 deaths in Manchester, 3 in Liverpool, 2 in Nottingham, and 2 in Oldham. Small-pox caused 2 deaths in Cardiff, and 1 in Sheffield.

London.—One thousand three hundred and fifty-two deaths were registered during the week, including measles, 141; scarlet fever, 24; diphtheria, 34; whooping-cough, 20; enteric fever, 11; diarrhoea and dysentery, 13; simple cholera, 1. The deaths from all causes corresponded to an annual rate of 17.2 a thousand. Diseases of the respiratory organs caused 258 deaths; different forms of violence, 54; and 6 cases of suicide were registered. In greater London 1,678 deaths were registered, corresponding to an annual rate of 15.8 a thousand of the population. In the "outer ring" the deaths included measles, 16; diphtheria, 7, and whooping-cough, 5.

Ireland.—The average annual death rate represented by the deaths registered during the week ended December 1 in the 16 principal town districts of Ireland was 20.7 a thousand of the population. The lowest rate was recorded in Wexford, viz., 4.3, and the highest in Lurgan, viz., 51.3 a thousand. In Dublin 155 deaths were registered, including whooping-cough, 1; enteric fever, 6; scarlet fever, 2; diphtheria, 2.

Scotland.—The deaths registered in 8 principal towns during the week ended December 1, corresponded to an annual rate of 19.1 a thousand of the population, which is estimated at 1,314,274. The lowest mortality was recorded in Leith, viz., 12.6, and the highest in Paisley, viz.,

32.0 a thousand. The aggregate number of deaths registered from all causes was 483, including measles, 14; scarlet fever, 13; diphtheria, 10; whooping-cough, 7; fever, 11, and diarrhoea, 5.

Marseilles, France.—The United States consul in his dispatch dated December 4, 1888, states that “the health of the city is notably good, the daily average of 24½ deaths being six below the normal average. An epidemic of small-pox prevails in the Department of Vanelure, on the northern border of this district.” There were 741 deaths registered during the month of November, including cholera (sporadic), 1; small-pox, 16; enteric fever, 30; scarlet fever, 1; diphtheria and croup, 40; measles, 10; whooping-cough, 4; diarrhoea enteritis, 56.

Catania, Italy.—The total number of deaths registered during the month of November, 1888, was 347; estimated population, 107,167. There were 118 deaths from small-pox during that period.

Treiste, Austria.—There were 27 cases and 11 deaths from small-pox during the month of November, 1888.

Gibraltar.—The following quarantine notices are published:

November 22, 1888. The board of health at a meeting held this day has decided that in future any vessel communicating, whether in quarantine or not, with any port declared to be infected will be treated as an infected vessel.

December 1, 1888. The board of health at a meeting held this day has decided to remove the quarantine now imposed on all arrivals from the Canary Islands, with the exception of those from the island of La Palma, the restrictions on which will continue in force as heretofore.

Maceio, Brazil.—Thirty-eight deaths were registered during the month of October, 1888, including 3 from small-pox.

Guayaquil, Ecuador.—The United States consul reports deaths from measles as follows: Week ended October 23, 127; October 30, 124; November 6, 97; November 13, 76; November 20, 64.

Cardenas, Cuba.—December 7, 1888. Good health prevails in town and harbor. Weather cool.

Havana, Cuba.—Three deaths from yellow fever were registered during the week ended December 8, 1888.

Dr. D. M. Burgess, Sanitary Inspector Marine Hospital-Service, at Havana, reports as follows:

HAVANA, ISLAND OF CUBA, *December 6, 1888.*

SIR: I have the honor to inform you that there were 539 deaths in this city during the month of November.

Thirty-eight of those deaths were by yellow fever, 30 by so-called pernicious fever, 1 by intermittent fever, 2 by paludal fever, 6 by enteric fever, 3 by croup, and 1 by diphtheria.

So large a number given (30) as dying of pernicious fever, while only 3 are given as dying of other forms of paludal fever, excites the sus-

pcion that not a few of those given as dying of pernicious fever may have died of yellow fever.

Every now and then cases of small-pox arrive at this port on the Spanish mail steamers and are put in the hospitals here, particularly the military, but as yet I do not learn of its having spread from there.

Very respectfully, your obedient servant,

D. M. BURGESS,
Sanitary Inspector, M.-H. S.

To SURGEON-GENERAL HAMILTON.

MORTALITY TABLE, FOREIGN CITIES.

