

Dr. H. Timbrell Bulstrode's report to the Local Government Board upon alleged oyster-home enteric fever and other illness following the mayoral banquets at Winchester and Southampton, and upon enteric fever occurring simultaneously elsewhere and also ascribed to oysters.

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Dr. H. Timbrell Bulstrode's Report to the Local Government Board upon alleged Oyster-borne Enteric Fever and other Illness following the Mayoral Banquets at Winchester and Southampton, and upon Enteric Fever occurring simultaneously elsewhere, and also ascribed to Oysters.

W. H. POWER,
Medical Officer,

14th May, 1903.

On December 16th, 1902, a telegram was received from Dr. Lockhart Stephens, Medical Officer of Health of the Warblington Urban District in Hampshire, stating that there were several cases of enteric fever at the town of Emsworth, and that, from information derived from Winchester and Southampton, Dr. Stephens had reason to believe that specifically infected oysters were being imported into these towns from Emsworth, and were causing enteric fever therein.

The Board also received about this time information from other sources to the effect that cases of enteric fever had occurred among guests at the mayoral banquets at the two towns here in question. It was stated, too, in the public press that cases of enteric fever had occurred at Portsmouth which had been attributed by the medical officer of health to the consumption of oysters, and on December 17th a telegram was received from the Sanitary Committee of the Portsmouth Corporation drawing the attention of the Board to the outbreak referred to.

In consequence of this information I was instructed by the Board to proceed to the several places mentioned to investigate the circumstances, and to report thereon.

I now give an account of the facts which I elicited at each place, and of the investigations subsequently made relative thereto.

THE MAYORAL BANQUET AT WINCHESTER.

On November 10th, 1902, there took place at the Guildhall, Winchester, a dinner to the ex-mayor, 134 guests being present.

Of these 134 guests, nine had, at the date of my visit on December 17th, developed enteric fever, as also had one of the waiters who officiated at the banquet, and who partook of a certain item in the menu. Of these 10 persons, two,* including the waiter, were already dead. I gathered, too, from the Mayor and from members and officials of the Corporation who were present at the Guildhall at my preliminary conference, that, in addition to the 10 cases of enteric fever, there had been, among persons present at the banquet, numerous cases of gastro-enteritis of varying degrees of severity.

The cause of these cases of illness had not then been definitely determined, although suspicion had, it appears, fallen upon both the soup and the oysters consumed at the banquet, while, by some, the mischief was ascribed to other articles on the menu.

* Two more died subsequently, making four fatal cases in all.—H. T. B.

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It appeared to me desirable that an exhaustive inquiry should be made with the object of ascertaining, if possible, what article or articles of diet might have been responsible for the outbreak.

I therefore suggested to the mayor and the medical officer of health that a copy of the menu in the form shown in the appendix (pages 20 and 21) should be forwarded to each of the guests, and that they should be asked to state of what articles of the menu they partook, whether they suffered any indisposition or illness shortly after the banquet and, if so, the nature of such attack; and also whether they ascribed it to the banquet.

My suggestion was at once adopted, and after a considerable lapse of time, caused mainly by the serious illness of several of the guests, the information was procured, which is tabulated in Appendix No. 1 (pages 22-28).

I may add that I also visited, in company with the medical officer of health of Winchester, several of the cases of illness other than enteric fever, and that I called upon each of the medical practitioners who had been in attendance upon the enteric fever cases.

In the table in the appendix the articles partaken of by each guest at the banquet are tabulated, the cases of *illness* being printed in italic, and the cases of *enteric fever* being differentiated by means of black type. An asterisk is placed against the initials of those attacked with gastro-enteritis and a † against the initials of those who suffered from enteric fever. I would draw special attention to these tables as they serve to show at a glance the very considerable amount of illness following the banquet.

I have made an analysis of this table, and I herewith arrange the results in tabular form. In enumerating the cases, those articles against which a ? was placed by the guest have been omitted, such units having been reckoned neither among the consumers or non-consumers of the articles in question. This appeared to me, after consideration, to be the fairest manner of dealing with the doubtful factors.

Out of the total 134 guests no less than 62, or 46.3 per cent., were attacked with illness of some kind or other.

Of the 63 persons (inclusive of the waiter) who became ill—

2 did not take oysters.			
At least	23	"	" clear soup.
"	40	"	" thick "
"	38	"	" smelts.
"	23	"	" turbot and lobster sauce.
"	15	"	" sweetbread and spinach.
"	51	"	" kidneys and mushrooms.
"	50	"	" boiled mutton.
"	45	"	" roast "
"	50	"	" roast beef.
"	37	"	" venison.
"	44	"	" red currant jelly.
"	56	"	" capons.
"	50	"	" ham.
"	54	"	" tongue.
"	43	"	" turkey.
"	27	"	" pheasant.
"	50	"	" partridge.
"	48	"	" Sir Watkin Wynn pudding
"	52	"	" Charlotte russe.
"	46	"	" liqueur jellies.
"	54	"	" caramel cream.
"	57	"	" maraschino cream.
"	47	"	" meringue.
"	19	"	" ice.
"	32	"	" cheese.
"	46	"	" salad (celery).
"	45	"	" aerated water.

The enteric fever cases considered separately.—Of the 10 cases of enteric fever—

All the 10 took oysters.

At least 5 did not take clear soup.

"	4	"	"	thick "
"	6	"	"	smelts.
"	2	"	"	turbot.
"	1	"	"	sweetbread.
"	6	"	"	kidneys and mushrooms.
"	5	"	"	boiled mutton.
"	5	"	"	roast "
"	6	"	"	" beef.
"	5	"	"	venison.
"	5	"	"	currant jelly.
"	7	"	"	capons.
"	6	"	"	ham.
"	7	"	"	tongue.
"	5	"	"	turkey.
"	1	"	"	pheasant.
"	5	"	"	partridge.
"	5	"	"	Watkin Wynn pudding.
"	5	"	"	Charlotte russe.
"	7	"	"	liqueur jellies.
"	7	"	"	caramel cream.
"	8	"	"	maraschino cream.
"	5	"	"	meringue.
"	6	"	"	ice.
"	3	"	"	cheese.
"	5	"	"	salad.
"	3	"	"	aërated water.

The advantage of the scheme thus adopted is that, so far as enteric fever is concerned, it is permissible to exclude every article on the menu with the exception of oysters, so that from this point of view it is unnecessary to enter at any length into the composition, or the source, of any other articles in the menu.

It may, however, be stated that, with regard to illness generally, the matter has been thoroughly gone into, and in the appendix (page 29) will be found the precise composition and the source of each article which went to make up the menu.

With respect to the turtle soup, which is one of the items to which suspicion had locally attached as causative of indisposition if not of actual illness, it is clear, seeing that at least 23 of those who were taken ill did not partake thereof, that no reasonable suspicion can attach to it. It was alleged that the "stock" from which the soup was made was prepared in copper vessels which had not been recently tinned, and that directly after the banquet these same vessels were sent by the caterer to be re-tinned. As the figures already given will, I think, suffice to show that neither of the soups was the source of mischief, I do not propose to discuss the matter further, nor do I propose to deal with each article of the menu separately. Such a discussion, in face of the evidence above set forth, is superfluous.

Additional data.—It occurred to me in the first instance that enquiries relative to the waiters and other attendants who were present at the banquet should furnish evidence which might be put to use in tracing out the cause of illness, and, consequently, forms of enquiry were sent to each of the attendants.

Forty-two returns were received in this connection, exclusive of the waiter who contracted enteric fever and died, and who is included in the list published in the appendix, but it has to be observed that the waiters partook of only a few of the articles which formed part of the general menu.

Among these 42 attendants only eight took oysters, and none of these suffered from enteric fever. But if for the moment, the dead waiter be included, it is found that there occurred one case of enteric fever among nine oyster eaters, which is about the same percentage incidence as upon oyster-eating guests, i.e., nine cases among 113 oyster-eaters. In the matter of illness other than enteric fever there was but one case of indisposition, and that was a waiter who placed a ? against oysters, and who was "taken very sick with dysentery for the next two days," and who continued more or less unwell for a week afterwards. It is clear, therefore, seeing that among 43 waiters there was but one case of enteric fever and one case of illness, that among these attendants some factor was absent which was operative among the guests.

The ladies in the gallery.—A few ladies were present towards the end of the banquet, and they were furnished with light refreshments by the caterer.

These refreshments consisted of sandwiches, bread and butter, cakes, coffee, and strawberry ice cream. The constitution of the ice cream was the same as that of those used for the guests, and hence it seemed that the information under this heading might prove of use. These ladies were kind enough to fill up the forms which were sent to them, and from these it appears that none of them suffered any indisposition.

The observed nature of illness suffered by partakers of the banquet.—A study of the notes on the table in the appendix (pages 22-28) will show that persons who suffered from illness following the banquet may be divided into four groups:—

- (a) Those who suffered from gastric pain, vomiting, and diarrhoea a few hours after the banquet.
- (b) Those who suffered from an attack of gastro-enteritis three or four days after the banquet.
- (c) Those who suffered from enteric fever. *which can be confirmed*
- (d) Those who suffered from vomiting and diarrhoea shortly after the banquet, and also, later, from enteric fever.

How far was illness, enteric fever or other, occurring in Winchester at this particular time referable directly or indirectly to the banquet?—Although it may seem somewhat superfluous to discuss this question it is desirable that the connection of the banquet with the illness shall be reasonably established before proceeding further.

Now the banquet, or rather the presence of the guests at the Guildhall on November 10th, was, as far as could be ascertained, the only factor common to the lives of all those who were subsequently attacked. It was, however, necessary before the connection of illness with the banquet could be logically arrived at to enquire whether there had been after the banquet any general prevalence of enteric fever and gastro-enteritis among persons who had not been present at the dinner. But as far as could be ascertained all the cases of enteric fever and gastro-enteritis which occurred in Winchester immediately subsequent to the banquet were among persons who were present at the banquet; indeed it will be seen by the next section that there were but very few cases of enteric fever in Winchester during the last six months of 1902.

The prevalence of enteric fever in Winchester.—It is of particular importance to ascertain how many persons there were suffering from enteric fever in Winchester at or about the time of the banquet, but who were not present at such banquet.

Dr. Langdon has been good enough to furnish me with a list of the cases notified in Winchester during the last six months of 1902. From this list it appears that, excluding the ten cases among persons who attended the banquet, there were only seven cases notified as enteric fever in Winchester since the end of June, and that of these seven cases four were in all probability imported, while one person was subsequently found not to have had enteric fever. Of these seven persons, therefore, probably only two contracted their disease in Winchester.

The cases of enteric fever notified in Winchester during the last few years have been as follows :—

1898	...	...	3 cases.
1899	...	...	3 "
1900	...	...	2 "
1901	...	...	18 "
1902	...	...	19 " (10 in connection with banquet).

The sanitary condition of the houses invaded by enteric fever.—As a matter of routine the sanitary condition of the houses in which the enteric fever cases occurred was examined by Mr. John Lord, the Winchester Inspector of Nuisances. He reported that in seven of these houses the condition was "satisfactory." In three there were sanitary defects, and there were also sanitary defects in the business premises of one of the patients whose private house was in a "satisfactory" condition.

The milk supply in relation to the enteric fever cases.—The ten invaded households were supplied with milk from six different sources so that there was obviously no sufficient ground for attaching suspicion to the milk supply.

The sanitary condition of the Guildhall.—It might be contended that the outbreak was due to defective drainage arrangements in the Guildhall itself. I therefore examined the plans of the drainage, and, in company with the Medical Officer of Health and Inspector of Nuisances, went over the building. The drainage is not modern, and there were certain defects to which I called attention and which will, I believe, be remedied. But these defects would not be at all likely to have caused the remarkable and unique explosion of illness with which I am now dealing.

Moreover, had the sanitary condition of the building been responsible for the illness which is in question, there would be difficulty in explaining why such defects exercised their influence almost without exception upon the consumers of one article of diet, or why the ladies in the gallery, and the waiters, were practically exempt from attack, and why, further, such an explosion should not have taken place in connection with other aggregations of persons in the same hall.

The oysters consumed at the banquet.—The caterer to the banquet informed me that the oysters consumed were procured through a local fishmonger, and that they were neither handled by him nor were they sent in transit to his place of business. Intermediate handling of them by the caterer might, had it occurred, possibly have been a point of considerable importance, as will be seen later.

The fishmonger from whom the oysters were procured by the caterer stated that he in turn obtained them from an oyster merchant at Emsworth on November 10th, the day of the banquet. These oysters were delivered to the fishmonger's shop in Winchester, "given a drink" of salt and water, opened at the shop, brought down to the banquet on their flat shells on a tray, and forthwith spread out by the waiters on the plates, *three* oysters being placed before each guest.

