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TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL,
U. S. MARINE-HOSPITAL SERVICE,
Washington, D. C., December 14, 1888.

Abstract of Sanitary Reports received through the Department of State from foreign countries during the week ended December 14, 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 November 24 corresponded to an annual rate of 18.2 a thousand of the aggregate population, which is estimated at 9,398.273. The lowest rate was recorded in Derby, viz., 9.8, and the highest in Blackburn, viz., 28.9 a thousand. Diphtheria caused 3 deaths in Salford, 6 in Manchester, 2 in Newcastle-upon-Tyne. Small-pox caused 1 death in Cardiff.

London.—One thousand four hundred and nine deaths were registered during the week, including measles, 133; scarlet fever, 20; diphtheria, 41; whooping-cough, 19; typhus, 1; enteric fever, 15; diarrhœa and dysentery, 18. The deaths from all causes corresponded to an annual rate of 17.2 a thousand. Diseases of the respiratory organs caused 287 deaths, and 6 cases of suicide were registered. In greater London 1,756 deaths were registered, corresponding to an annual rate of 10.6 a thousand of the population. In the "outer ring" the deaths included measles, 29; scarlet fever, 3; diphtheria, 6, and whooping-cough, 4.

Ireland.—The average annual death rate represented by the deaths registered during the week ended November 24 in the 16 principal town districts of Ireland was 22.5 a thousand of the population. The lowest rate was recorded in Lurgan, viz., 5.1, and the highest in Sligo, viz., 38.5 a thousand. In Dublin 175 deaths were registered, including measles, 2; diarrhœa, 1; whooping-cough, 3; enteric fever, 5; scarlet fever, 1; erysipelas, 1.

Scotland.—The deaths registered in 8 principal towns during the week ended November 24, corresponded to an annual rate of 17.8 a thousand of the population, which is estimated at 1,314,274. The lowest mortality

was recorded in Edinburgh, viz., 14.1, and the highest in Paisley, viz., 27.0 a thousand. The aggregate number of deaths registered from all causes was 449, including measles, 19; scarlet fever, 6; diphtheria, 9; whooping-cough, 9; fever, 4, and diarrhœa, 6.

Netherlands.—The deaths registered in the principal cities of the Netherlands, having an aggregate population of 1,129,774, during the month of September, 1888, corresponded to an annual death rate of 21.5. The lowest rate was recorded in Groningen, viz., 17; and the highest in Hertogenbosh, 29.9. The total number of deaths from all causes was 1,953, including scarlet fever, 3; measles, 7; typhus and enteric fever, 10; whooping-cough, 45; diarrhœa and dysentery, 28, and simple cholera, 6.

Martinique.—The United States Consul reports by cable, under date of December 5, 1888, that yellow fever has appeared at Martinique.

Catania, Italy.—One hundred and seventy-four deaths were registered during the month of September, 1888, including small-pox, 134; enteric fever, 7.

During the month of October there were 188 deaths registered, including small-pox, 153, and enteric fever, 4.

Ceara, Brazil.—Eighty-two deaths were registered during the month of October, 1888.

The United States Consul states that "the town is clean, but depends upon natural drainage; the entire province is suffering from a protracted drought, and the famine-stricken are crowding into this city, and succumb to any kind of disease."

Barbadoes, W I., November 24, 1888.—The health of the island is good. There is no system of registration, and particulars are unobtainable. The population is estimated at 180,000.

Cardenas, Cuba, November 29, 1888.—Cool and dry weather prevails. Health of town good, excepting a few cases of small-pox.

Havana, Cuba.—Eight deaths from yellow fever were registered during the week ended November 30, 1888.

Bordeaux, France.—Five hundred and forty-four deaths were registered during the month of October, 1888, including enteric fever, 16; scarlet fever, 1; and diphtheria, 9.

Nassau, N. P., November 17, 1888.—City healthy. Strict quarantine against Florida and Cuba. The number of deaths is never reported.

Bahia, Brazil.—The United States Vice-Consul, in his dispatch dated November 22, 1888, says: "The sanitary condition of this city and the adjacent country is good, and without any suspicion of plague, cholera, or contagious disease whatever."

