

Report on certain associated cases of enteric fever following Stirling County Ball, on 1st October, 1895 / by A. K. Chalmers ; with a bacteriological report by R. M. Buchanan.

Contributors

Chalmers, Archibald Kerr.
Royal College of Surgeons of England

Publication/Creation

Glasgow : Printed by Robert Anderson, [1895]

Persistent URL

<https://wellcomecollection.org/works/snnngsyr>

Provider

Royal College of Surgeons

License and attribution

This material has been provided by This material has been provided by The Royal College of Surgeons of England. The original may be consulted at The Royal College of Surgeons of England. where the originals may be consulted. This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>

4

REPORT

ON CERTAIN ASSOCIATED CASES OF ENTERIC FEVER

FOLLOWING STIRLING COUNTY BALL, ON 1ST OCTOBER, 1895,

BY

A. K. CHALMERS, M.D., D.P.H. (CAMB.),

MEDICAL OFFICER OF HEALTH, GLASGOW;

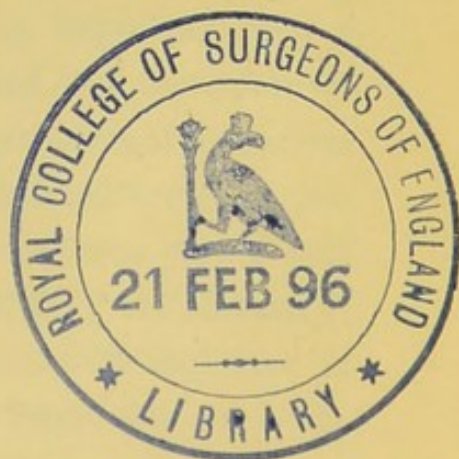
WITH

A BACTERIOLOGICAL REPORT

BY

R. M. BUCHANAN, M.B., F.F.P.S.G.,

PROFESSOR OF MEDICAL JURISPRUDENCE, ANDERSON'S COLLEGE, GLASGOW.



REPORT

ON CERTAIN ASSOCIATED CASES OF
RHYTHMOTRY

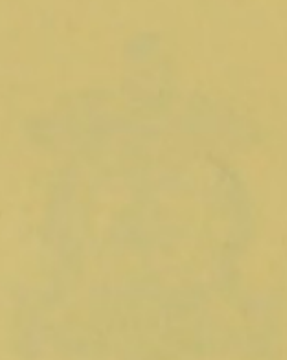
BY

J. L. KELLOGG, M.D.

OF THE UNIVERSITY OF CHICAGO

CHICAGO, ILL.

1900



REPORT

ON CERTAIN ASSOCIATED CASES OF ENTERIC FEVER FOLLOWING
STIRLING COUNTY BALL, ON 1ST OCTOBER, 1895.

The circumstances attending the outbreak of Enteric Fever which followed the Stirling County Ball, on the evening of 1st October last, will be still sufficiently fresh in the public mind to render any extended recital of them unnecessary. This ball was held in the Stirling Public Halls, and was attended by over 460 persons. It is an annual meeting, largely attended by visitors, and, in some manner, regarded as marking the close of the holiday season in that part of the country. After an interval, several of those who had been present sickened. Three of them were resident in Glasgow; and on the first notification being received, I learned that another gentleman who had also been present was likewise ill. While communicating with Dr. Wilson, Medical Officer of Health, Stirling, regarding this, a second case occurring in Glasgow was notified, and thereafter we rapidly came to know that several others had sickened in various parts of the country. There was thus established a strong presumption that these several illnesses had a common origin, and, allowing for variation in the incubation-period of the disease, it was apparent that this origin was consistent with exposure to infection during the evening of the dance. From this point the enquiry fell into two lines: Dr. Wilson collecting such information as existed in Stirling as to the condition of the Public Halls and the presence of Enteric Fever otherwise in and about Stirling at the time; while, for Glasgow, the special interest lay in the

fact that all the food stuffs supplied during the entertainment had been purveyed by a well-known firm of Glasgow restaurateurs. Moreover, the daily prints at the time reflected the popular opinion that the cause of the outbreak lay in the oysters consumed; and the known conditions of impurity which attend oyster culture in many places tended to strengthen, if it did not indeed formulate, the opinion which thus found expression. These oysters likewise, while purveyed by the firm referred to, had been imported by one of the leading oyster merchants in the city, and a great part of the investigation, as will afterwards be described, was directed toward ascertaining the conditions under which they were grown.