The oysters were what are known in the trade as "Best French," *i.e.*, they were oysters imported into this country from France, to be laid down or stored in our waters. In this instance the oysters had, I ascertained subsequently, come originally from a source other than Emsworth, and they had been stored in the ponds at Emsworth for only a few days.

Although it appears from the returns sent in that one or two of the guests did not altogether approve the oysters placed before them, a scrutiny of the table in the appendix (pages 22-28) will serve to show that the oysters were more generally patronised than any other article on the menu.

But certain of the guests only ate two oysters, and one of those who subsequently developed a fatal attack of enteric fever only took *one* oyster. Another enteric fever patient remarked at the time of the dinner that he did not like the oysters, and yet another that "one of the oysters was bad."

A case of enteric fever in the caterer's family.—In order that all the evidence bearing upon the case may be fairly set forth, it is necessary to refer to the fact that a son of the caterer was attacked with illness about a week after returning from Cowes on August 12th, and that he was found in the first week in September to be suffering from enteric fever, which it is believed that he contracted from eating oysters at Cowes.

The patient was isolated on the top floor of the caterer's private residence, a large modern house in the suburbs of Winchester. He was nursed by two trained nurses, and after the termination of the illness his room, bedding, &c., were disinfected. Such disinfection was carried out on November 1st, and the evidence points to the fact that his case had no causal relation to the outbreak here under consideration. I make mention of it, however, to show that the question of the possible infection of the oysters after they left the ponds has not been lost sight of. As I have already pointed out, the oysters were not handled by the caterer or by any of his family, nor did they even go to the Guildhall *via* the caterer's place of business.

Summary as regards Winchester.—The foregoing facts combine to form a very strong presumption that the illness here in question was caused by the banquet, and that the only item taken at the banquet capable of affording an adequate explanation of the attacks of illness which followed was the oysters. The fact that two* of the guests who did not take oysters were attacked with illness after the banquet by no means suffices to negative the evidence tending to incriminate the oysters. As regards any feat of the magnitude of the Winchester banquet it might reasonably be expected that some of the guests would suffer indisposition afterwards; indeed, it may be regarded as probable that a few of those who were ill, but who also took oysters, may in point of fact owe their illness to something other than the oysters.

THE MAYORAL BANQUET AT SOUTHAMPTON.

The mayoral banquet at Southampton took place at the South Western Hotel, Southampton, on Nov. 10th, 1902, and there were in all 132 guests. Out of this number ten subsequently developed enteric fever, as also did one of the attendants at the hotel who had partaken of certain articles on the menu. In addition to these eleven cases of enteric fever there were a number of cases of gastro-enteritis.

At the date of my visit to Southampton the enteric fever in question had already been ascribed to the oysters: the evidence indeed accumulated by Dr. Lauder, the medical officer of health, had appeared to him so strong that he had reported the matter to the Local Government Board, and was about to issue a notice warning persons against the danger of consuming oysters from the locality where they had been derived.

I deemed it, however, expedient that the problem at Southampton should be attacked on the same lines as that at Winchester, and Dr. Lauder was good enough at once to fall in with my suggestion that a circular in the same sense as that used at Winchester should be forthwith despatched to each of the guests. Although a large number of the returns were sent back to the medical officer of health with promptitude, tabulated in his office, and forwarded to me, complete information was only in our hands at the end of January.

These Southampton returns, which have been arranged in tabular form in Appendix No. 2, suggest that the mischief which followed the Southampton

* Mr C— was quite well after the dinner on November 10th, but on November 12th and 13th he suffered from abdominal pain. He had no nausea. For a fortnight prior to the banquet he had suffered from constipation, and shortly before the dinner he had taken an aperient. Mr. C— would not have attributed his illness to the banquet had there not been a rumour that several cases of illness had been caused by it.

Mr F— was quite well until November 15th, when he suffered from a rigour, had a temperature of 102°, rapid pulse, furred tongue, and pain and tenderness in the hepatic region; some vomiting. He had no diarrhoea. His illness lasted about a week.

banquet was almost parallel in nature and magnitude to that which occurred after the Winchester banquet, *i.e.*, the number of guests was nearly identical, there were eleven cases of enteric fever and, besides, many cases of gastro-enteritis. Moreover, as at Winchester, one of the attendants was attacked.

It will be seen on a further analysis of the table—in which the cases of illness are distinguished by italics, the enteric fever cases being also, as in the Winchester record, printed in thick type—that excluding from the categories of the “Ill” or “Not Ill” all the doubtful factors, there were, besides the eleven cases of enteric fever, 44 cases of illness. That is to say, 55 out of the 133 guests (including the waiter) were attacked subsequently to the banquet with indisposition of some sort—*i.e.*, 41·3 per cent. of the guests suffered illness.

On an examination of the articles of food partaken of by each of the Guests who were attacked by illness the following facts appear :—

All cases of illness grouped together.

54 of the 55* took oysters.

At least	6	did not take	turtle soup.
“	14	“	“
“	34	“	boiled turbot.
“	20	“	filleted sole.
“	12	“	sweetbread.
“	28	“	roast lamb.
“	21	“	beans.
“	12	“	pommes mouseline.
“	19	“	neige au champagne.
“	20	“	cigarettes.
“	36	“	pheasant.
“	26	“	quail.
“	32	“	potatoes.
“	37	“	salad.
“	39	“	burgomeister pudding.
“	39	“	Charlotte à la Prince de Galles.
“	45	“	chocolate.
“	22	“	rice.
“	14	“	ice pudding.
“		“	dessert.

Enteric fever cases separately considered.

All of the eleven took oysters.

At least	2	did not take	turtle soup.
“	4	“	“
“	7	“	boiled turbot.
“	5	“	filleted sole.
“	3	“	sweetbread.
“	5	“	roast lamb.
“	4	“	beans.
“	3	“	pommes mouseline.
“	6	“	neige au champagne
“	4	“	cigarettes.
“	8	“	pheasant.
“	4	“	quail.
“	8	“	potatoes.
“	7	“	salad.
“	6	“	burgomeister pudding.
“	6	“	Charlotte à la Prince de Galles.
“	9	“	chocolate.
“	7	“	rice.
“	5	“	ice pudding.
“		“	dessert.

* The exception was number 46, F.J.D., who returned himself as having suffered “slight abdominal pain” after the banquet.

As to the illness suffered by the 55 Southampton people—An analysis of the notes in the table in Appendix II. (pages 31-39) will serve to show that as at Winchester, so at Southampton, the sufferers may be divided into four separate groups :—

- (a) Those who suffered from illness a few hours after the banquet.
- (b) Those whose illness did not take place until three to five days afterwards.
- (c) Those who suffered from enteric fever.
- (d) Those who suffered from illness a few hours after the banquet, and who, in addition, developed enteric fever later on.

Alike, therefore, at Winchester and Southampton there appear to have been poisons of an analogous nature at work ; and the results obtained may have been brought about by—

- (a) A toxin already formed in food, and capable of producing toxic symptoms within a few hours, or, conceivably some rapidly acting bacteria capable of producing the same manifestations.
- (b) An infection of the food by bacteria requiring some three or four days to produce in the human body sufficient bye-products to bring about toxic symptoms.
- (c) Presence in food of the specific bacteria of enteric fever requiring one, two, or three weeks, or thereabouts, to give rise to symptoms of enteric fever.
- (d) A mixed infection of the food by a ready-made toxin, or possibly some rapidly acting bacteria, and by enteric fever bacteria, the toxin or bacteria manifesting their effects on the consumer in the one case in a few hours, in the other after a considerable period of incubation had elapsed.

How far was the illness at Southampton referable to the banquet.—It is possible on the facts recorded to eliminate from consideration the vast majority of the articles consumed at the Southampton banquet, and reasonable suspicion can alone attach to the oysters and the turtle soup. Before, however, discussing these articles of diet, it may be mentioned that, locally, some suspicion was in the first instance attached to the beans, which, it was alleged, were tinned. But a reference to the table will show that at least 28 persons of the 55 who were ill did not partake of beans. Moreover, the enquiries which were made satisfied both Dr. Lauder and myself that the beans were not tinned, but that they were, on the contrary, fresh hot-house beans, for which a high price had been paid.

Passing now to the oysters and the turtle soup.

The oysters.—It will be seen by this table that with one exception all those who were attacked with illness of one or another description took oysters, and that the one guest who was ill, but who took no oysters, suffered from "slight abdominal pain." It may, I suggest, be fairly said that all attacked with illness took oysters, and this article of food was the only one common to all those so attacked.

The turtle soup.—Of the 55 persons who were taken ill at least six did not partake of turtle soup, a fact which in itself goes far to negative belief that the illness was in any degree due to this article. In the appendix will be found a list of the articles out of which the "stock," which formed the basis of the turtle soup, was made. The process of preparing the "stock" renders it necessary that the compound shall be actually boiled on more than one occasion, and this fact renders it improbable that the soup was the cause at any rate of the enteric fever or other bacterial infection. As to illness of other sorts the tinned turtle used in this instance was of West Indian origin and prepared by a French firm, and the specimens of this which I was shown were quite "fresh" and the tins not "blown." The *chef* to whom I spoke upon the subject seemed fully alive to the danger of using a "blown" tin, *i.e.*, a tin the ends of which are distended by gas. There is every probability that the turtle used had been properly sterilised. Moreover, there was no complaint as to the quality of the soup. Nevertheless, it is theoretically possible that one of the ingredients of the

soup may have contained ready-formed toxins which the boiling was insufficient to destroy; indeed, but little is known as to the effect of heat upon toxins. But, even if this were so, a theory of this nature, improbable as it is, would not account for the bacterial infection which, in my view, was responsible both for the later developing gastro-enteritis and for the enteric fever.

The oysters supplied to the Southampton banquet.—The oysters consumed at this banquet were obtained by the caterer from a firm of local fishmongers who, in turn, procured them from the same firm at Emsworth as that which supplied the Winchester banquet.

On November 10th, 1,000 oysters were sent from Emsworth to the fishmonger who supplied the Southampton banquet. These oysters, like those consumed at Winchester, were of French origin, and they had, so I was informed, been relaid on certain English grounds. They had been sent from those grounds to Emsworth, and stored in the ponds there until wanted. The oysters in question are known in the trade as "French, 1st quality," and they were described on the menu as "Huitres de Whitstable."

These oysters arrived at Southampton from Emsworth at about three o'clock on the afternoon of Monday, November 10th, and they were sent in the same package as that in which they arrived to the South Western Hotel, where they were opened, the "lift man" who was subsequently attacked with enteric fever assisting in the process. The oysters were opened in the basement of the hotel, and they were sent up in the lift to the small kitchen which adjoins the hall in which the banquet was held.

About 600 oysters were opened, and the remainder were returned to the fishmonger who supplied them. It will thus be seen that the oysters which were supplied to the Southampton guests were derived from practically the same source as were those which were furnished to the guests at Winchester.

The enteric fever cases.—Of the eleven persons, including the "lift-man," who attended the banquet and who were subsequently attacked with enteric fever, eight were inhabitants of Southampton, and their illness was in due course notified to the medical officer of health.

One of the three remaining cases lived at Cirencester, in Gloucestershire, another at Woolston, and another at Swathling. In fact there was an approach here to the phenomena observed in the well-known outbreak of enteric fever which occurred at the Wesleyan College, Connecticut, of which a full account is given in the supplement in continuation of the Report of the Medical Officer of the Local Government Board.*

Other enteric fever cases which occurred in Southampton about the same date among persons who were not present at the banquet.—Besides the eleven cases which attended the banquet, there were other cases which were notified to the medical officer of health between December 8th and 15th, and the following is a summary given me by Dr. Lauder of such cases:—

Date of Notification.	Initials.	Age.	When taken ill.	
December 8	W. L. ...	20	December 1	Ate Emsworth oysters November 28th at a shop.
" 12	F. A. F. ...	23	" 2	Fishmonger.
" 16	S. W. ...	44	" 7	Ate Emsworth oysters in a shop November 17th.
" 9	M. B. ...	18	November 28	Ate Emsworth oysters from time to time.
" 9	A. W. ...	4	" 29	—
" 9	G. C. ...	9	" —	Admitted from outside borough.
" 9	K. G. ...	22	December 4	Nursing patients with enteric fever for considerable time before and up to her attack.
" 11	E. M. ...	19	November 27	Ate Emsworth oysters November 12th.

* "On Oyster Culture in Relation to Disease." Supplement in continuation of the Report of the Medical Officer for 1894-5. Twenty-fourth Annual Report of the Local Government Board.

