

*N. Y. (State) 1885*



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1885

DISINFECTION OF RAGS.



COMMUNICATION

OF THE

HEALTH OFFICER OF THE PORT OF NEW YORK

TO THE

New York City Board of Health,

IN RELATION TO THE REGULATION REQUIRING THE  
DISINFECTION OF FOREIGN RAGS.



NEW YORK:  
MARTIN P. BROWN, PRINTER AND STATIONER,  
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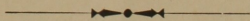
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# DISINFECTION OF RAGS.



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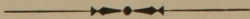
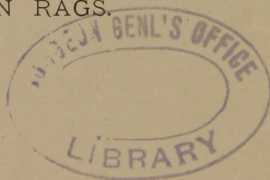
*New York (State)*

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Communication from the Health Officer of the Port of New York to the  
New York City Board of Health

IN RELATION TO THE

DISINFECTION OF FOREIGN RAGS.

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The association of the Health Officer of the Port with the New York City Board of Health as an ex-officio member thereof, as provided by law, was designed to promote the efficiency of the respective departments in the protection of the public health.

The co-operation of these departments through an exchange of views, and a knowledge of the measures adopted by each for the protection of the public health, will doubtless contribute in the future, as it has in the past, to secure that very desirable result.

For this reason it is believed to be a duty, and it is esteemed a privilege, to present to the Board a brief history of the measures adopted by the Health Officer of the Port of New York to secure the disinfection of the foreign rags that enter the port of New York, and the reasons for such action, which include the views of eminent sanitarians of this country and Europe, and the presentation of some of the evidence collected from reliable sources that infected old rags are not unfrequently the source of contagious and infectious disease in this and other countries.

The Health Officer has had the honor to communicate to this Board informally frequently during his connection with it, the efforts made to secure the protection of our seaboard and interior populations from small-pox by securing early vaccination of the immigrant after leaving the port of departure, and greater vigilance on the part of the medical officers of passenger steamers in detecting the incipient development of contagious disease among them on the passage; the effort to secure the removal of hospitals from the steerage and the covered gangways to such places on the steamer as would afford complete isolation of the sick, and the measures to secure an improved hygiene of passenger steamers have, from time to time, been informally laid before your Board.

The disinfection of old rags at the port of New York has been also frequently discussed. The necessity for this is not a new one to the sanitarians of other countries; but long and earnestly as it has been discussed by them, the practical difficulty has been that no means has been discovered by which rags in bale could be efficiently disinfected. Moist heat, dry heat, boiling and sulphurous acid, one or the other have been suggested by many, and employed by a few, to disinfect rags before they were baled, but it was reserved for Yankee ingenuity to discover the means by which superheated steam and sulphurous acid in vacuum could be used to penetrate quickly the largest and most closely packed bale of rags, and by the use of the first-named agent destroy with certainty the most resisting forms of germ life, and with the second, all except spore-bearing organisms.

The presentation of this subject to the members of this Board—its history, the opinions of health authorities and sanitarians, and the facts are designed to aid in securing the expression of an intelligent opinion from the humanitarians who stand upon the watch-towers that overlook the public health, as well as from those whose duty it is as the chosen guardians of the public health to “cry aloud and spare not” when dangers, great or small, near or remote, threaten to invade the charge which it is their duty to preserve.

If, on the other hand, the leading minds among sanitarians and health authorities believe that the disinfection of old rags is necessary, the expression of such views will doubtless be received by those who are legally constituted supervisors of maritime sanitation with respectful consideration.

The succeeding pages of this article will convince all impartial minds who give them attentive perusal that the rule which requires that all old rags should be disinfected before they are shipped, or at the port of New York, has been made in compliance with the expressed conviction by influential sanitary and health organizations, of the necessity of such a regulation.

The discussion among European sanitarians and health authorities as to the means by which this object can be accomplished has taken a wide range. In 1884, Dr. Ruysch, of the Hague, proposed to disinfect rags before baling by “steam or hot air”; “as to disinfecting them in a lump (bale), I fear,” he wrote, “it will be a difficult matter.” Dr. George Buchanan, of the

"Local Government Board" of England, in his report for 1883-4, was of the opinion that "bales of rags cannot usually be properly disinfected," "without exposure to heat in such a way that every article in the bale shall attain a temperature of 250° Fahr." "The arrangement," he continues, "which gives greatest penetration of heat is the use of high-pressure steam," "or the bale may be opened out and the whole of its contents be exposed to disinfection by a liquid agent, and this may be water at a boiling heat, or water containing one pint of the clear solution of chloride of lime to four gallons of water," in which the rags "should soak for some hours." Dr. Proust, the French delegate to the International Sanitary Conference at Rome, writes as follows, under date of August 22, 1885: "Our intention now, in France, is to subject them (rags) to the action of disinfecting tanks by means of steam, and while those tanks or boilers are being constructed, to subject rags to the action of sulphurous acid." Dr. Rochefort, Secretary of the Marine Board of Health (France) in the "Revue d'Hygiene," Vol. VII., No. 7, describes "an apparatus for steam disinfection," of which, in conclusion, he says: "If this apparatus does not solve in a complete manner the problem of disinfection, it brings at least an important addition to the solution sought." Dr. Pouchet, in the "Revue d'Hygiene" of May 20, 1885, describes an apparatus for the disinfection of rags by M. Lecouteux and Garnier in St. Oberkauff, as "a copper boiler, in which the rags are piled up, and which is provided with a double bottom pierced with holes, and having at the bottom part a cock for the escape of water. The lid is cemented and bolted on the boiler, and has a cock for the introduction of steam. The apparatus once well closed, a jet of steam is introduced under pressure of three atmospheres into the boiler full of rags."

The "Annal d'Hygiene Publique," 1879, Vol. II., p. 480, has the following: "But in this question (the disinfection of rags) it is necessary, as much as possible, to consider the interest of public health with those of commerce, and we judge that the previous disinfection of rags by heat is the process to be generally adopted, but to add thereto disinfecting vapors in special cases. The action of heat is prompt, almost immediate, which constitutes an economy of time, and heat alters neither the merchandise nor its color, which is very important for the rag trade. We cannot speak too often of it. It is urgent to establish large apparatus for disinfection by heat in our lazarettos; those destined for our hospital and beneficiary establishments would be of lesser importance. This apparatus is indispensable in order to treat the rags coming from abroad, as well as to cleanse those which are received in the interior of the country."

The disinfection of Egyptian rags by boiling has been practiced by the Seymour Paper Company at their warehouses in Cairo for nearly two years past. The use of sulphurous acid with the rags well scattered upon racks, was also recommended to this company by the Health Officer at New York, with the expressed preference for the disinfection by boiling, on account of the liability of the rags to be packed so closely and piled in such quantities upon the racks as to prevent the access of the gas to them sufficiently to affect a satisfactory disinfection.

The system of disinfection of rags in bale by superheated steam, in use at the port of New York, has the misfortune for its popularity with rag importers of being patented. The disinfection in bale by the "sulphur vacuum process," so far as the details of the experiments have been received, seems likely to be satisfactory, and will doubtless afford to those importers who are prejudiced against disinfection by superheated steam, the opportunity of employing a rival system of disinfection.

In relation to the regulation which requires that all rags shall be disinfected that enter this port, it is proper to say that the importance of the rag industry is not overlooked in the restrictions on the importations of this article, which have been thought necessary for the public health.

More than a quarter of a million of people in France alone live by this industry. Probably 175,000 bales of rags enter per annum at the port of New York—worth several millions of dollars. But this ought not to disguise the fact that old rags have in all time past been considered as prolific sources of contagion. And the more the subject is discussed the more will this be apparent. It will be seen, now that the discussion is invited, that this fear among health authorities is neither new or groundless.

While seeking to discharge a duty, conceived to be such by the light of long and patient investigation, and by the expressed opinion of sanitary organizations and health authorities, it has not seemed proper to increase public apprehension in relation to a useful article of commerce by representing the dangers from the omission of the duty which would be likely to increase the prejudice or fear of the public. For this reason no public reply has been made to the criticisms of interested parties until they impliedly, if not expressly, charged venality in the discharge of the duty.

An appeal was made from the decision of the Health Officer which requires that all foreign rags entering this port shall be disinfected where gathered, or at this port. The parties making the appeal have the satisfaction—the distinction, if they please to consider it such—of being the first in the experience of something more than five years, during which interests aggregating thousands of millions of dollars have passed under the supervision and control of the New York Quarantine, to express a doubt of the integrity which has influenced the measures and management of it, and to appeal from the decisions made by the Health Officer in the official discharge of his duty.

A brief history of the circumstances which led to the adoption of the present restrictions on the importation of old rags will be necessary to an intelligent presentation of the reasons for the Health



Officer's refusal to give permission to land the cargo of Italian rags on the "Fillippo," from which decision D. de Castro recently made an appeal.

The causes which have contributed to impress health authorities, not only in this country but in Europe, that old rags have been fruitful sources of the dissemination of some forms of contagious disease, will be referred to further on, as briefly as is consistent with the many proofs at hand of that fact.

A literature has not been wanting in relation to this article of commerce, which inspired the liveliest apprehension in the minds of a great majority of the people, of the danger of the introduction of contagious diseases among the populations of our seaboard and interior communities by the admission of foreign rags. The press in numerous instances, and throughout the country, disseminated this literature in language more vigorous than elegant. "Old rags picked from the filth of Egyptian towns like Cairo and Alexandria—rags gathered from the slums of Naples—old rags that were thrown into the street from hospitals and pest-houses," were held up to the public gaze as the embodiment of filth and the greatest source of danger to the public health.