NATURE OF THE DISEASE.

At first sight it would appear to be unnecessary to discuss this aspect of the question. The patients were each under different medical supervision—three in Glasgow, five others in various parts of Scotland, two in England, and one in Venice. So far as precise information was obtainable, we learned that two had sickened on the 14th October, one on the 15th, and one on the 19th. One illness was recognisably Enteric Fever on the 17th; and in another the eruption appeared on the 19th. In general, therefore, the dates of sickening extended from late in the second till early in the fourth week, dating from exposure—a period quite within the maximum variation in the duration of the incubation period of this disease. Three of these attacks ended fatally, and in several of those now recovering the symptoms present have been characterised by marked severity. There need exist, therefore, no hesitation in regarding them as genuine cases of Enteric Fever. It was observed, however, in two at least of the attacks, that the earlier symptoms were accompanied by evidence of local inflammation, which in one instance ended in a superficial abscess. This is not a feature of uncomplicated Enteric Fever at its onset,

and I am disposed to attach some importance to it in connection, first of all, with the severity which otherwise characterised several of the attacks; and, secondly, because of the occurrence of symptoms of gastro-intestinal irritation in a few of the other visitors, who did not, however, ultimately develop Enteric Fever. In these latter cases the symptoms began within twenty-four hours, and apparently resulted from ptomaine intoxication. That is to say, they are to be regarded as resulting, I think, from the consumption of some article of food which was undergoing putrefactive change. These several factors, therefore, appear in some manner to be correlated, and suggest that the severity of the Enteric Fever may have been dependent on the contemporaneous action of other agencies, which acted in preparing the way for its entrance into the system.

FOOD SUPPLY.

During the dance refreshments were provided in a room on the ground floor to the right of the entrance hall, and supper was served from midnight, onwards, in the lesser hall, which is on an upper flat. The enquiry into the source of these food stuffs was much simplified by the fact that most of the articles were cooked. All such, however, as from their nature could be regarded as possible carriers of infection were made the subject of enquiry. This list comprised aerated waters, ice, ice creams, cream, sweets (into the composition of which whipped cream entered), salads, and oysters.

ICE—Used in the preparation of claret and champagne cup, and also added occasionally to champagne and other beverages. In the preparation of ice creams it is only used as packing. It was of the variety known in the market as "Norwegian." By custom both ice and champagne for this ball are supplied through a local (Stirling) agent, and form the only exception to the general statement already made that the purveying was done by the

Glasgow firm. The ice, however, was purchased by the Stirling agent from a Glasgow ice merchant. A question at one time arose as to whether this supply was not supplemented by some "home ice" obtained during last winter's frost, but I was ultimately assured that this was not the case as the supply then obtained had been exhausted in August last.

AERATED WATERS.—Soda water, potass water, and lemonade, obtained from a Glasgow firm of manufacturers who use Loch Katrine water twice filtered.

CREAM.—Used in the preparation of ice creams (being first boiled) and as whipped cream entering into the composition of certain sweets, was obtained from a farm in Lanarkshire (from which also certain restaurants in Glasgow obtain daily supplies), and regarding which Dr. J. T. Wilson, Medical Officer of Health for the County of Lanarkshire, informs me "that it is kept thoroughly clean and in good sanitary condition, and that, so far as can be ascertained, there was no illness among the staff." The ices were made in Glasgow and sent on to Stirling by train in the evening.

SALADS.—In the preparation of these, the vegetables were carefully washed, as I am assured by the cook who described the process. When lobster is added to salad, it is first boiled and shelled.