Writing to me on December 24th, Dr. Lauder mentions that another case of enteric fever had occurred in Southampton in a person who had eaten Emsworth oysters.

Negative evidence as regards oysters furnished by the Southampton banquet.—It will have been noticed that some 400 oysters were returned from the South Western Hotel to the fishmongers who supplied them. An endeavour was made by Dr. Lauder to ascertain what became of these oysters, but as it was only after December 18th, *i.e.*, five weeks subsequent to the banquet, that the fact of the return of so many oysters became appreciated, there was difficulty in following up the matter. Dr. Lauder was informed of six places to which these oysters were said to have been sent, and enquiries were made wherever possible. No information was, however, procurable, save in respect of a certain banquet which took place at Southampton, on the 13th of November, and which was said to have been supplied with some of the oysters which were left over from the mayoral banquet. Enquiries were made of the guests present, and of the 32 who replied 18 had partaken of oysters. Of these—

One replied :—

In bed 15th December. Pain in small of back, T. 102°, and shivering, but was out next day. Illness not attributed to banquet.

Another replied :—

Pain across shoulders, chest, and stomach; lassitude. Illness not attributed to banquet.

A third, who did not state whether he took oysters, replied :—

On 19th and 20th November had severe headache with feverish symptoms. Not definitely ascribed to banquet.

No great importance is to be attached to this negative evidence, even assuming that the oysters in question to have been part of the batch of 1,000 supplied to the mayor's banquet (and it will be seen later how great was the difficulty in obtaining reliable information). They had been kept for three additional days, and possibly during that time the enteric fever bacillus, assuming it to have been present in some of them, may have perished. As regards other forms of illness such as gastro-enteritis, it is to be observed that there are no means available for determining its prevalence; in only a few cases would medical assistance be sought, and it is improbable that such attacks would be brought to the notice of the medical officer of health.

The efforts therefore, which were made after December 18th to determine whether or not harm had resulted from the consumption of the 400 oysters remaining over from the mayoral banquet on November 10th were unsuccessful.

The sanitary condition of the South Western Hotel.—Shortly after the banquet Dr. Lauder turned his attention to this matter, and as a result of his investigations he reported to the sanitary committee that there was nothing in the sanitary condition of the hotel which would be likely to account for the outbreak. I subsequently inspected the drainage myself, and I am quite in accord with Dr. Lauder on this point.

The sanitary condition of the invaded houses.—The sanitary condition of these premises has been carefully gone into by Dr. Lauder, and he has kindly furnished me with the following facts :—

Initials.	Premises.	Remarks.
G. H.	Carlton Crescent	Drains tested; no defects found.
T. J.	Bargate Street	Do. do.
W. H. R.	Westwood Road	Do. do.
J. F.	Polygon	Drains tested; no internal defects found.
G. F.	Belmont Road	Drains tested; no defects found.
J. H.	"Hollyholm"	Do. do.
J. M.	Belmont Road	Do. do.

The milk supply of the invaded houses.—The source from which the milk was supplied was in each case investigated, and the results showed that there was no common source of supply; indeed nearly every house was supplied from a different source.

The behaviour of enteric fever in Southampton apart from the particular series of cases.—As a general rule enteric fever in Southampton is confined to the poorer portions of the town, but in the series of cases here under consideration the incidence has been on portions of the borough in which cases of enteric fever are of rare occurrence.

As affording some indication of the prevalence of enteric fever in Southampton, I submit herewith the notification figures for that disease for each of the five last years, as also the figures for the month of December in the same years.

ENTERIC FEVER.

	Year.	Total Notifications.	Notifications for December.
	1898	154	10
	1899	173	3
	1900	73	4
	1901	106	3
	1902	123	18

Summary of the Southampton outbreak.—After the banquet on November 10th there occurred 11 cases of enteric fever and 44 cases of gastro-enteritis. The only circumstances common to the lives of those thus attacked was the mayoral banquet, on November 10th, a date which would be consistent with enteric fever infection having been contracted at such banquet. On this occasion the only article of diet common to the sufferers—apart from a single and doubtful case which may be disregarded in this connection—was oysters which had been procured from the same sources and at the same date as those that were consumed at the Winchester banquet.

PORTSMOUTH.

Cases of enteric fever in Portsmouth ascribed by the medical officer of health to the consumption of oysters from Emsworth.—In consequence of a telegram which had been received by the Local Government Board from the Town Council of Portsmouth relative to an outbreak of oyster-borne enteric fever in that town, I visited Portsmouth on December 18th, and conferred with Alderman Emanuel, the Chairman of the Sanitary Committee, and with Dr. Mearns Fraser, the Medical Officer of Health. I then learned that there had been 22* cases of enteric fever notified in the borough between November 5th and December 16th, and that all these cases had been attributed by Dr. Fraser to the consumption of oysters procured from Emsworth.

The cases, generally speaking, belonged to a class of persons in comfortable circumstances, although some of the patients were described as "poor."

Dr. Fraser informed me that he had excluded other likely causes of enteric fever, and that oysters appeared to him to be the most probable source of infection. There had, it appears, been no cases of illness following the mayoral banquet on November 10th, although oysters had formed part of the menu.

* Three other cases occurred subsequently, making 25 in all.

As it was a matter of interest to determine the source of the oysters in this instance, the oyster merchant who supplied the oysters was sent for to the town hall. He stated that the oysters in question were procured direct from Whitstable. According to the fishmonger, the oysters came down from London on November 8th and were taken unopened to the banquet. There were 120 guests present at this mayoral banquet, and at a more recent banquet to Lord Roberts there were 280 guests present. He supplied the oysters on each occasion, and in each instance the oysters were supplied direct from Whitstable.

I have, however, reason to believe that, although the oysters referred to above were procured from Whitstable, they were in each instance stored for a short period in the Emsworth ponds. I have had considerable difficulty in ascertaining the facts in this case, but I eventually saw the entries in the books of the Emsworth oyster merchant who supplied the oysters, and he informed me that, as a matter of fact, the oysters in each instance had been deposited in the Emsworth ponds. This illustrates the manner in which a grave injustice may be done to certain oyster layings and beds, and it accentuates the importance of the greatest care being exercised in working out outbreaks of this nature.

My other public duties have not allowed me to enquire personally into the outbreak of oyster-borne enteric fever in Portsmouth, but Dr. Fraser has furnished me with the interesting report which he made upon the subject to the Sanitary Committee of the Portsmouth Corporation, which report is reproduced in Appendix No. 3. Briefly it is to the following effect:—

Between December 4th and 14th the medical officer of health had his attention arrested by the unusual number of notifications of enteric fever, and by the fact that the cases in question inhabited a portion of the borough as a rule but slightly invaded by the disease. Upon detailed enquiry the medical officer of health found that the only factor common to all the cases was the consumption of oysters, and it further transpired that these oysters were taken at a date which was consistent with their having been the cause of the illness. These oysters were procured from Emsworth, a place at which, Dr. Fraser had reason to know, the oysters were liable to be polluted by sewage.

None of the usual vehicles of infection, such as water, milk or other articles of food, were competent to explain the outbreak, nor were there such general drainage defects in connection with the invaded houses that the prevalence of the disease could be reasonably attributed to this cause. Moreover, personal infection was apparently almost imperative in the series under consideration.

Finally, Dr. Fraser was able to ascertain that 18 out of the 25 cases which were notified between December 4th and 21st had consumed oysters between November 10th and 20th, *i.e.*, at a date when, as will be seen shortly, the oysters had opportunity of becoming specifically polluted in the Emsworth ponds.

PLACES OTHER THAN WINCHESTER, SOUTHAMPTON, AND PORTSMOUTH, AT WHICH OCCURRED CASES OF ENTERIC FEVER IN NOVEMBER AND DECEMBER, AND SOME OF WHICH WERE ATTRIBUTED TO THE CONSUMPTION OF OYSTERS FROM EMSWORTH.

Seeing that Emsworth is an important centre for the distribution of oysters to many parts of England, it seemed not improbable that an inquiry at some of the places to which oysters had been sent on or about the date at which the oysters were furnished to the Winchester and Southampton banquets might afford some interesting information. I, therefore, abstracted from the books of the oyster merchants who supplied the oysters to the banquets in question the names of certain of the places to which oysters had been sent on or about November 10th, and I caused to be sent to the medical officer of health of each place a letter inquiring into prevalence of fever and other gastro-enteric illness subsequent to that date.

I furnish in Appendix No. 3 my letter and abstracts of the answers, in a positive sense, arranging these replies in the order in which they reached me, and I would here express my thanks to Dr. Arthur Mitchell, Dr. Caldwell Smith, Dr. W. G. Willoughby, Dr. Arthur Newsholme, and Dr. A. Griffiths, for their kind co-operation. I have omitted from these replies any matter of a confidential nature.

The majority of the replies which I received were of a negative character. No cases of enteric fever had in the localities in question been either traced to or been surmised to have been caused by oysters at or about the date referred to in my circular letter. The fact as it stands calls for some comment. It is in accordance with the experience of epidemiology that usually only a relatively small percentage of those who are exposed to any given infection contract the disease in question. In this connection it has to be noted, that, as will presently appear, the Emsworth oysters, although they have for very many years been exposed to the liability of pollution, are only actually thus polluted at uncertain, probably widely separated, intervals. It is not unlikely indeed that the *majority* of the oysters taken on any given date from the Emsworth grounds would prove incapable of conveying definite infection.

I have had no personal opportunity of investigating the cases referred to in the correspondence in Appendix No. 3, and I therefore refrain from any comments thereon. I may, however, add that it is not improbable, had my circular letter asked for information as to oyster-borne enteric fever generally, and had no specific dates been mentioned, the positive replies might have been more numerous. But my instructions did not cover so wide a field.

The negative replies which I received were from the following places, and I take this opportunity of thanking the Medical Officers of Health of these localities for their kind assistance:—Tunbridge Wells, Newcastle-on-Tyne, Addlestone, Salisbury, Newport (Mon.), Torquay (reply received from Dr. Winter, Chairman of Sanitary Committee), Southend, City of London, Bournemouth, Worthing, Ringwood, Bognor, Fareham, Devonport, Chichester, Lewes, Cheltenham, Worcester, Gosport, and the Croydon Rural District.

VENTNOR.

Dr. Robertson, of Ventnor, has been good enough to furnish me with the particulars of a case of enteric fever under his care, in regard of which the evidence points strongly to Emsworth oysters as having been the source of the infection. The case is of particular interest, owing to the fact that the patient had been under Dr. Robertson's care for chronic bronchitis and emphysema since October 9th; that all she ate and drank had been duly recorded since October 9th; and that she had only been outside the house in which she was lodging on one or two occasions, and then only in an invalid chair.

On October 16th, 16th, 21st, 24th and 27th, and on November 4th, 6th, 10th, 11th, and 14th, this patient partook of oysters which had been procured from Emsworth by the occupier of the house in which she was lodging, no oysters having been consumed either before or after these dates.

This patient of Dr. Robertson fell ill with what proved to be a mild but typical attack of enteric fever on December 3rd. On page 47 will be found the temperature chart of this case.

I am informed by Dr. Woodford, the medical officer of health of Ventnor, that there was no doubt whatever as to the oysters having come from Emsworth, and I was able to ascertain myself at Emsworth that this was the fact. The oysters were not procured from the same merchant who supplied the Winchester and Southampton banquets, but from the merchant who supplied the Portsmouth banquet. In the first instance this merchant asserted

emphatically that the oysters supplied to Ventnor, and which were probably the source of one case of enteric fever, came direct from Whitstable, and had not been stored in the Emsworth ponds; but on being pressed upon this point he admitted that the oysters had been so stored.

THE EMSWORTH OYSTER PONDS.

Reference to the accompanying map will serve to show the position of the Emsworth oyster ponds, and the relation thereof to the Emsworth sewers.

The Emsworth ponds are mainly the property of two oyster merchants, but certain of the ponds belong to the local fishermen, and are used by them solely for storing oysters.

The oysters stored in these ponds are of different kinds; they include French, American, Portuguese, and Deep Sea oysters. These are brought from abroad, or from the sea, and stored in these ponds until they are required for market. In a word, Emsworth is an important distributing centre for oysters of nearly all varieties.

The ponds have been known to me since 1895. I pointed out at that date the dangerous position which they occupied in relation to the Emsworth sewer outfalls. The report which I then made was instrumental in bringing about a small improvement in the condition of affairs. Certain drains which in 1895 discharged directly among the ponds were intercepted and led to the main outfall.

On the map now submitted the ponds from which the oysters for the Winchester and Southampton banquets were said to have been taken are coloured red, as also are those in which the Whitstable oysters which were supplied to the Portsmouth banquet and to the banquet to Lord Roberts are said to have been deposited pending their despatch to Portsmouth. Two ponds are marked red in each instance, because it is not quite clear which ponds actually represent those in which the oysters were deposited.

