

# WEEKLY ABSTRACT OF SANITARY REPORTS.

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TREASURY DEPARTMENT,  
OFFICE SUPERVISING SURGEON-GENERAL,  
U. S. MARINE-HOSPITAL SERVICE,  
Washington, D. C., November 22, 1889.

*Abstract of Domestic and Foreign Sanitary Reports received during the week ended November 22, 1889, published in accordance with section 4, Act of Congress, approved April 29, 1878.*

UNITED STATES.

*Special Reports.*

REPORT UPON THE MICRO-ORGANISMS IN SCRAPINGS FROM THE NAILS OF SURGICAL NURSES.

HYGIENIC LABORATORY, U. S. MARINE HOSPITAL,  
New York, November 18, 1889.

SIR: In accordance with your request of June 23, I have the honor to state that I have carried on a line of experimentation to determine the micro-organisms in the nail-dirt from the nurses of the surgical wards of this hospital.

Many observers have spoken of the danger of wound infection from this source; some have asserted that it was an impossibility to thoroughly cleanse the hands, more especially the nails, of operators and assistants.

Many plans have been devised, some of which are too tedious for application, to insure the perfect cleanliness of hands. Granting that this is accomplished on the part of the operator it does not, from our observation, apply to the surgical nurses and attendants of an operating-room.

In this investigation attention was chiefly directed to the hands of the surgical nurses and those having charge of or making surgical dressings. Observations were made from time to time, extending over a period of three months, the clientele of the wards constantly changing, so that a patient designated as a source of infection would not apply to the whole series.

The nurses had been, we believe, instructed to use the nail-brush and other agents for cleansing their hands. The usual method was as follows: Scrub the hands with soap and warm water to be followed by immersion in bichloride solution (1 to 3,000), the usual ward mixture for the surgical wards.

The examinations were so timed as to take the nurses when they were making or assisting in dressings, or just before an operation. In all the examinations only in two instances were the hands found to be sterile; in all the others bacteria were found.

To make the matter as clear as possible, we prefer to give the observations in detail and allow their results to speak for themselves.

The general plan of procedure that was followed was—

The nurse was called from his ward to the laboratory and was caused to immerse his hands in moderately strong solution of sodium carbonate, which had been previously rendered sterile. After allowing them to remain in this solution three to five minutes scrapings were made from their hands and under their nails by means of a stout-pointed aseptic needle, and the material was transferred to test tubes containing nutrient agar-agar, and roll Esmarch's tubes made; these were placed in a thermostat, at a temperature of 37° C., for twelve to sixty hours.

Usually the development of colonies had taken place at the end of twelve hours, but in some instances the bacteria were inhibited for a considerable time.

*Observation 1—Assistant surgical nurse.*—To appearances his hands were clean. He stated that he had just finished preparing his hands for assisting in an operation, having scrubbed them with soap and warm water, then dipping them in a bichloride solution (1 to 2,000).

His hands were soaked for five minutes in a sterilized solution of sodium carbonate, then scrapings were made with the needle from the palmar surfaces and under the nails.

Agar-agar Esmarch tubes give, in twenty hours, a considerable number of colonies in the first and second dilution. On cultivation, the colonies gave *Streptococcus pyogenes*.

Previous to examination he had been assisting in dressing. His special detail for the operation was to hand sponges to the operator.

*Observation 2—Surgical nurse*, just after completing a dressing for several leg ulcers, had washed his hands in bichloride solution (1 to 1,000).

Cultivations made in the same manner from the nails gave a few colonies of *Streptococcus pyogenes*.

*Observation 3—Interne*—Had been dressing suppurating wounds previously, during which he had used bichloride solution *ad libitum*.

After the hands had been soaked in the sodium carbonate solution, scrapings were made from the nails and Esmarch tubes made therefrom. Thirty-six hours after a few small colonies were apparent in the first tube, none in the first and second dilutions. Forty-eight hours after they were transplanted in various media for differentiation. All the colonies proved to be *Streptococcus pyogenes*.

*Observation 4—Same as in 3.*—Had just finished dressing cases. Hands prepared for experiment by scrubbing with soap and water, then transferred to 90 per cent. alcohol for a few minutes, then in (1 to 2,000) bichloride solution, bichloride neutralized by sodium carbonate. Scrapings from under the nails gave negative results.

*Observation 5—Assistant surgical nurse* called down to the laboratory while assisting in surgical dressings. His hands had smell of iodoform. When questioned about what he had been doing with iodoform he stated that he had been handing iodoform gauze to the doctor.

Cultivations made in the usual manner as in the other cases and Esmarch tubes then made. In twenty-four hours all the tubes contained a large number of colonies. All the colonies, on examination, proved to be micrococci. These were transferred to different media and, on cultivation there, were found to be *Staphylococcus pyogenes aureus* and *Staphylococcus pyogenes albus*.

*Observation 6—Assistant surgical nurse.*—Had just finished his work in assisting in the morning dressings, no special preparation of hands

save that he had washed them in bichloride solution just at the close of the dressings.

Examination gave a few colonies of a micrococcus, the *Streptococcus pyogenes*.

*Observation 7—Head surgical nurse.*—Had just prepared the operating-room for an operation, and at the time of the examination had finished cleansing his hands and was waiting to assist.

Cultivations were made from the scrapings of the nails in the usual manner.

The Esmarch tubes gave a very large number of colonies. Three varieties were found. First, a large bacillus, rapidly liquefying gelatine, the *Staphylococcus pyogenes albus* and *Staphylococcus pyogenes aureus*. The nurse's duty this day was to pass sponges to the operator.

*Observation 8—Head surgical nurse.*—He had just prepared the operating-room for an operation, and had prepared his hands for assisting in the operation.

Cultivations made from the nails gave a large number of colonies. These were found to be of two varieties; a large bacillus and micrococci. The micrococci, on culture, were found to be *Staphylococcus albus* and *aureus*.

