

PART IV.
MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE
COLLEGE OF PHYSICIANS.

SESSION 1878-9.

HENRY H. HEAD, M.D., President.

GEORGE F. DUFFEY, M.D., Honorary Secretary.

Special Meeting, Wednesday, May 14, 1879.

JAMES LITTLE, M.D., Vice-President, in the Chair.

*Discussion on Dr. Cameron's Paper, "On an Epidemic of Fever caused by Infected Milk."**

DR. LYONS said that Dr. Cameron's main position was that a large number of typhoid cases occurred in certain districts, and that those cases were traceable to a milk epidemic in a certain dairy; that in that dairy typhoid fever existed, and that from the cases of typhoid fever which there occurred the epidemic was spread. Now, if there had been an epidemic confined to only a small locality in the city it might be reasonable to look for the particular cause of it in such circumstances as Dr. Cameron had described. But the cases which occurred in the districts referred to by Dr. Cameron were only a small fraction of the cases constituting an epidemic of typhoid that prevailed over the whole city during last year and the present year. He himself had to deal with a considerable number of cases amongst the Metropolitan Police. The disease occurred amongst persons widely separated from each other, and the only thing they had in common was the Vartry water, upon which, he supposed, nobody would charge the origin of typhoid fever. Dr. Cameron had found a small epidemic in a locality which had been long notorious for the unsanitary condition of the houses in it. It had occurred to Dr. Cameron that the milk supply was the cause of the comparatively small outbreak with which he dealt. No doubt the theory of the possible milk origin of typhoid had been for some years fashionable. He believed that

* This paper will be found at page 1.

this theory would not stand the test of investigation, but would play its part for a time and then disappear into the limbo of forgotten fancies and imaginative causes of disease. Dr. Cameron went into the locality which he examined with the preconceived notion that these homogalactists, or partakers of the same supply of milk, were the subjects of a fever which had been conveyed from a particular dairy. He found some individuals sick in that dairy, there being plenty of people sick all round with similar diseases; and he thought that if he should be able to prove that the disease had been conveyed in the milk from the dairy he would immortalise himself. He (Dr. Lyons) happened to be concerned about some of those cases; and he thought he was entitled to have been asked his opinion as to the nature of those cases, but he was not. Was that done? Certainly not. If Dr. Cameron's premises were false, his conclusion fell to the ground. If cases of typhoid fever occurred—as there did in localities adjoining that in question, which had nothing to do with the milk from X's dairy—then it was open to him (Dr. Lyons) to assert that the cases reported in the paper were only part of a visitation common throughout the city, and that they had no connexion with X's dairy. But if it should appear that there was really no typhoid fever in that dairy what would become of Dr. Cameron's theory? He (Dr. Lyons) asserted that there was no typhoid fever, in the strict acceptance of the term, in X's premises from beginning to end. A girl sickened first. She was ill for three or four weeks. She had fever of a kind by no means uncommon—a simple continued fever—but she had no spots or rash of any kind. She had from beginning to end no diarrhœa. She had some slight head symptoms; and, if the case had anything specific about it, the symptoms were those of cerebro-spinal meningitis. The little boy sickened next, and exhibited undoubted symptoms of cerebro-spinal meningitis. He had no eruption of any kind, and no diarrhœa from beginning to end. On the contrary, his bowels were constipated, as were also those of the girl, and enemata and mild purgatives had to be used with them from time to time. The father sickened next, and exhibited symptoms of maculated typhus. His was a case of considerable gravity. At the end of three weeks pulmonary complications came on, and then a few indistinct spots that might have been mistaken for those of typhoid fever, but which were wholly uncharacteristic, made their appearance, and disappeared in twenty-four hours. From beginning to end the man never exhibited symptoms of typhoid fever. So far from his having diarrhœa, which could have occasioned dejecta capable of contamination, the difficulty was to keep his bowels even moderately in action. There was no reason, consequently, for asserting that any of those three cases were capable of spreading typhoid fever, or that there were any contaminating dejecta in the dairy-yard in question. The accumulation of ashes Dr. Cameron had spoken of would act as a disinfectant and absorbent of gases. He