OYSTERS.—These were obtained by the purveyors through Mr. William Milne, oyster merchant, Glasgow, who readily placed at our disposal every facility for acquiring much of the information we were in quest of, and voluntarily communicated much which otherwise we could only very labouriously have acquired. The oyster beds are, however, situated in Holland, and but for an investigation which was most obligingly, and I fear at considerable personal inconvenience, undertaken by Dr. Saltet, Medical Officer of Health for the City of Amsterdam, and Dr. Van der Loeff, Medical Officer of Health for Zealand and East Brabant,

there might still have remained some uncertainty as to whether the oysters used on this occasion were sewage-fed, a feature which as is well known characterises certain other well-known brands. The question also of accidental contamination of a part only of the oysters, either in the beds or during transit, which was raised by the contrast between the numbers who partook of them and the few who sickened, could only be satisfactorily answered by beginning the enquiry at the oyster fishery. Those purveyed to the Stirling meeting were part of a consignment of 5,500 which arrived at Grangemouth from Holland on the 26th, and reached Glasgow by rail on the 28th September. 2,500 were sent to Stirling by rail on the afternoon of 1st October (having been stored in the oyster merchant's and fishmonger's premises in Glasgow in the interval), and 1,800 were consumed during the evening. Two unopened kits, containing 250 each, were returned to Glasgow after the ball, and were, along with the other 3,000, disposed of to fishmongers in Glasgow and other parts of Scotland, according to a list with which Mr. Milne has supplied me. These oysters are known to the trade as "large best Dutch native," and are imported in wooden kits of varying sizes, packed top and bottom with sea-weed. The kits forwarded to Stirling were not opened until they reached the halls, and the oysters only as the waiter in charge of the tables required. After opening, they were placed on boards kept beside the workers until sent to the tables. One of the Glasgow fishmonger's employees attended at the halls, and procured assistance in the work of opening them from a local fishmonger. A certain number of "watery" oysters, are found, it seems, in every kit, and are rejected. These have no smell. Several such were met with in this instance, but according to these operatives none were found to be smelling (putrid). It must be a matter of extreme delicacy and difficulty, however, to detect a faint odour of putrefaction when the air is, so to speak, saturated with the smell of oysters. To

this we shall have occasion to return. In the liquid which is contained within the shell, and bathes the oysters, particles of sand, &c., are frequently present, and in the process of opening, a dish of water is kept at hand in which the oyster is dipped ; after which it is placed, usually on the flat shell, and sent to table. The water for this purpose was obtained from a tap in the hall kitchen, and changed as required, and the dish used was a newly opened fruit-tin, obtained from the cook, and rinsed before using. When this enquiry was opened, I obtained from Mr. Milne two oysters of the same brand, and Dr. R. M. Buchanan undertook a prolonged "culture" investigation in the laboratory of the Western Infirmary, Glasgow, with the view of discovering whether the bacillus of typhoid fever could be recovered from the shell or its contents, but the results were entirely negative. A report by Dr. Buchanan of the examination is appended.

I had also, as already stated, communicated with Dr. Saltet, and the exhaustive nature of the enquiry undertaken by him will be best described in the following extracts from his letters. On 16th November he wrote :—

"Oysters are cultivated in Zealand, mainly in the bay that was formerly the Easter Schelde ; it became a bay by the construction of the railway dyke as marked on the map," which accompanied the letter. This dyke, I believe, carries the main railway line between Flushing and Berlin. "Sewage from Rotterdam, Dordrecht, or Antwerp, cannot flow over the oyster banks. . . . From my colleague, the Medical Officer of Health of Zealand and East Brabant, Dr. Von der Loeff, I hear that cases of typhoid fever were very rare this year in Zealand and adjoining parts of the province of Brabant. . . . As the oyster beds are Crown-lands leased to oyster growers . . . I wrote to the manager of the Crown-lands there and asked him to send me a map of the oyster district, with the names of the lessees of each lot. As soon as I have that map, I will study the maps of the

