

I doubt very much if we appreciate the great and good work of our brethren in the village and farm districts of our northern New England States, where the high potency of typhoid infection often resembles that of dynamized solutions, and the malignancy of the process is frequently fulminating in its short and deadly course.

Fall fever, a north-country name for typhoid, is more dreaded there than any other infectious or any contagious disease—smallpox alone excepted. The farm well must remain practically as it is; the hill-side spring and piping, the meadow brook and hydraulic ram—I have seen them all—are inoperable, to borrow a surgical term, for several months yearly in a region where the ground freezes post-hole deep on the farm of the milk producer; the vaultless privy and the kitchen cesspool will continue to menace the health of every family within their sphere of influence, until the dairy and its adjuncts receive the same care and supervision as that now given the cattle in the matter of tuberculosis. Milk infection and its results are too widely known to call for other remarks.

A single case of typhoid, high up on a mountain stream, the water supply of Plymouth, Pa., resulted in a thousand cases of typhoid and a fatality of 10%. The Spanish bullets at El Caney and Santiago were not more fateful in their course than the flies from the latrines and cesspools at Chickamauga in the camps of 1898.

Milk infection, water supply pollution and camp food infection by flies—these are widely known; not so, however, until recently, the subject matter of Dr. Harrington's paper.

I suppose the occasion for this discussion is to be found in the outbreak of typhoid in the Boston colony, summer residents at Marion, Cape Cod. Marion has a winter population of 500, that of summer is estimated to be between 1,400 and 1,500. The village is delightfully located on the western shore, the deep water side of Sippican Harbor, an arm of Buzzard's Bay, about two and a half miles long with greatest width of about one mile.

The village water supply is largely from artesian wells, each on the premises of the owners of the house lots. Late in September last, I saw the first of a series of cases originating in the village, on October 9th, the second, and on October 13th, the third; afterwards there were 2 other cases (but not among my people), all residents of Boston in the winter and within easy pistol-shot of Charlesgate East. How many other cases in families or of people from other cities no one knows.

One case originated at the northern end of the village, 3 at the southern, a mile away, and yet another midway between. Neither milk, nor water, nor food supply in any form were common to all. If it was true that the village market-man kept his greens bright and his vegetables fresh by water from a polluted well, it is also true that he did not supply the families of my patients.

There is no sewage system in Marion. Residences erected along the water-front drain down

to the shore, few have cesspools, so that for a mile or more, houses, shops, fish markets, stables, academy and hotel pour their sewage into the incoming and outgoing tide.

Up to last fall the Marion oyster, native to the region, had been the pride and glory of the place; on the deep shell he had no superior; he came next after grace at all the good dinners the place is so famous for; whatever else was absent, he was present at all functions; he was introduced to guests as a desirable acquaintance.

A house party of 6 sat down to oysters on a blazer, 3 of the number had typhoid. A plain or even a fancy roast is mere child's play to a microbe that hibernates in a cake of ice and comes up smiling the next summer.

Blenkinsop's Cove, a mile or more long, on the eastern side of the harbor and about a mile across from Marion Village, had been the chief source of the supply for the summer trade, until in mid-season the demand increased and emergency calls arose; then, for convenience in quick delivery, etc., the clean oysters from across the harbor were kept in storage in places polluted by filth and contaminated by sewage. The State Board of Health reports the bacillus coli communis in oysters taken from various places on the village side, none in oysters from Blenkinsop's Cove.

This Marion outbreak, of small proportions fortunately, nevertheless has had wide influence; but the oyster was not so much at fault after all. A Virginia ham soaking in such waters would afford an example of food infection.

EARLY DIAGNOSIS OF TYPHOID FEVER BY ISOLATION OF BACILLUS TYPHOSUS FROM STOOLS; CONCLUSIONS OF DR. L. REMY BASED ON THE USE OF HIS ASPARAGIN-LACTOSE-CARBOL GELATINE.¹

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It is almost impossible to isolate the bacillus of typhoid fever from a mixture containing the common colon bacillus by means of plate culture with the ordinary nutrient gelatine or agaragar. This is not due to any antagonism between the two organisms, but is the fault of the culture medium. Many men have tried to invent a medium that could be used to separate the typhoid from the colon bacillus.

One of the most noted of these, Elsner, in 1895, successfully used a gelatine medium made from the juice of potatoes. Other observers failed to obtain his results on account of the great variations in the chemical composition of potato.