During the winter of 1883-1884, the writer had formulated a plan for boiling Egyptian rags at the warehouses of the Seymour Paper Company in Cairo and Alexandria, which was adopted, and a plan made for that purpose, the supervision of which was entrusted to a citizen of the United States appointed by the Secretary of State. This plan of disinfection proceeded for some time, and twelve to fifteen thousand pounds were daily disinfected.

The extension of cholera to the continent of Europe, it is assumed, seemed to the Government to necessitate the adoption of this, or other measures, to prevent the importation of infected rags from those localities, as the restriction on the importation of rags not disinfected amounted practically to an embargo. A circular issued by the Treasury Department, August 30, prohibited the landing of old rags on and after the 1st of September prox., for three months from the date, and charged customs officers throughout the United States with the execution of the order. Subsequently this order was modified to the extent of admitting all rags afloat previous to the first of September, and afterwards the order was further modified so as to allow rags that were afloat previous to the first of January, 1885, to enter our ports, and prohibiting the entry of old rags that were not afloat on that date from any foreign country, except upon disinfection at the expense of the importers.

At the conference of the representatives of State Boards of Health, and of maritime, sanitary officials, held at Washington, D. C., December 10 and 11, 1884, the Secretary of the Treasury requested and obtained the expression of the views of the conference in respect to the admission of rags from foreign countries; for there was a difference of opinion manifested between the Secretary of the Treasury and the Secretary of State in this matter, as shown when the matter was discussed at the Cabinet meeting held the day previous to the meeting of the conference; the Secretary of State was understood to favor the prohibition of the importation of all foreign rags, while the Secretary of the Treasury inclined to admit rags if disinfected by some process which health authorities considered efficient.

The views of the Conference, as represented by the Committee to whom the subject was referred, were expressed in the following letter to the Secretary :

WASHINGTON, D. C., December 11, 1884.

*To the Hon. HUGH McCULLOCH, Secretary of the Treasury :*

SIR—The committee appointed by the Conference of State Boards of Health, to consider the subject of national action relating to health, which committee had the honor of an interview with you this day, and hereby respectfully submits the view of the committee respecting the particular source of danger to health upon which you have expressed a wish to receive the opinion of the committee, namely, from imported rags.

Members of the committee believe that contagious diseases, dangerous to the public health, occur in the homes of the people in every country, that old rags are collected mainly from cast-off material from the homes of the people, and that old rags, in whatever country collected, are not free from danger, and that it would tend to prevent the introduction into this country of more than one contagious disease if all old rags so imported into the country should be disinfected before or on entrance at the port of entry.

This committee are of the opinion that disinfection of old rags can be effected by boiling them thoroughly, by exposing them to superheated steam so as to assure a temperature equal to or exceeding two hundred and twelve degrees, by the use of sulphurous acid gas—the rags being fully exposed to the action of such gas in the ratio resulting from the burning of two pounds of sulphur to each one thousand cubic feet of air, or by the use of the latter agent in any other form or manner which shall secure the subjection of the old rags to that agent in an effectual manner.

This committee further express the opinion that the disinfection of rags should be allowed to be effected in any country where a proper inspection of the process of disinfection can be secured, and such disinfection certified to by a representative of the United States.

H. B. WALCOT, Chairman,  
S. S. HERRICK, Secretary.

Ten days subsequently, December 22, Secretary McCulloch issued the following circular :

*To Collectors of Customs and others :*

All circulars of the Department concerning the importation of old rags are modified as follows :

No old rags except those afloat on or before January 1, 1885, on vessels bound directly to the United States, shall be landed in the United States from any vessel, nor come into the United States by land, from any foreign country, except upon disinfection, at the expense of the importers, as provided in this circular, or as may hereafter be provided.

Either of the following processes will be considered a satisfactory method of disinfection of old rags, and will entitle them to entry and to be landed in the United States upon the usual permit of the local Health Officer, viz. :

1. Boiling in water for two hours under a pressure of fifty pounds per square inch.
2. Boiling in water for four hours without pressure.
3. Subjection to the action of confined sulphurous acid gas for six hours, burning one and a half or two pounds roll-brimstone in each one thousand cubic feet of space, with rags well scattered on racks.

4. Disinfection in the bale by means of perforated screws or tubes through which sulphur dioxide, or superheated steam at a temperature of not less than three hundred and thirty degrees, shall be forced under a pressure of four atmospheres for a period sufficient to insure thorough disinfection.

Old rags may be landed and stored at such places as may be approved by this Department, for the purpose of undergoing any of the processes of disinfection before named, and upon the completion of such process to the satisfaction of an inspector of customs and the local officer, the rags may be delivered to the importer or consignee.

Old rags may be subjected to disinfection by either of said processes in any other country where this Department may appoint an inspector to superintend the same, whose certificate of such disinfection shall be authenticated by a United States consular officer, according to Department circular No 61, of April 22, 1884.

H. McCULLOCH, Secretary.

The Secretary of the Treasury forwarded this circular to health authorities and to importers of rags, asking their opinion of it.

The first three processes above mentioned in the formula for the disinfection of Egyptian rags in the latter part of 1883. The fourth process mentioned in the circular, to wit., disinfection in the bale by means of perforated screws or tubes, through which sulphur dioxide or superheated steam at a temperature of not less than three hundred and thirty degrees was forced, was as novel an expedient as it has been proved to be efficient—at least in subjecting the rags to the agents mentioned in the Department circular.

The history of the adoption by the Treasury Department of the system of disinfection of rags in the bale by superheated steam, while not strictly pertinent to the objects of this article, is nevertheless a necessary portion of this subject, since it affords an explanation and justification of the action of the Health Officer in accepting the method adopted by the Government for the disinfection of rags in the bale.

The latter part of December, 1884, the Secretary of the Treasury requested the Health Officer of the port of New York to indicate some suitable place near New York City or Brooklyn for disinfecting rags from foreign ports. Before complying with this request a consultation with Dr. Raymond, Health Commissioner of Brooklyn, was held in relation to the disinfection of rags, and it was determined that the efficiency of superheated steam and sulphurous acid should be submitted to such tests as would afford a practical demonstration of the power of those agents as germicides. Dr. J. S. Billings, of the United States Army, was requested to conduct the experiments. He declined, and recommended that Dr. George M. Sternberg, also of the United States Army, but on detached duty at the Johns Hopkins University, be employed, as his specialty in the cultivation and study of disease-producing germs would enable him to give satisfactory attention to the tests it was proposed to make.

The results of the tests with superheated steam were communicated by Dr. Sternberg under date of February 24th, as follows :

“Moist heat proves to be a most certain and practicable method of destroying germs, and the most resistant spores are quickly destroyed by a temperature of 230 degrees Fahr., which is 100 degrees below the temperature exacted by the Treasury Department. The spores of anthrax are destroyed by a temperature of 221 degrees maintained for two minutes, and all microcci and bacilli not containing spores are quickly destroyed by a temperature much below the boiling point of water.”

The management and result of the experiments with sulphurous acid is best told by Dr. Sternberg's report in the “Medical News” of March 14 and 28, 1885. It is sufficient to say that the report of Dr. Sternberg indicated a less satisfactory result with that agent than was secured with superheated steam.

There is no doubt that whatever of living organisms may exist in bales of rags including the most resisting spores, may be quickly destroyed by steam at a temperature of 230 degrees Fahr.,

and that all parts of a bale weighing a half a ton may be heated to this degree in eight minutes by the system adopted.

The conclusions in respect to S. O. 2 have not in all respects been as satisfactory, but it was conclusively proved that the specific infecting power of vaccine virus is destroyed by it—and that micro-organisms without spores may be destroyed by this agent if exposed to it under favorable circumstances.

The Baltic Stores, on the water-front of South Brooklyn, were designated by the Secretary of the Treasury as the place for the disinfection of "old rags" by superheated steam, subject to the approval of the local health authorities.

Under date of June 10, 1885, the Treasury Department issued a circular relegating to the local Health Boards and Quarantine officials the regulations under which foreign rags should be admitted.

The plant for disinfecting rags was removed from the Baltic Stores soon after this order was issued, and established near the discharging Quarantine anchorage.

The recommendation of the conference of eminent health authorities which met at Washington, D. C., December 10-11, 1884, that all foreign rags should be disinfected in countries where gathered, or at the ports of entry in this country, and the adoption by the Government of that recommendation, constitutes one of the reasons for requiring that all old rags entering the port of New York shall be disinfected.

Early in April of the present year, the undersigned was apprehensive that cholera would appear in Europe, and impressed with the great responsibility of the situation which was imposed, owing to the epidemic of cholera in Europe during the past year, and the liability that the dreaded disease would recruit its forces during the present season and cross the Atlantic to invade our own people, as also with the conviction that other contagia, particularly that of small-pox, which existed in an unusual degree in some localities, notably in London, where an average of from 1,200 to 1,500 cases of that disease were in the hospitals for the past year, the writer invited a conference of the principal maritime sanitary and local health officials, which met at the Fifth Avenue Hotel, the 23d of April, and adopted the following conclusions:

1. That the maximum period of incubation of Asiatic cholera may, for quarantine purposes, be assumed to be eight days, and that in case of the disease occurring on vessels during the voyage hitherward, the quarantine of observation of persons should extend to eight days from the last date of possible exposure.