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.	Whooping-cough.
Glasgow	Nov. 24	545,678	175	.....	.....	.....	.....	1	.....	6	.....	.....
Warsaw	Nov. 17	444,814	268	.....	.....	8	.....	.....	21	19	.....	.....
Calcutta	Oct. 6	433,219	218	39	.....	.....	.....	.....	.....	2	.....	.....
Calcutta	Oct. 13	433,219	238	41	.....	.....	.....	.....	.....	.....	.....	.....
Calcutta	Oct. 20	433,219	236	39	.....	.....	.....	.....	.....	2	.....	.....
Rome	Oct. 13	393,496	153	.....	.....	.....	.....	8	.....	3	.....	.....
Amsterdam	Nov. 24	389,916	121	.....	.....	.....	.....	3	1	1	.....	.....
Copenhagen	Nov. 20	300,000	127	.....	.....	.....	.....	1	6	4	.....	.....
Munich	Nov. 17	275,000	157	.....	.....	.....	.....	.....	1	7	.....	.....
Belfast	Nov. 24	227,022	93	.....	.....	.....	.....	1	.....	2	.....	.....
Genoa	Nov. 24	179,880	97	.....	.....	4	1	.....	.....	.....	.....	.....
Toronto	Dec. 1	130,000	15	.....	.....	.....	.....	1	.....	.....	.....	.....
Stuttgart	Nov. 24	125,510	43	.....	.....	.....	.....	.....	.....	1	.....	.....
Bremen	Nov. 17	122,000	49	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pernambuco	Nov. 6	110,000	81	.....	4	4	.....	4	3	1	.....	.....
Barmen	Nov. 24	109,000	36	.....	.....	.....	.....	.....	.....	4	.....	.....
Leghorn	Nov. 25	102,540	46	.....	.....	.....	.....	1	.....	.....	.....	.....
Ceara	Nov. 8	26,943	28	.....	1	.....	.....	.....	.....	.....	.....	.....
Vera Cruz	Nov. 29	23,800	27	.....	.....	1	.....	.....	.....	.....	.....	.....
Gibraltar	Nov. 18	23,631	8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kingston, Can	Nov. 30	17,300	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Antigua	Nov. 25	15,847	11	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nassau	Nov. 17	12,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

UNITED STATES.

Report of Experiments on the use of Phosphorus as a Disinfectant; made at the Laboratory of the United States Marine-Hospital Service at the port of New York.

SIR: I have the honor to state that in accordance with your instructions, I have made a series of experiments with the fumes of phosphoric pentoxide in view of determining its utility and applicability for disinfection.

As a fact well known in chemistry, when phosphorus is burned in air, phosphoric pentoxide is formed, it being a white amorphous powder, absorbing moisture with the greatest avidity, forming hydrogen phosphate, or phosphoric acid. On igniting phosphorus in a closed space or vessel, the amorphous powder falls in flakes to the bottom of the vessel, the powder never being longer in suspension than forty minutes after combustion is completed, an excess of phosphorns being used in each instance.

For the purpose of experiment, a large wooden cask, 500 litres capacity, was used for exposing microörganisms and various substances to the fumes. At first the phosphorus was placed in the bottom of the cask and ignited, but it was found that the temperature at the top where the microörganisms were placed, was 75° C. By subsequent experiment it was found that this could be overcome by suspending the vessel containg the phosphorus, nearer the top of the cask, and covering all the contiguous surfaces of wood with asbestos board. By this arrangement the temperature of the air at the bottom never reached over 32° C.

Its effect on litmus.—1st series: Test-tubes, 1 by 5 inches, having within considerable quantities of alkaline litmus paper in a moist state, were placed in the cask; some were left open, mouths upward, some were placed horizontally, and others suspended mouths downward.

2nd series (four in number) contained moistened litmus paper, covered with 1, 2, 3, and 4 layers of filter paper, respectively.

3rd series, (four in number) covered with 1, 2, 3, and 4 layers of flannel.

4th series, covered with 1, 2, 3, and 4 layers of muslin.

5th series, covered with 1, 2, 3, and 4 layers of thin film of absorbent cotton. The materials used for covering these various test-tubes, were thoroughly dried in an oven before using, and immediately after covering the tubes they were placed in the cask, thus overcoming as far as possible, the amount of moisture that is constantly present in fabrics and preventing absorption of the phosphorus pentoxide by the coverings.

Thirty-five grams of phosphorus was ignited, and the cask hermetically sealed, for 24 hours, then opened. No change was observed in any of the tubes of litmus that were covered. In the series left open, those that were placed in a vertical position, and those lying horizontally, all the paper was acted upon by the phosphoric fumes. In those suspended mouth downwards, very little of the paper had changed color. All the external surfaces were covered with flakes of pentoxide.

The test-tubes that were covered were then taken and tested for presence of the acid, to ascertain if any had penetrated the coverings, but in no instance was it found.

As a control-experiment the tubes were placed under a bell-jar, and asm all quantity of sulphur dioxide was thrown in, and in less than thirty seconds all the paper had been acted upon by the gas.

In another series of experiments, letters and newspapers having been sealed and perforated after the manner practiced at the fumigating stations in the South, each containing in the middle a piece of litmus paper, were exposed to the fumes for 24 hours.