The drainage of Emsworth.—The house drainage of Emsworth is disposed of partly into privy-middens and partly into catchpits, which communicate in most instances by an overflow with the sewers in the neighbouring streets. The slop-water—including the sink-water, &c.—passes, generally speaking, whether there are privy-middens or catchpits, directly into the sewers. These sewers have been constructed at different dates, and they consist partly of brick culverts, and partly of stoneware pipes. For the most part they are leaky, and their fall, in places, is deficient. They are neither properly flushed nor adequately ventilated.

These sewers now discharge mainly by means of one outfall, which is situated in the channel of the estuary, near to the oyster ponds (*see map*), and which consists of an iron pipe, the end of which is covered with an iron flap.

In addition to this main outfall there are others, some discharging into the river Ems under and near to the bridge crossing the river at the end of Queen Street, and another into the same river at the lower end of King Street (*see map*). As I stated as far back as 1895,* "*It would hardly seem necessary, in view of the relations between the sewer outlets and the storage pits depicted on the accompanying map, to dwell upon the gross contaminations to which oysters here stored must be liable.*"

The behaviour, past and present, of enteric fever in the town of Emsworth.—From a report drawn up by Dr. Lockhart Stephens, the medical officer of health of the Warblington Urban District, it appears that enteric fever has

* "On Oyster Culture in Relation to Disease."

been unduly prevalent in the town of Emsworth for many years. But I do not in this report propose to trace the behaviour of the disease further back than 1895, at which time Emsworth became administratively part of the Warblington Urban District, an area previously within the limits of the Havant Rural Sanitary District.

The number of cases of enteric fever notified annually in Emsworth (population in 1901, 3,637) since 1895 has been as follows :—

Years.							Cases of Enteric Fever.
1895	...	...	...	...	...	...	20
1896	...	...	...	...	...	...	5
1897	...	...	...	...	...	...	7
1898	...	...	...	...	...	...	10
1899	...	...	...	...	...	...	10
1900	...	...	...	...	...	...	12
1901	...	...	...	...	...	...	17
1902	...	...	...	...	...	...	21

The cases occurring during 1902 were notified month by month as follows :—

Month.							Cases of Enteric Fever.
January	...	...	...	...	...	...	2
February	...	...	...	...	...	...	—
March	...	...	...	...	...	...	1
April	...	...	...	...	...	...	—
May	...	...	...	...	...	...	—
June	...	...	...	...	...	...	2
July	...	...	...	...	...	...	2
August	...	...	...	...	...	...	1
September	...	...	...	...	...	...	—
October	...	...	...	...	...	...	3
November	...	...	...	...	...	...	9
December	...	...	...	...	...	...	1

In view of the suspicion which has attached to Emsworth oysters, it will be well to ascertain the position of the houses invaded in the place during October and November, and to enquire as to the destination of the drainage from such houses.

Between October 22nd and December 8th, 1902, there were in all nine Emsworth houses (comprising 13 cases) invaded by enteric fever, and six of such houses were invaded before November 10th. The position of each of these nine houses will be found indicated by a red dot on the accompanying map.

The slop water of infected dwellings, which would be apt to contain the washings from bed linen, etc., as also probably some of the urine, passed in every instance but one into the sewer, and in each case the catch-pit which received the excreta overflowed into the sewer. It may, in fact, be said that every house, save one, communicated in some measure with the sewer, and that specifically infected material from eight out of the nine houses had opportunity of entering the outfall sewer which discharges near to the oyster ponds.

The source of the Emsworth cases of Enteric Fever.—It was not until attention had been drawn to the Winchester and Southampton outbreaks that enquiry was made in Emsworth as to the part which Emsworth oysters may have had in disease causation in Emsworth itself, and at this comparatively late date there was the greatest difficulty in ascertaining the facts owing in no small degree to a disinclination on the part of the people of Emsworth to incriminate the Emsworth oyster ponds. In many of the invaded houses there were it seems, sanitary defects; but subsequent inquiries tended to show that Emsworth oysters were not improbably operative in causing fever in Emsworth to a greater extent than was originally believed. As I had no opportunity of personally investigating the Emsworth cases I do not propose to give a detailed account of them, but I have little doubt from the evidence which I have obtained, but of which I am not able to make public use, that oysters played a not altogether unimportant part in the causation of enteric fever in Emsworth during October and November, 1902.

When Dr. Lockhart Stephens was informed by the Medical Officers of Health of Southampton, Portsmouth and Winchester, of the suspicions which they had formed with regard to the Emsworth oysters, he at once drew the attention of the Warblington District Council to the matter, and urged that a notice warning the public against the danger of eating shellfish from Emsworth should be published. This advice was, however, rejected by the District Council.

SUMMARY OF FACTS BROUGHT OUT BY THIS INQUIRY.

It may be useful at this stage to briefly summarise what are the alleged facts in connection with this altogether unique explosion of illness.

1. *Two* Mayoral banquets occur on *the same day* in separate towns several miles apart.
2. In connection with each banquet there occurs illness of analogous nature, attacking, approximately speaking, the same percentage of guests and at corresponding intervals.
3. At both banquets not every guest partook of oysters, but all those guests who suffered enteric fever, and approximately all those who suffered other illness did partake of oysters. The exceptions to this rule appear insignificant when all the facts are marshalled.
4. Oysters derived directly from the same source constituted the only article of food which was common to the guests attacked.
5. *Oysters from this source* were at the same time and in other places proving themselves competent causes of enteric fever.

CONCLUSION.

The foregoing narrative of facts would seem to establish the strongest possible presumption that oysters which had been deposited for a time at Emsworth have caused the outbreaks of enteric fever and other illness which followed the Mayoral banquets on November 10th at Winchester and Southampton.

It would seem, too, that the series of cases at Portsmouth referred to by Dr. Fraser in his report also contracted their enteric fever through oysters procured from Emsworth; and, from further evidence supplied in this report it would appear that Emsworth oysters may also have been operative in the production of fever in places other than Winchester, Southampton and Portsmouth.

It will, necessarily, be asked: why, if the Emsworth oysters were responsible for the illness following the Winchester and Southampton banquets, no conspicuous illness followed the two banquets at Portsmouth, seeing that the oysters supplied to those other banquets had also been deposited in the Emsworth ponds. It may further be asked why, in view of the long time which the Emsworth oyster ponds have been exposed to sewage pollution, no such occurrences as those here under consideration have been previously brought to light.

The answer is, I think, this. It is only occasionally that enteric fever has been prevalent in Emsworth. On such occasions the specific bacilli in the excreta may not always have escaped the disinfecting process to which the stools are usually subjected, or, if they did thus escape, they failed to maintain their potency for harm in face of the antagonistic influence of other bacteria in the sewer. Or, again, if they survived they may have rapidly perished on reaching the outfall. Laboratory experiments tend to show that the Eberth-Gaffky bacillus has no great expectation of life in sewage, and, furthermore, that it does not, again under laboratory conditions, survive indefinitely in sea water. Nevertheless, laboratory experiments do tend to show that the bacilli in question may survive long enough to reach the Emsworth outfall, as well as, under the topographical circumstances of the Emsworth ponds, long enough to reach these ponds. Laboratory experiments also show that the enteric fever bacillus having once reached the oysters may survive therein sufficiently long to enable the bacillus to pass to the consumer with the oysters.

It is obviously an assumption without sufficient warrant to infer that what takes place in a tank of sea water procured from a certain source will of necessity also take place in an estuary consisting partly of fresh and partly of salt water, which estuary may contain other lower forms of life, animal and vegetable, capable of influencing favourably or adversely the vitality of the enteric fever bacillus. Few competent bacteriologists would, I think, make any such claim, and there is obviously need for further investigation into the fauna and flora of sea and brackish water before we can forecast what, under any given circumstances, will be the behaviour therein of the enteric fever bacillus. However this may be, looking at the outbreaks here under consideration from the epidemiological standpoint, it seems to me to be a matter of practical certainty that some of the enteric fever dejecta which found its way into the Emsworth sewer from one or other of the cases of enteric fever which occurred antecedent to November 10th, did as a matter of fact carry living enteric fever bacteria into the Emsworth channel, which bacteria, on the rising tides, found their way into the ponds from which the oysters supplied to the banquets were taken. What were the circumstances which enabled this infectious material to resist adverse influences until it was carried into the pond or ponds from which the oysters for the Winchester and Southampton banquets were taken, and what the conditions which seemingly safeguarded these ponds during the short time during which the oysters for the Portsmouth banquet were deposited in them, I am unable to say.

Bacteriological examination of the water and oysters from the Emsworth ponds.—When I visited Emsworth in connection with the enquiry now in question I was pressed by the oyster merchants (and I see by Dr. Fraser's report that similar pressure was brought to bear upon him) to take samples of the water and oysters in the ponds and to submit them to the bacteriologist for examination. My reply was that I had been familiar with these ponds since 1895; that I had at that date expressed my opinion as to the dangers to which oysters deposited therein were liable; and that no negative testimony, either chemical or bacteriological, would undo the fact that the oysters were laid down within a few yards of the main sewer. Moreover, a positive result

in either case would be superfluous. This attitude I adopted because I considered that if this outbreak of enteric fever had been caused by the Emsworth oysters, the science of epidemiology should be competent to demonstrate the fact. How far I have—with the hearty co-operation and assistance of Dr. Fraser, Dr. Langdon, Dr. Lauder, Dr. Lockhart Stephens, and others—been able to afford such demonstration may be judged of from this report. Moreover, I had recently seen a bacteriological analysis of alleged Emsworth oysters in which it was stated that such oysters were free from sewage contamination, and the experience which I gained in my enquiry in 1895 had gone far to show me that, at any rate at that date, negative results might be yielded by particular samples taken from situations obviously liable to contamination by sewage.

It is, moreover, not unusual for a sample of water to be taken at the mouth of an estuary, on the top of the flood, and, if this sample is regarded as satisfactory by the bacteriologist, the certificate relating thereto is utilised to cover all parts of the fishery. Clearly, regard should be had to the state of tide, as also to other parts of the fishery from which no samples have been taken. In a word, negative bacteriological evidence may be highly misleading, and, as regards positive evidence, it is desirable that there should be some agreement among bacteriologists as to the precise significance, both as regards presence and number, of *B. coli communis* and *B. enteritidis sporogenes* before a bacterial standard can be applied either with safety to the consumer or justice to the oyster industry.

It may, however, be added that, as a matter of fact, specimens of water and oysters from the Emsworth ponds were examined by Dr. Klein, which, in December, 1902, were found to contain bacteria of sewage origin in abundance, albeit the enteric fever bacillus was not discovered by him in these oysters.

In concluding this report I wish to place on record my indebtedness to a number of persons who have afforded me assistance in connection with this enquiry.

In connection with Winchester, my thanks are due to the Mayor (J. A. Fort, Esq.), the Town Clerk, and Dr. Langdon (the Medical Officer of Health), for their cordial co-operation during the enquiry, as also to all those medical gentlemen who were good enough to afford me information as to cases under their care.

As regards Southampton, I have received very great assistance from Dr. Lauder, the Medical Officer of Health, who took especial pains to furnish me with the numerous details necessary for this report, and I have also to thank the Town Clerk for his co-operation, as well as all those medical practitioners who gave me information as to their cases.

With respect to Portsmouth and Emsworth I have to acknowledge with gratitude the assistance of Dr. Mearns Fraser and Dr. Lockhart Stephens, as also, at the former place, that of Alderman Emanuel, J.P.

I also received assistance from the oyster merchants at Emsworth, and from others whose names space will not allow me to mention, but who will, I trust, accept this acknowledgment of the help they rendered me.

H. TIMBRELL BULSTRODE.

NOTE ON THE STORAGE OF OYSTERS IN SHOPS.

I think that it may not be altogether out of place if I here draw attention to the importance, from the point of view of the public health, of greater care being exercised in the storage of oysters. Although it is unlikely that oysters stored in shops should become specifically polluted by the excreta of enteric fever it is in my view probable—albeit I am satisfied that no such influence

has been operative in the series of cases under consideration in this report—that at least some of the acute diarrhoea and vomiting, which is by no means rarely observed after the ingestion of oysters, may be caused by oysters kept so long in the shops that when sold they are practically moribund.

I do not propose to mention the towns where instances of oysters exposed for sale in a moribund state have come beneath my notice, but I may add that in the course of my experience I have seen multiple examples of this. I can recall an instance in which having examined certain oyster layings, and being satisfied that they were free from sewage pollution, I entered a shop in a neighbouring town to procure some oysters for consumption. Before purchasing the oysters I asked to see them, and I found so many in a moribund condition that I deemed it unsafe to partake of any.