*Observation 9—Surgical nurse.*—Examination made after the morning dressings had been made; the nails were not clean, scrapings from them gave a few colonies which, on examination, were found to be a sarcina.

*Observation 10—Nurse of venereal ward.*—His hands were in a filthy condition, his nails in mourning; he stoutly asserted that he had just completed the toilet of his hands by a thorough (?) washing in (1 to 2,000) bichloride solution. The cultivations were made in the usual manner.

The result was a little different than was expected. There was an enormous number of colonies of bacteria quite different in appearance than had been encountered in the other cases; the majority of these were of bacilli. Two varieties of bacilli, identical with those encountered in sewage, and a large non-liquefying micrococcus.

In a subsequent examination, made during the time he was dressing suppurating sores, *Staphylococcus pyogenes albus* was found.

*Observation 11—Nurse of venereal ward.*—Hands had been washed in bichloride solution (1 to 1,000) just after dressing cases, chiefly chancroidal ulcers. The examination gave a few colonies of *Streptococcus pyogenes*.

*Observation 12—Nurse of venereal ward.*—No previous disinfection of hands. Hands soaked in a solution of sodium carbonate; scrapings from the nails gave a considerable number of colonies of a micrococcus which was demonstrated to be *Streptococcus pyogenes*.

*Observation 13—Nurse of venereal ward.*—States that on this occasion he had been assisting the doctor in dressing several cases of suppurating buboes.

This examination did not give any colonies of micro-organisms of pus, but gave a large number of colonies of large saprophytic bacilli.

*Observation 14—Assistant surgical nurse.*—Had been assisting in surgical dressings.

Esmarchs made from scrapings of the nails gave quite a number of colonies, two varieties of bacteria; a large saprophytic bacillus and *Staphylococcus pyogenes albus*.

*Observation 15—Surgical nurse.*—No previous treatment of the hands by disinfectants.

The examination gave a variety of *streptococcus*, its properties not determined.

*Observations 16 and 17—Assistant surgical nurse.*—Hands had been washed and scrubbed with soap and water, then soaked in alcohol, 90 per cent., for five minutes, then in bichloride solution (1 to 1,000) for two minutes.

After neutralization with sodium carbonate, Esmarch tubes were made. These gave negative results.

*Observation 18—Nurse of venereal ward.*—Had been assisting in dressing suppurating buboes. A pure culture of *Staphylococcus pyogenes albus* was found.

*Observation 19—Nurse of venereal ward.*—Engaged in dressing chancroidal ulcers; hands cleansed with soap and water only.

Cultivations from the nails give a large number of colonies, consisting of two varieties; a large liquefying bacillus and a large coccus, not classified.

*Observation 20—Interne.*—Had finished dressing suppurating cases two hours previously; hands had been washed and scrubbed with soap and water.

The examination, made in the usual manner, gave a large number of colonies, the majority consisting of *Staphylococcus pyogenes albus* and a few colonies of a saprophytic bacillus.

*Observation 21—Surgical nurse.*—Hands examined just after an operation; saprophytic only, no pus micro-organisms.

*Observation 22—Head surgical nurse, first female ward.*—No disinfection of hands. Two varieties of bacteria: a large liquefying bacillus and *Streptococcus pyogenes*.

*Observation 23—House physician.*—No disinfection of the hands. Examination gave a pure culture of *Streptococcus pyogenes*.

*Observation 24—Surgical nurse, male.*—No disinfection of hands; had been assisting in an operation for skin grafting (Theirsch's operation).

Two varieties of bacteria were found: a saprophytic bacillus and *Staphylococcus pyogenes albus*.

*Observation 25—Assistant house surgeon.*—No special preparation of the hands. Had been dressing cases previously.

Examination showed *Streptococcus pyogenes*.

Through the kindness of one of the staff of a leading New York hospital the inoculations were made from the nails of cases 21 to 25, inclusive.

*Observation 26—Surgical nurse.*—Had just finished giving a new patient a bath; before this he had been assisting in making some dressings.

Examination gave a few colonies of bacteria, which investigation proved to be *Staphylococcus pyogenes albus*.

A marked inhibition was noticed in this case; no colonies appearing until the fourth day.

*Observation 27—Assistant surgical nurse.*—Hands cleansed with soap and water, then soaked in alcohol and ether, then in bichloride solution (1 to 2,000).

Examination then made after the usual manner gave a great number of colonies—so many that it was with difficulty they could be isolated. Varieties were not determined.

#### *Control experiments.*

The surgical nurses, three in number, were called to the laboratory and instructed to wash their hands thoroughly with soap and warm

water. Their finger tips were then dipped in a gelatine culture of *Staphylococcus pyogenes aureus*, then the hands were treated with soap and water, then in alcohol three minutes, then in bichloride solution (1 to 500) three minutes, then this was neutralized in the usual manner and the nails examined. In all the cases there developed a considerable number of colonies consisting of a saprophytic bacillus. None of the pus organisms were found.

In another instance all the day nurses were prepared in the same manner. Their hands were then infected with *Staphylococcus pyogenes aureus*, then scrubbed well with soap and warm water, then treated for six minutes with alcohol containing (1 to 3,000) bichloride, then in bichloride solution (1 to 500), (1 to 1,000), (1 to 1,500), (1 to 2,000), (1 to 2,500), respectively, for another six minutes, and then neutralized in the usual manner.

The Esmarch tubes made from the nail scrapings of the hands subjected to (1 to 500), (1 to 1,000), (1 to 1,500) remained sterile, but in the others there were many colonies of *Staphylococcus pyogenes aureus*.

#### *Sources of contamination.*

It is safe to say that in most cases of suppuration you will find present a micro-organism for its production.

In the Marine-Hospital Service a great number of chronic patients are treated, and among these are those suffering from old leg ulcers which have no prospect of healing, nor do their possessors, as a rule, show much solicitude for recovery.