It was found that the fumes had acted upon the litmus to a very small extent around the perforations; in newspapers, where not perforated, no effect was noticed.

MICRO-ORGANISMS.

The microörganisms exposed to the fumes were: Anthrax, cholera Asiaticæ, cholera nostras, bacterium of yellow fever (Finlay), and typhoid.

All the cultivations of the above organisms were made in small flat dishes $\frac{1}{2}$ inch in depth and 3 inches wide, containing a film of agar-agar $\frac{1}{16}$ inch in thickness. These were divided into several series, like those of the test tubes—

First series, left open.

Second series, covered with filter paper.

Third series, covered with muslin.

Fourth series, covered with flannel.

Fifth series, covered with film of absorbent cotton.

All were exposed for 24 hours, an excess of phosphorus being used.

On taking cultivations from the casks, all external surfaces of the dishes were covered with a layer of the amorphous powder.

In the series that were covered no effect was noted upon the growth of any of the microörganisms; subsequently, these were carefully tested for the presence of phosphoric acid, but not the slightest trace was found to have been present in the medium.

Those left open were covered with a great quantity of phosphoric acid, and all the organisms were found to have been killed.

Further experiments made in the same manner as the above were confirmatory throughout.

An attempt was made to force the fumes through cotton loosely packed in a tube 1 inch in diameter, using about 125 grammes pressure to the square inch, but no fumes could be detected. (This was readily accomplished by sulphur dioxide.)

The conclusions then are, 1st, that phosphoric pentoxide is a disinfectant to surfaces only; 2nd, it has no penetrating power, and is altogether unfit for fumigation of anything where penetration of the agent is desirable.

From the foregoing, it was not deemed worth the while to pursue the subject further when it promised so little; therefore, no observation on the spores of different microörganisms was made.

I am, sir, yours very respectfully,

JOS. J. KINYOUN,

Assistant Surgeon M.-H. S.

To the SUPERVISING SURGEON-GENERAL.

Tampa, Fla.—Dr. J. P. Wall writes as follows, under date of December 4, 1888:

With the end of November the guards at Plant City were discharged, and yesterday the board of health of this county met and raised all local quarantines in the county, and asked all other health boards that had quarantined against Tampa and Hillsborough County to raise their quarantines.

It has been rather continuously cool since the 24th ultimo, with even light frost on the morning of the 27th, with the thermometer ranging from 50° F. to 70° F. in the middle of the day. To-day it is raining, with the thermometer at this moment (12 m.) to 57° F., and the probability is that it will end in a norther, with a decided cold snap and frost.

During the whole season, after the first two weeks, the character of the fever here was of a mild type with all who had been living continuously in Tampa. The worst cases and the mortality was principally among those who at first ran off and then came back in September when the disease had almost died out for lack of material and new comers, the mortality being principally confined to these latter, with the exception of the first three deaths in August, the 13th and 14th. The same is to be noted with regard to the little town of Manatee, where the fever evidently prevailed last fall and winter, while it was rather fatal at Palmetto, which was evidently a new field. From this I infer that it will not be as bad the second year in any community with the resident population as it was the first. However, I must confess that Plant City was somewhat an exception to this rule, for after it reappeared there in June it was pretty bad, though quite a number of those were returned refugees.

I have seen one suspicious case since my last report, but the patient

is practically isolated, and no doubt contracted the infection anterior to the cool weather of the last ten days Besides it is entirely too late in the season for it to take on an epidemic form, though as yet I am not encouraging unacclimated people to stop in Tampa any length of time.

The board of health has specially urged on the city authorities and the citizens generally the importance of fumigating houses and effects, and of airing the same as much as possible.

Palmetto, Fla.—Sanitary Inspector M. B. Harrison writes as follows:

December 5. "In my weekly telegram of yesterday I reported 'no new cases of yellow fever in Palmetto.' I have to-day discharged one case in the country, two miles from Palmetto. I hope this is the last case, but it will take time to tell. We had a light frost on morning of 25th of November."

And the following telegram:

December 11: "For week ending 6 p. m., Monday, December 10, there were at Palmetto, Fla., no new cases yellow fever; deaths, none. Last case took fever November 19. Total number cases to date, 85."

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

December 7. "Board of health reports new cases, none; deaths, none; total cases, 4,704; deaths, 412. Patients, St. Lukes, 1. Houses fumigated, 127; houses inspected, 444."

December 8. "Board of health reports new cases, 1; deaths, none; total cases, 4,705; deaths, 412. Patients, St. Luke's, 1. Houses fumigated, 94; houses inspected, 206; not finished."