In 1896, a Belgian, named Remy, devised a gelatine medium made with asparagin and definite amounts of several salts to correspond to a chemical analysis of potato. With this he successfully separated laboratory cultures of typhoid and colon bacilli, and later on cultures derived from stools

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of typhoid patients. Just before using he adds to each tube of medium a little milk-sugar, and two drops of a 1-40 carbolic acid solution. The culture or feces is diluted twice, first about 1 to 40, second about 1 to 8,000. One or two loopfuls of this second dilution is mixed with a tube of melted medium and poured onto a glass plate. Colonies appear after two days at room temperature. The smaller and paler colonies are probably typhoid, but the appearance of the colonies is never sufficient for a diagnosis. Little cubes of gelatine containing each one colony are cut out and transferred to several tubes of bouillon. Examination of these tubes after a short incubation will show whether or no the organism is a motile bacillus. Some of it is then transferred to milk-sugar gelatine and incubated to see whether gas bubbles will develop. The bacillus must be tested with known typhoid serum to see if it will clump, and the bouillon culture tested for indol. If the bacillus clumps in the presence of typhoid serum and produces neither gas nor indol it may be said with certainty to be typhoid. If it does not clump and produces neither gas nor indol it may yet be typhoid, for typhoid bacilli when living together with colon bacilli may gradually lose their sensitiveness to typhoid serum. If gas is produced the culture is certainly colon bacillus.

Early in 1889 Rémy began to apply this method to the examination of stools of typhoid patients. During the year he made 31 examinations of stools from 23 cases of typhoid fever, and isolated the typhoid bacilli from every case. One examination was negative because the dilution was not sufficient, another because it was too great. Repetition in these cases, however, gave positive results. One case on the fifty-eighth day gave a negative result, though an earlier trial was positive. The earliest of all the examinations was on the third day of the disease, the latest on the forty-fifth day. Early in the disease the typhoid bacilli are present in relatively small numbers. They increase considerably during the second week, and may sometimes be almost the only bacterium present. During the third and fourth weeks the number diminishes steadily.

In two cases where an unusually large number of typhoid colonies developed on the plates, the patients died soon after the examination. In all the cases the typhoid bacilli had the same characteristics. They did not produce indol, they did not make gas from milk-sugar, and when mixed with typhoid serum they clumped promptly. The bacilli isolated during the second week grew rapidly and abundantly, while those isolated toward the end of the disease showed less vigor. In 3 cases the typhoid bacilli were found in the stools before the serum reaction or any other sign of typhoid fever was present. Consequently the presence of the typhoid bacillus with its specific characteristics is the only sign that, taken by itself, will justify the clinician in making a certain diagnosis. It is also the only sign that cannot fail. Control examinations of the stools from 12 patients with other diseases failed to show the typhoid

bacillus. The constant presence of the typhoid bacillus in the stools of persons sick with typhoid fever and the absence of it in the stools of other patients, Rémy offers as additional proof that the bacillus is the true cause of the disease.

I have made three lots of gelatine after the formula of Rémy, but cannot yet give any conclusion based on personal experience. The time required to make a report is at least three days.

Those who have used a method described by Piorkowski say that it is valuable and worth further trial. McConkey working in the Thompson-Yates Laboratories, in Liverpool, has had very encouraging results by adding bile salts to a medium for separating typhoid and colon bacilli. There is, therefore, good reason to hope that a method will be devised by which a report of examination of feces can be made in less than three days.

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THE FEVERS OF THE PHILIPPINES.¹

A PRELIMINARY REPORT ON THE NATURE OF THE FEVERS PREVALENT IN THE PHILIPPINE ISLANDS, INCLUDING TYPHOID FEVER, MALTA FEVER, THE MALARIAL FEVERS AND UNDETERMINED TROPICAL FEVERS.

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TYPHOID FEVER.

TYPHOID fever existed among our troops in the Philippine Islands to a considerable extent. There is hardly a command that has not lost men by it, still typhoid fever never has assumed anything near the epidemic form as occurred in the camps in the United States during the Spanish-American War, and as now prevails in the English Army in South Africa. Some cases of typhoid were undoubtedly brought over in the early expeditions from San Francisco to Manila, but it is more than probable that typhoid fever existed widely in the Philippines at the time of our occupation.

Our troops occupied many of the old Spanish camps. From these camps came a large number of the cases of typhoid fever. The camps at the

¹ Extract of a Report to the Surgeon-General of the Army, on the Diseases of the Philippine Islands. (By permission of the Surgeon-General.)