These patients "go the rounds" from one hospital to another, and carry a well-assorted stock of pyogenetic material.

Five cases were studied in connection with this paper. Two cases were treated with hot bichloride solution (1 to 1,000), two others with bromine water, and one with boracic acid ointment. In all the cases pus organisms were found. They were less in number in those treated with bichloride solution; next in order were those treated with bromine water, and an enormous number in the one treated with boracic acid.

Another great source of infection are the venereal cases, a majority of which are suffering from a suppurating disease.

A careful bacteriological examination was made of the walls and tables with which the hands of the nurse had not come in contact, and in no instance were there any pus organisms found. Whereas on the other hand the articles which were used by the nurse, such as irrigator tubes, basins, etc., including coverings to surgical dressings, gave pus micro-organisms.

From the foregoing it is thought safe to assert that the hands of the nurse play a greater rôle as an infectious agent than is supposed.

In twenty-six observations, pus organisms were found in sixteen; *Staphylococcus pyogenes albus* in ten; *Staphylococcus pyogenes aureus*, two; *Streptococcus pyogenes*, four.

Fürbinger has offered a very good plan for rendering the hands aseptic. It is the same as was followed in the control experiments. From our observations, it appears that if we add a small quantity of bichloride solution to our alcohol the effect is much more constant, and, with proper care, the hands can be freed from micro-organisms.

Control experiments were made on all the observations, and in but one instance did the experiment have to be discarded on account of outside contamination.

These few observations may serve to emphasize the constant danger of infection from these sources.

My thanks are due to Interne George B. Young for his efficient services.

Very respectfully,

JOS. J. KINYOUN,

*Assistant Surgeon, Marine-Hospital Service.*

To the SUPERVISING SURGEON-GENERAL U. S. M. H. S.

YELLOW FEVER—*Key West, Fla.*—The following telegram has been received :

November 15, 1889.—One pronounced and 1 suspicious case of yellow fever at Key West to-day ; 26 days since the Ellinger case.

J. L. POSEY, M. D.,

*Sanitary Inspector, Marine-Hospital Service.*

HEALTH OF THE UNITED STATES NAVY.—*Report of the Chief of the Bureau of Medicine and Surgery to the Secretary of the Navy, for the year 1888.*

Number of patients admitted to the sick list, and under treatment during the year 1888, 11,499. Of this number 7,820 were on vessels afloat, 1,527 in hospitals, and 2,152 at navy-yards and shore-stations.

The daily average of sick on vessels afloat was 160. The average each case was under treatment represented a loss of seven and one-half days. Eighty-seven in a thousand were invalidated to hospitals.

The total number of deaths in the naval service was 123. Of this number 57 occurred on vessels afloat, and 66 in hospitals and on shore-stations.

Sixteen cases of accidental drowning are included in the record, and the ratio of deaths was 12.35 in a thousand for the entire service.

The number of persons examined for the naval service, including apprentice boys, was 10,000. Of this number 3,914, or more than one-third, were rejected for physical disqualifications. The number rejected for color-blindness was 130, a ratio of 13 in a thousand.

ADULTERATION OF FOOD AND DRUGS.—The report of the Commissioner of Internal Revenue to the Secretary of the Treasury, June 30, 1889, calls attention to the act of Congress October 12, 1888, to prevent the manufacture or sale of adulterated food or drugs in the District of Columbia, and to the fact that no samples have been submitted for examination under this new law.

Copies of European laws regarding these adulterations are included in this and the previous year's report, and the Commissioner states, regarding the European laws, that—

They furnish hints for the preparation of regulations under the existing law in which this office is interested. They also furnish models for the amendments which are needed and generally are useful as guides in future State and Federal legislation on this subject. It is evident that unity of action between State and Federal authorities in the matter

must be secured before the best results can be accomplished. On the one hand opponents of the passage of Federal laws on food adulteration have urged that such laws interfere with the exercise of the police powers of the States, and that under the Federal Constitution such powers were not surrendered to the United States; on the other hand, certain laws passed by States to prevent the sale of impure food therein have been found to be in conflict with the power conferred by the Constitution on Congress to regulate foreign commerce and commerce between the States; also in violation of the provision forbidding a State to make or enforce any law which shall abridge the privileges or immunities of citizens of the United States.

The report of the microscopist, included in the Commissioner's report, after referring to the apathy upon this subject, states as follows:

This office has brought the subject to the attention of the Commissioners of the District, the health department, and the local press by letters and by furnishing them with copies of the law, regulations, and blank forms of application, but has not succeeded in enlisting their active co-operation.

The law does not provide that the Commissioner of Internal Revenue shall enforce its provisions in procuring samples of food or drugs, that matter being delegated to "any purchaser," "any health officer, inspector of nuisances, or any food inspector," only requiring that the analysis shall be under his control "under such rules and regulations as may be prescribed by the Secretary of the Treasury." \* \* \*

That a national law to regulate the sale of adulterated articles of food is needed in this country, where the manufacture and sale of adulterated foods of all kinds is carried on more openly and on a larger scale than in foreign countries, goes without question, and it is a great pity that the law intended for this capital city should prove a dead letter from the outset, because of the lack of certain administrative features and clear definitions. It, therefore, seems desirable to have the law amended in these regards. With the experience gained in enforcing a proper food-adulteration law in the District of Columbia, the extension of its provisions to all territory over which the United States has exclusive jurisdiction would readily follow, and finally it could be so enlarged as to embrace all adulterated articles of food intended for consumption sold in any State or Territory other than where produced. With the co-operation of the different State and local authorities a very thorough supervision over such foods could be maintained. A national law would not apply to adulterated articles of food manufactured and sold in the State or Territory where produced, unless it should take the form of a revenue measure, imposing a tax on the manufacturers of and dealers in such commodities.

The different State laws on food adulteration are, with one or two exceptions, entirely inoperative. Being drawn up with the idea that an adulterated article of food is necessarily injurious to health, these laws fail to reach the great majority of cases where cheap and harmless substitutes are used.