Cities.	Week ended.	Estimated population.	Total deaths from all causes.	Deaths from—							
				Cholera.	Yellow fever.	Small-pox.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.
Paris	Nov. 30.....	2,260,946	806			3	12	4	27	20	3
Paris	Dec. 1.....	2,260,945	876		4	20	2	7	27	33	5
Glasgow	Dec. 1.....	545,678	200				2		5		
Warsaw	Nov. 24.....	444,814	225		7			13	11		
Amsterdam	Dec. 1.....	389,916	160				2		4		
Copenhagen	Nov. 27.....	300,000	120				1	7	7		
Munich	Nov. 24.....	275,000	170				1	1	8		
Palermo	Nov. 24.....	250,000	72		3			1	2		
Palermo	Dec. 1.....	250,000	65		1			1	1		
Bristol	Nov. 24.....	226,510	73				1	1			
Genoa	Dec. 1.....	179,875	94		1	2			1		
Trieste	Nov. 17.....	154,500	95								
Trieste	Nov. 24.....	154,500	78		4				4		
Toronto	Dec. 8.....	130,000	38				2				
Stuttgart	Dec. 1.....	125,510	41			1			2		
Bremen	Nov. 24.....	122,000	42								
Havre	Nov. 24.....	112,074	44		2		7		2		
Havre	Dec. 1.....	112,074	65		1		4	1			
Pernambuco.....	Nov. 13.....	110,000	68				2	2			
Pernambuco.....	Nov. 20.....	110,000	61				1	1			
Leghorn	Dec. 3.....	102,540	42						1		
Mayence	Nov. 3.....	65,802	20					1			
Cadiz	Nov. 24.....	65,028	62								
Cadiz	Dec. 1.....	65,028	46								
Guayaquil	Nov. 13.....	30,000	122		1					76	
Guayaquil	Nov. 20.....	30,000	103		2	2				64	
Ceara	Nov. 15.....	28,943	28								
Gibraltar.....	Nov. 25.....	23,631	10		1						
Gibraltar.....	Dec. 2.....	23,631	10				1				
Kingston, Can.....	Dec. 7.....	17,800	4								
St. Thomas.....	Nov. 23.....	13,500	5								
Paita	Nov. 17.....	4,000	0								

UNITED STATES.

Dr. J. P. Wall reports as follows :

TAMPA, FLA., *December 10, 1888.*

SIR: Having been appointed by you agent of the Marine-Hospital Bureau for Hillsborough County, on the 21st of July, 1888, to take charge of relief measures on account of the existence of yellow fever in Plant City, I at once entered on the discharge of my duties.

The board of health of Hillsborough County had, on the 9th of July, employed twenty guards to isolate Plant City and prevent communication with the adjacent country. From the 23d of July these

guards were continued at the expense of the Marine-Hospital Bureau until the 30th of November ultimo. Of these guards three were employed at \$3 a day, and the remaining seventeen at \$1.50 a day. Of those employed at \$3 a day one was placed in command, one was detailed as my clerk and general agent in my absence, and the other, being a physician, was designated to attend the sick and supervise such measures of disinfection as might from time to time be ordered. The names of these three gentlemen were W. P. Head, representing the town as acting mayor, Col. J. L. Young, and Dr. J. W. Douglass. All three discharged their duties with fidelity and zeal.

Some changes in the seventeen guards were made from time to time, generally by their quitting, when others would have to be employed. But one guard had to be discharged for cause, and that one was one E. S. Tyner, who failed to carry out orders in preventing people from going into Plant City.

During the first of August all the dwellings, out-houses, and privies in Plant City were fumigated with sulphur, in compliance with your order of the 30th of July.

Doctor Douglass attended the sick in the country, who left Plant City the first week in July, and he was instructed to keep up a course of inquiries as to sickness in the country and visit the sick, and in case the disease proved to be yellow fever, or was suspicious, to have the necessary measures taken to prevent the spread of the infection. By August the surrounding country was free from sickness, with only an occasional case in Plant City, till the 21st of August.

On August 7 the fever made its appearance in Tampa, and by the end of the week there were eight cases. It was of a grave type in most of the cases first stricken, three deaths occurring out of the first eight. Its type then assumed a milder character, especially with the unacclimated who remained in the city.

On the 12th of August the presence of yellow fever in Tampa was officially announced, and the board of health established local quarantines within the county against Tampa, and all the counties in the State put on quarantines against Tampa and the county.

All the measures met with a great deal of opposition among the people of Tampa, and the president of the board of health was the object of much malicious abuse; especially from early in August till the 24th of September, before the next death took place—a stranger who had been here about two weeks.