Water Engineering Department to see if water from the polders is pumped out into the Easter Schelde, and I will try to get information about the days that was the cause. I will then write to Mr. Overman" (the oyster merchant) "to know from what particular bank the oysters sent to Glasgow on the particular date came. . . . My friend, Dr. Van der Loeff, who studied matters on the spot, writes to me that he does not consider a contamination of the oyster banks likely to occur. From his Annual Report for 1894, I see that there was an epidemic of typhoid fever in Yerseke" (in South Beveland, and again referred to in Dr. Saltet's next letter) "last year, with 52 cases and 7 deaths, the greater number of cases (41) occurring in October, November, and December." On 10th December, Dr. Saltet again writes—"The maps, &c., that I had the intention to send you" (as stated in former letter), "would not be of use—so I was told by the Medical Officer of Health of the district and by the Secretary of the Fishery Department at Tholen. I therefore made a trip to Breda and, talked the matter over with Dr. Van der Loeff. . . . The width of the Easter Schelde, between Yerseke and the Island of Tholen, is at least three English miles. In the middle of that bay the oyster banks are situated. The land of South Beveland and of Tholen is good arable land, producing wheat, and situated below the sea level, protected from the sea by big dykes. Sewage—in general, all manure—is carefully made use of by the farmers there. This is also the case in North Brabant. The Ports of Tholen, Yerseke, and Bergen-op-Zoom, are at the sea level, but generally speaking, and especially in so far as Zeeland is concerned, the Medical Officer of Health, Dr. Van der Loeff, who visits these parts now and then, told me that the drainage, including the house water, is conducted not to the sea but to the inner parts of the land, and that afterwards, as soon as the level of the canals has risen to a point that prevents the drainage of the soil, the water is pumped out into the sea. Now this year, the second part of August and the whole of September

were very dry months here; and so there cannot have been much water pumped out of these polders into the sea, as the farmers had none to spare. Naturally, the Easter Schelde, like all navigable water, is soiled by the ships that pass, but I think we can take for granted that—

“1st.—This bay is not generally polluted by sewage to any great extent; and

“2nd.—That specially in the weeks immediately preceding September 24th” (when the oysters were sent to Scotland) “the pollution must have been very insignificant.

“The case would have been different if the oysters had been placed in oyster pits before their exportation. These pits—stores for live oysters—are situated near the trading places, and so are, of course, much more easily polluted than the banks in the middle of the bay. But oyster traders never put oysters into these pits if they can avoid it. Only in winter time, when the storms often hinder the fishing, they fill these pits to a certain extent, in order to be able to satisfy their customers regularly. In hot weather they never make use of them, but export the oysters as soon as they are brought to shore. In your case, the oysters were sent on September 24th from Bergen-op-Zoom” (by rail to Rotterdam). “They left Rotterdam on the night, 24th-25th September. . . . The whole lot was fished in the same part of the bay. . . . Mr. Overman sent, as he wrote to Dr. Van der Loeff, about that time (September) oysters from the same banks to Brussels and to Berlin. They were eaten there without any accident, and he continues sending oysters to these customers, no complaints having been made.”

During transit from Rotterdam to Grangemouth, I learn from the shippers, through Mr. Milne, that “in the alleys on deck where they are carried, it is perfectly cool and airy, and to keep them from being pilfered, they are generally built round with hoops, empty baskets, or other light articles. This fact will also

show that it was impossible that they could be contaminated with any deleterious matter while in our custody." This describes the custom, and there is no reason to assume that it was departed from in the present case.

So far, all this tended to exonerate the oyster from any active share in the introduction of the enteric fever virus, and confirmation of this impression was shortly forthcoming.

We already knew that nine of those attacked by enteric fever had partaken of oysters during the course of the evening ; but of two ladies, sisters, one had already succumbed to the disease, and the other was so ill that information could not be obtained until convalescence had become established. On December 19th, however, I learned definitely that this lady had no oysters on the evening in question, and this I am disposed to regard as very materially strengthening the impression which the description of the conditions of growth and transit of the oysters already given creates. There remains indeed only the barest possibility of a concurrent exposure, to some source of infection elsewhere, to explain this lady's illness, but this possibility scarcely requires discussion. As a general statement, therefore, I believe it to be in strict accordance with the facts, as we now know them, that the cause of enteric fever infection, which was unquestionably operative during the evening of the ball, was not conveyed to the halls in the oysters.