December 9. "Board of health reports no new cases, and no deaths. Patients, St. Lukes, 1."

December 10. "Board of health reports no new cases, and no deaths. Patients, St. Luke's, 1. Houses fumigated, 99, and 179 inspected but not fumigated for causes already stated; vacant houses, 260; total houses visited, 540."

December 13. "The board of health announces no more fever bulletins will be issued. They suggest the fumigating of mails be suspended, and also for baggage going north. Transportation of household goods to be prohibited for one or two weeks yet."

Gainesville, Fla.—Assistant Surgeon Martin, U. S. N., telegraphed as follows:

December 7. "Fumigation completed. Dr. Posey can attend to replacing bedding, which is all that remains to be done."

Newark, N. J.—The health officer, under date of December 4, reports "a very marked decrease in typhoid and scarlet fever, and quite a decrease in diphtheria."

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. 8	1,546,012	700	.....	.....	.....	.....	.....	.....	8	29	36	22	13
Philadelphia, Pa.	Dec. 1	1,016,758	302	.....	.....	.....	.....	.....	.....	5	9	5	.....	1
Brooklyn, N. Y.	Dec. 1	805,885	300	.....	.....	.....	.....	.....	.....	4	3	30	.....	9
Brooklyn, N. Y.	Dec. 8	805,885	304	.....	.....	.....	.....	.....	.....	7	6	20	2	4
Chicago, Ill.	Dec. 8	800,000	268	.....	.....	.....	.....	.....	.....	10	5	20	6	.....
St. Louis, Mo.	Dec. 1	440,000	134	.....	.....	.....	.....	.....	.....	3	1	8	.....	.....
Baltimore, Md.	Dec. 8	431,879	152	.....	.....	.....	.....	.....	.....	2	1	3	1	.....
San Francisco, Cal.	Nov. 30	330,000	140	.....	.....	.....	.....	.....	.....	3	.....	6	.....	.....
Cincinnati, Ohio.	Dec. 8	255,139	107	.....	.....	.....	.....	.....	.....	6	.....	11	.....	.....
New Orleans, La.	Dec. 1	248,000	142	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....
Pittsburgh, Pa.	Dec. 11	230,000	56	.....	.....	.....	.....	.....	.....	2	.....	2	.....	1
Milwaukee, Wis.	Dec. 8	195,000	64	.....	.....	.....	.....	.....	.....	1	3	1	.....	.....
Minneapolis, Minn.	Dec. 1	180,000	37	.....	.....	.....	.....	.....	.....	2	2	2	.....	.....
Kansas City, Mo.	Dec. 8	180,000	26	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....
Newark, N. J.	Dec. 4	176,000	70	.....	.....	.....	.....	.....	.....	2	.....	4	.....	.....
St. Paul, Minn.	Dec. 8	175,000	28	.....	.....	.....	.....	.....	.....	2	1	4	.....	.....
Rochester, N. Y.	Dec. 8	120,000	24	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Detroit, Mich.	Dec. 1	116,340	56	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	1
Detroit, Mich.	Dec. 8	116,340	65	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Richmond, Va.	Dec. 3	100,000	40	.....	.....	.....	.....	.....	.....	2	.....	1	.....	.....
Denver, Colo.	Dec. 7	96,000	30	.....	.....	.....	.....	.....	.....	1	2	.....	.....	.....
Toledo, Ohio	Dec. 7	80,000	18	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....
Camden, N. J.	Dec. 5	70,000	22	.....	.....	.....	.....	.....	.....	4	.....	1	1	1
Nashville, Tenn.	Dec. 8	65,153	15	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Fall River, Mass.	Dec. 8	65,000	20	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Charleston, S. C.	Dec. 8	60,145	37	.....	.....	.....	.....	.....	.....	3	.....	1	.....	1
Lynn, Mass.	Dec. 8	50,000	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Manchester, N. H.	Dec. 1	41,000	12	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Portland, Me.	Dec. 8	40,000	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....
Davenport, Ia.	Dec. 1	33,715	8	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....
East Saginaw, Mich.	Dec. 1	33,000	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Burlington, Ia.	Dec. 6	30,166	5	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
New Albany, Ind.	Dec. 8	30,000	4	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
Altoona, Pa.	Dec. 1	29,546	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Auburn, N. Y.	Dec. 8	26,000	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haverhill, Mass.	Dec. 8	25,000	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newton, Mass.	Dec. 8	21,105	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newport, R. I.	Dec. 6	20,466	6	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Keokuk, Ia.	Dec. 8	16,000	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pensacola, Fla.	Dec. 1	15,000	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

JOHN B. HAMILTON,

Supervising Surgeon-General, Marine-Hospital Service.