Fortunately the number of unacclimated people in Tampa was not large, and the great majority of the cases being of a very mild type, there was not much necessity for relief measures to be extended by the Government. In only two instances did I find it necessary to employ nurses at Government expense. Considerable bedding was destroyed at Plant City, and some little in Tampa, in compliance with your instructions of August 9. In Tampa there prevailed during August and September some kind of ephemeral fever of from one to three days duration, generally designated dengue, certainly not yellow fever, and lacking in many of the symptoms of dengue. So that if a general destruction of bedding had been ordered later in the season, I do not see how it would have been possible to discriminate between the two fevers so as to get at the really infected bedding. I was often puzzled by this fever, which was not yellow fever, to tell it from the genuine yellow fever, and the other physicians who reported cases, rarely reported the

milder types of yellow fever on account of the presence of this other fever and their confused inability to differentiate the two. This mild nondescript fever, dengue, or whatever it was, disappeared pretty well in the early part of October. One physician denied all through there being any yellow fever here, notwithstanding he lost a patient with black vomit and urine poisoning, and two physicians who saw the case, in consultation, pronounced it yellow fever. I mention these facts to give you some idea of the difficulties of the situation.

From the 7th of August only 10 deaths occurred from yellow fever up to the present time—3 in August; 1 in September; 2 in October; and 4 in November. One of these in November was a short distance in the country from Tampa.

About the 25th of August the fever appeared at Mango, a small depot place 10 miles from Tampa on the South Florida Railroad. There were some fifteen cases with no deaths. Only one patient was seriously ill, and he was attended by a physician from Tampa who diagnosed the character of the disease. The country physician in attendance previously calling it malarial bilious fever.

All claims against the Government have been rendered, and the total amount of expenditures through the Marine-Hospital Bureau you have.

December 15.—Tampa is, I think, free from the fever. The case taken sick on the 1st instant was a lingering one, with the nephritic complication, yellow color, blueing of gums, etc. She is now convalescing.

I notified the S. F. R. R. Company yesterday that it was safe for them to resume business here.

It is possible for there to be an occasional case of yellow fever during the next few weeks. About this it is impossible to predict with certainty.

Very respectfully, your obedient servant,

JOHN P. WALL, M. D.,
President Board of Health, Hillsborough,
U. S. Agent M.-H. Bureau.

To SURGEON-GENERAL HAMILTON.

Enterprise, Fla.—Dr. J. F. Hartigan, sanitary inspector Marine-Hospital Service, reports as follows:

WASHINGTON, D. C., *December 17, 1888.*

SIR: On my return from Punta Gorda, the 26th October, I found a dispatch at Bartow from Dr. King Wyllly to the effect that yellow fever existed at Enterprise. I left on the first train for that place under your instructions to "investigate the matter there and report," arriving at Sanford the next morning. On account of the excitement and confusion here over the announcement, the infected point being only four miles across the lake, and there having been daily communication with it, some delay occurred before I could secure transportation. I reached there, however, in the afternoon, and was met at the wharf by Doctors Posey and Caldwell.

The streets were deserted, the town depopulated, and there was everywhere noticeable a funeral aspect. Dr. W. H. Caven, the oldest physician of the place, had just died, and the body still laid as he appeared in the throes of dissolution. It being necessary to remove him as soon as possible to permit of fumigation and disinfection of the

premises, a post-mortem examination was agreed upon at once. Accordingly this was made in the presence of Doctors Posey and Caldwell, with the following result:

Rigor mortis not yet marked. The whole surface, and conjunctivæ, presented the characteristic icteric tint; there was much emaciation. The eyes and mouth were stark open, some of the black vomit being still oozing from the angle of the latter and nostrils, and was smeared over his head and moustache, extending to the pillow and bedding. The lungs showed a number of infarctions anteriorly, while posteriorly there was passive congestion. Heart was in a state of acute fatty degeneration, and contained a small amount of dark fluid blood. The appearance of the liver was perhaps pathognomonic of the disease; it presented the peculiar boxwood or mustard color so commonly found, a fatty oleaginous material adhering to the knife on section. Spleen unaltered. The stomach was three-fourths filled with black vomit, and there were patches of redness, and softening of its mucous lining. Small intestines entirely normal, containing nothing except inspissated mucus. Kidneys were congested; bladder empty. Brain not examined.

This second necropsy—Doctors Posey, Caldwell, and Gill present—was on the body of Mrs. Bennett. This case presented much the same appearance as the foregoing. There was an absence of infarctions, however, and the boxwood color of the liver was less marked. Stomach contained even more black vomit. In addition I found chronic valvular heart disease, and atrophy as well as cystic and calcareous degeneration of right kidney. The left kidney was twice its normal size, and had evidently been performing double duty for a long time. Intestines and bladder were empty.