2. That for fumigation of closed spaces, sulphurous acid gas may be commended, from two to three pounds of sulphur being burned for each 1,000 cubic feet.

3. That for disinfection of luggage, or other fomites, reliance may be placed on fresh chloride of lime, bi-chloride of mercury, or dry heat to 230 degrees Fahr.

4. That in view of the danger of other contagia, as well as that of cholera, all rags imported to this country should be disinfected either at the place of departure or on their arrival here.

5. That if such disinfection be done abroad it be required that either the rags be boiled for not less than thirty minutes, and dried before baling, or treated with superheated steam for not less than eight minutes, and in such manner as to be heated to or above 212 degrees Fahr. in every part.

6. That inspectors should be appointed (by the department having control of the epidemic fund) to certify to the sufficiency of disinfection of rags according to the above rules, and that a consular endorsement be added to such certificate.

7. That in the absence of such certificate and consular endorsement, all rags should be disinfected at the port of entry.

These conclusions, which were not invited by the Health Officer at the Port of New York, but which were the expression of the deliberate and unbiased judgment of the sanitarians present, and which were subsequently formally approved by others not present at the meeting, affords another of the reasons for requiring that all foreign rags entering the port of New York shall be disinfected at the port of departure, or at this port.

The appeal of de Castro & Co. was based upon the claim that an exception should be made in his case to the regulation which has been adopted under the advice of one of the most numerous and representative health conferences ever held in the United States, and subsequently by the representatives of most of the principal quarantine officials of the Northern Atlantic ports.

The Health Officer at New York for the two years previous to the order of the Government which directed that all foreign rags should be disinfected, endeavored to make these exceptions, and found it to be far the most difficult and vexatious of the duties of his administration.

The eminent Dr. Richter, of Germany, whose voice was long since raised against rags as the fruitful source of contagious disease, says: "When man's own interests are at stake, he does not care at all for his fellow-beings, whether in adversity or prosperity, and for a farthing he will put all the people's health in jeopardy."

This is severe language, but it is the language of one of the most earnest and eminent of the sanitarians in Europe.

It is but a few weeks since a small invoice of rags came to this port by one of the English steamers. The Health Officer at New York was notified by the consul at Naples that these rags came

from one of the worst cholera infected portions of that city. The Health Officer telegraphed the agents of the steamer in New York that the rags would not be permitted to land. The consignees of these rags did not come forward to claim them. Is there any doubt that they would have done so if the source from which they came had not been discovered?

Dr. Sternberg, of the United States-Army, writes as follows, under a recent date :

"It cannot be claimed that it is necessary in order that the public health may be protected, to disinfect all rags which come to us from foreign ports. But it is so difficult a matter to determine just what rags may be admitted with safety, that it seems to me advisable to make the rule general. If exceptions are made and the matter is left to the judgment of the local health authorities, the carelessness or indifference of a single individual may neutralize all the good which has been accomplished by judicious discrimination and disinfection at all our principal seaports. The chain is no stronger than its weakest link."

Dr. J. Higham Hill, Health Inspector on the Consular Staff at London, writes, under date of August 19, 1884, to the Consul General: "I have heard that large quantities of continental rags are now being forwarded to America via Hull rather than London, there being no Health Inspector at the former port."

"The sources whence rags are collected are so difficult to trace, and during epidemics of infectious disease rags are so likely to come from infected localities, it appears to me that, unless a reliable certificate from a competent authority be produced stating that they have been properly disinfected, it would be a wise precaution to prohibit the importation."

Consul Lathrop, at Bristol, on the same date, wrote the State Department that rags that arrive in England are not required by the "Local Government Board" to be disinfected if designed for immediate exportation, and adds: "Under this provision it would be entirely competent for a vessel direct from Marseilles, for instance, to trans-ship its cargo of rags at any English port for the United States."

These are some, but not all the reasons why there should be no exceptions to the rule, under present circumstances. I hasten to notice some of the circumstances which have contributed to impress the Health Officer at New York with the conviction that the line of safety and assurance of protection of the public health lay in requiring the disinfection of all rags that enter the port:

1st. The difficulty which has been illustrated, and which is corroborated by those who have superior opportunities for observation, and thereby forming correct conclusions in determining what rags may and what may not be safely admitted without disinfection.

2d. That the precautionary measures necessary against the diseases communicated by rags, have engaged the attention and have been earnestly discussed, not only in this country but in Europe, as instanced by the health congress within a few years past at Turin, at Brussels, and at The Hague.

3d. That the following authentic record of instances where contagious diseases have been communicated from rags afford conclusive proof of the wise regard which the representative bodies referred to in this country and Europe have for the public health, in the prohibition recommended of the distribution of rags that have not been disinfected.

The "British Medical Journal" of May 11, 1878, page 686, speaks of "Rags as disseminators of disease," and refers to "the measures taken by the Austrian government to prevent the spread of disease by obtaining the adoption of uniform precautions in all the neighboring States in the shape of strict enforcement of sanitary regulations, and the prohibition of the importation of rags." "The authorities of Austria," the article remarks, "have for some time forbidden the importation of rags."

Vol. I, page 863, of the same journal, says: "An epidemic of small-pox, which spread somewhat widely, broke out at Abenheim, in the Canton of Worms, Rhein'ish Hesse. Almost all the patients at the outset were five women who worked in a rag factory cutting up and assorting rags. The cases were investigated, and it was found that a portion of these rags came from Marseilles, where small-pox prevailed to a serious extent."

The "British Medical Journal" of July 3, 1880, Vol. I., page 21, says: "Girls who worked at sorting rags at Canterbury contracted the disease and communicated it to twelve others." "The then health officer said that during the period of three years there had not been a case of small-pox in the city the origin of which had not been traced to the factory." In 1878 cases originated in the same factory. In 1879 another case occurred there. Dr. Butterfield, in his last annual report on the health of Bradford, wrote: "No case of small-pox had occurred in the borough for many months, when a girl who had not left the neighborhood was taken sick. In a few days another young woman employed in the same work exhibited symptoms of the disease." "March, 1878, several persons residing apart, but working in the same room at a rag warehouse, were simultaneously affected with small-pox, and from them extended to about thirty others."

"At Whitesford, in 1873 and 1875, there were two outbreaks of small-pox from the same cause." "At Thetford an epidemic of six months' duration and from which sixteen or seventeen deaths resulted, were traced by Dr. H. J. Hunter to two women engaged together in cutting up some foreign rags and who fell ill the same day."

Under date of January 20, 1883, the "British Medical Journal" said: "An outbreak of small-pox has just taken place at New Cathcart, under peculiar circumstances. A local firm of paper-

makers received in December last a quantity of rags from Koenigsburg, via Leith. The work people in their employment have been engaged in cutting them up recently, and within the last few days four of them have been seized with small-pox, and some others have sickened with what is feared will turn out to be the same disease."

The Thirteenth Annual Report of the Local Government Board (of England, 1883-1884) contains the following, in the report of the medical office of the Board :

"Of infectious diseases, which are known to have been conveyed to persons engaged in the rag trade or in paper-making, small-pox is by far the most frequent," \* \* \* and again he remarks: "It has been thought desirable to take exceptional precautions to prevent the introduction of cholera by them (rags) into English ports."

(Signed) GEO. BUCHANAN, Medical Officer Local Government Board.

The restrictions on the importation of rags at the port of New York are by no means without precedent. Reference has been made to the restrictions by Austria. Holland has a very rigid inspection law. And a French decree dated as early as March 15, 1879, compels "all rags imported into France by sea to be disinfected; and the importation of rags is restricted to certain ports where disinfecting apparatuses have been provided."

In order to evade this, rags have been unloaded at neighboring ports in other countries and thence carried by land across the frontier. With a view of preventing this it has been recommended that the importation be restricted on land to places where a disinfecting arrangement is provided. (See "British Medical Journal" of August 4, 1883.)

The following is from the "British Medical Journal" of May 2, 1885 :

#### THE DISINFECTION OF RAGS.

"The Woodside Rag Works at Aberdeen, the outbreak of small-pox amongst the workers in which was the subject of a question by Dr. Farquharson on April 23d, have repeatedly been the scene of similar outbreaks of the same disease, and it would be worth while, therefore, that some special inquiry should be made as to the precautions adopted by the proprietors for preventing such occurrences in future."

"Some of the better known paper makers in England have now a regular set of regulations for minimizing the danger arising from the handling of infected rags. It is impossible, perhaps, absolutely to prevent the occurrence of a case of small-pox from this cause, without measures of disinfection being applied to all rags. Although we have no reason for assuming that other diseases are not spread by rags, we have chiefly records of small-pox distributed in this way." \* \* \*

Section 49 of the Scotch Public Health Act of 1867 (corresponding to section 125 of the English Act of 1875) imposes a penalty on any person who "gives, lends, sells, transmits, or exposes, without due disinfection, any bedding, clothing, rags or other things which have been exposed to infection from any dangerous infectious disorders." Of course, if this law were universally observed, the question of rag disinfection would hardly arise, at any rate as regards rags of home origin. If infected rags pass into the hands of dealers, it is not because the law is not sufficiently stringent, but because of the practical difficulties in the way of its enforcement.

Obviously, it is the person who first sells the rags who should be responsible for their freedom from infectious properties, both because he alone is likely to know their history, and because if disinfection were postponed until they reached the paper mills the rags would pass through several hands while still retaining their infectious properties. It would seem hardly fair, therefore, to compel the paper manufacturer to atone for the omissions of the first vender by a process of disinfection applied indiscriminately to all rags; but it would nevertheless be very desirable if, for the protection of the work people, paper makers could see their way to the adoption of some effective means of disinfection of rags. Of the processes which have been proposed to this end, Dr. Franklin Parsons, to whose admirable summary of the subject we are indebted for many of the above suggestions, thinks that high-pressure steam seems to promise most.