CONSUMPTION.—*Danger of health resorts becoming infected.*—The October circular of the State board of health of California contains the following:

Our remarks in the monthly circular of last month, regarding the contagiousness of this disease, and the undesirability of inviting its

victims to this coast, seems to have given great umbrage to our southern neighbors, who seem to look upon the solicitude of the State board of health for the sanitary welfare of the State as a direct blow at their prosperity, and an endeavor to prevent the immigration of diseased persons into their midst. The State board has no such desire or power ; it can only advise the public of the danger incurred from the promiscuous mingling of consumptives with healthy people, which is its duty. M. Delargy, in a paper contributed to the *Journal Hygiene*, points out that certain mountain regions in Europe, formerly exempt from phthisis, have now become infected since intercourse with cities and phthysical localities have been furnished, and considers the crowding together of a large number of phthysical cases, in the most healthy localities, will soon have an unfavorable effect upon the purity of the atmosphere. Indeed, it may be said that consumption is never contracted except by contact, by association, or by living in close proximity. The length of time consumed by phthisis before proving fatal, enables it to infect all susceptible persons coming in contact with it, hence its great danger when not isolated. Cadeac and Malet, by experiment, proved that tubercular matter, dried and pulverized, was capable of transmitting the disease one hundred days after such preparation, and Pietro asserts that tubercular matter will retain its virulence ten months after drying. Desiccation or drying of the sputa seems to be the most effective way of disseminating the disease. Cornet found that of 311 animals inoculated with the dust scraped from the rooms occupied by phthysical patients, that 167 died soon after ; of these one-fifth were found to be tuberculous. He says, further, that a phthysical patient, to be innocuous, must never, under any circumstance, expectorate upon the floor, or into a handkerchief, but always into a spittoon cup containing water, which must be disinfected and frequently changed. The danger of contagion from consumption is not exaggerated, preventive measures are as applicable to the south as they are to any other part of California, and the State board of health would be derelict in its duty if it did not point out this fact and call public attention to the necessity of caution in dealing with it.

*Reports of States, and Yearly and Monthly Reports of Cities.*

ALABAMA—*Mobile*.—Month of October, 1889. Estimated population, 40,000. Total deaths, 22 ; including croup, 1.

CALIFORNIA.—*Monthly circular of the State board of health for October, 1889.*

Reports received from 101 localities, with an estimated population of 846,300, give the number of deaths as 1,007, which is a percentage of 1.2 per thousand in the month, or an annual mortality of 14.4, which is a slight increase over the preceding two months, but sufficiently low to indicate a very favorable condition of the public health.

Consumption as usual heads the list with 147 deaths, nearly one-seventh of the total mortality. Diphtheria and croup caused 35 deaths ; typhoid fever, 48 ; scarlet fever, 4 ; and whooping-cough, 4.



Scarlet fever was quite prevalent in San Francisco, and also in Alameda. In the latter town—

The health officer, Dr. J. T. McLean, believes the disease to have been spread by the carelessness of parents in permitting children having the disease in a mild form to attend school, no physician being called to these cases, and consequently not reported to the health officer, as they should be. *In Alameda, the board of health has very properly passed an ordinance requiring a placard 3 by 6 inches to be placed conspicuously on every dwelling containing any case of scarlet fever, diphtheria, or small-pox, making it a penal offense to remove such notice until all danger of infection has ceased.* This precaution is eminently proper, and should be adopted by every health board and health officer in the State. Such notification of disease would save many lives, and be an efficient means of arresting the spread of these disorders when otherwise they might become epidemic.

*San Francisco.*—Year ended June 30, 1889. (Annual report of the health department.) Estimated population, 330,000, including a Chinese population of 30,000. Total deaths, 5,729, including 559 Chinese. The death-rate among the Chinese was 18.63 a thousand; among the other nationalities, taken together, 17.23 a thousand. Diphtheria caused 151 deaths; croup, 90; scarlatina, 28; small-pox, 67; and typhoid fever, 152. There was an increase of 251 deaths from zymotic diseases over the preceding year. The annual death-rate, however, is the lowest of the last ten years, being 17.36 a thousand, and there being but four years in the last twenty when it was lower, viz, in 1872, 1876, 1878, and 1879, the last year having the lowest recorded rate, 14.75 a thousand. There were fumigated during the year 134 houses on account of diphtheria and scarlet fever. An apparatus for the disinfection of bedding, clothing, etc., from houses in which have occurred cases of small-pox, diphtheria, and other infectious diseases, is now ready to be erected in a suitable locality.

Month of October, 1889. Total deaths, 507; including diphtheria, 6; croup, 4; typhoid fever, 30; scarlatina, 3; and whooping-cough, 2.

*Oakland.*—Month of October, 1889. Estimated population, 60,000. Total deaths, 66; including diphtheria, 3; croup, 1; and typhoid fever, 3.

*Sacramento.*—Month of October, 1889. Estimated population, 35,000. Total deaths, 30; including typhoid fever, 1.

CONNECTICUT.—Month of October, 1889. Reports to the State board of health, New Haven, from 166 towns, having an aggregate population of 755,836, give a total of 1,027 deaths, including scarlet fever, 7; diphtheria and croup, 71; enteric fever, 37; and whooping-cough, 12.

The population of towns not reporting is 3,186. Concerning typhoid fever the secretary of the State board writes as follows :

Typhoid fever has decreased since September. It has also been much less fatal throughout the State than it was in October of last year.

There have been but 37 deaths, while in 1888 there were 62 in the month.

The occurrence of the disease in some of the students of Yale University has been widely published, and the misrepresentation and exaggeration of facts has created much unnecessary alarm.

Among the 1,500 persons connected with the University there have been 9 cases of typhoid fever. This number includes 1 tutor. These had all been absent from New Haven during the vacation. They arrived at college on or about the beginning of the term, September 19. Several of them became ill so soon after their arrival as to render it highly probable that they had received the infection elsewhere. And none of them were taken ill so late as to preclude the possibility of that origin of the disease.