I now directed my attention to the cause of the epidemic. It seems that on Sunday, the 16th of September, the steamer "City of Jacksonville" from Jacksonville was moored at the Watson Wharf, where she was quarantined ten days, no one being allowed to go ashore. The watchman on board was sick on her arrival; and as the boat could not provide him with the delicacies necessary in his condition, the wife of O. H. Voss, who lived on the place, cooked him chicken broth several times and furnished fresh water daily. This was carried half way from the house to a truck, which a man named Phillips pushed on the wharf and returned. On the 23d Voss went aboard the "Jacksonville" for a little while. Three days afterwards, having retired as well as usual, he awoke about 5 o'clock with a lazy feeling, as he expresses it, and an hour later he was seized with a headache and a creeping or chilly sensation in the small of the back, which extended up to the neck, along his arms, around the chest, and down his legs. He immediately went to bed and was covered with blankets. The chill lasted an hour, a high fever following, which "cooled down" about two in the afternoon. Voss had lived in Florida seven years, and had frequently boasted to his wife of his health, which led her to remark that at last he had chills and fever. He told her it was something more than ordinary chills and fever, and to send for a doctor at once. The fever, as stated, diminished at 2 o'clock, but in half an hour it returned violent as before. It then gradually became less until the third day, when it had entirely subsided. During all this time he retained his faculties but felt dazed. There was suffusion of the eyes, pausea and vomiting. The aching and weakness, especially in the back and from the knees down, lingered several days.

Mrs. Voss was taken sick the 11th day from her husband's seizure, and had exactly similar symptoms. The stomach rejected everything for five days. There was a constant burning of the epigastrium. She had a relapse on account of errors of diet. The ejecta at first was greenish, but later the coffee-ground appearance at the bottom of the vessel led to the remark that she thought she had yellow fever. The husband was now of the same opinion, but would not alarm her by saying so. Flakes of grayish mucus were also in the matter vomited, and long strings network-like passed from her bowels, resembling tripe on washing. This was followed by black coagula, which, on agitation, looked like black paint. While she was sick her little nephew had a mild attack.

The following persons visited the house during the period of her sickness: Miss Cleland and Mrs. Whitely, nurses; Miss Bradley, an old colored man named Armwood, Mrs. Atkinson called one evening, and Mrs. Ferguson and daughter another. Of these Mrs. Atkinson was first taken, then Miss Cleland, Armwood, and Mrs. Ferguson and daughter followed. Doctor Long was taken sick while attending Miss Bradley and others, but recovered. Mrs. Whitely was the only person exposed who did not contract the disease. Mrs. Bennett was nursing her sister, Mrs. Atkinson, when Mr. Bennett called at the House. He was seized on the 16th of October, and died the 21st. Mrs. Bennett took sick later, dying on the 31st. While attending her Doctor Caven was taken and died the 27th. Miss Bradley died on the 26th of October.

From these the disease spread until there were about forty cases perhaps in all, many of them, towards the last, being hardly typical—at least by the 1st of November the epidemic seemed to have lost its virulence. The true nature of the disease was not announced until Doctor King Wyly, of Sanford, was called to see Doctor Caven, and the question may be asked why? Mr. Bennett was the first victim, and many who attended his funeral carried with them the germs of the disease. No one had suspected what it was. It is, however, but just to Doctor Long to say that shortly before he was stricken down, his suspicion was aroused, and he had intended to make it known. Doctor Caven was also prostrated, and he, too, was unable to communicate what he thought. So it was left for Doctor Wyly to assume a responsibility which medical men, who know anything of the temper of Florida towns, understand and appreciate.

Upon my arrival at Enterprise, the most extravagant reports of mortality were rife. The officials seemed to have all left, and it was difficult to get authoritative information. Of the list of nineteen deaths handed me as having occurred this summer, on analysis I am able to state that only the four mentioned died of yellow fever. Of three who died in June, it is true there were suspicious symptoms, but they were clearly ascribable to malarial causes alone; the balance had no relation whatever to the subject under investigation—some of them having taken place even the year before.

The following table of all cases of fever during the warm months, collated by Doctor Gill, confirms this:

May, 3 cases; June, 4 cases; July, 11 cases; August, 11 cases; September, 9 cases; October, 38 cases.

He also made a census, which showed a population of 120 white, 380 colored, comprised in an area two and a half miles square.

Had the town been in a good sanitary condition, it is clear that the disease, after its introduction, could not have made such rapid headway. But a tour of inspection through it revealed a criminal violation of ordinary hygiene rules. Over its territory are scattered numerous ponds and marshes, generally without an outlet or an attempt at one. Perhaps the most pernicious of these is just west of the hotel. In it is dug a pit about fourteen feet by ten, lined by boards, which has been a receptacle for the hotel sewerage. The intention was to regularly mix this with dried muck and use as a fertilizer, but it had not been properly carried out, and the matter for a long time kept leaking through, as was evident from the surrounding exhalations.