I have recently had a very similar experience, and I am far from satisfied with the manner in which oysters are stored. It is not uncommon to find several dead or dying oysters among those exposed for sale, and it is not improbable that the toxic symptoms observed after the consumption of oysters may, in some cases, be due to this cause. The frequency of these attacks of gastro-enteritis after the consumption of oysters and other molluscs is not, I think, adequately appreciated, a fact which is probably due to the circumstance that such attacks are rarely fatal. Several attacks of this nature have been recorded in this country, and, as regards France, Dr. Mosny has brought together a mass of information in a valuable report which he made on the subject to the French Government.

The shells of all oysters should be thoroughly cleansed by scrubbing before the oysters are placed in a common receptacle, and such receptacle should be constructed of white impervious material, and not used for other purposes. Weak oysters should be at once removed. It is, however, desirable that oysters should be procured daily from the "beds," "layings," or "ponds," and that the shells should be thoroughly cleansed before being despatched therefrom.

The shells of a healthy oyster should be either tightly closed, or, if apart, they should, when the oyster is held flat between the fingers and thumb, be felt to be gripped together by means of the powerful adductor muscle with which the oyster is provided. If the shells gape, and do not at once, and vigorously, close on handling, the oyster should be rejected.

H. T. B.

APPENDIX No. 1.

CONTENTS.

- (a.) Copy of communication sent to each guest.
- (b.) A table showing the articles consumed at the Winchester banquet, and the returns of the illness from which certain guests suffered.
- (c.) A list of the articles used in the preparation of the banquet, and the sources from which they were procured.
- (d.) Notes on the enteric fever cases.

(a.)

Guildhall, Winchester,

December 20th, 1902.

DEAR SIR,

THE Sanitary Committee of the Corporation, acting on the advice of their Medical Officer of Health, are anxious to ascertain certain additional facts with regard to the illness which followed the recent public banquet of November 10th, and they will be much obliged if you will be good enough to supply them with some special information.

There is furnished herewith a form containing a list of the articles of food consumed at the banquet.

You are requested—

- (1.) To place a (+) opposite the articles of which you partook, a query (?) against those concerning which you are not in a position to make a positive statement; no mark against those articles which you did not consume.
- (2.) To answer the questions printed on the form.
- (3.) To return the form filled up, if possible, by return of post, to

T. C. LANGDON, F.R.C.S.,

Medical Officer of Health,

Guildhall, Winchester.

I am, dear Sir,

Yours faithfully,

J. A. FORT, Mayor.

Did you suffer any illness or serious inconvenience after the banquet?

If so, do you attribute such illness to the banquet?

If so, how long after the banquet did such illness commence?

If so, what was the nature of such illness?

Please return to

T. C. LANGDON, F.R.C.S.,

Medical Officer of Health,

Guildhall, Winchester.

	Column for Marks.	Remarks.
Oysters		
Clear Soup		
Thick Soup		
Smelts		
Turbot and Lobster Sauce		
Sweetbread and Spinach		
Kidneys and Mushrooms		
Boiled Mutton		
Roast Mutton		
Roast Beef		
Venison		
Red Currant Jelly		
Capons		
Ham		
Tongue		
Turkey		
Pheasant		
Partridge		
Sir Watkin Wynn Pudding		
Charlotte Russe		
Liqueur Jellies		
Caramel Cream		
Maraschino Cream		
Meringues		
Ice		
Cheese		
Salad		
Aërated Water, which ?		

(b.)
THE WINCHESTER MAYORAL BANQUET.

Number.	Names of Guests										Remark.																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
1	The Ex-Mayor C. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Following day gastric disturbance lasting two or three days.
2*	C. G.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	C. M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	W. H. M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	H. L. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	W. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	G. H. M. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	S. A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	W. P.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	E. V. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	A. J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12*	F. H. K.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13†	E. D. G.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	C. P.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	E. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	C. A. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Violent diarrhoea following day.

No diarrhoea or vomiting after banquet, but attacked by enteric fever about November 28th.

Number.	Names of Guests										Remarks.																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
41	C. S.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Suffered from diarrhoea shortly after the banquet. Recovered from this and developed enteric fever about November 25th. <i>Diarrhoea came on two days after banquet and lasted 10 days.</i>
42	D. T. C.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
43	W. L.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
44	C. R.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
45	M. W.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
46	H. J. A. K.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<i>Sickness and diarrhoea two or three days after banquet.</i>
47	W. S. M.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
48	T. F. K.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
49	N. C. H. N.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<i>Severe diarrhoea commenced three or four days after illness.</i>
50	E. W. P.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
51	J. C. W.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<i>Violently sick night of November 12th, Diarrhoea for two days.</i>
52	E. E. S.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
53	M. J. R.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
54	Dr. B.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
55	S. C.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Diarrhoea November 11th. Later, enteric fever.
56	S. C.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<i>Sickness and diarrhoea, November 12th.</i>
57	C. S.	"	"	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	<i>Sickness and diarrhoea six hours after banquet.</i>

Suffered from diarrhoea shortly after the banquet. Recovered from this and developed enteric fever about November 25th.
Diarrhoea came on two days after banquet and lasted 10 days.

Sickness and diarrhoea two or three days after banquet.

Severe diarrhoea commenced three or four days after illness.

Violently sick night of November 12th, Diarrhoea for two days.

Diarrhoea November 11th. Later, enteric fever.
Sickness and diarrhoea, November 12th.
Sickness and diarrhoea six hours after banquet.

[illegible]

(c.)

MENU.

November 10th.

Article.	
Oysters	Supplied by P. & P., procured by them from Emsworth.
Soups	Stock made from calves' feet, cow heel, shins of beef, knuckles of veal, and fowl. Meat obtained from G. Wright. Flavoured with herbs and vegetables, then clarified. Turtle meat obtained fresh from Crosse & Blackwell, London. Game soup made from above stock, with hare, pigeon, and partridge, all fresh, and giblets of all the same as below.
Fish—	
Smelts and Turbot	Brought fresh from Billingsgate Market by A. C., fish salesman, same morning as dinner. Lobster sauce, made from two tins of lobster from Lazenby's.
Entrées—	
Sweetbreads and Spinach }	{ Obtained from W. T., Leadenhall Market, London.
Kidneys and Mushrooms }	{ Obtained fresh from C. & B., in tins, and unpacked from cask at Banquet Hall. From W. T., Leadenhall, and G. W., Winchester. Fresh from C. & B., in tins.
Joints—	
Boiled Legs of Mutton	Fresh from W. E., Winchester.
Roast Beef	{ Fresh from G. W., Winchester.
Roast Saddle of Welsh Mutton	
Haunch Venison	Given by the Mayor, J. A. Fort, Esq.
Vegetables—	
Potatoes	From the caterer's own garden.
Turnips, Carrots, Sprouts, Cauliflower	Purchased from district market gardener through W. H., Water Lane.
Removes—	
Boiled Capons }	Fresh from C. E. B., Leadenhall Market.
Roast Turkeys }	J. D., Grocers, Winchester.
Hams	W. J., 133a, Great Suffolk Street, S.E.
Tongues	{ From W. H., High Street, Winchester, and P. & P., High Street, Winchester.
Pheasants }	
Partridges }	
Sweets—	
Caramel Creams }	{ Made by the two chefs from fresh cream, milk, eggs, &c. Milk and cream from H. Coombes-Winton.
Charlotte Russe }	{ Crosse and Blackwell's table jelly in bottles, flavoured.
Liqueur Jellies	Made from cakes, bread crumbs, eggs and milk.
Sir Watkin Wynn Pudding	Made from whites of eggs in own bakehouse.
Meringues à la Crème	Made by own pastrycook, from cream, eggs, essences, crystallized fruits chopped and soaked in liqueurs, &c.
Nesselrode Ice Pudding	
	Ices, sandwiches, coffee, &c., supplied to mayor's party in gallery, of about 30 ladies.
	Ices flavoured with strawberry jam and essence made with eggs, cream and sugar, &c., coloured with Langdale's cochineal.
Cheese	Gruyère, Gorgonzola and Cheddar from J. Dyer & Son.
Salad	Celery from caterer's own garden, watercress from W. J., High Street.
Coffee	Made from C. F.'s French coffee.

(d.)

BRIEF SUMMARY OF THE ENTERIC FEVER CASES.

Dr. E.—This patient, who was attended by Dr. Fuller England, suffered from diarrhoea on November 12th. This soon passed off. The patient was, however, never quite well afterwards, and he developed enteric fever at the end of November. The attack proved fatal.

The Very Rev. Dr. S.—Dr. Brown, the medical adviser in this case, informs me that the patient was attacked with diarrhoea and vomiting about 48 hours after the banquet, and his temperature rose to 102°. The patient recovered sufficiently to attend a function at Reading, on November 15th, but it appears that he failed to altogether recover his usual health, and on November 25th, when Dr. Brown's advice was again sought, the patient was found to be suffering from what appeared to be enteric fever, and on December 3rd it was notified as such to the medical officer of health; the case eventually terminating fatally. This patient ate only *one* oyster.

Mr. S.—Dr. Wickham, who attended this case, informed me that the patient suffered considerably from gastric disturbances shortly after the dinner, but that he recovered and attended to his usual duties. On November 25th the patient again consulted Dr. Wickham,

and on November 27th he was found to be suffering from much abdominal pain and diarrhoea. He developed a severe attack of enteric fever, suffered from hæmorrhage from December 8th to 10th, and died on December 16th.

Councillor B. suffered from no illness immediately following the banquet, but he began to feel ill towards the end of November. On December 5th Dr. Applebe, who kindly gave me particulars as to the case, found the patient manifesting all the symptoms of enteric fever. He eventually developed a temperature of 106° and suffered from hæmorrhage and double pneumonia. Although a positive Widal reaction was not obtained in this case there was never any reasonable doubt as to the fact of enteric fever. The failure to obtain Widal's reaction with the patient's blood was ascribed to the gravity of the case and the septicæmic character which it presented.

Councillor G. was taken ill on November 29th, having suffered from no illness immediately after the banquet. The attack of enteric fever was not, Dr. Scott informed me, at all severe, but the patient subsequently suffered from lung trouble and from extensive thrombosis. The case ended fatally on February 15th.

Councillor F.—Dr. Fuller England, who kindly furnished me with the particulars as to this case, stated that the patient suffered no inconvenience immediately after the banquet, but he felt unwell on November 19th, and on November 24th he consulted Dr. England, whose diagnosis of enteric fever was eventually confirmed by Widal's reaction.

Mr. P., who was also attended by Dr. Fuller England, suffered from no inconvenience immediately subsequent to the banquet, but some 15 days afterwards he developed symptoms of enteric fever.

Mr. T. V., who was attended by Dr. Scott, had been slightly unwell before the dinner. Immediately after the dinner he felt more unwell, but he suffered from no diarrhoea or vomiting. This indisposition partly passed off, but he never quite recovered, and on November 24th he apparently became worse, and at the end of the month, when he sought medical advice, he was found by Dr. Scott to be suffering from enteric fever.

Councillor S. suffered from diarrhoea and vomiting shortly after the banquet, and was attended by Dr. Brown. The patient recovered from this attack, but on November 25th, when Dr. Brown was again called in, he found the patient suffering from enteric fever.

Mr. S. C. suffered from pain and diarrhoea the day following the banquet. This lasted several days and returned about November 27th, when patient consulted Dr. Langdon, who found him to be suffering from enteric fever.

APPENDIX No. 2.

- (a.) Table showing the articles of the menu consumed by each of the guests at the Southampton Banquet, and the nature of the illness from which certain of the guests suffered.
- (b.) Table showing the constituents of each article on the menu, and the source thereof.
- (c.) Notes on certain of the enteric fever cases.

(a.)

TABULATION OF REPLIES RECEIVED FROM PERSONS ATTENDING MAYORAL BANQUET AT THE SOUTH WESTERN HOTEL, SOUTHAMPTON, NOVEMBER 10TH, 1902.

Number.	Name.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Remarks.
1	C. H.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	23
2	E. J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	C. H. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	G. S. T.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	F. G. T.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	H. M. W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	On November 12th rash all over body, and feeling of giddiness. Took medicine for a week. Diarrhoea for 14 days after banquet.
7	W. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Abdominal pains on November 11th, 12th and 13th. Diarrhoea 14th and 15th.
8	G. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Abdominal pains and diarrhoea which lasted until November 18th. Acute diarrhoea for two or three days after banquet.
9	C. J. S.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Suffered from diarrhoea a week after banquet.
10	W. M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Felt unwell after dinner.
11	W. H. R.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	A. F. G.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Violent sickness on November 11th and 12th. Quite well in a few days.
13	O. P. H.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	November 12th violent headache with nausea and faintness. Better next day.
14	W. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	J. E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	P. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	T. M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Diarrhoea a few days after banquet.