The belief that old rags communicated contagion is so considerable in England that it has been the subject of discussion in the House of Commons.

"British Medical Journal," August 25, 1883, page 397; House of Commons, August 15, 1883. Importation of Disease by Rags. Sir S. Northcote asked the President of the Local Government Board whether his attention had been called to some cases of small-pox reported from a place in his constituency, which were supposed to have originated from foreign rags among people employed in certain paper mills.

There was one death last week and there had been several other serious cases of illness. He called the attention of the Local Government Board to the subject, in the hope that some restriction might be devised to check the propagation of infection by rags.

It will doubtless be admitted that cholera and other severe forms of contagious disease such as small-pox, diphtheria, and scarlatina and typhus fever, can be communicated by cast-off or soiled

clothing; but old rags it is said have no such history as carriers of contagion. It is urged that rags are gathered months before being shipped, and the contagion, if there was any, has lost its power. This is probably true of a great portion of the rags imported, but it is certainly true that there are in most, if not all consignments, rags that have been recently gathered. And it is also true that the contagion of some of these diseases may be preserved in clothing and old rags for weeks and months, and when again exposed to the air in the presence of susceptible persons, will communicate their deadly poison. It has never been satisfactorily ascertained how long the contagion of some of these diseases may be retained in old rags or cast-off clothing. The cases of small-pox that developed in 1873, in the hospital at Utrecht, were traced to insufficiently disinfected bed quilts which had been infected by small-pox patients treated there in 1872.

The "British Medical Journal" of 1880, Vol. 1st, page 952, has a report of Dr. Henry S. Alford, Medical Health Officer in the Tauton District, in relation to the Abenheim epidemic of small-pox, in which he alleges that the disease was communicated by "rags that had been on the premises six months and were obtained from Russia or Wales." No cases had occurred in the village, nor had the girls first attacked left home.

Dr. Ruysch of The Hague, one of the delegates to the International Sanitary Congress at Rome, of the present year, and one of the most earnest, able and zealous of the European sanitarians, made a report, at the Congress of Hygiene at The Hague in 1884, on rags—"A Danger National and International," from which the following extracts are made:

"In England, France and Germany the same facts go to prove the propagation of diseases, and principally small-pox (by rags). One of the most interesting works on this subject is certainly Dr. Gilbert's report on the epidemic at Marseilles, that had exactly the same characteristics as the small-pox epidemic of 1874 and 1875, and proved conclusively the great influence of rags on epidemics. To cite only two facts: In 1874 there were 117 rag stores in Marseilles, of which 46 were in one district; in that district the number of dead from small-pox was three times larger than in any other district, while of 157 cases of disease 64 cases occurred in rag pickers' houses, or in houses in close proximity thereto, or rag stores. In that district Dr. Gilbert found a cellar for rags which infected six persons, four of whom died."

"A rag-picker from Amsterdam, when cholera was raging in 1866, introduced it in the city of Tilbourg."

"At Dresden a rag-picker was the first victim of cholera in that commune."

"At Mearssen the first one attacked with cholera was a rag-picker."

"In 1866, various people working in a paper-mill at Wormerveer had been handling rags and were taken with typhus."

"The origin of the small-pox epidemic in 1871 at Herde and Epe, the Medical Inspector attributed to rags."

"In 1870 and in 1880, persons were attacked with small-pox who, while working in a paper factory at Maestricht, had been handling rags, or had visited the locality where rags are selected; whereas during all that time no other case of this disease was known at Maestricht, but only in Belgium whence the suspected rags were partly coming."

"Infected rags from Marseilles caused an epidemic at Abenheim, in Germany."

"Similar reports on the propagation of small-pox by means of rags have been established in a paper factory at Lyons, Christiana, Leipsic, Bradford, Osult, Whittlesford and Thetsort."

"As in the disposition of filth, we must commence by watching the place of its origin—the gutter, the house, the sewers under our feet, and finally the place where it is accumulated—so in rags must we watch the various ways by which they come into circulation and the stations where they are stored, and so much more so in rags, as we know by sad experience that men engaged in this business for the sake of a few pennies are apt to relax their obligations."

The conclusions of the report of Dr. Ruysch are embraced in the two following propositions, which were adopted by the Congress of the Hague:

"1st conclusion—Since the disinfection of rags as practiced in general leaves much that is unsatisfactory, and that the precautions to take when gathering, transporting and selecting rags, clothing and old clothes are not sufficient, rags that have not been carefully watched from their starting point are a national and international danger."

"2d conclusion—To appoint a commission of the members here present in this Congress to ascertain what measures, national and international, can be adopted to prevent the fatal influence communicated by this source of contagion."

The conviction that old rags from foreign ports have been, and are public carriers of contagion, is most firmly established in the minds not only of the sanitarians of other countries, but of our own maritime and interior health authorities, and of those eminent as sanitarians.

The relegation by the Government to the local health authorities of the question of the admission of rags, left to maritime sanitary officials a legacy of difficulties under which it has been impossible to make uniform rules for their admission at the different ports consistent with the sense of duty of those officials as the guardians of the public health, and secondarily (but an important duty) as the conservators of commercial interests. The following is an illustration:

The Boston Board of Health on the 1st of June adopted this order :

"In view of the unreliable character of the evidence as to the origin, history and treatment of rags brought to this port from foreign ports, and in view also of the misleading character of the health certificates brought by masters of vessels from ports from which rags are shipped, and on account of the danger from cholera and other contagia likely to be carried by these importations, it is hereby

"Ordered, That on and after this date (June 1, 1885) all rags arriving at this port from any foreign port, shall, before being discharged, be disinfected, under the supervision of an officer of this Board and in a manner satisfactory to this Board." Dated June 1, 1885.

At the same time the Health Officer at New York believed it to be his duty to admit all rags that had been disinfected under the supervision and regulations of the Treasury Department.

The Health Officer at the port of New York has hitherto admitted all invoices of rags that have been accompanied by the certificates of the Inspector appointed by the Treasury Department, and endorsed by the United States Consul, that they have been disinfected according to either of the four formulæ prescribed by the Treasury Department in the circular of December 22, 1884.

*Extracts from Foreign and Home Journals.*

("Annal d'Hygiene Publique," 1879, Vol. II, page 480).

RAG-PICKERS' DISEASE.

The physicians of lower Austria have observed recently a disease, the nature of which remains unknown, that they have only met in the paper factories, and which they call the Rag Pickers' Disease (Die Handernkrankheit). The disease commences with weakness, anorexia, insomnia, vomiting, sensation of weight in the epigastrium, the second day, sometimes the third, one can see cyanosis of the lips, cheeks, the nails, cold sweats, œdema of the lungs, no disturbance of the brain. Generally death is easy, excepting in cases where there is pulmonary stasis. No abdominal symptoms, no albumen in the urine. On necropsy one finds various lesions of the lungs without special character.

This is the disease Dr. Hoffman, the Austrian delegate to the Rome International Sanitary Conference, refers to on another page as "rag sickness," and which he believes to be a "form of anthrax."

Extracts from the report of Dr. Bristow, taken from the eighth report of the Medical officer of the Privy Council, page 206.

"Mr. Barnard, upon opening a bag of rags, noticed a disagreeable odor, and fourteen days (or thereabouts) after was seized with small-pox. He recognized the same odor while the scabs were falling off. No small-pox in the vicinity previously."

"Saunders (a female rag-sorter) took small-pox from Temple Mills, Marlow; four others had it at nearly the same time. All five were engaged on dirty London rags. She was attacked in two weeks. No small-pox in the village at the time." Page 207.

"Mrs. Hays says, while cutting up rags she recognized the smell of small-pox, and two or three weeks afterwards she took the disease. She claims that the rags were from Tunbridge Wells, where small-pox was prevailing at the time. There was no small-pox in her neighborhood at the time." Page 207.

"Mrs. Holland had small-pox, which she attributed to some London seconds she had been cutting up. Eight other cases broke out subsequently in the mill. There was in the neighborhood one Henry Styles, a carrier, who had the disease previously; he died of it a week or two before she took it, but he lived three-quarters of a mile away, and had no communication with her." Page 207.

CHOLERA COMMUNICATED BY CLOTHING.

"John Barnes, a laborer, had been suffering for two days from diarrhoea and cramp, when, on the 28th of December, he was taken ill with the symptoms of cholera, and died. The next day, Barnes' wife and two other persons who visited the sick man, were seized with cholera, but recovered. The son of the deceased man then arrived; it appears he had been apprenticed to his uncle, a shoemaker in Leeds, and that his aunt died of cholera fifteen days before, her effects having been sent to Barnes without having been washed. The trunk containing the things had been opened by Barnes in the evening, and the next day he was taken ill, and died." "Lancet," Vol. II., page 109.

"In 1854 cholera was not known in the County of Bedford, when it broke out in the village of Ridgmont, and eleven cases occurred, all of which were fatal. It was ascertained that the first case occurred in a man whose son had died of cholera in London a week or two before, and whose clothes were sent down to the country. The poor man unwrapped the bundle of clothes himself; he was seized with the disease and died. This case was the nucleus of the others. An instance of similar nature was reported from Lustheim, near Munich, where the first case of cholera was generated in the house of a laborer, one of whose daughters was in service at Munich. The latter sent her parents clothes belonging to a family some members of which had just died of cholera; these

old clothes were at once appropriated and worn; three days afterwards (September 21, 1854), the father and mother were seized with cholera and died; on the 22d and 25th other members of the family took the disease. Dr. Lebert reports the case of a man who was attacked with cholera, having worn the clothes of a person who had died of the disease two months previously." Page 224.