I found the streets and vacant lots generally overgrown with weeds and decaying vegetation; here and there were scattered heaps of all kinds of garbage; the drains were obstructed, and there was no system of disinfection or removal of excreta. Perhaps the worst death-trap that was ever found in a christian community existed here. In the court-house yard the jail was situated; almost adjoining the latter a privy-house was built over a cesspool 10 feet square and 4 feet deep, with a 6-inch pipe communicating. Not only was this intended for the excrement from the jail, but it was an open place where the passerby entered. On account of the porosity of the soil, the fluids percolated, and there was hardly ever an overflow. Two and a half years ago this pest-hole was established by authority! having been permitted to exist since. Of course it was a subject for early attention. After making a bonfire of the building, and free disinfection, with a dummy-engine I removed in closed barrels to the suburbs more than a thousand gallons of filth, and filled the opening with dry sand. The evil consequences of the condition described were noticeable as far back as June, and in September, when the county-seat and jail were removed to DeLand. A prisoner named Riley, who was confined only 2 months, was a strong, robust man when committed, and on transferring him he was but a shadow of his former self. Another man, after 5 months' incarceration, was turned loose, and has since been a physical wreck. The pale, wan features and languor of the jailer's family attested plainly the havoc made among them. The reason given for the nuisance not being abated was because it was in the court-house grounds, and was county property. The town authorities and health board frequently protested against it, but the commissioners postponed action from time to time. It is but one illustration of the feebleness of county boards of health in Florida. They are mixed boards, and are all appointed by the governor, generally on the longest list of recommendations. It is time that the State should wake up to its interests, and pass a law creating a State board which, if I may be permitted to make the suggestion, should be composed exclusively of medical men and sanitarians, with authority to *act* and appoint county sub-boards, to consist also of competent medical men; and let the powers of the corporate authorities be subservient. Thus will be saved a repetition of the absurd measures, hardships, and conflict which prevailed during the late unfortunate epidemic.

The rainy season in Florida generally begins in July and lasts till September. May is the worst month for malarial fever, at least in the vicinity of Enterprise. In June, as already referred to, there were three deaths of a suspicious character, but the rain which soon followed arrested its onward march. It has often been observed by physicians

and old citizens that in this part of the State only during drought does fever and dysentery prevail. Heavy rains drown the highland vegetation, and when the water recedes exposure to the hot sun produces disease.

Having shown, as I believe, satisfactorily, the importation of the disease, and the presence of pabulum for its propagation, the theory of local origin can hardly be entertained, and so it is, in my opinion, with the history of yellow fever in all the Southern towns. Doctor Hand, who investigated the outbreak at New Berne in 1864, was so beset with difficulties in establishing proof of its introduction that he referred it to local causes, and enumerated the various influences which he thought produced it. But did he go back to the beginning? In 1812 New Berne was afflicted with a similar visitation, and the pestilence was declared authoritatively at the time to have been introduced by a vessel from one of the West India Islands. May not the ballast from such craft have been thrown overboard, and remain all these years hibernating; and during the several days of excessively low water referred to in the doctor's report, the sand and mud thrown from the exposed river bottom into the new embankment, have been the immediate and exciting cause of the disease? This was the history of the Savannah epidemic in 1876, the first cases having been traced to boys who played on a pile of ballast partly submerged, which was thrown overboard at the time by a West India trader; and so with other instances that might be enumerated.

Now it is conceded that filth enters as a necessary factor in the production of yellow fever. Of the Florida towns visited, with one or two exceptions, it is not practicable to direct the sewerage into tidal water, where it can be carried away and become harmless. At all the other places its disposition is dangerous and unsatisfactory. In only one town did I find a reliable system for its purification and utility. Even here the approach to the works was indicated by a strong olfactory sense, on account of indifferent preliminary process. Nearly all the towns profess to have a system, but it is hazardous. In one place I found what had been attempted as an artesian well, utilized by permitting the fluids from hotels to enter the cavern, where, no doubt, it meanders under ground for miles, finally finding its way to the beds of lakes, and possibly contaminating their crystal waters. Under these circumstances it occurs to me that all human excrement should be subjected to incineration. Every town should have a furnace for the purpose. This is quite feasible, and ought to be practicable every where. In a school-house in this city, as well as in other places, it has proved a marked success. The idea is not new, but its adaptability to Florida towns, and all others similarly situated, will, I think, be apparent. Not only will it forever remove one of the factors essential to the production and propagation of yellow fever, but it will also contribute to prevent typhoid fever, as well as have a general wholesome effect on the community.

Respectfully submitted,

J. F. HARTIGAN, M. D.

To SURGEON-GENERAL HAMILTON.