Due consideration should be given to the fact that about 1,500 persons, at an age most susceptible to the typhoid infection, and at a season of the year when that infection is most active, assembled on or near the same day, at the same place, from every section of the country, and in many instances from places in which typhoid fever was prevailing. These circumstances, taken in connection with the well known predisposing influence of a change of residence, justifies the suggestion that most if not all the college cases may have received the germs of the disease outside of New Haven.

The sanitary condition of the college grounds and buildings has been carefully investigated by officials of both the local and State boards of health and found excellent.

*New Haven.*—Month of October, 1889. Estimated population, 85,000. Total deaths, 114 ; including typhoid fever, 5 ; diphtheria and croup, 6 ; whooping-cough, 2.

*IOWA.*—The October bulletin of the State board of health reports a decrease of scarlet fever and an increase of diphtheria throughout the State, but nowhere is there an epidemic. The bulletin also contains the following statement regarding the “relations between the State board of health and the Iowa railroads :”

In the matters of quarantine and in the transportation of corpses, especially of those having died of infectious diseases, the State board of health has always found the railroads of the State ready and anxious to heartily co-operate. There are a few other matters, however, affecting the lives of many of our people that have not received the prompt compliance on the part of the railroads that the board, acting only in the interest of the lives of the people, has desired or expected.

The board asks that such changes be made by the use of automatic couplers, and the improved guards for the “frogs” as will prevent the many accidents occurring by the present methods.

It asks further that the tools carried on the passenger coaches shall be placed where, in case of accident, they will be most accessible instead of at the ends of the cars where they now are ; and that the water-cooler

be not placed alongside the water-closet, so that when the latter is opened one who is drinking may not be exposed to unpleasant and often noxious odors.

We are happy to state that in an interview with Dr. P. W. Lewellen recently on this very point, Mr. West, their master mechanic at Burlington, stated that they had now about perfected "a plan for carrying all the tools referred to about the middle of the coach, and easily accessible to any one wishing to use them." As an evidence of their desire to afford the best service possible from a sanitary point, both Mr. C. E. Perkins, the president, and Mr. Brown, the assistant superintendent of the road, assured Dr. Lewellen that they "would be only too glad to adopt any regulation the State board of health may deem necessary to improve and maintain the sanitary condition of their coaches."

MICHIGAN.—Week ending November 9. Reports to the State board of health, Lansing, from 62 observers in different parts of the State, indicate that inflammation of brain, cerebro-spinal meningitis, cholera infantum, membranous croup, diphtheria, dysentery, erysipelas, measles, puerperal fever, and whooping-cough increased, and cholera morbus and scarlet fever decreased, in area of prevalence.

The disease having the greatest area of prevalence was neuralgia.

*Detroit*.—Month of October, 1889. Estimated population, 250,000 (1,800 added by recent annexation). Total deaths, 300, including diphtheria, 19; typhoid fever, 8; scarlet fever, 2.

OHIO—*Cincinnati*.—Month of October, 1889. Estimated population, 325,000. Total deaths, 449, including croup, 13; diphtheria, 46; typhoid fever, 11; whooping-cough, 1.

*Dayton*.—Month of October. Estimated population, 60,000. Total deaths, 65, including croup, 3; diphtheria, 10; and typhoid fever, 4.

RHODE ISLAND.—Month of October, 1889. The number of deaths in the towns making returns and representing an estimated population of 304,660, was 458.

Typhoid fever was reported from more than half the towns in the State, but in lessened numbers compared with September. Measles increased 30 per cent. in number of localities, and was epidemic in and around Centredale, Pawtucket, and Ponagansett. Scarlet fever was reported from 4 towns only and diphtheria from 7.

June and October are the healthiest months, taking one year with another for a series of years.

TENNESSEE—*Nashville*.—Year ended September 30, 1889. Estimated population, white, 41,836; colored, 23,317; total, 65,153. Deaths, white, 530, a yearly rate of 12.66 in a thousand of the white population; colored, 494, or 21.18 a thousand; total, 1,024, or 15.71 a thousand. A comparative statement shows that this is the lowest rate of death in the last fifteen years, and it is in striking contrast to the rate of the first year given (1875), which was 34.55.

## 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.
New York, N. Y.	Nov. 16.	1,589,261	607						11	2	16		7
Philadelphia, Pa.	Nov. 16.	1,040,245	370						2	6	8		3
Brooklyn, N. Y.	Nov. 16.	843,602	294						2	5	22		
Baltimore, Md.	Nov. 16.	500,343	125					1	3	1	4		2
Boston, Mass.	Nov. 16.	420,000	148						4		7		
San Francisco, Cal.	Nov. 8.	333,000	99						4		4		
Cincinnati, Ohio.	Nov. 16.	325,000	101						1		10		1
New Orleans, La.	Nov. 9.	254,000	114						1		2		
Washington, D. C.	Nov. 9.	250,000	73						2		3		1
Detroit, Mich.	Nov. 9.	250,000	74						2		2		
Cleveland, Ohio.	Oct. 19.	235,000	85						6		6		
Cleveland, Ohio.	Oct. 26.	235,000	73						4		7	1	
Pittsburgh, Pa.	Nov. 9.	230,000	73						4		6		
Minneapolis, Minn.	Nov. 16.	200,000	39						3		7		1
Denver, Colo.	Nov. 15.	135,000	45						1		1		
Providence, R. I.	Nov. 16.	127,000	44						3		3		
Indianapolis, Ind.	Nov. 15.	124,450	27								1		
Toledo, Ohio.	Nov. 15.	89,000	31								7		
Fall River, Mass.	Nov. 6.	69,000	22										
Nashville, Tenn.	Nov. 19.	65,153	10										
Charleston, S. C.	Nov. 9.	60,145	29						1				
Charleston, S. C.	Nov. 16.	60,145	31						1				
Lynn, Mass.	Nov. 16.	45,867	12						1				
Portland, Me.	Nov. 16.	42,000	10										
Manchester, N. H.	Nov. 9.	42,000	17										
Galveston, Tex.	Nov. 8.	40,000	19								1		
Yonkers, N. Y.	Nov. 15.	31,000	4										
Canton, Ohio.	Nov. 15.	30,000							2				
Binghamton, N. Y.	Nov. 16.	30,000	8										
Auburn, N. Y.	Nov. 9.	26,000	7								1		
Auburn, N. Y.	Nov. 16.	26,000	7								1		
Haverhill, Mass.	Nov. 16.	25,000	5										
Newport, R. I.	Nov. 14.	22,000	3										
Rock Island, Ill.	Nov. 10.	16,000	3								3		