(Dr. Lyons) disagreed with Dr. Cameron as to the sanitary condition of X's dairy-yard and immediate personal surroundings, which, in his opinion, were both excellent. Everything that he saw in his numerous visits to the yard evidenced scrupulous cleanliness and care. He never saw the milk-cans exposed. On repeated occasions he used the milk in question, and Dr. Cameron has stated that it was pure on the occasions that he himself examined it. The paper said—"I presume that in the later stages of this man's illness few will doubt that he suffered from typhoid fever." He (Dr. Lyons) begged to deny that. Again, Dr. Cameron said—"The facts I shall bring forward will prove that typhoid fever was spread in December last by means of the milk supplied from this dairy." That assumed what he had not proved—namely, that typhoid fever existed in the dairy. As a matter of fact, during the clamour that arose about this man's milk, numbers of people persisted in using it. From the beginning to the end those cases were treated with the very milk that was impugned and recovered on it, using it cold and boiled, raw and cooked. He believed that the cases of typhoid that had occurred in the district in question were part and parcel of the endemic visitation of typhoid that had prevailed in the city during the last two or three years. He called attention to the fact that it was principally since the introduction of the Vartry water into Dublin that typhoid fever had been so prevalent. He did not incline to the opinion that the Vartry water had anything to do with it; for a very marked change in the food of the people of Dublin had occurred, and he thought that the change of type in the fevers of the city was more due to the food of the inhabitants consisting more extensively of meat than heretofore. In conclusion, he expressed his regret that Dr. Cameron had alarmed the public by bringing forward this subject. He referred to Dr. Harley, with whom he had seen X. and the cases occurring in his (X.'s) house, in consultation, for particulars as to the nature and dates of their respective illnesses.

DR. FOOT said that all who had seen typhoid fever in the other parts of the city would bear him out in the assertion that constipation, or, at all events, the absence of diarrhoea, had been a marked feature of enteric fever for some time past. As far as the evidence went, he did not see that Dr. Cameron's position had been shaken in the smallest degree by Dr. Lyons. Not a shadow of proof had been given against the existence of typhoid fever in the locality to which he referred. Ample evidence had been given by Dr. Murchison of the fact that typhoid fever was communicable by milk; and he considered that no hypothesis but that of Dr. Cameron accounted for the epidemic of typhoid fever in the districts in question.

DR. HARLEY said that a complaint had been made by Dr. Lyons that his opinion was not asked in the matter. He (Dr. Harley) was

responsible for that. When Dr. Lyons first saw the father of the children he was in maculated typhus, and going on favourably. A few days afterwards, Dr. Lyons saw him again, and there were two or three rose-coloured spots on his body; and they then agreed that it was typhoid, although there was no diarrhoea. That evening Dr. Cameron came and asked him what was the matter with him, and he said he was afraid it was typhoid. The first case occurred in the house about the 15th of December, and was that of the little girl. The second case was that of the father, and the third that of the boy. The girl was first visited by him on the 15th of December. On the 1st of January the father was covered with typhus spots. On the 2nd of that month he (Dr. Harley) saw Dr. Lyons in consultation about him. He got on well through the typhus, and was sitting up in bed eating chicken, when a new illness set in of an undefined nature. It was accompanied with high fever. He had had bronchitic complications during the typhus, and in his second illness his chest became again affected, and more pneumonic symptoms set in. Then Dr. Lyons saw him again, and continued to see him with him (Dr. Harley) during his convalescence. He went through a very malignant form of low pneumonia after the fever symptoms had abated, but he never had any diarrhoea or abdominal tenderness whatever. Treatment was mainly directed to his lungs. The boy went through a severe attack of cerebro-spinal meningitis. His case was characterised by the absence of diarrhoea, but he had very severe head symptoms. He got well about the same time as his father, after having been ill about a fortnight. He had kept no charts of their temperatures during their illnesses. He paid his first visit to the house on the 15th December. The girl's first illness was called at the time gastric fever. She was feverish, prostrate, and semi-comatose, and slept through the fever. She drank the celebrated milk all the time, and was occasionally treated with lime-water, but never had diarrhoea. With respect to the cases that occurred at St. Mary's-road the illness commenced on the 29th of November. X.'s children got ill on the 15th of December, and were ill for a few days before he (Dr. Harley) saw them. The child that had meningitis was watched by him from the commencement to the end. It went through gastric fever, and convalesced so as to be up in the drawingroom, and ate chicken, contrary to his advice. She then got a relapse, the head became engaged, and the child died of meningitis on the 26th of November.