Lakeland, Fla.—

WASHINGTON, D. C., *December 18, 1888.*

SIR: After completing my investigations at Enterprise, I wrote the Sanford authorities for permission to land at midnight to take the train,

in pursuance of instructions to "have your clothing fumigated and proceed to other points named in original orders."

Doctor Montgomery, a member of the Orange County health board, replied, "Mr. Moran will send a special car for you to the junction at Enterprise. If you go to Osteen Mr. Carlisle will make all arrangements. Your coming this way is emphatically prohibited by the city authorities." After a drive of 20 miles to Osteen and back to the junction, I was locked in by the conductor and compelled to travel all night in a box car, without covering, or any accommodation except the bare floor to lay on. I reached Camp Perry the next afternoon. On the 16th of November I arrived at Lakeland, Polk County. This place was only laid out as a town four years ago, and derives its name from the peculiarity of its location, having six clear-water lakes within the corporate limits, and many more in its vicinity. The population is about eight hundred. It is 30 miles east of Tampa, at the junction of South Florida and Florida Southern railroads. This town is perhaps the highest in South Florida, excepting Brooksville, being 210 feet above the sea, and the high rolling and gently undulating character of the land render artificial drainage unnecessary. The water supply is principally from wells averaging 30 feet deep. There is no systematic removal of night soil. The cemetery is situated three-fourths of a mile from town. Burial permits are not required.

Mayor, Epps Tucker; Physician, Dr. J. M. Perry.

There have been no deaths from zymotic causes, but after heavy rains a mild form of remittent fever and dysentery prevail. Marl, or rotten limestone, is found some distance from the town, and at Plant City, ten miles away, where it underlies the whole hill upon which that place is built. It is a matter of common observation that wherever this marl exists, it is characterized by fever of a bilious, conjestive, or icteric type.

Respectfully,

J. F. HARTIGAN, M. D.

SURGEON-GENERAL HAMILTON.

Dade City, Fla.—

WASHINGTON, D. C., *December 19, 1888.*

SIR: Dade City, the county seat of Pasco, has a population of only 250. It is governed by county commissioners. The water supply is from wells and cisterns. There is no system for removal of night-soil.

Doctor Preston, a physician of the place, informs me that all varieties of malarial fever prevail there on account of the surrounding lowlands being periodically submerged from heavy rains. For the last two years the usual form has been characterized by an icteric condition; albumen is present in most of the cases, and sometimes a temperature of 105° to 106° is reached. The algid state has generally passed before the doctor is called in, when he may find the high temperature mentioned. There is no regular chill preceding. The patient will say he has "inward fever." The eyes are injected with yellowness of conjunctivæ; pulse perhaps 110 to 115. There is gastric disturbance, high-colored urine, soreness of muscles, and aching of spine from the occiput down. Spleen does not show any characteristic malarial condition.

The doctor has had 60 to 70 of these cases during the past season, with

but one death; this patient had black vomit. The preliminary state or susceptibility may last for weeks—depending upon the power of resistance, and if the man is temperate—or as long as there is an even temperature he will have a capacity to resist or hold his own. When at the first damp or cold change he is compelled to take to his bed, and for the first time the doctor is sent for, every organ of the body being now in a state of passive congestion from adynamia, there is partial arrest of secretions. A prominent and persistent symptom is burning of the stomach, like a ball of fire, and tenderness of hepatic region. In other cases, or perhaps in the same patient, the next day the want of correlation may be noticed of pulse and temperature—the pulse is perhaps 50 to 60, and temperature 103 or 104, lasting sometimes for days. Lately, an icteric condition has been observed from the first. In fatal cases, all the symptoms are aggravated, especially the “ball of fire.” There is sighing and interrupted respiration, fluttering pulse, singultus, subsultus, &c.

The duration of the disease is generally two weeks. Early attention, or reestablishment of the secretions forestalls the fever, and the patient is about in two or three days, where otherwise the disease would go on the allotted time.

Respectfully,

J. F. HARTIGAN, M. D.

To SURGEON-GENERAL HAMILTON.

FUMIGATION OF VESSELS.

The following correspondence relative to the arrangements now being made for the fumigation of vessels at national quarantine stations, is published for general information:

U. S. MARINE-HOSPITAL SERVICE, DISTRICT OF THE GULF,
Port of Ship Island, Miss., Surgeon's Office, July 28, 1888.

SIR: It is evident from Doctor Kinyoun's report that a larger percentage of S. O₂ than is obtained by the method of the Louisiana Quarantine is required for the disinfection of the holds of vessels, and it is doubtful to me if any considerable proportion is attainable by their open furnace method. I, therefore, would call your attention to the following considerations:

1. The maximum amount of S. O₂ attainable by burning sulphur in atmospheric air is 20 per cent. (by volume) of the total residue of combustion. This is obvious. If a larger proportion than 20 per cent. is required, acting during the time and pressure at our disposal, it must be produced by chemical decomposition, which can produce the gas almost without limit, but at considerable cost.