+ = Article consumed.

- = Articles not consumed.

* = Illness.

† = Enteric fever.

Number.	Name.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Remarks.
1																								23
18	S. H.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19*	W. Z.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	E. J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	W. J. M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	A. J. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	B. S.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24*	R. W. J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Two or three days after banquet had colic, fifth day vomiting. Medical treatment.
25	T. G. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	C. T.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	S. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28*	S. J. L.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29*	R. W. L.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30*	F. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	C. J. H.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32*	W. J. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	F. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34*	H. A. S.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	W. V.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	G. P.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Two or three days after banquet had colic, fifth day vomiting. Medical treatment.

Three weeks after banquet, abdominal pain and giddiness. Under medical treatment.

Diarrhoea November 10th to 13th.

Lassitude and indisposition to work.

Acidity and irritation of stomach for 14 days after banquet.

Excessive diarrhoea November 13th to 22nd.

For three weeks ending December 18th had diarrhoea and flatulency.

Number.	Name.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Remarks.
1																							23
60*	J. M. L.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
61	W. J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
62	F. W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
63*	N. E. A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
64	H. M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
65	A. J. L.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
66	W. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
67	R. A.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
68	H. T.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
69*	S. W. W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
70	M. E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
71	A. E.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
72	W. P. O.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
73	T. L. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
74*	W. D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
75*	W. R. H.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
76	W. B.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
77	J. C.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

November 11th, nausea. Severe abdominal pains night of 13th, with diarrhoea up to the 15th November.

18th November, gastric disturbance and diarrhoea lasting one week.

Abdominal disturbance November 19th.

Abdominal pains a few days after banquet.
December 11th-13th, violent diarrhoea with much sickness.

(b.)

CONSTITUENTS OF MENU OF MAYOR'S BANQUET, NOVEMBER 10TH, 1902.

Articles.	
Oysters...	Brown bread and butter, cayenne pepper.
Turtle Soup ...	Best stock, made of flesh, stock, meat, knuckle, veal, sherry, white wine, fresh carrots and onions, herbs, and turtle.
Boiled Turbot...	Butter, eggs, lemon juice.
Languipière Sauce ...	Yolks of eggs, salad oil, vinegar, gherkins, capers, parsley.
Fried fillets of Sole ...	Sweetbreads, mushrooms, truffle, cocks' combs, white wine.
Sauce Veite ...	Veal, stock, eggs, cream.
Braised Sweetbreads ...	Plain boiled.
Sauce ...	Potatoes mashed in milk, rolled, bread crumbed, and fried.
Roast Saddle Lamb ...	Made with fresh mint.
Fresh grown Beans ...	Whites of eggs, sugar, lemon and orange juice, champagne rum, maraschino.
Pommes Mouseline ...	Roasted and flavoured with cognac.
Mint Sauce ...	Roasted and garnished with truffles.
Neige au Champagne ...	Potatoes cut and fried.
Pheasants ...	Bread crumbs, milk, cayenne pepper, onions.
Quails ...	Celery, beetroot cooked, vegetables (cold), lettuce.
Straw Potatoes ...	Salad dressing of oil, vinegar, eggs.
Bread Sauce ...	Genoise pastry (flour, eggs, butter, sugar).
Salade Sicilienne ...	Custard (milk, eggs, sugar, vanilla).
Pouding Burgomeister ...	Sauce (egg, sugar, sherry), garnished with crystallized fruit.
Charlotte à la Prince de Galles ...	Almond sugar, white of eggs, vanilla, genoise pastry to whipped cream.
Bouche au Chocolat ...	Flour, cocoa, butter, eggs, sugar, milk.
Riz à la Mirabeau ...	Jelly composed of gelatine, water, sugar, cochineal, cinnamon, coreander, maiseetinis. Rice cooked in milk, garnished with crystallized fruit.
Bombe à la petit duc ...	Whipped cream, sugar almonds crystallized fruit, curaçoa, *kirsch.

* A liqueur made from cherries used for flavouring.

Watercress used on several dishes.

The above were all personally inspected by the chef before being used.

Article.	From whom obtained.
Oysters ...	T. and M., High Street.
All Meat—Veal, Lamb, Stock, Meat, &c.	B. & Son, Above Bar.
All Fish—Turbot, Soles, &c.	T. & M., High Street.
Sweetbreads ...	B. and Son, Above Bar.
Cocks' combs ...	From France in bottles.
All Vegetables—Beans, Potatoes, &c.	O. and W., High Street.
Pheasants...	T. and M., High Street.
Quails ...	W. T., Virgo Street, London.
Eggs ...	From different farmers in neighbourhood.
Milk, Cream ...	S. C. Dairies Co.

(c.)

NOTES ON THE ENTERIC FEVER CASES WHICH ATTENDED THE BANQUET.

G. H., 42, who was under the care of Dr. Arlidge, first fell ill on November 26th, and sought medical advice on November 29th. The case was fairly typical of enteric but the patient suffered from two relapses, and he was still very ill on January 9th.

J. F., 51, a medical man, who was under the care of Mr. Purvis, F.R.C.S., was first seen on November 19th, but he continued to perform his professional duties until December 1st. The attack was typical but mild.

J. T. H., aged 53, who was under the care of Dr. Powell, suffered from diarrhoea and vomiting within 48 hours of the banquet. This passed off, but the patient apparently suffered discomfort up to December 15th, when he was notified as suffering from enteric fever. The patient was a total abstainer.

G. F., who was attended by Dr. Ives, was unwell on the day following the banquet and he was apparently somewhat indisposed until November 24th, about which time he was found to be suffering from enteric fever. He was still very ill on January 9th, 1903.

J. M. M., who was also attended by Dr. Ives, felt "queer" on the day following the banquet but he suffered from no diarrhoea or vomiting. He developed enteric fever at the end of November.

J. B., who was under the care of Dr. O'Meara, took oysters at the Mayor's banquet on November 10th.

He was found to be suffering from a mild attack of enteric fever on December 7th.

A. J. S., 20, *liftman at S.W. Hotel*.—Felt ill about November 25th, and was first seen by Dr. O'Meara on December 4th. He was admitted into the Isolation Hospital on December 11th. He passed through a typical attack of enteric fever.

T. J. was taken ill November 24th with an attack of jaundice. When admitted into home on December 5th temperature was 104° F., and the temperature remained high for 30 days from commencement of illness. There was constipation throughout illness and no hæmorrhage. From December 23rd to December 27th the cardiac condition of the patient was very critical.

W. R. when first seen was suffering from bilious vomiting and diarrhoea, with intense headache and a temperature of 104·6, which symptoms persisted on and off for a few days, when the bowels became normal in their action. But on December 11th the usual diarrhoea appeared for about a week, but at no time was it excessive. There was no hæmorrhage and but little abdominal tenderness. No complications.

J. P.—No illness immediately following banquet but he developed enteric fever about November 27th and died December 11th. He was under the care of Dr. Mackinnon of Cirencester, and I am indebted to him for information as to the case.

H. G.—Taken ill on November 12th and subsequently developed enteric fever.

NOTES ON ENTERIC FEVER CASES WHICH DID NOT ATTEND THE BANQUET.

F. A. F., 23, *fishmongers' manager*.—First felt ill on December 2nd, and was admitted into hospital on December 13th. Suffered from a very mild attack of enteric fever, and his blood yielded the Widal reaction.

Patient had not eaten oysters for at least two months, but he handles them daily, and frequently opens them.

W. L., 20.—A soldier on furlough, first felt ill on December 1st, with vomiting and diarrhoea, after having partaken freely of oysters the same evening. This attack of illness was followed by general malaise, and, on admission to hospital on December 8th, he had a temperature of 102 F., dry furred tongue, tumid abdomen, and a copious eruption; spleen palpable. His blood yielded a positive Widal reaction. Had a severe attack of enteric fever, and suffered subsequently from a relapse.

S. W.—Diarrhoea for first fortnight; no hæmorrhage; no complications.

M. B.—Illness commenced with vomiting and high temperature, 103°–104°. Vomiting ceased on fifth day. Rose spots appeared on seventh day, and lasted until temperature reached normal. Constipation during first week and moderate diarrhoea afterwards. No hæmorrhage. Miscarriage of twins at end of third week.

E. M.—Course of fever mild; not much diarrhoea, and no hæmorrhage. Rash well marked. Recovery good and uninterrupted.

APPENDIX No. 3.

Health Department,
Town Hall, Portsmouth,
December 31st, 1902.

REPORT ON THE RECENT OUTBREAK OF TYPHOID FEVER CAUSED BY
OYSTERS.

To the Chairman and Members of the Health Committee.

GENTLEMEN,

SUPPLEMENTING the representation I made to you on December 17th, I now report more fully on the recent outbreak of typhoid fever caused by oysters.

My attention was first attracted by the number of notifications of typhoid fever that I received between December 4th and 14th. From its unusual prevalence, and especially from the number of cases that occurred in Southsea, which is usually free from this disease, it struck me that some special factor of infection was at work. Careful enquiries were instituted, and as a result I found that the sole condition that was common to the whole of the cases was the ingestion of oysters.

The shell-fish—including oysters, cockles, and mussels—sold in this town have long been regarded by me with suspicion as being the cause of occasional cases of typhoid fever, and I at once commenced investigations with a view to ascertaining whether they were the cause of the outbreak on this particular occasion.

(Subsequently cases of typhoid at Southampton and Winchester, supposed also to have been caused by oysters, were reported; of these I cannot speak from personal knowledge, and have therefore taken no account of them, nor have been influenced by them, in forming my conclusions.)

The mere fact that all the persons attacked had eaten oysters was not enough to warrant the conclusion that these alone were the cause of the disease; in order to be satisfied it was essential for the following propositions to be established:—

- 1.—That the oysters had been eaten at such a date previous to the onset of the disease as would be consistent with what we know as to the time typhoid fever takes to develop in man.
- 2.—That there was no other condition common to all or a large proportion of the cases which could be regarded as playing a causal part in the disease.
- 3.—That the oysters had not only been exposed to sewage contamination, but that this sewage actually contained the specific infection of typhoid fever.

As the implication of oysters must prove a very serious matter for those engaged in the oyster fisheries, I decided to make no public statement until I had satisfied myself with regard to each of the above propositions.

With regard then to the date on which oysters were eaten by the persons suffering from the disease. I must explain that in all infectious diseases, after the infectious matter has been received into the body, a certain period elapses before the disease becomes evident, during which, in fact, the disease is developing, and this is termed the "incubation period." This is not the same in every case, but as a rule in typhoid fever it is from ten to fourteen days; but it may be as short as eight or as long as twenty-eight days. In the list attached to this report the dates in each case are given—when the oysters were eaten and when the disease became manifest. Without going into detail, I may say at once that in every one of the twenty-five cases the date of the eating of the oysters was consistent with the assumption that they were the cause of the disease. The incubation period is not the same in all the cases, and whether the disease takes a longer or shorter time to develop probably depends to some extent on the condition of the person at the time he becomes infected, and also on the amount of the poison he has absorbed.

It was next necessary to see if there was any condition other than oysters common to all the patients to which the disease could reasonably be attributed. The usual factors in the spread of typhoid fever are—water, milk, other articles of diet, defective drainage, and personal contact. In the cases in question one of these, namely, water, was common to the whole. All were supplied by the Company's water, but inasmuch as there is no evidence whatever that the water is polluted, and having regard to the smallness of the outbreak, the idea that the disease was waterborne may be ignored.

Milk similarly may be excluded, for I find on making enquiries that to the twenty-five cases there were thirteen separate milk supplies, and that no one supply went to more than five of the cases.

As regards defective drainage, a certain amount of discrimination must be used in estimating the part this could have played. In ten of the cases careful examination of the premises revealed defects in the drainage system. A number of these, however, were very slight, such as a defect in the ventilating shaft or an insufficient flush to the w.c. pan, &c. Seeing then that in some of the cases there were no drainage defects at all, and that in some of the others the defects were very slight, there is no reasonable room for doubt that this outbreak was due to a cause independent of drainage.

Personal contact can only be regarded as having caused the disease in Case 12, and even here the patient had also eaten oysters within the incubation period.