"On the 24th of December, 1848, a woman and two children died of cholera in Suon Fields, Southwark. The clothes of the children were sent to Boston for the use of a third child living with its grandmother. The old lady and child unpacked the parcel, and both were attacked with cholera. There were no other cases in Boston until eight months afterwards." Page 383.

"It is well authenticated that during the epidemic in the United States in 1873, cholera was introduced in effects of emigrants. The vessels which brought them were in perfect sanitary condition. Passengers were healthy, and remained so after landing, and until they reached Carthage, Ohio, Crow River, Minn., and Yankton, Dak., where their goods were unpacked. At each place within twenty hours after poison particles were liberated, the first case appeared."

If the contagion of cholera may be preserved in clothing for weeks and months, why not in rags?

From the collection of the works of the "Comite Consultatif" of Public Hygiene, Paris, 1883, Vol. XII., Page 83. Council of Public Hygiene, Dr. Vallin, Reporter. (Translation.) Depository and Sorting Warehouses for Rags:

"Rag-sorting is done on a vast scale in the department of Oise, particularly at Criel. The quantity of material which comes to the warehouses has a value of 1,500,000 francs per annum."

"An epidemic of variola which devastated the Arrondissement in 1877 and 1878, has been attributed by Dr. Boursier, member of the Council of Hygiene in the Arrondissement of Senlis, to the propagation of variolous virus by the rags."

"About July, 1878, five sorters of rags working in the warehouse at Criel were attacked with small-pox; they conveyed the disease to their relations and neighbors; their soiled clothing infected the proprietor and workers in a floating laundry. The course of the epidemic could be followed from its point of origin to twenty communes."

"The deaths at Criel, Montataire and Nogent were twenty-two; in the Arrondissement, forty."

"On the occasion of an application for a permit for the erection of a new sorting warehouse at Criel, Mr. L. Febvre, of Farque, Secretary of the Council at Senlis, has given very interesting details of the hygiene of the buildings for and the operations of rag sorting."

"The warehouses at Senlis use between them 5,000,000 kilograms of rags. These are separated into four or five kinds by women, chiefly young girls."

"Garments, by chance whole, are taken by the class of unmarried working people who are destitute of resources."

"Others, which have been patched or worn too much, serve for wiping-cloths for the machines in factories."

"All white goods, linen or cotton, are destined for the paper mills, except a slight amount of linen deducted for charpie or surgical dressings. The best is sent to English paper mills on payment of the customs."

"Colored fabrics, cotton or half linen, are also the subjects of a minute classification, and the refuse is sold as waste. The rest passes to the weavers for manufacture into new fabrics."

"The dust raised by this sorting is horrible and infective; this dust contains, sometimes, virulent germs. Disinfection of the rags should be made. Some desire this to be done at the place of origin, at the place where the rag is received for transmission abroad; others demand disinfection at the place of destination, in the port of entry, which is the only practical measure for cargoes coming from the East by way of the sea."

"But they fear that the expense will be high for the wholesale dealer in rags, who is only a warehouse keeper, and who makes a first sorting in order to sell the different kinds to the various industries."

"Of the Commissioners appointed to examine the demand in question, one Dr. Boursier, Health Officer, "believes neither in the fitness nor efficiency of measures directed against the establishments at Criel," but is a partisan of preliminary disinfection of rags in the family—a view which is entirely too Platonic; the other, the reporter, proposed the following conclusion: "

"The Council considers that sanitary measures which some object to, and which the police might impose on families attacked with contagious diseases, would not be sufficient to preserve the sorting warehouses at Criel, which would always be in danger; that the virulent germs could be carried outside the warehouses by the workers, either in the form of dust or in the state of incubation."

"That incubation could only occur in non-vaccinated or non-revaccinated persons.

That in regard to the rag-sorting warehouses at Criel, the Prefect should be requested

1st. To order a thorough washing of the floor every eight days.

2d. To order the workers to wear an over-garment which is to be removed before going out."

3d. To permit no one to be employed in these works unless they have been vaccinated or re-vaccinated inside of ten years."



"4th. To apply these measures to the warehouse in question."

"The permit was given under the conditions here cited, which nevertheless seem insufficient.

We read in the report which they made, about a small deduction from the linen rags for the manufacture of charpie and dressings. One cannot think without horror that, perhaps, this unwashed charpie will be used to dress an amputation of the thigh in some hospital where Listerism is not used. Is not this a new reason for the definite banishment of charpie from hospital supplies, and its replacement by lit washed charpie?"

"New York Medical Journal," August 29, 1885. Letter from Dr. Sonderegger, President of the Swiss Aerzte Commission :

"The fact in relation to rags was observed and described by Prof. Biermer (living now at Breslau as Professor of Practical Medicine), and by Dr. Zehnder, Vice-Director of the Board of Health (Sanetatsrath), who were both most active at the time of the cholera in Zurich in 1867.

Kreegsliten is a small village in the Canton of Solothurn, at 80-100 kilometres distance from Zurich, not connected with this town either by water or by trade and industrial commerce.

There is a paper-mill at Kreegsliten, and a working-woman, who had to tear the rags, was attacked suddenly with cholera, and died the following day. The following days sixteen more workmen (all occupied in tearing rags) were taken sick; of these eleven died.

A careful examination showed that all of the rags went from Zurich and from cholera houses; therefore, the whole mass of rags was disinfected by boiling. After this no case of cholera occurred. The large establishment of the paper-mill, as well as the village, remained free. I mentioned the fact in a little address to the Swiss people, which I have the honor to send you, and nobody doubted the fact or made any opposition. The fact was known everywhere in Switzerland."

State Board of Health, Michigan, 1882, Allegan County, page 393 :

Dr. B. Thomson, Health Officer of Plainwell, reported on April 15, 1882, small-pox contracted while working in a paper mill, from which three other cases originated.

Sixth Annual Report State Board of Health, Connecticut, 1883; General Report :

Small-pox, page 22.—"The disease was several times introduced by tramps, more often by emigrants brought up from New York for domestic or out-door service, and a few times by paper rags. This is the principal danger from the latter source, as shown by the investigation made by the Board a few years ago, and perhaps the only one that is liable to occur at any time. As New Haven is the chief port of entry for the State, and one of the three principal ports of entry for rags in the country, the chief danger will occur there. The recent action taken by the City Board of Health requiring disinfection of rags from infected ports is a proper safeguard, especially as Massachusetts and New York have local regulations on the subject."

Secretary's Report, page 225 :

In Manchester and Windsor Locks there were several cases (small-pox) infected from paper rags, and in the latter place the disease broke out the second time in the same locality.

State Board of Health, Michigan, 1881. Secretary's Report. Proceedings of Board, July 12, 1881 :

"Dr. Jackson mentioned the formation of a Sanitary Association at Pontiac, and said there was need for such effort there. He spoke of the spread of small-pox by an immigrant tramp-burglar, who communicated the disease to another prisoner. The clothing left in the pest-house was supposed to have been disinfected, having been treated for that purpose, the pest-house locked up and labeled. The clothing was stolen, however, and the disease communicated to sixteen persons by it, and the disease still further spread by them. He said the information as to what constitutes disinfection was much needed there; and it was owing to inefficient disinfection that the disease was conveyed by the clothing."

Also, page 295—Prevention and Restriction of Small-pox :

Section 22, Rags—"No person should handle old clothing or rags without taking precaution to prevent the spread of communicable diseases. Children should not be allowed to go near a rag-picker's collection; nor into the rag rooms in paper mills or storehouses."

Fifth Annual Report, Mass. State Board of Health, 1877. Article headed Health of Towns. Answer of correspondents, page 548 :

West Springfield—We, in common with the rest of the State, suffered from small-pox, originating in the rag-picking room of one of our paper mills, and spreading rapidly, from there being no care to isolate the sufferers."

Conn. State Board of Health. Fourth Annual Report, 1881 :

Sect. says in report of small-pox—"One or two instances where paper stock was the medium of conveying the contagion, should have been mentioned."

State Board of Health, Mich., '78, page LXII. :

"June 6, 1878, William Simonds, M. D., Health Officer of Warren Township, Macomb County, reported details of twenty-three cases of small-pox occurring from February 1 to May 17, 1877. In some of the cases the disease was derived from clothing from the city; in some cases from the paper mill. Of the twenty-three cases, seven died."

Annual Report State Board of Health, Wisconsin, 1882. Secretary's Report—page 53—Small-pox :

“A single case, the origin of which could not be ascertained, occurred in City of Appletonx. It was conjectured that infected rags at one of the paper-mills caused the case, a relative of the patient being employed in the sorting-room of one of these establishments.”

Page 58. Dr. Grasmuck, of Menasha, writes as follows :

“A case of variola was discovered here (Jan. 21) to-day in about the sixth day of development. It had been kept hidden, and many have been exposed ; the disease was probably contracted at the paper-mills.”