2. Practically a much less proportion than 20 per cent. is obtainable, especially by the open furnace method. Doctor Kinyoun found from 2 per cent. to 6 per cent. This 6 per cent. for the amount used is obviously an error of analysis, it is impossible. (I can in general approximate 8 per cent. to 12 per cent.—in one case 14 per cent.—by small pots burnt in the hold.)

It would seem that the more perfect combustion, of the oxygen I mean for the sulphur is in excess, would be accomplished by a hot blast forced through tuyères (or a pipe perforated with small holes

might do better) through molten sulphur, or projected with some force on the surface of burning molten sulphur. If the blast be hot and sufficiently divided to insure good contact, I submit that practically, all of the oxygen will combine with the sulphur. I believe by this method very nearly 20 per cent. of the atmosphere of the hold can be replaced by $S. O_2$ under whatever pressure the fan will give (and the greater the pressure the more efficacious) and at a cost but slightly greater than the open pan furnace of the Louisiana quarantine. The volatilization of sulphur (which would be considerable) can, if deemed desirable, be controlled by a cooled drum or worm on the pipe leading to the vessel, but if it be judged more desirable to deliver the gas hot (there can be no possible danger of fire), say 300° to 600° C., than to save the sublimed sulphur, this must be dispensed with.

It is natural I suppose for one to over estimate the value of his own ideas, but if the experiments now being conducted by Doctor Kinyoun show that 20 per cent. of $S. O_2$ under any available pressure and time of exposure, is a reliable germicide, I believe that this method will enable us to disinfect the holds of ships cheaply and certainly, which we do not now, and our "atmosphere surcharged with the germicide gas" will not be like Doctor Holt's one-half of 1 per cent.

If 20 per cent. is not sufficient, we must go to the action of $H_2 S. O_4$ or copper, or some similar process, or use chlorine, which I can generally use, my vessels being in ballast almost entirely.

If you think the use of the above principle will be of advantage to the service, I will be very glad to place it at its disposal.

Very respectfully,

H. R. CARTER,

Passed Assistant Surgeon, U. S. M.-H. S.

To SUPERVISING SURGEON-GENERAL, M.-H. S.,

Washington, D. C.

—
TREASURY DEPARTMENT,

OFFICE SUPERVISING SURGEON-GENERAL, M.-H. S.,

Washington, D. C., August 4, 1888.

Respectfully referred to Assistant Surgeon J. J. Kinyoun (through medical officer in charge) New York, N. Y., for his information, and such remarks as he may have to make on the subject.

JOHN B. HAMILTON,

Supervising Surgeon-General, M.-H. S.

—
LABORATORY OF U. S. MARINE-HOSPITAL SERVICE,

New York, N. Y., December 10, 1888.

Respectfully returned to the Supervising Surgeon-General Marine-Hospital Service with the statement that from observations made upon the germicidal properties of $S. O_2$, it has been determined that air containing 10 per cent. of $S. O_2$ proves effectual to all non-spore producing micro-organisms experimented upon, but has not in any strength been of value in killing the spores of anthrax. The time of exposure in all cases being not less than 24 or more than 96 hours. A report will be made in full at a later date. An experimental furnace has been constructed in the laboratory for the evolution of $S. O_2$, combining, it is thought, the good points, as is suggested in the plan by Passed As-

sistant Surgeon H. R. Carter, and that in use at the Louisiana quarantine. It is constructed upon the principle of a reverberatory furnace. The heat evolved in the combustion being utilized for heating the air quite hot as it comes in contact with the molten sulphur, the plan of which is set forth in the appended sketch. Three sides were constructed of brick, the fourth provided with openings $4\frac{1}{2}$ by 14 inches, for the reception of pans containing sulphur.

The shelves or partitions forming the compartments are of heavy sheet-iron, each compartment communicating with one another by a space ($1\frac{1}{2}$ by 14 inches) at ultimate sides. The side left open is closed by a door fitting against the partitions in such a manner as to completely close them. The top is provided with a pipe for conveying off the gas and an aspirator for measuring the per centage of the gas. Communicating with the lowermost compartment is an aperture for the supply of air. This was so arranged that a forced draught could be kept up by means of a bellows. Ordinary iron baking-pans (8 by 12 by 2) were used as a receptacle for the sulphur. The sulphur is ignited in all of the pans and the door closed, and air is forced in by the bellows. The air now passing over each succeeding pan becomes more and more heated on being passed over a large area of sulphur, it was hoped that all the oxygen would be consumed. Repeated experiments gave from 14 to 16 per cent. of S. O₂; temperature, 21° C., while burning sulphur in a closed space gave only 6 per cent. at 21° C.; *i. e.*, it would not support the combustion of sulphur above that percentage.