## FOREIGN.

(Reports received through the Department of State and other channels.)

GREAT BRITAIN—*England and Wales*.—The deaths registered in 28 great towns of England and Wales during the week ended November 2 corresponded to an annual rate of 17.5 a thousand of the aggregate population, which is estimated at 9,555,406. The lowest rate was recorded in Brighton, viz, 11.6, and the highest in Preston, viz, 32.0 a thousand. Diphtheria caused 6 deaths in Manchester and 2 in Portsmouth and in Liverpool.

*London*.—One thousand three hundred and seventeen deaths were registered during the week, including measles, 22; scarlet fever, 20; diphtheria, 31; whooping-cough, 21; enteric fever, 19; diarrhœa and dysentery, 17; and not one from cholera, small-pox, or typhus. The deaths from all causes corresponded to an annual rate of 15.8 a thousand. Diseases of the respiratory organs caused 300 deaths. In greater London 1,647 deaths were registered, corresponding to an annual rate of 15.2 a thousand of the population. In the "outer ring" the deaths included measles, 7; scarlet fever, 8; and diphtheria, 10; and whooping cough, 7.

*Corrections*.—For Abstract No. 46, London, measles, "27," should read 17; respiratory organs, "28" deaths, should read 281. Ireland, week ended "October 19," should read October 26.

CUBA—*Havana*.—For the two weeks ended November 14 there were 14 deaths from yellow fever.

TURKEY.—*Sanitary commission at Constantinople*.—*The chargé d'affaires ad interim* at Constantinople has informed the Secretary of State that in accordance with instructions of September 25, 1889, he has appointed Dr. Richard Sarell, resident at Constantinople, as delegate to represent this Government at the sanitary commission in that capital.

## CHOLERA IN MESOPOTAMIA.

*Third article.*

(From the *Revue-Medico Pharmaceutique*, Constantinople, October 31, 1889.—Translation.)

The hope we expressed at the close of our last article, of an approaching diminution of choleraic mortality in Mesopotamia, has been in great part realized. Thanks to the efforts displayed by the authorities and sanitary physicians, the epidemic has been arrested in its development, and the number of victims abates notably from week to week.

We have followed the march of cholera up to the moment (September 30), when the epidemic ravaged southern Mesopotamia (Irak-Arabi), and a good part of northern Mesopotamia (El-Djehireh), from Bagdad

to Hith on the Euphrates, Tekrit on the Tigris, and the banks of the Little Zab on the side of the Turco-Persian frontier.

Later, the malady made some uncertain progress, and invaded some new localities. These are:

(1) On the Euphrates, Havas (near Hillah), and Kiabouriah (near Hindiah). But only sporadic cases occurred there, and the focus which we described in the district of the sacred localities between Samava and Mussayeb is extinguished, probably from lack of material.

(2) In the city of Bagdad only isolated cases are reported, at long intervals. Thus from September 25 to September 28, only 9 deaths were observed: 1 on September 28, 3 on September 30, 2 from October 6 to October 7, 1 on the 11th, another on the 12th, and the last on the 19th of October.

(3) From along the Tigris, above Bagdad, after the 2 deaths reported September 16, at the quarantine station of Tekrit, no news has been received, which is a good sign.

(4) Between the Tigris and the Turco-Persian frontier the epidemic heavily afflicted the city of Sueleimaniah, carrying off, in the space of about a month, nearly 150 inhabitants. It invaded the quarantine stations of Altin-Keupru and Keuy-Sandjak; on October 14 it manifested itself in the city of Erbil, between the two Zabs, where in the space of ten days (October 14 to 23), it mowed down 143 victims. By the last advices received (October 27), it has appeared at Revendauz. Mossoul is seriously threatened. We hope this important center will be spared, for cholera could not fail to gain new strength there.

(5) To conclude, in the Chat-el-Arab and the lower Tigris the situation is satisfactory, but a slight recrudescence is reported along the Diala, especially in the direction of Hanéguine and Benkoudra, the latter a neighboring place to the former. This is the return route of the Persian pilgrimage to the holy places of Kerbela, Nedjef, and their environs. In the direction of the frontier, at Kiazmieh, to the east of Bagdad, cholera continued.

The number of choleraic deaths registered from the end of July, the beginning of the epidemic, to October 25, reaches 6,867, of which 694 only are for the last four weeks.

With regard to the measures of defense, the extension of cholera has obliged the authorities to modify slightly the line of the cordon which we described in our second article. This cordon passes now by Djuhb-Kahakep, on the Tedmour route (Palmyra), Abou-Kemal, Meyadin, and Buseira on the Euphrates, Chor, Chenadiah, and Tel-Kavkoub on the Khabour, Sindjar, and Tel-Afar, through El-Djezireh (northern Mesopotamia), Ali-Hammam on the Tigris; thence it follows the line of the Great Zab, and the Revendouz-Tehai with stations at Kelek, Guirdarech, Hindjireh, Guirdamamich, Herir, Kalakin, Koniatman, Revendouz, Mavil, Dergala, Memehal, and Rayet, on the Turco-Persian frontier.