DR. GRIMSHAW said the whole question depended on whether or not the cases at the dairy were enteric fever. He dropped the word "typhoid," because in many cases Dr. Cameron had used the word "typhoidal," which was a mischievous and indefinite expression. On the face of the paper there was no evidence of the existence of typhoid fever in the household in question. It was stated at the end of the account of the father's

illness that he relapsed into a low form of fever accompanied by a few rose spots. The two children were very young, and everyone who knew anything of typhus fever knew that young children attacked with typhus sometimes had no spots at all, and that such cases often closely resembled cases of enteric fever. As to how the poison got into the milk was a question not worth discussing; if contagion were floating about it would have been quite easy for it to get into the milk. Most of the Dublin dairy-yards were in a filthy state. At the time covered by Dr. Cameron's paper typhoid fever was extremely prevalent all over Dublin. Dr. Cameron's figures with regard to the number of persons supplied from the dairy in question were rather indefinite. It was very doubtful that several of the cases which he traced to the use of the milk were typhoid fever at all. The medical men who attended some of them did not say they were typhoid; while the particulars of other cases were given on hearsay. Dr. Cameron mentioned that he did not take the same amount of trouble in investigating the epidemic in other localities, as X.'s customers in them were very few. Those were the very instances that would have settled the case. If he had found that in those places where X.'s customers were very few typhoid fever was very abundant—which, he had no doubt, he would have found if he had looked—it would have been a very important fact. He (Dr. Grimshaw) had lately had considerable dealings with fever cases at the west end of Dublin, and met with a considerable number of typhoid cases, not one of which had any connexion with X.'s dairy. Dr. Cameron had mentioned that in the western districts of Dublin there were houses to which milk was supplied from X.'s dairy, but he did not mention anything in connexion with those cases. The facts mentioned in connexion with the case of Mr. Travers Smith did not prove that he had typhoid fever; and another important point was, that no statistics had been given as to the persons who got milk from this dairy, but who did not get fever. The total of houses supplied, and the results in all the cases not having been given, the conclusions of Dr. Cameron fell to the ground. One of Dr. Cameron's cases was mentioned as having occurred at 24 Elgin-road, and if there was anything whatever in the pythogenic origin of typhoid fever, the case in question must have originated in that way. He had inspected that house, and found that the ground outside the bedroom occupied by the girl was higher than the floor of the room, and the drainage of an adjoining privy was actually draining into it. Why that case should be attributed to the milk he did not know. With all respect, therefore, for his friend Dr. Cameron, he thought that, as typhoid fever was prevalent in all directions in Dublin, there were numerous other sources of it besides the supposed one of the milk of this dairy. Dr. Cameron was, no doubt, right in assuming that if the poison of the disease existed in the dairy-yard, it might have been blown into the

milk by currents of air. He (Dr. Grimshaw) did not think that Dr. Cameron's paper was a satisfactory one. He admitted that the circumstances were suspicious, but he did not think that the evidence established that X.'s dairy had infected all the people who were mentioned, and, therefore, he thought the Society should come to the Scotch verdict of "not proven."

SURGEON-GENERAL CRAWFORD, A.M.D., having alluded to the unhealthy condition of the district (the Pembroke Township), in which so many of the cases traced by Dr. Cameron resided, and to the sanitary commission that had been appointed by the commissioners of the township at the request of several influential inhabitants to investigate into the causes of such unhealthiness, said that Dr. Cameron's paper did not dwell on the history of typhoid fever in that locality previous to December. One member of his (Dr. Crawford's) family suffered from typhoid fever so far back as July last. Neighbours of his a little further up suffered in July; and Dr. Chapman would tell them that in Elgin-road and Clyde-road typhoid fever prevailed for a considerable time before they heard anything about X.'s dairy. He believed that the whole district was permeated with whatever was the cause of typhoid fever, and that no statistics regarding the distribution of milk there in December could be accepted as proof to the contrary. If the paper went abroad, and the people of Pembroke Township were thus given reason to suppose that the prevalence of typhoid fever there was due, not to the unsatisfactory sanitary condition of their houses, but to milk from particular dairies, and other external causes, there would be an end of sanitary reform in that township for many years to come. Instances were discovered of serious sanitary defects in houses where this epidemic prevailed. Up to a few weeks before the occurrence of this so-called milk-epidemic there was no question that the common sewers of Raglan-road and Elgin-road had been contaminated by typhoid discharges from cases of typhoid occurring in houses in those roads. The Sanitary Inspection Committee discovered that not a single house on those roads was provided with an intercepting trap, and that there were but very few houses in either of the roads in which the soil pipes, or any other pipes, were ventilated. The sewers themselves were unventilated up to a few weeks before the occurrence of those fevers in Raglan-road, when some ventilators were put into the sewers in that road. In fact, the whole drainage arrangements of those two roads in particular were hermetically sealed up, and no means existed for the escape of the sewer gas except into the houses. Numbers of the houses were vacant for several months between June and November, and the disuse of the sanitary appliances in those houses during that period was not calculated to improve their sanitary state when they were again occupied. Those drains were not flushed during the summer months, and to that might be attributed the