The above results, with the plan of the furnace, were submitted to Captain Moore, United States Revenue Marine, who ere this has submitted the plans and specifications of a sulphur furnace for the vessel for Chandeleur.

I am, sir, very respectfully,

JOS. J. KINYOUN,

Assistant Surgeon, U. S. M.-H. S.

Port Townsend, Wash.—Passed Assistant Surgeon A. H. Glennan, United States Marine-Hospital Service, reports under date of December 10, "found seaman at office with varioloid. Local health authorities promptly notified. Case removed to pest-house."

Seattle, Wash.—Acting Assistant Surgeon J. B. Eagleson reports, under date of December 10, "twelve cases of small-pox in city, with indications of increasing. Two cases from local steamers."

Jacksonville, Fla.—Dr. J. Y. Porter, telegraphs as follows:

December 14: "Houses fumigated, 22; and 108 inspected."

December 15: "Houses fumigated, 14; and 35 inspected."

December 16: "Refugees returning in large numbers daily. Cannot fumigation of personal baggage be stopped?"

December 17: "The city council and board of health have opened the gates to refugees to return to city, and passenger service to and from Jacksonville have been resumed. The fumigation of baggage is a matter of impracticability. Please order it discontinued."

On December 15 this bureau informed the General Superintendent of

the Railway Mail Service, Post-Office Department, that as the epidemic of yellow fever in Florida was practically over, fumigation of mails was no longer necessary. The fumigation of baggage ceased December 20. The Camp Perry will be retained through the winter and placed in readiness for any outbreak that may occur next summer.

December 18: "One new case of yellow fever to-day from refugees."

MORTALITY TABLE, CITIES OF THE UNITED STATES.

Cities.	Week ended.	Estimated population.	Total deaths from all causes.	Deaths from—										
				Cholera.	Yellow fever.	Small-pox.	Varioloid.	Varicella.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping-cough.
New York, N. Y.....	Dec. 15.....	1,546,884	634							10	34	23	19	20
Philadelphia, Pa.....	Dec. 8.....	1,016,758	316							6	8	13	1	3
Baltimore, Md.....	Dec. 15.....	431,879	161							4	1	4		2
San Francisco, Cal.....	Dec. 7.....	330,000	124							2		5		
Cincinnati, Ohio.....	Dec. 15.....	255,139	100							3	1	6		
New Orleans, La.....	Dec. 8.....	248,000	139								1	3		
Pittsburgh, Pa.....	Dec. 15.....	230,000	64							4	2	3		
Milwaukee, Wis.....	Dec. 15.....	195,000	62									3		
St. Paul, Minn.....	Dec. 15.....	180,000	32							1	1	2		
Minneapolis, Minn.....	Dec. 15.....	180,000	47									5		
Kansas City, Mo.....	Dec. 15.....	180,000	28									1		
Newark, N. J.....	Dec. 11.....	177,000	56									3		
Rochester, N. Y.....	Dec. 15.....	120,000	35									1		1
Richmond, Va.....	Dec. 15.....	100,000	24									1		
Denver, Colo.....	Dec. 14.....	96,000	29							1		2		
Toledo, Ohio.....	Dec. 14.....	80,000	13							1		1		
Camden, N. J.....	Dec. 5.....	70,000	14											
Nashville, Tenn.....	Dec. 15.....	65,153	15							3				
Fall River, Mass.....	Dec. 15.....	65,000	22							1				
Charleston, S. C.....	Dec. 15.....	60,145	31								1			
Lynn, Mass.....	Dec. 15.....	50,000	15									2		
Manchester, N. H.....	Dec. 8.....	41,000	13							1		4		
Portland, Me.....	Dec. 15.....	40,000	8							1				
East Saginaw, Mich.....	Dec. 15.....	33,000	8											
Burlington, Ia.....	Dec. 13.....	30,166	8									1		
Altoona, Pa.....	Dec. 8.....	30,000	4									1		
Auburn, N. Y.....	Dec. 15.....	26,000	8											
Haverhill, Mass.....	Dec. 15.....	25,000	5											
Newton, Mass.....	Dec. 15.....	21,105	3											
Newport, R. I.....	Dec. 13.....	20,466	1											
Keokuk, Ia.....	Dec. 15.....	16,000	3											

JOHN B. HAMILTON,

Supervising Surgeon-General, Marine-Hospital Service.