With regard to Persia, it has been invaded by cholera to a great extent in the northern region as far as the vicinity of Hamadan. There is every reason to believe that independently of the propagation along the river Karoun, a propagation which seems to have been effected contemporaneously with the development of the disease in Mesopotamia, cholera was imported to an equal degree by the Persian pilgrims returning from Kerbela, Nedjef, etc., by way of the Diala. At present the two groups: (1) Mohamara, Fellahigé, Chouchter, Beihehan, and (2) Kasrichirin, Kermanchah, constitute only one, and the disease seems to

gain ground, although as the journals assure us it should diminish in intensity. On the other hand a dispatch from St. Petersburg announces the appearance of cholera at Recht, a Persian city on the Caspian Sea. This alarming news has not been confirmed.

*Recapitulative table of choleraic mortality in Mesopotamia from September 26 to October 26, 1889.*

Place.	Date.		Deaths.
	From—	To—	
Bassora.....	September 24.....	October 19.....	7
Bagdad.....	September 28.....	October 25.....	9
Fáo.....	October 3.....	.....	1
Musseyeb.....	October 1.....	October 21.....	4
Samava.....	September 26.....	October 1.....	5
Kiazmieh.....	September 27.....	October 1.....	47
Kizilrabad.....	October 14.....	.....	1
Hanéguine.....	September 27.....	October 4.....	23
Chamiah.....	September 26.....	October 1.....	48
Kerbela.....	September 28.....	October 24.....	42
Amara.....	September 29.....	October 9.....	7
Hillah and environs (Havas, etc.).....	September 26.....	October 21.....	43
Kerkouk.....	September 27.....	October 20.....	51
Altin-Keupru.....	October 1.....	.....	1
Suleimaniah.....	September 27.....	October 24.....	146
Coubcissa (1).....	October 22.....	.....	3
Zorbatia.....	September 27.....	September 28.....	5
Karabey (near Altin-Keupru).....	September 30.....	October 5.....	3
Keuy-Sandjak.....	September 30.....	October 16.....	29
Anah (2).....	October 2.....	October 7.....	9
Djauba (near Anah).....	October 2.....	October 7.....	2
Kamich-tépé (on the Little Zab).....	October 6.....	.....	4
Benkoudra (near Henéguine).....	October 8.....	October 20.....	36
Kiabouriah (near Hindiah).....	October 9.....	October 13.....	22
Achar (near Bassora).....	October 11.....	.....	3
Erbil.....	October 14.....	October 23.....	143
			694
To which must be added the total of deaths rendered from July 27 to September 26 (see <i>Revue</i> , p. 139) or.....			6,173
<b>General total</b> .....			<b>6,867</b>

(1) *Caubeïssa*.—Although this quarantine station was declared contaminated contemporaneously with Suleimaniah the 3 deaths of October 22 are the sole indication of mortality we have.

(2) The reported deaths at Anah and Djauba are denied.

**PERSIA—Cholera.**—The United States minister forwards to the Secretary of State the following report of the proceeding of the sanitary council at Teheran, September 17, 1889 :

REGULATIONS ADOPTED BY THE GOVERNMENT AND SUBMITTED TO SANITARY COUNCIL FOR ITS CONSIDERATION.

### 1. *Rules governing arrivals by sea.*

Every ship coming from Bassorah or Schatil-Arab to Persian ports must cast anchor 1,000 zars (a zar equals 41 inches) from land, and the health officer or person appointed must go by skiff to the ship, and, within 20 zars of the ship, halt and ask of the captain if he has any cases of cholera or other infectious diseases on board, and as to whether there are any invalids on board the ship, whether there have been any cases of cholera on board, and whether any one has died, and of

what cause, and so in like manner to ascertain the quality of the cargo of the ship, especially to ascertain whether wool, cotton, skins, or leather are part of the cargo or not, also learn the state of the ship as to cleanliness, and assure himself of the truth of the statements made by the captain. If no illness exists on board the ship, and no history can be obtained of any contagious disease on board, and the ship contains none of the above-mentioned articles as part of her cargo, then she shall be detained fifteen days, after which the cargo and passengers may be landed, provided no cases of cholera have occurred during the fifteen days, and on condition that the four articles mentioned are not in her cargo, otherwise she is not permitted to land passengers or cargo, and must proceed to some island distant from Fars, (province of Persia bordering on the gulf), and between which island and Fars there is no communication. There the cargo must be taken from the ship and aired thoroughly, and afterwards fumigated with sulphur. If cholera has occurred among the passengers, their clothing and effects, as far as possible, must be burned, otherwise to be thoroughly cleansed, and after the ship remaining in quarantine one month, the ship itself to be thoroughly cleansed and fumigated, after which she will be permitted to enter Persian ports. These directions must be strictly carried out especially on those ships which are not clean and are without a ship's surgeon.

2. *Directions for prevention of spread of cholera by land.*

The main route for charrodars and pilgrims to be via Khanakin. The Persian Government having established quarantine at Kas-ih-Shireen, all travelers are obliged to stop there ten days and submit to regulations laid down. They will be examined by the physician appointed to take charge of the quarantine, and if during the ten days no evidence exists of cholera, the personal effects of the travelers will be put into heated ovens of proper temperature for as long a time as is thought necessary to cleanse them, afterwards to be fumigated with sulphur, and the travelers will then be permitted to go on their way. If, however, during these ten days any cases of cholera occur, they are to be isolated at some distant place and there treated. Convalescence occurring, they will be detained one month, and then permitted to go on their way; their personal effects, so far as possible, to be burned, otherwise to be put into hot ovens and afterwards fumigated with sulphur. If in a caravan wool, cotton, and skins, or leather are found, they are to be carefully spread out in an open space and there aired several days and fumigated. The water-closets in proximity to quarantine quarters must be cleansed daily, and washed with a lime solution, and a solution of lime and sufficient quantity of sulphate of iron and common salt to be poured into the water-closet daily.