continuance in them of the contagion which afterwards got into the houses, and caused the outbreak which Dr. Cameron had attributed to the milk.

On the motion of DR. HAYDEN, the discussion was adjourned to that day week.

Adjourned Special Meeting, Wednesday, May 21, 1879.

JAMES LITTLE, M.D., Vice-President, in the Chair.

The discussion on Dr. Cameron's paper, "On an Epidemic of Fever caused by Infected Milk," was resumed.

DR. HAYDEN said he had had no connexion with any of the cases, and he did not know where the dairy in question was. The substance of the paper under discussion might be summed up in three propositions—viz., 1st, that fever of a typhoid character existed in a particular dairy at a particular time; 2nd, that that fever, through the dejecta from the bowels of the persons affected with it, was introduced into the milk supplied to the customers; and 3rd, that through that milk the fever arising from the semina in the milk was distributed through the city. He did not consider that any of those propositions had been established. As to the existence of the fever in the dairy, they had the affirmation of one of the medical men who attended the patients there that the fever under which they laboured was not at all typhoid; that gentleman was himself an eminent author on the subject of fevers. The second medical man who attended them was rather dubious as to the specific character of the fever. There was nothing on the face of the paper to show that they were typhoid; they had none of the characteristic signs. As to the *materies morbi* being carried by the air into the milk, it should be remembered that at the time when those cases were reported to have existed—namely, in December, the ground was covered with snow, and when there was no snow there was sleet or cold rain; and he doubted that there were such currents of air as would have dispersed particles of matter so contaminated through the yard, and carried them into the pails of milk, or up to the udders of the cattle. As to the proposition that typhoid fever was distributed in the milk through the city, and found in a great number of houses during the months of December and January, any person who examined the paper dispassionately would find a great deal warranting him in questioning the evidence, and doubting that that proposition had been established. In connexion with Elgin-road they found six cases in numbers from 1 to 6. "The lady in No. 6," it was stated, "who used the milk, got a low feverish attack at Christmas, but was confined to bed for only a few days; and it was doubtful whether

or not the milk from X.'s dairy was the cause of her illness, but the case was worth noting." It might be worth noting in a general way, but most assuredly in the present connexion it was not, for there was nothing to show that the fever originated by the milk was typhoid. In the cases connected with No. 7, Raglan-road, in which the mother and boy went to the country, and died there in January, 1879, the hypothesis that they took the poison with them from Dublin was converted into a positive affirmation. He questioned the truth of that. It was admitted that the sanitary condition of the residence to which they went in the county of Meath was not satisfactory. As to the case of the medical man in Fitzwilliam-square, he could not see the object of mentioning it, for it was not affirmed either that the gentleman took the milk or that the fever was typhoid. Again, with respect to the case of a child, Dr. Cameron affirmed in the same page of his paper "that he had little doubt, from the illness of the other members of the family, and from the poisonous character of the milk, that the illness was due to it." There, again, what was a mere hypothesis was converted into an affirmation that the milk was poisonous. He did not think that fair. Therefore, while he esteemed his friend Dr. Cameron very highly, and placed the highest estimate upon his laborious investigations into the causes of disease, he did not think that the present paper would enhance his reputation, or advance the interests of medical science in the slightest degree.