National Board of Health, “Bulletin,” Vol. I, No. 44. Washington, D. C., Saturday, May 1, 1880 :

“Ypsilanti, Michigan.—Dr. E. Batwell, Health Officer of this town, reports to the State Board of Health two cases of small-pox in which the contagion was ascribed to rags at the paper-mills. A girl working in a paper-mill and her brother, who was daily about the rag-room, were seized with variola at the same time. Several neighbors were exposed before the nature of the disease was made known. As soon as the State Board of Health was informed of the cases, Dr. H. B. Baker, the Secretary, visited them and enforced the proper measures to prevent the spread of the disease.”

Massachusetts State Board of Health, 1873, page 463 :

Extracts from table showing cases of small-pox in the State of Massachusetts in 1872 and February, 1873, such table being made in pursuance of Order passed by House of Representatives, January 21, 1873 :

CITIES AND TOWNS.	No. OF CASES.		PROBABLE SOURCE OF INFECTION.
	1872.	February, 1873.	
Adams.....	34	..	Paper rags.
Blackstone.....	10	..	“
Cummington.....	19	..	“
Dighton.....	17	..	“
Fitchburg.....	24	1	“ and Boston.
Holyoke.....	32	..	“
Huntington.....	3	..	“
Lee.....	14	1	“
Montgomery.....	6	..	“
West Boylston.....	1	..	“
West Springfield.....	12	4	“
S. Hadley.....	8	..	Holyoke.
Dalton.....	6	..	Lee.
Total.....	186	6	

Total for thirteen months, 192.

Second Annual Report Wisconsin State Board of Health, for the year ending December 31, '77. Extracts from communications of correspondents by the Secretary of the Board :

P. 140, Menasha—“During the year ending September, 1877, the City of Menasha was visited by an epidemic of small-pox, extending from December, 1876, to May, 1877, assuming in progress a severe form. During that period about seventy cases occurred, with a proportion of deaths of nearly one to six. From May to December several more cases were reported, but no deaths, most of the cases assuming a mild form. The epidemic originated in the paper-mills at Menah, and the cases occurring in Menasha all sprung directly or indirectly from that source. The first two cases that came under the care of a physician fell into my hands. They were young women, eighteen to twenty years of age, who had been working in one of the paper-mills at Menah, and had never been vaccinated. Had the proprietors been more thorough in enforcing vaccination

among the employees, I am certain the epidemic would not have been so widespread. So late as the 26th of April I attended a case that originated in one of the mills. The patient had worked there two months or more without being vaccinated."

141st page, Menah—"Beginning in November, 1876, simultaneously in this city and Menasha, small-pox continued, with short periods of intermission, through the winter and well into warm weather, in the spring. During this time there were in this city some twenty unmistakable cases, the mortality being light; while in the neighboring City of Menasha the number of cases is estimated at sixty, with a much larger proportion of fatal cases.

"In both places the original and principal source of infection was the paper mills.

"In view of these facts it must seem, even to the laity, as if some special legislation should be had, compelling the thorough disinfection of all paper stock before allowing it to come to the mills for assortment."

Also, same report, page 95. Supplementary Report on Small-pox, by E. L. Griffin, M. D., of Fond-du-lac, President:

"In Neenah and Menasha the disease was believed to have been communicated by means of paper rags brought from Milwaukee. There were three distinct cases in as many different families which were reported at the same time, being three girls who were employed in sorting rags in the paper mills. During the course of the season there were new cases from time to time, emanating from the mills. This special origin of small-pox indicates a special and peculiar danger from infectious and contagious diseases to a community in which paper mills are located, and calls for unusual vigilance and hearty co-operation on the part of the proprietors of such establishments, and the citizens."

In reply to inquiries made touching this source of danger, Dr. J. R. Barnett, of Neenah, writes:

"I have given the question of rag disinfection some thought, and in a recent communication to the Secretary of the State Board of Health, I advised the procuring of legislation compelling disinfection before rags can be handled in paper mills.

"As to the particulars of such a bill I have thought but little, but there can be as little doubt as to the practicability as there is to the desirability of suitable legal restrictions upon the trade in and handling of paper stock.

"Most of the stock used in the Neenah mills, of which there are four, turning out an aggregate product of ten to twelve tons per day, requiring fifteen to twenty tons of rags, must of necessity come from abroad. The large cities are the depots and principal primary source of supply, because it is in the cities alone that the small economy of rag-picking and saving is reduced to a science; at least what is gathered into the 'junk' shops from the country is turned into the mass and baled up with it, sharing its various kinds and degrees of infectiveness without adding any element of safety. The bales thus sent out of the paper mills are infernal machines for the dissemination of zymotic poisons.

"There are few cities of 100,000 inhabitants and over where small-pox is not in perennial bloom. There are consequently few consignments of rags to paper mills that are not at the same time consignments of potential small-pox to the community possessing the mills.

"This statement is none the less true because it happens only occasionally that the mill operatives contract the disease. The women in the rag-rooms are exposed to the danger of contagion almost every working day of their lives, and the community is at the mercy of the chance which dooms or spares the rag-women.

"Safety for the community can be secured only in one way, namely, by the thorough disinfection of rags before they are allowed within its corporate limits. There are various ways by which the law may provide for this disinfection.

"It may provide that all warehouses for the accommodation and storage of rags shall be remote from centres of population, and that dealers shall disinfect under established rules before baling their rags for the jobbing market; or it may provide for disinfection by the manufacturer. Under any system it should make the sale of infected rags an offense punishable by the severest penalty.

"It may be a question whether every incorporate city has not the power, under existing laws, to provide for its own safety and to adopt any system of quarantine that it pleases. If cities already have this power it is clear that special legislation will be required compelling them to use it so far as it is not used, and the proverbial tenderness of all city governments for the various industries of their respective towns make it doubtful whether they could ever impose restrictions hampering in any degree their prosperity. The State should, therefore, remedy the neglect by such legislation as cannot be evaded."

If the suggestions of Dr. Barnett were accepted and acted on by proprietors of all such industries in the State, and an inviolable rule established by which all operatives in such establishments should be excluded who did not present a written certificate from a competent physician giving assurance of the thorough protection of the bearer by vaccination, very much would be gained to the corporations and to the community in which they are located.

Variola caused by Infected Paper Rags, by F. B. A. Lewis, M. D. (Horr), of Watertown, N. Y. "Boston Medical and Surgical Journal," Vol. I., 1875, page 647:

"Having read the article in the 'Journal' of April 22, 1875, concerning a recent exanthema in Boston, I thought it possible that a notice of the cases of eruptive diseases which have occurred

in this city during the past few weeks might not be uninteresting in connection with the above-mentioned article. On the first appearance of these cases to be detailed, they were considered by me to be those of Rothelu as described by Drs. Cutting and Swan, but they terminated in an undoubted form of variola."

Ten cases are referred to by the writer, and the symptoms described at length; the writer further adds:

"Recurring to the first cases, they are supposed to have been caused by exposure to twenty bales of rags which were brought from California, ten bales having been received January 28, and ten February 5. These rags were sorted by twenty-one girls in one large room, seven of whom were attacked at about same date. The superintendent of the room stated to the writer that the rags were moist, and had a peculiarly disagreeable odor, and many bandages, poultices, some entire articles of underwear, stained as though from the persons of invalids, were found."

"The writer has observed that the vessel bringing these rags to New York City was not quarantined; that the bales were not stored with many others which were forwarded to the mills of another country, and although made into paper, no complaint was entered. Some of the employees here who actually handled the rags were not affected, while others working on other material on the opposite side of the room succumbed to the disease; and even two or three who were in other parts of the mill, but who came into the assorting-room on an errand, took the disease. About forty cases have occurred in all, and thirteen or fourteen have died. The mortality was mostly confined to those first attacked."

"This attack has appeared to be very irregular or mixed, and not in any way like the ordinary form of variola, as seen by the writer while in charge of your Quarantine Hospital in 1860. Had the cases been attended by a single physician, and the fact that all the patients had been employed in a paper-mill been known, possibly the disease might have been suspected earlier. But four days elapsed before notes were compared. However, no apparent harm was done by the delay.

"I refrain from further comment on the cases, as readers interested in the subject will see, without doubt, some instructive points in the time and mode of attack, the severity of some of the cases and the mildness of others, the strange recovery in the one and malignancy in the other. It appears also that even these hasty notes cannot fail to call the attention of the younger members of the profession to a possible source of a disease which, especially in the rural districts, brings panic among the people."

#### OPINIONS OF MEDICAL MEN.

From the "Medical Record," June 20, 1885. Rags and Infectious Diseases. Editorial:

\* \* \* "The opinion of these officers (health), and of the best health authorities generally, is that imported rags should sustain careful inspection and, if need be, disinfection. The best method of securing a sanitary history of the rags—and that is what the ship should supply—have not been devised, and therefore, some trouble must for the present ensue. It is much wiser and more economical meanwhile to be on the safe side, and Health Officer Smith will get the hearty support of the profession and the laity if he takes firm ground in defense of the public health.

"It should be remembered that cholera is not the only danger which we must avoid. Whether it has ever been imported in rags or not, other diseases, almost as destructive, have been so conveyed."

Letter from E. Hoffmann, Austrian delegate to the International Sanitary Conference at Rome, 1885; member of Committee on Disinfectants.

AUGUST 11, 1885.

"Very Honored Colleague—In reply to your highly prized letter, which I received yesterday, I report as follows:

"I hold, rags which come from regions infected with cholera exceedingly dangerous, not merely because they may be soiled with cholera dejections, but especially because they hold in the interior of the bales the infectious material longer than might otherwise be possible, for the dejections, etc., dry out only slowly and the warmth favors the growth of microscopic organisms. On the whole, there takes place in this respect the very same process which is also to be observed in single rags, where the infectious material is kept moist a longer time in the folds, or in places where it is more closely laid together, and keeps the microscopic organisms contained therein much longer in a condition to multiply.