3. *Directions for towns and villages where cholera exists.*

If cholera occurs in a house the patient must be placed where there is plenty of good air, and if possible under a tree or on a bed suspended among the branches, to be so far as possible isolated, and except the one or two nurses who are in attendance, to have no communication with others. It is also advisable that any others who occupy the house quit it and do not revisit it for fifteen days, the house itself to be thoroughly cleansed as recommended above, using, wherever practicable and possible, lime water, sulphur, copperas, and salt. Should cholera occur among others, they, too, are to be isolated and treated in the same manner, and the house to be thoroughly cleansed and its con-



tents aired for fifteen days, lime water being sprinkled over the walls, floors, and ceilings, and the house to remain empty twenty to thirty days. Should cholera break out in several houses the same general directions are to be carried out in each case, and others to be forbidden access to the said locality or to any of the houses in the infected districts. In the non-infected districts every precaution as to cleanliness is to be observed, and fumigation, etc., to be carried out to prevent the further spread of the disease, and further, that if it be possible those in the vicinity should remove and live in tents and under trees.

In the cities, should the cholera break out, the same general directions are recommended and should be enforced, and the inhabitants should dwell at a distance of 8 to 12 miles from the city, living in tents and on beds and having no more communication with each other than possible, should refrain from eating fruit, and maintain an abstemious diet.

The health officer, assisted by the police, to have the streets and thoroughfares cleansed regularly, and maintain the strictest cleanliness among the butcher shops.

It is recommended that several copies of these directions be sent to the officers in charge of the frontiers until such time as fuller directions may be given and printed.

To those who have passed the quarantine it is recommended that a passport be given, which shall show that they have conformed thereto in every particular, so that they may not be hindered in their journey. That consequently those who do not possess such passport shall be required to return and go through the prescribed quarantine.

The price of the passport and the expenses connected with the quarantine is with the Persian Government. Those representing the Government having the right to collect the fees, which should not exceed 1 kran per diem for travelers, and 5 shohis per diem for animals.

If the poor are charged nothing it would be a great charity.

The price of passport to be 2 krans.

The above is translated by Dr. W. W. Torrence, of Teheran, who further reports that—

The latest telegram concerning cholera, is as follows, from the English agent at Kermanshah :

“ KERMANSHAH, *September* 16, 1889.

“ The epidemic, according to telegraphic information, has appeared at Bankooreh, Kaleh-Moalleen, Kasri-Sar-eh, Pul of Kirind. Four or five deaths occur daily.”

The above mentioned is about midway between Kernanshah and Kasr-ih-Shireen (Persian frontier).

## 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.
London.....	Oct. 26.....	5,642,015	.....	.....	.....	1	1	21	36	44	22	.....
Paris.....	Oct. 26.....	2,260,945	922	.....	1	.....	16	2	21	6	.....	6
Paris.....	Nov. 2.....	2,260,945	940	.....	3	.....	22	4	23	19	.....	.....
Glasgow.....	Oct. 26.....	545,678	236	.....	.....	.....	4	2	6	.....	.....	.....
Warsaw.....	Oct. 19.....	445,770	197	.....	30	.....	19	3	9	.....	.....	.....
Amsterdam.....	Oct. 26.....	399,051	140	.....	.....	.....	1	1	5	.....	.....	.....
Rio de Janeiro.....	Oct. 19.....	350,000	236	.....	27	6	4	.....	.....	.....	.....	.....
Palermo.....	Oct. 26.....	250,000	62	.....	.....	.....	.....	6	.....	.....	.....	.....
Belfast.....	Oct. 26.....	229,622	96	.....	.....	.....	4	.....	.....	.....	.....	.....
Genoa.....	Oct. 26.....	180,391	82	.....	1	4	.....	.....	.....	1	.....	.....
Trieste.....	Oct. 19.....	154,500	65	.....	.....	.....	3	.....	.....	1	.....	.....
Rotterdam.....	Oct. 26.....	145,102	77	.....	.....	.....	1	.....	.....	.....	.....	.....
Stuttgart.....	Oct. 26.....	125,510	33	.....	.....	.....	.....	.....	.....	1	.....	.....
Pernambuco.....	Oct. 15.....	120,000	67	.....	.....	1	.....	1	.....	.....	.....	.....
Pernambuco.....	Oct. 22.....	120,000	88	.....	.....	.....	1	1	.....	.....	.....	.....
Havre.....	Oct. 26.....	112,074	50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barmen.....	Oct. 19.....	109,000	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barmen.....	Oct. 26.....	109,000	41	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mayence.....	Oct. 12.....	65,802	28	.....	.....	.....	.....	3	.....	.....	.....	.....
Mayence.....	Oct. 19.....	65,802	24	.....	.....	1	.....	1	5	.....	.....	.....
Cadiz.....	Oct. 26.....	57,157	56	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vera Cruz.....	Oct. 31.....	23,800	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gibraltar.....	Oct. 27.....	23,681	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kingston, Can.....	Nov. 8.....	18,284	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Thomas.....	Oct. 25.....	15,000	15	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laguayra.....	Oct. 26.....	7,428	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laguayra.....	Nov. 2.....	7,428	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Juan del Norte.....	Aug. 26.....	1,250	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Juan del Norte.....	Sept. 2.....	1,250	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Juan del Norte.....	Sept. 9.....	1,250	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Juan del Norte.....	Sept. 16.....	1,250	2	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTICE.—The following numbers of the present volume of abstracts are desired to complete a number of files in the Marine Hospital Bureau. Medical officers of the service, and others who receive the abstracts, who do not keep permanent files, will confer a favor by forwarding to the Bureau the numbers indicated. Officers of the Marine-Hospital Service, however, will not break the official files at the stations.

The desired numbers are numbers 7, 9, and 24 of the current volume.

JOHN B. HAMILTON,  
*Supervising Surgeon-General, Marine-Hospital Service.*