PROFESSOR WILLIAM MOORE said that Dr. Cameron had alluded to some cases which he (Prof. Moore) had seen in Fitzwilliam-square, and in Burlington- and Northumberland-roads. The nursery-maid in Fitzwilliam-square had enteric fever, and he sent her to Sir Patrick Dun's Hospital. In a few days afterwards he was sent for to see a child of three years of age in the same house, and he might add that that house was as well looked after in a sanitary respect as any other in Dublin. The child had a temperature of 105°, some slight bronchitis and diarrhœa, and convalesced at the end of twelve days. He was also called in to see the brother of that child, a boy aged seven or eight years, who had fever, with high temperature, diarrhœa, but no bronchitis, and in his case the fever went on for thirteen or fourteen days. While he was attending that case another child sickened, and had diarrhœa, bronchitis, and high temperature, and that illness went on for fifteen or sixteen days. None of the children had any spots, but the servant was spotted. The cases in Burlington-road were, first that of a child in a house which, so far as outward appearances were concerned, was perfect as to its sanitary condition. That child had intense diarrhœa, bronchitis, and very high temperature, so much so that very little hopes were entertained of its recovery. It convalesced after eighteen days. During the time the child had fever its mother complained to him of pains and aches. She was in the eighth month of her pregnancy. In a few days she took to her bed, and spots

developed themselves, accompanied with persistent diarrhoea, bronchitis, and temperatures varying from 104° to 105° . She went through the fever, convalesced, and at the end of a month was delivered of a living child. As to the Northumberland-road cases—the girl, who was nineteen or twenty years of age, had diarrhoea, high temperature, and a few spots; unmistakably she had a twenty-one day fever. The housemaid had been sent to the Meath Hospital. The brother of the young lady was convalescing from fever when he was asked to see her. He found it was the same milkman that supplied all the houses. The nursery-maid in Fitzwilliam-square had enteric fever; there could be no mistake about the lady that he saw in Burlington-road; and the same was true with respect to the Northumberland-road case. As to what kind of fever the children had, the best way to arrive at that was by the process of exclusion. He maintained that these were all cases of enteric fever. No one in Dublin was more competent to form an opinion on fever than Dr. Lyons; but while he had told them what the fever was not, he had not told them what the fever was that the proprietor of the dairy had. From what was recorded about the case, he (Professor Moore) believed that it must have been some form of enteric fever.

DR. J. W. MOORE said that four of the cases detailed in Dr. Cameron's paper came directly or indirectly under his notice in December and January last. The most doubtful was that of Mr. Travers Smith, a member of his class in the Meath Hospital, who felt unwell from the 22nd of December. He had a feeling of languor, unusual heat at night, constipation, and severe headache—his pulse being 110 and his temperature 102° . He was unable to apply his mind to anything; he had no eruption, and not much delirium, but the clinical chart showed that his illness ran a course of some three weeks, and that the temperature on one occasion reached 107° . Dr. James Cuming, who attended him in Belfast, said that he certainly used the milk, and that he certainly had fever, but whether it was typhoid fever or not he could not say. Mr. Smith on his return to Dublin came to him (Dr. Moore) and told him of this anomalous fever that he had. It appeared that Mr. Smith used milk from X.'s dairy, and that he was the only member of his family who drank it in a raw state. The second case that he saw was that of Eliza Armstrong, who was admitted into the Meath Hospital on the thirteenth day of an undoubted attack of typhoid fever. She had rose spots and obstinate constipation, and died on the thirty-fourth day of her illness. The third case was that of Ellen Donnell, who was admitted into the Meath Hospital from the house in Upper Mount-street on the 28th of December. In the cases of that patient and of Eliza Armstrong they made the diagnosis of typhoid fever long before they heard of the milk epidemic. Ellen Donnell was admitted on the ninth day of a severe attack of typhoid fever, accompanied with rose spots and moderate

diarrhœa at intervals of three and four days. At the end of four weeks otitis set in, and the left ear discharged freely. Her illness ran to seventy-two days, but she ultimately left the hospital quite well. The fourth case was that of James Byrne, who was admitted into Cork-street Hospital on the 4th of January last, and after being there for fifty-five days was discharged well on the 28th of February. He had a copious eruption of rose spots and a good deal of diarrhœa. These cases fully bore out the diagnosis of typhoid fever.

Dr. Lyons had alluded to the small proportion that the cases attributed by Dr. Cameron to X.'s milk bore to the number of typhoid cases then existing in Dublin; but an examination of the Registrar-General's Returns for eight weeks ending February 8, 1879, showed that during that period the admissions of cases of enteric fever into all the Dublin hospitals numbered 91. Of these 91 cases, 18, or very nearly 20 per cent., occurred in connexion with the outbreak described by Dr. Cameron. But the evidence was still stronger for the three weeks ending January the 11th, 1879. The total number of typhoid cases admitted into all the Dublin hospitals during that period was 45, and of these no fewer than 17, or 38 per cent., were distinctly connected with Dr. Cameron's outbreak.