"In Austria, whenever the cholera breaks out in another country, the importation of rags is imperatively forbidden. Special regulations about the disinfection of rags do not exist, and only general directions for disinfection are enforced.

"I, myself, would employ only heat (steam) and complete aëration. It is of the highest importance in this matter to see to it that only thoroughly dried rags are packed in bales and brought into trade. With reference to the so-called "rag sickness," which, in my opinion, is a form of anthrax, and which affects especially the workers in paper factories who open bales of rags and perform the first work upon them—sorting and cutting the rags—I have required that the rags before

their manufacture should be treated with superheated steam, then spread upon a grating and thoroughly dried."

Dr. Geo. M. Sternberg, whose researches and studies in relation to germ, producing diseases have secured him an enviable reputation both in this country and Europe, writes as follows :

"It is difficult to make a general rule which will be just to those engaged in importing rags, without taking any risk so far as the public health is concerned. But it seems to me that there will be less injustice in a rule to which no exceptions are made, than in leaving the matter to the individual judgment of the health officers of our several seaport cities." \* \* \* "I am satisfied that the below-named infectious material could be transported across the Atlantic in bales of rags, without any loss of specific infectious power, viz. : Articles infected by contact with patients having yellow fever, small-pox or scarlet fever, or with the germs of anthrax (malignant pustule) symptomatic anthrax (black leg) pleuro-pneumonia of cattle, and tuberculosis" \* \* \* "When we consider the degraded condition of the rag-picker in the populous cities of Europe and Asia and the localities in which their collections are largely made, it seems to be beyond question that infectious material of various kinds must frequently find its way into the bale of rags which is shipped to this country. I am therefore in favor of disinfection of all old rags by the very simple but effective method of subjecting them to superheated steam."

The Health Officer of Ypsilanti, Michigan, in a report to the Secretary of the State Board of Health of Michigan, says :

"Before closing this report, I would desire briefly to allude to the source of the small-pox in this city. In most all cases it has been directly traced to those engaged in picking over rags in our paper mills. The larger portion of those rags, particularly the best linen 'stock,' are imported in bales from France, Italy or Germany. One can easily imagine that we have here a never failing source of contagion, and that these rags collected from all sources—hospitals, pest-houses, etc.—form a germ from which many of our epidemics originate." \* \* \* "Cannot some remedy be devised or some means be introduced to disinfect these rags, previous to sending them on their mission of death and disease through the United States?"

This was written in 1876. It cannot therefore be claimed that this opinion is the result of recent discussions concerning old rags or from "cholera scare."

In reference to the last case of small-pox reported from Ypsilanti, the Secretary of the Michigan State Board of Health says :

"It originated in the rag-room of one of the paper mills, and proved fatal the third day after the eruption appeared. I am very confident that contagious diseases may be spread in this way. Scarlet fever is frequently reported in this office as contracted from old clothing disused for weeks or months, but previously in contact with the sick."

If clothing that has been in contact with the sick may convey the contagion of scarlet fever after "weeks or months," it is much more probable that this disease, or small-pox, the contagion of which may be carried thousands of miles, and infect months after it has been given off by its victim, may be communicated by the rags which are thrown out of the sick room into the garbage barrel or into the street, and gathered by the rag-picker with as little scruple and care from the gutters that reek with filth, as from the refuse from the residence of the rich.

Dr. T. C. Minor, whilom health officer of Cincinnati, recently addressed the following letter to the "Commercial Gazette" of that city :

"The day is not far distant when Congress must enact a law absolutely prohibiting the importation of rags, unless in consular certificate that the same have been exposed to a temperature of 212 degrees Fahrenheit, by boiling. Nine-tenths of the outbreaks of zymotic diseases in the United States may be tracked to the doors of the rag and old-clothes men, and the sooner the American people realize this fact the better for all concerned. No conscientious and honest rag-importer, with the good of his fellow-countrymen at heart, can possibly object to the sanitary inspection of his stock. The objectors to the present Treasury Department rules should be marked—they seek to fill their pockets at the expense of the health and lives of their neighbors.

"The last year's rags from cholera-infected Marseilles and other Mediterranean ports will soon arrive, unless the Treasury Department prohibits their import. Are the rag and old-paper importers willing to assume the responsibility of introducing such material into our crowded American cities?"

"You state at the conclusion of your Washington dispatch that 'the paper men believe that Secretary Manning accepts their view of the matter and will come to their relief.' They are reluctant to cause public agitation of the matter, however, as that invariably results in the presentation of the other side of the question in equally strong terms by sanitarians."

It is generally understood that Dr. John C. Peters has given much attention to the history of cholera. When a reporter asked him recently whether it was likely that cholera could be brought here in baled rags, he is reported to have said :

"I should be afraid of them. I should be afraid of those last Japanese rags that they are making such a fuss about, for although there has been no recent outbreak of cholera in Japan, it prevailed there some years ago, and it is a matter of general knowledge that rags will retain the

cholera germ for a long period of time. Of course they will not hold cholera as long as they will small-pox, but we don't want small-pox or any other infectious disease any more than we do cholera.

"Then, too, it must be borne in mind that even though rags may come from a port where cholera has not prevailed, that is not a guarantee that they do not contain the deadly germs, for people move about from place to place, and from country to country, carrying with them old clothing which afterwards go into rag-bales. It is, therefore, quite possible for a family from a cholera district to go into a previously unaffected place, and if they do not develop the contagion there, to send it thence in the rag-bale. It has been of frequent occurrence that cholera has been carried to far away countries in old clothing. For instance: In 1867, the disease broke out in the heart of South America, and this was pointed to as an evidence that it could be generated on American soil. Those who were informed on the subject knew that this could not be so, for it never existed here except through importation. Inquiry was set on foot, but it was not until several years afterwards that it was shown that the disease had been brought from Genoa, Italy, to Brazil, in the clothing of some Italian immigrants. Last year two ships arrived from Genoa, at Brazil, with people from a cholera district, but the Brazilian authorities had been taught a lesson from which they profited. The ships were not allowed to land, but had to go back to Italy, and South America escaped the cholera at that time.

"The history of the breaking out of cholera in Spain last year is interesting, and positively sustains the theory, or fact, rather—for so it has come to be accepted—that the disease is carried in old clothing. It all came from one family that, trying to escape the rigid quarantine, shipped from Marseilles down to Algiers, and from there shipped to Alicante, in Spain. Their clothing, of course, had not been disinfected, and shortly after their arrival the disease broke out in Alicante. It lingered there during the winter, and has since been doing deadly work."

In compliance with the request of the Surgeon-General of the United States Army, Dr. Sternberg gave the following opinion:

BALTIMORE Md., March 20, 1885.

*To the Surgeon-General U. S. Army, Washington, D. C.:*

GENERAL—In compliance with instructions contained in a communication dated March 19, 1885, and with the request contained in the inclosed communication from the Honorable Secretary of the Treasury, I have the honor to submit the following opinion:

My studies relating to disease germs leave no doubt in my mind as to the possibility of the importation of the germs of cholera, malignant pustule, small-pox and yellow fever in old rags, whether baled or otherwise.

The germs of malignant pustule (anthrax) may be preserved indefinitely without losing their virulence, and we have ample evidence that the germs of cholera, of small-pox and yellow fever may be preserved in infected clothing or bedding for a considerable time—exactly how long a time has not been determined.

That such infected articles could be preserved in bales of rags can scarcely be questioned, and it seems apparent that they are likely to find their way into the rag-picker's collections during the epidemic prevalence of these diseases, especially in countries where there is no organized sanitary supervision.

Very respectfully,  
Your obedient servant,

GEORGE M. STERNBERG, Major and Surgeon, U. S. A.

*To the Editor of the "Evening Post":*

SIR—In the "Evening Post" of September 1, you state: "There is no authentic case on record of cholera having been conveyed in rags, but great pains have been taken to alarm the public, through the telegraph and press." There is a case in the record of my memory as follows: In the summer of 1849, a whole family, somewhere in northern Indiana, died with cholera. The clothing of that family was packed late in the spring of 1850, and sent to some relatives in Castalia, O., who opened the box and used the clothing. This latter family was attacked with the disease, the first case there, and through them the cholera spread through that village and the surrounding country, and was very fatal."

"I could cite several instances during the prevalence of cholera, in the visitations of 1832 and succeeding years, and in 1849 and following years, where cholera was carried by persons having contracted the disease where it was epidemic to places otherwise free, and places perfectly healthy in every other respect and all other seasons. It was carried from Maysville, Kentucky, on the Ohio river, to West Union, Ohio, seventeen miles distant, about 1834 or 5, a town entirely free of all malaria, etc. It was carried from Columbus to Mt. Vernon, Ohio, in 1850, by a gentleman who had a severe attack in Columbus in 1849, and recovered that year. He died with the disease in 1850,

in Mt. Vernon, one of the healthiest places in Ohio. Either in 1849 or 1850, a large number of Irish laborers were engaged in the building of the Central Ohio Railroad on the east side of Walnut Creek, seven miles east of Columbus, at a large embankment. They were all perfectly healthy until late in the season, when a woman arrived there infected with the disease and died, and it spread among the laborers and many died. The first case, in 1849, in Columbus, was that of a citizen who visited Cincinnati, where it was epidemic, contracted the disease there and was attacked on his return home and died, and a few others took it from him, when from their excreta, etc., the atmosphere became infected and the disease became epidemic."