We now come to articles of diet other than milk and water. The number of these to which the spread of typhoid has been attributed is few. None of them have the typhoid bacillus unless it is introduced by means of sewage pollution, and moreover, as the typhoid bacillus is destroyed by prolonged heating at 60° C. or by a few minutes at 100° C., it is evident that the articles of diet are restricted at once to uncooked or only partially cooked food. Now in all the cases in question the one common article of diet was oysters, and I at once instituted enquiries to ascertain if these fulfilled the conditions of the third proposition, namely: had they been infected with the specific organism of typhoid fever? It was found that in every case the oysters had come from the Emsworth Oyster Fisheries. As I had on previous occasions, in connection with the conditions influencing the health of the inhabitants of this borough, visited amongst other places the Emsworth Oyster Fisheries, I was well aware that the sewage discharges in dangerous proximity to these beds. I therefore communicated with Dr. Lockhart Stephens, the Medical Officer of Health of Emsworth, in order to ascertain if there were cases of typhoid in Emsworth at such dates as would correspond with the infection of the oysters with the typhoid bacillus. Dr. Stephens informed me that there had been several cases of typhoid in Emsworth during the year, that it had been most prevalent during the last three months, and that there had been in fact, since October 22nd, thirteen cases, in eight of which the excreta from the patients was discharged into the sewers, which in turn discharged within 50 yards of the oyster beds. Here, therefore, is a chain of evidence without one missing link, in face of which it is impossible to come to any other conclusion but that the sole cause for these cases of typhoid was the ingestion of oysters from the specifically infected fisheries at Emsworth. It is true that this evidence is merely presumptive, but it must be borne in mind that in fixing on the cause of any epidemic presumptive evidence is all that can be obtained, but it would surely be difficult to imagine presumptive evidence stronger than has been forthcoming in the above cases.

The point will naturally occur that there must be numbers of people who have eaten oysters from Emsworth who have not contracted typhoid. It must be remembered, however, that, in the first place, everyone is not susceptible to the disease; and, secondly, that in all probability only one particular bed or one lot of oysters was infected. It is unreasonable to suppose that every oyster would be infected, and it is quite possible that only those people were affected who were subject to one or other of the following conditions:—

- (a) They may have eaten a specially large number of the oysters and so have had a large quantity of the typhoid poison.
- (b) They may have eaten only a few but these few may have been contaminated with a large amount of the typhoid poison.
- (c) They may have been in a delicate state of health or have been constitutionally very susceptible to the disease.

That only one particular batch was affected is, I think, evident from the fact that in nearly all the cases (18 out of 25) the oysters were eaten between the 10th and 20th of November. The few in which oysters were eaten after that date may possibly be accounted for by some of the first batch of infected oysters being mixed in the shops with later supplies.

I also have been asked why a bacteriological examination was not made to demonstrate the presence of the typhoid bacillus actually in the oyster. The reasons why I have not done so are these. In the first place it is unnecessary to prove that oysters, cockles and mussels may contain the typhoid bacillus; this has already been fully demonstrated by Professor Klein in the researches undertaken by direction of the Local Government Board, the results of which have been published in the various annual reports of the Medical Officer to the Board. In the second place the oysters that caused the disease were eaten some 10, 12 or 14 days previous to the disease becoming pronounced, and consequently if, as I suggest, only one batch of oysters were infected, although it is just possible that one might accidentally select a second batch of oysters that were also infected, the chances are very much against doing so, and such negative evidence, although it would be valueless, might prove misleading to those of the public who might not understand the true bearings of the case. Failure to find the typhoid bacillus would, I repeat, be worthless evidence as regards the oysters that I allege were responsible for the disease and which were taken from the beds some time previously.* The above is always a difficulty in tracing an outbreak of typhoid fever, the M.O.H. does not become aware of the epidemic until 14 days or more after the typhoid poison has been distributed, and when the vehicle of transmission has in all probability been destroyed or is unobtainable.

* Since writing the above Report, I believe a bacteriological examination of the oysters and the water in the beds has been made by Professor Klein, with a result that although there was abundant evidence of sewage pollution the typhoid bacillus itself was not discovered.

The evidence, then, that has been forthcoming—the fact that all the 25 persons attacked ate oysters about the time they must have contracted the disease; that these oysters came from the Emsworth Oyster Fisheries, that the Fisheries were open to contamination from the specific organism of typhoid fever, and finally that there is no other condition common to all the cases which would account for the outbreak, leaves no room for doubt that to oysters alone must be attributed the present epidemic.

The next step for your consideration is how similar outbreaks can be prevented in the future.

It is a sorrowful confession that in the present state of the law the Sanitary Authority is almost helpless. The only step we could take was to warn the public not to eat the oysters. This was done without any loss of time as soon as it became evident that the oysters were infected. But this locking the door after the horse is stolen is obviously a very poor expedient, and if nothing further is done this outbreak will be forgotten and things go on as in the past until another occurs. There is legally no power for you as a Sanitary Authority to prevent the sale of oysters because they may come from a polluted source.

Although you may seize and destroy a tuberculous carcass, or unsound food, yet you have not the least control over oysters which you may happen to know have been actually exposed to typhoid infected sewage, and which will be practically certain, sooner or later, to be the active agents in the spread of disease and death.

Authoritative warnings as to the dangers from the pollution of oyster beds by sewage have in the past been issued only to be ignored. In 1896 the Local Government Board issued a special report on the Oyster Fisheries in the Kingdom, in which the following comments on the Emsworth oyster beds occur: "It would hardly seem necessary, in view of the relations between the sewer outlets and the storage pits depicted on the accompanying map, to dwell upon the gross contaminations to which the oysters here stored must be liable. In no single instance is Emsworth sewage discharged in tidal waters in other than a crude condition." Thus Dr. Bulstrode wrote in 1896; practically no attention, however, has been paid to this warning; had it been acted upon there is little doubt the present outbreak, and possibly other cases of typhoid fever in the past, would have been avoided. Nor is Emsworth an isolated case; in the same year Dr. Bulstrode reported on the Oyster Layings of Brightlingsea Creek as follows: "The sewage of Brightlingsea is discharged by three separate outlets on to the foreshore. At the time of my visit each of these outfalls was discharging offensive matter; the middle one, that passes through Mr. Stone's yard, being particularly offensive. Near to the points of discharge on the foreshore of the creek are numerous oyster layings, and at low tide the sewage may be seen emerging from the outfalls, and after passing over the mud running along the back of the oyster layings hereabouts. Under these circumstances it is difficult to understand how the oysters near can fail to be polluted thereby." This warning also was ignored. Here too an outbreak of 26 cases of typhoid fever occurred in 1897, with reference to which a Local Government Board Inspector reported "that in each case there was no condition, irrespective of oysters, to which infection could be attributed."

From the foregoing examples it is amply evident that warnings are simply waste of time, stronger measures must be adopted, and there is little doubt that the only effectual remedy to be obtained is from fresh legislation. I strongly advise, therefore, that your efforts be in this direction, and in order to carry additional weight I would suggest that an effort be made to co-operate with other Sanitary Authorities in making a strong representation to Government for the provision of the legislation necessary for the protection of the public. It might be advisable to invite to attend a conference on the subject, not only delegates from other Sanitary Authorities, but also as many of our Parliamentary Representatives as possible, together with representatives from the Fisheries Board, in order that a thoroughly strong representation be made on the matter. I do not pretend here to indicate the lines the legislation should take, but I would mention that besides oysters infected cockles and mussels also undoubtedly caused typhoid, and should receive attention. There is also the question of imported shell-fish to deal with, for it is obviously little use protecting our own fisheries if shell-fish are allowed to be imported from foreign sources, where no precautions whatever are observed.

In concluding this report I may add that as the public in this town has now been sufficiently warned, I do not anticipate any further outbreak at present, but this is the time, whilst the circumstances are fresh in the memory of the public, to urge the enactment of the necessary protective legislation, as, if nothing is done now, in all probability the matter will be allowed to drop until we are face to face with another and possibly severer epidemic.

I attach a list of the cases concerned in the present outbreak.

I have the honor to be, Gentlemen,

Your obedient Servant,

A. MEARN FRASER, M.D.,

Medical Officer of Health.

CASES.

- 1.—Mr. W. A., Grove Road, Southsea. Oysters several times up to November 16th; taken ill on November 27th. Notified on December 6th.
 - 2.—Mr. C. H. W., South Parade, Southsea. Oysters on November 22nd, and three or four times previously; taken ill on December 1st. Notified on December 7th.
 - 3.—Mrs. B., Commercial Road, Landport. Oysters on November 11th; taken ill on December 1st. Notified on December 8th.
 - 4.—Mr. P. B., Commercial Road, Landport. Oysters on November 12th; taken ill on November 25th. Notified on December 8th.
 - 5.—Mr. S. B., Commercial Road, Landport. Oysters on November 12th; taken ill on November 28th. Notified on December 8th.
 - 6.—Miss C. B., Commercial Road, Landport. Oysters on November 12th; taken ill December 5th. Notified on December 8th.
- (The above four were members of the same family.)*
- 7.—Mr. W. S., North End Grove, North End. Oysters on November 11th; taken ill on November 21st. Notified on December 7th.
 - 8.—Mr. C. W., Union Street, Portsea. Oysters on November 8th; taken ill on November 29th. Notified on December 9th.
 - 9.—Mrs. F. G., Shaftesbury Road, Southsea. Oysters on November 13th; taken ill on November 22nd. Notified on December 9th.
 - 10.—Mrs. P. W., Gains Road, Southsea. Oysters on November 22nd and 24th; taken ill on December 3rd. Notified on December 10th.
 - 11.—Miss F. A., Lake Road, Landport. Oysters on November 12th; taken ill on November 20th. Notified on December 10th.
 - 12.—Miss E. A., Lake Road, Landport. Oysters on November 12th; taken ill on December 5th. Notified on December 10th.
- (The above two are members of the same family; and as the second case E. A. was taken ill fifteen days after the first, it is possible the second case was caused by personal infection, and therefore only indirectly due to oysters.)*
- 13.—Mrs. K., Shaftesbury Road, Southsea. Oysters several times from November 1st to the 10th; taken ill on November 27th. Notified on December 11th.
 - 14.—Mr. J. H., Nelson Road, Southsea. Oysters on November 10th and 18th; taken ill November 29th. Notified on December 12th.
 - 15.—Miss L. B., Commercial Road, Landport. Oysters on November 21st and 29th; taken ill December 2nd. Notified on December 12th.
 - 16.—Mr. W. L., Osborne Road, Southsea. Oysters taken on numerous occasions during November; taken ill November 27th. Notified on December 14th.
 - 17.—Mr. E. B. A., Nightingale Road, Southsea. Oysters on November 26th, 30th, and December 7th; taken ill December 9th. Notified on December 4th.
 - 18.—Mrs. E. H., Somers Road, Southsea. Oysters on November 21st; taken ill December 7th. Notified on December 16th.
 - 19.—A. H., Somers Road, Southsea. Oysters on November 21st; taken ill December 12th. Notified on December 16th.
 - 20.—Mrs. C. T., St. Ronan's Avenue, Southsea. Oysters on November 14th; taken ill on December 2nd. Notified on December 18th.
 - 21.—K. B., Derby Road, North End. Oysters on November 16th; taken ill on December 8th. Notified on December 20th.
 - 22.—Miss H. W., Osborne Road, Southsea. Oysters November 14th; taken ill December 6th. Notified on December 18th.
 - 23.—Mr. S. W., Osborne Road, Southsea. Oysters three times a week during November; taken ill on November 30th. Notified on December 16th.
 - 24.—Mr. C. P., Hampshire Terrace, Southsea. Oysters on December 6th and 13th; taken ill on December 20th. Notified on December 21st.
 - 25.—Mrs. F. A., King Street, Portsea. Oysters nearly every day from November 17th to 27th; taken ill December 7th. Notified on December 19th.

Confidential.

Local Government Board,
Whitehall, S.W.,
December, 1902.

DEAR SIR,

I AM investigating, under the instructions of the Local Government Board, an outbreak of enteric fever in Hampshire which is alleged to have been caused by the consumption of oysters eaten raw.

I have reason to believe that oysters from the suspected sources were introduced into your district during the second week in November, and I should be extremely obliged if you could kindly inform me if any cases of enteric fever or gastro-enteritis have occurred in your district at a date which would suggest infection at or about November 10th. If so, might I ask whether oysters had been taken at or about the date in question, and, if so, what is the name of the fishmonger from whom the oysters were procured.

I am, dear Sir,

Yours faithfully,

H. TIMBRELL BULSTRODE.

To Dr.

Medical Officer of Health.

GUILDFORD URBAN SANITARY AUTHORITY.

MEDICAL OFFICER'S DEPARTMENT.

Guildford,
December 28th, 1902.

DEAR SIR,

IN reply to your letter of the 27th inst., I am glad to say that the only two recent cases of enteric in this district were undoubtedly due to direct infection, as these patients contracted the disease whilst nursing an enteric case at Woking.