The cooked foods on this occasion were despatched from Glasgow about mid-day of 1st October ; the ices and sweets being sent early in the evening, and all of them under such conditions as excluded the likelihood of contamination in transit. On reaching the halls these (except the ices), were stored in the hall kitchen. Not the slightest evidence, therefore, has been discoverable, pointing to contamination of the food supplies prior to their delivery at the halls on the evening in question.

It has been stated, on the testimony of the oyster openers, that

these were in good condition when opened. They were opened, however, and until required, kept, in a small side corridor adjoining one of the principal lavatories, an exceedingly unhappy site to select for such a purpose. Indeed, it would seem that some influence to which they were here exposed rapidly determined putrefactive changes in some of them; for, in several instances, when brought to the table, they were rejected on this condition being recognised. But the risk which attends the consumption of putrescent oysters is that of ptomaine intoxication; while an oyster bathed in liquid containing the germ of enteric fever, may, like milk when similarly poisoned, be bland to the palate, yet virulently poisonous in character.

In Stirling during the past autumn there has been little enteric fever among the population. One case of the disease was notified, Dr. Wilson tells me, on 31st August, another on 20th September, a third on 17th October (a gentleman who attended the ball); and there was no other during this month.

The halls in which the ball was held are in large demand for concerts and meetings of various kinds, and food has been purveyed on nine of these occasions since August last, being in several instances cooked on the premises. The county ball alone among them was followed by cases of enteric fever, the greater part of the food here being cooked before being despatched from Glasgow.

On 14th November information reached me which suggested that the drainage of the halls was defective, and this information I communicated to Dr. Wilson. On an examination of the drainage system being made by Mr. Wallis, Memb. San. Inst., London, Resident Engineer to the West of Scotland Sanitary Association, structural and other defects therein were found.

The present tendency very largely is to discount the power of drain effluvia to cause specific disease. But with defective drainage there is usually pollution of subsoil, and when once the possibility of this has been established, the presence or absence of

the means of specific pollution, in a place of public resort, is reduced very much to a matter of chance. The circumstances which influence bacterial life are complex, while our knowledge of them is limited; and in the present instance all we know is that enteric fever, associated with a few other illnesses attributable to ptomaine poisoning, occurred; that up till the time the food supplies were delivered at the halls there is a complete absence of evidence pointing to contamination; that the subsoil there was exposed to pollution from defects in the drainage; and that the climatic conditions of the period were marked by an unusually high range of air temperature.

SANITARY CHAMBERS,
GLASGOW, *December, 1895.*

REPORT BY DR. R. M. BUCHANAN

*On the Bacteriological Examination of the Oysters,
referred to at page 8.*

Experiments were undertaken without delay with the object of isolating and obtaining in pure culture the different species of bacteria which might be present in the oysters.

The ordinary nutrient media, "gelatine" and agar-agar," were inoculated and spread on glass plates. The inoculations were made with material (1) from the outer surface of the oyster shell, (2) from the enclosed water, (3) from the body of the oyster, and (4) from the sandy debris within the shell. The gelatine plates yielded, at the room temperature, abundant colonies of bacteria, comprising in all seven or eight species. When the colonies had sufficiently developed, in two to three days, the different species

were transplanted into gelatine in test tubes for further examination in pure culture. The agar-agar series of plates, at incubation temperature, also produced a variety of species, and these were similarly isolated in gelatine tubes.

A few colonies, both in the gelatine and agar-agar plates, presented a certain outward semblance to colonies of the typhoid bacillus, and the likeness was maintained, to a large extent, in the tube cultures. These growths were then submitted to the more crucial tests of microscopical examination, cultivations on potatoes, in milk, and in glucose-bouillon, and it was found that the other characteristics which go to distinguish the bacillus of typhoid from other bacteria were wanting.

The investigation here outlined, and extending over a period of six weeks, affords no evidence of the presence of the bacillus of typhoid fever in these oysters.

WESTERN INFIRMARY,
GLASGOW, 23rd December, 1895.