"It seems to me that the greed of importers and dealers in rags has more influence on their opinions than a humane regard for the public welfare. I had hoped that the prohibition of the Treasury Department of the importation of rags would have been continued until either the disease had spent its force in Europe or appeared here as an epidemic. From close observations of the visitations of 1832, etc., and 1849, etc., I became satisfied that cholera was contagious from the excreta and clothing of the sufferers."

"Cholera is a cold disease, very much aggravated by fear. Courage, quiet, keeping warm, etc., no cold drinks, all water drunk boiled, no exposure to night air, I observed were material aids in the prevention of attacks of this disease. Most of the attacks begin in the night. It comes in two forms—one very violent ending in death in from two to five hours, incurable—the other insidious, beginning with a mild, painless diarrhoea, which should be attended to at once and a physician called, and is curable generally if properly attended to in time. I have no expectation that cholera can be kept out of the United States, but still it may be delayed perhaps in coming until its virulence has somewhat abated."

S. BRUSH.

CANANDAIGUA, N. Y., September 3, 1885.

Dr. Sayre, formerly Resident Physician of the City of New York, when asked what articles he was particularly suspicious of, is reported to have said: "Well, more than anything else, the packed-up clothing of immigrants, and the rags that were brought from infected districts. That last, by the way, is a matter that should concern us very much about these days, if there are to be any importations from the neighborhood of Marseilles, Madrid and other infected localities or ports where trans-shipments from such ports could be made. Not only would there be danger now, but for many months to come."

"Revue d'Hygiene," Paris, 20th of May, 1885; by Dr. G. Pouchet:

Page 392—"When we think of the varieties of merchandise coming from abroad, and their more or less prolonged stay in the warehouses, or the masses, often considerable, accumulated in damp places which favor the development of inferior organisms, we have reason to be surprised that their immediate use does not more frequently occasion contagious diseases or local troubles, such as phlegmous, an example of which I saw in a workman, who, having an excoriation of his hand, wrapped the injured part in a piece of rag, apparently clean."

Our colleague, Dr. Napias, related in this excellent "Manuel d'Hygiene Industrielle," epidemics of small-pox breaking out among the workers manipulating old rags.

"A decree of March 15, 1879, issued on the advice of the Comite Consultatif d'Hygiene Publique de France, rendered obligatory the disinfection of rags, old clothes, paper rags, etc., coming from foreign countries, particularly from the East, from Egypt and Algeria, and limited this importation into France by the maritime channels to the ports of Marseilles, Panillac, St. Nazaire and Cherbourg, alone provided with apparatus and sufficient means of disinfection."

"M. Lecourteux and Garnier, in their machine shops in the St. Oberkampf.—In July last, at the time of the rumors of the invasion of cholera, these manufacturers, ignoring entirely the source of the rags which they used, decided to submit them to the action of steam before utilizing them. After some experiments they adopted the following process. Since that time each new delivery of rags is thus treated before being distributed to the workers, etc. The process is then described by Dr. Pouchet, and consists in putting them in a copper boiler with a double bottom, pierced with holes, and steam introduced under a pressure of three atmospheres."

"The following discussion on the paper of Dr. Pouchet ensued: M. Lunier called attention to the fact that formerly the skin diseases were frequently in the "Maisons Centrales," where the prisoners are occupied in sorting woolen rags. It is no longer so, since the contractors have been obliged to previously disinfect the rags with sulphurous acid."

"M. Vallin thinks with M. Pouchet that it will be easy to disinfect the rags with steam before submitting them to the operation of sorting and tearing, which are very dangerous. One can scarcely understand why like measures were not adopted with the paper manufactories where neither heat nor steam pressure are wanting. But what is of more importance, and more difficult, is the disinfection of rags on their entrance on the frontier or in our ports. The danger is at Marseilles, because the rags come from eastern countries, where the filth is excessive, and pesudential diseases of all sorts prevail. For many years they have sought means for rapid disinfection of the large compressed bales before allowing them to be taken away by the railroads; now these bales are looked into, if

not opened on the dock, and the rag dealers deduct samples, which are handled and scattered through the city. M. Pasteur thought that these bales could be traversed by a current of sulphurous acid gas without opening them, by means of an ingenious arrangement, which M. Raulin was so kind last year as to send us the description and the design of."

"M. Olliver : It is not alone in the workhouses, but also in the storehouses of rags that disinfection is necessary ; diphtheria, variola, scarlatina, etc., have been observed around this hot-bed."

"M. Gariel believes that it is difficult to cause a gas to pass through rags compressed by hydraulic pressure."

"M. Pouchet : It is impossible to disinfect in the storehouses ; among them are some too low ; the only and true solution which this question allows is the suppression of storehouses in Paris."

"British Medical Journal," Vol. II., 1884, p. 629. September 27, '84. Imperial Board of Health, July 29, 1884 :

"Concerning the case quoted by Prof. Leyden, Prof. Hirsch said, that in the town of Muhlhausen, in Thuringia, there were nine cases of cholera, four of them proving fatal in the cholera epidemic of 1873, all of which, with the exception of one case, belonged to one house. The house was inhabited by six families, numbering twenty-three persons, three of the families, numbering eleven, inhabiting the basement floor. Behind the house was a drain of a closet, which was used only by the inhabitants of the basement, other water-closets existing for the inhabitants of the lower stories. The first case, which took place on August 26, was that of a woman who had come a few weeks before to Muhlhausen from St. Louis, in the U. S. A. via N. Y., Hamburg and Bremen, but had only received the things she had brought with her from America about the beginning of August. Among these effects were some soiled linen which she sent to be washed, and some confectionery which she and her sister, in whose house she was living, partook of. A few days afterwards the newcomer was attacked with cholera ; then her sister ; her child and her grandmother also had severe attacks of diarrhoea, and soon afterwards cases of cholera occurred amongst the other families inhabiting the basement ; so that, out of the eleven persons inhabiting the basement, only two escaped the disease, and four died of it ; whilst four amongst the inhabitants of the upper stories, who had afforded the sick persons assistance, who also took charge of the old woman and the child, who had become ill, not one case of cholera occurred. That at the time when the effects left St. Louis, cholera had been raging especially severely, in the quarter of the town, too, from which they came, has been accurately proved. The appearance of cholera in that house in Muhlhausen, where there had been no case till then, after the arrival of the luggage, induces the reporter of the case to believe that the specific poison of the disease was introduced with the baggage, and that the further spread of the disease amongst those inhabitants of the basement, who had not come in contact with the things, was explained as infection from the closet used in common by the inhabitants of the basement, the dejecta of the first patient having been thrown into it."

Dr. Hirsch said : "An interval of from four to six weeks between one case of cholera and the outbreak of an epidemic caused by personal effects, was completely recognizable with Dr. Koch's views."

Dr. Koch possessed dried anthrax material which was still efficacious after twelve years. In small-pox, infection sometimes took place after a year, or longer, and the vaccine could be preserved in a dry state for years. Linen packed together could still remain damp after the lapse of some weeks, and thus contain vital comma-bacilli.

"Annales d'Hygiene Publique," March, 1885. By Prof. Brouardel. Preservation of Europe from Exotic Diseases. Extract, page 239 :

"This cholera patient, scarcely affected, leaves his home, goes where his occupation calls him, disseminates everywhere his dejections, sometimes over great distances, and these contaminated matters can poison the air we breathe or the water we drink."

"Page 241—The linen which has been polluted by the dejecta of cholera patients are powerful agents of propagations, sometimes direct when by the contact of the hands one carries the germ to the food, when one breathes the effluvia, or indirect when the people drink the water below the wash-houses."

"In order that you may understand the importance of this question, let us cite two examples :"

"Page 242—The epidemic of Yport.—The sailors arriving from Newfoundland, absolutely healthy, debarked at Hetta, where the cholera was raging. Some died. They decided to return by the railroad to their native country, Fecamp and Yport. One of them died at Parascon ; his trunk continued the route, remained eight days on order at Paris, went to Yport, an old woman opened it, emptied it, and washed the clothes ; she died two days after and created a focus far from all communication with any other centre. The soiled linen had been the only means of contact."

Are the germs of cholera of long vitality ?

"You will acknowledge the importance of this question. At every turn they ask us shall we have the cholera in the spring ? We must answer that we know absolutely nothing about it. In those determined conditions these germs have indeed a very persistent duration of life. Thus Dr. Brown



of New York reports a woman of sixty-seven years died of cholera during an epidemic. Ten months after there had been no more cholera in the country the husband opened a trunk which contained the clothes of the woman, to give them to his niece. "That man died the next day of cholera."

The presentation of this matter to the extent that has been done, finds its justification in the fact that it is a subject which has enlisted the minds of many of the most eminent of the health authorities of Europe and this country, because it is believed that it involves the exposure of the protection of the public health to greater or less degree.

~~The presentation of~~ The difficulties which attend the restrictions on articles of commerce at our quarantine necessary for the preservation of the public health, are too numerous to mention. With the opinions of those whose names have been mentioned in this article, and a reference to some of many instances of disease that has been communicated by old rags, the regulation which requires that all old rags should be disinfected here or elsewhere before entering the Port of New York is respectfully submitted.

WM. M. SMITH, Health Officer, Port of New York.







Department of Health, Education, and Welfare, Public Health Service, Washington, D.C.

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