In September I had a case, and the only possible cause *that I could discover* was that the boy had eaten shell-fish at Portsmouth a fortnight previously.

Believe me, dear Sir,

Yours faithfully,

ARTHUR M. MITCHELL.

Dr. Bulstrode.

METROPOLITAN BOROUGH OF WANDSWORTH.

Public Health Department,
1, Huguenot Place, East Hill,
Wandsworth, S.W.,
31st December, 1902.

DEAR DR. BULSTRODE,

I ENCLOSE list of enteric fever cases which have occurred since the 1st December in this district, attributable to shellfish. The cases infected by cockles were perfectly clear, and both Dr. Watson, of Leigh-on-Sea, and Dr. Thresh, Medical Officer of Health for the County of Essex, have been informed. The case occurring at No. —, M— Road Clapham, notified on the 8th December, was, as you *will see from the letters enclosed, almost certainly due to Emsworth oysters*, but in the case at No. —, Old Town, I could not ascertain from what part the oysters had come. Any further cases I shall report to you immediately on notification. I may say that Dr. Klein has been investigating the cockles, and I have no doubt he will send you a copy of his report shortly.

Yours faithfully,

CALDWELL SMITH,

Medical Officer of Health.

Dr. Bulstrode,

Local Government Board.

ENTERIC FEVER FROM SHELLFISH.

Date of Notification.	Name of Patient.	Age.	Address.	Date of First Symptoms.	Suspected Source of Infection.
1902. Dec. 1 ...	T. D. ...	20	Chip Street, Clapham.	Nov. 15 ...	Patient had some cooked cockles on the 1st November. The cockles were purchased from a man named G., who bought them from a man P. at Billingsgate market. P. came from Leigh-on-Sea, near Southend, and brought the cockles from there.
" 1 ...	A. D. ...	16	Chip Street, Clapham.	" 22 ...	Patient had some cockles on the 8th November, obtained from same source as her brother above.
" 1 ...	N. D. ...	18	Chip Street, Clapham.	" 15 ..	Patient had some cooked cockles on 1st November. Particulars as above.
" 4 ...	J. O. ...	31	Baker's Cottages, Prescott Place, Clapham.	" 19 ...	Patient had some cooked cockles purchased off the man G. mentioned above on 8th November.
" 6 ...	E. O. ...	32	Hazelbourne Road, Streatham.	" 29 ...	Patient had some oysters two weeks previously, also on 27th November.
" 12 ...	W. K. ...	50	Old Town, Clapham	About two weeks ago.	Patient had some raw oysters purchased by a Mr. S., probably purchased from Mr. R., Billingsgate Market.
" 8 ...	G. Y. ...	28	Macaulay Road, Clapham.	Nov. 29 ...	Patient had some oysters bought at a shop near London Bridge Station. (See copy of letters.)
" 22 ...	H. C. ...	2	Lyddon Road, Wandsworth.	Dec. 9 ...	Patient had some boiled mussels eight weeks previous.
" 26 ...	D. U. ...	14	Gartmoor Gardens, Wandsworth.	" 20 ...	Patient had some raw oysters on 19th December.
1903. Jan. 7 ...	A. C. ...	40	Bedford Hill, Balham.	" 26 ..	Patient had some raw oysters on 7th or 8th December.
" 9 ...	G. R. ...	21	Fireroft, King's Road, Clapham Park.	" 30 ...	Patient had some raw oysters on 7th or 8th December, purchased from a Mr. M., who obtained them from Mr. D., of Lower Thames Street.
" 12 ...	M. A. C. ...	53	Lebanon Gardens, Wandsworth.	" 27 ...	Patient had some raw oysters about six weeks previous.

METROPOLITAN BOROUGH OF BERMONDSEY.

PUBLIC HEALTH DEPARTMENT.

Town Hall, Lower Road, S.E.,

20th December, 1902.

DEAR SIR,

ASSUMING that the incubation period of your case was 14 days, and the first symptoms came on on November 29th, the disease might possibly be acquired about the 15th or before. I find that on November 10th, 14th, and December 3rd this man got consignments of oysters from Emsworth as follows :—

November 10th	...	...	1,300.
" 14th	...	...	1,000.
December 3rd	...	...	1,000.

It is therefore quite possible that the source of infection may be Emsworth oysters.

Yours faithfully,

R. K. BROWN,

Medical Officer of Health.

Dr. P. Caldwell Smith,
Medical Officer of Health,
Wandsworth.

Town Hall, Eastbourne,
Sanitary Offices,
December 30th, 1902.

SIR,

IN reply to your letter of the 27th December, I beg to inform you that on November 25th a case of enteric fever was notified to me in Eastbourne about which there was some doubt as to the possibility of oyster infection. The case was a very bad one and quickly fatal, and as he was a soldier of 23 I have been unable to get definite information about oysters as his friends did not know what he might have been doing.

On December 22nd a case of enteric fever was notified to me of a man who had been already ill about a fortnight and who had partaken largely of oysters about the date you mention. He obtained these oysters, as I am informed, from a fishmonger named X.

There have been but three cases (although six notifications) of enteric fever in Eastbourne this year.

I am, Sir,

Yours faithfully,

W. G. WILLOUGHBY,

Medical Officer of Health.

H. T. Bulstrode, Esq.,

Local Government Board,

Whitehall, London, S.W.

N.B.—I have not been able to trace the oysters referred to above to Emsworth.

H. T. B.

BRIGHTON.

INFORMATION FURNISHED BY DR. ARTHUR NEWSHOLME, MEDICAL OFFICER OF HEALTH.

January 19, 1903.

List of cases of Typhoid Fever occurring in Brighton during 1902, in which oysters from Emsworth had been partaken of within three weeks of the onset of the attack.

(1.) Mrs. F., aged 27, wife of a cabinet maker of No. 29, G. Street, failed with typhoid fever about the 10th July, and kept her bed from the 19th. On or about June 26th she ate 10 oysters, the last of which she states was "bad." On July 4th, she and her mother ate four oysters each. The mother has remained well. The oysters were obtained from No. 82, C. Street. The proprietor of this shop obtains a portion of his oysters from Southwick and a portion from Emsworth. No other cases of typhoid fever occurred at this house, and the total number of such cases notified in Brighton during the months of June and July was only 10. No other cases occurred in connection with the same milk supply. The house was in a completely sanitary condition.

(2.) Mrs. S., aged 55, of No. 14, B. Place, failed with typhoid fever about October 12th. On October 5th she went to Emsworth, returning to Brighton on the 12th. While at Emsworth she had oysters several times. She stayed in Emsworth during the whole six days she was away from Brighton. On October 12th before returning to Brighton she had oysters for lunch. During the rest of the day she felt well, but next morning on getting out of bed she vomited and had severe diarrhoea. The diarrhoea lasted for several days. She was then better for a week, but after that was under a doctor's care for about a week before her admission to the Borough Sanatorium on November 16th. The sanitary condition of the house in which she lived in Brighton is good. There was no special prevalence of typhoid fever in Brighton at that time; the total number of cases notified during the month of October being only eight. There were no other cases in connection with the same milk supply.

(3.) Alice B., aged 18, of No. 12, B. Street, a barmaid failed with typhoid fever on November 24th. This patient and her sweetheart had oysters about three times weekly for three weeks during the weeks beginning at the end of October. She usually ate seven to 14 oysters on each occasion. Her sweetheart has remained well. The oysters were bought at No. 82, C. Street, the same shop as above, and are obtained from Southwick and Emsworth. The proprietor of the inn where this patient was barmaid, failed with typhoid fever on October 4th, the attack being traceable to oysters derived from Grimsby. The patient was nursed by a trained nurse and every precaution taken, but as Alice B. did not leave the inn for 10 days after the onset of the proprietor's attack of typhoid fever it is conceivable that her attack was caused by personal infection, though more likely that it was due to the oysters which she partook of at No. 82, C. Street.

(4.) George G., aged 40, of No. 77, S. Street, a detective at race meetings, failed with typhoid fever on December 1st. He had been living at the above address for one month before the onset of his illness. Early in the third week of November he bought and ate six oysters at No. 28, N. Road. At No. 77, S. Street, there are living six other persons, who have remained well. The oysters at No. 28, N. Road, are obtained from Emsworth and the Whitstable Company.

(5.) John B., age 34, of No. 71, B. Road, a grocer, failed with typhoid fever on December 19th. On or about the first week in December he ate a few oysters at the above shop in N. Road. There are living in the same house with the patient, his wife, two children, and two servants, all of whom have remained well. The patient does not take milk except in puddings. The sanitary condition of the house is good, and no other source of infection can be discovered.

The total number of notifications of typhoid fever in each month of 1902 has been as follows:—

January	...	...	...	...	...	7
February	...	...	...	...	...	3
March	...	...	...	...	...	2
April	...	...	...	...	...	3
May	...	...	...	...	...	3
June	...	...	...	...	...	3
July	...	...	...	...	...	7
August	...	...	...	...	...	5
September	...	...	...	...	...	5
October	...	...	...	...	...	8
November	...	...	...	...	...	8
December	...	...	...	...	...	11
Total	...	...	...	...	...	65

BOROUGH OF HOVE.

Town Hall,

Hove, Sussex.

January 30th, 1903.

DEAR DR. BULSTRODE,

THE case of enteric fever associated with oysters which I mentioned] was as follows:—

C. R. S. ate oysters on October 12th, obtained direct from Emsworth.

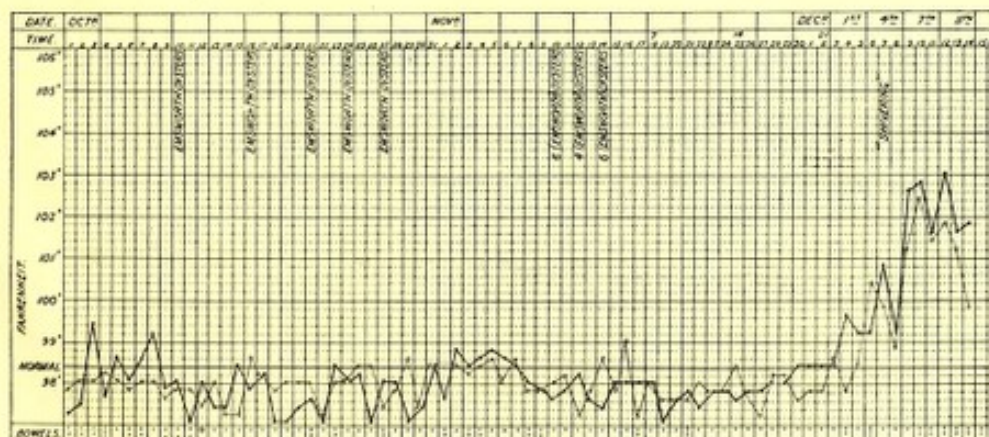
The history of the case is as follows: October 13th, violent diarrhoea till 16th when he took castor oil which stopped diarrhoea. October 20th, began to have headache and felt shivering, after which illness followed usual course of mild enteric fever.

I am,

Yours faithfully,

A. GRIFFITH.

TEMPERATURE CHART OF DR. ROBERTSON'S CASE.



(1.) George D. and No. 71, E. Street, a detective at two residences, failed with typhoid fever on December 1st. He had been living at the above address for one month before the onset of the illness. Early in the third week of November he bought and ate six oysters at No. 28, N. Road. At No. 71, E. Street, there are living six other persons, who have remained well. The oysters at No. 28, N. Road, are obtained from Hamworth and the Whitehead Company.

(2.) John H. and No. 31, of No. 71, E. Road, a grocer, failed with typhoid fever on December 19th. On average the first week in December he also lived at the above shop in N. Road. There are living in the same house with the patient his wife, two children, and two servants, all of whom have remained well. The patient does not take milk except in pudding. The sanitary condition of the house is good, and no other source of infection can be discovered.

The total number of notifications of typhoid fever in each month of 1903 has been as follows:—

January	1
February	2
March	2
April	3
May	4
June	7
July	7
August	5
September	5
October	6
November	8
December	11
Total	69

LONDON:
PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE,
By DARLING & SON, LTD., 34-40, BACON STREET, E.

1903.

THE case of enteric fever described with oyster which I mentioned was as follows:—

O. E. B. ate oysters on October 12th, obtained direct from Hamworth. The history of the case is as follows: October 12th, violent diarrhea 10 1/2 times when he took oyster on which oysters had been. October 13th, began to have headache and left shoulder, after which there followed several cases of mild enteric fever.

1 mm.

Yours faithfully,

A. CHRISTIE.

TEMPERATURE CHART OF DR. HOBBS' CASE.



= Sewers.

Scale, 25.344 Inches to a Statute Mile.