It was alleged that the fever in the dairy yard was not typhoid at all. He was disposed to accept that fact. The short clinical description given by Dr. Cameron showed that the case of X. himself was typhus, and that those of his two children were probably typhus also. But that raised the whole question of the etiology of typhoid fever. If they accepted the view of Budd that there was only one mode of origin of typhoid fever—namely, the introduction into the human system of a portion of the discharges from the intestines of a typhoid patient, then of course Dr. Cameron's theory fell completely to the ground. But he (Dr. Moore) was not ashamed to confess that he was an ardent disciple of Murchison on this point. He believed that decomposing organic fœcal matter of any kind might give rise independently to typhoid fever, and he thought the whole consensus of evidence was in favour of that view. The very name applied to the disease by Murchison showed that he believed in the *pythogenic* and independent origin of typhoid fever. The origin *de novo* of this fever being granted, they had a simple explanation of the outbreak of the disease due to infected milk from the dairy yard.

Dr. Grimshaw had said that Dr. Cameron gave no details as to the populations of the attacked households. That objection might be overruled, for they found that in those households the drinkers of the milk in a raw state were more severely attacked than the others. Of Dr. Cameron's 66 cases, 44 presumably drank the milk in a raw state. There was positive evidence that 34 of them drank the milk raw. When a local epidemic of typhoid occurred at Islington in 1870, Dr. Ballard

found that it prevailed principally amongst females and young children—in other words, amongst those persons who were most in the habit of using milk. Of Dr. Cameron's 66 cases, 27 occurred in children, 27 in adult females, who were the next largest consumers of milk, and 8 only in adult males, of whom two at least were raw milk drinkers—namely, Mr. Travers Smith and Mr. Lyne, who took a tumbler of X.'s milk every day at his dinner. Dr. Cameron very fairly alluded to the cases in which the milk caused no illness. Only 29 per cent. of the houses supplied with X.'s milk escaped; in 71 per cent. of them the members of the households were attacked with the disease. Looking at the cases in which the milk caused no illness, they found that in the first house the milk was only used in tea, very seldom in cooking, and that there were no children. In the second house the milk was taken cooked and uncooked by four or five persons, none of whom were young, and most of whom had gone through typhoid fever four and a half years before. In the third house the milk was taken cooked and uncooked by a family in which there were no children, and in the fourth house the whole family drank the milk raw and cooked until it was known that fever was in the vendor's family. That was in the latter part of January, and that house escaped, although no protective influence was at work.

It appeared to him that there were some peculiar characteristics in the epidemic which were not found in ordinary cases of typhoid. First, there was the absence of the rash in a good many cases; but this was notably an inconstant symptom. Murchison, basing his statement on an experience of 5,988 cases of typhoid fever, said that the rash was present in only 77 per cent. of them. Next, as to the inconstancy of the diarrhœa, Murchison stated that it was present in 93 per cent. of his cases, but added that a more extended experience led him to believe it was absent in fully one-fifth of the total cases. In the third place, the pyæmic complications and sequelæ that occurred in many of Dr. Cameron's cases gave this epidemic a distinctive character. In the case of the young girl at the Meath Hospital, the resulting pyæmic complications were remarkable. In Dr. Ringwood's cases also the fact had been overlooked by preceding speakers that Dr. Ringwood at once came to the conclusion that the patients under his care were poisoned through the milk.

With respect to the second illness of X., his opinion was that it was undoubtedly typhoid. During his first illness—an attack of typhus fever—X. drank the milk from his own dairy, and he (Dr. Moore) had little doubt that it was in that way that X. contracted typhoid fever—he was in fact himself one of the victims of the milk outbreak which Dr. Cameron had so well described.

DR. NIXON said—The question raised in Dr. Cameron's paper is of such importance that, although I have not had the advantage of hearing

the prolonged discussion which it has evoked, still, from my experience as a hospital physician, I feel it my duty to give my independent view as to its value. Starting, I presume, from the well-ascertained fact of the remarkable powers possessed by milk of absorption of vapours, and of undergoing rapid fermentative, or zymotic changes, when mixed with putrifying animal matter, Dr. Cameron holds that an epidemic of typhoid fever was produced by the presence in milk of the actual particles of the dejecta of a patient suffering from this disease. He states his belief that the *materies morbi* passed into the milk in the same way as elements of disease pass by the agency of sewer gases into water; that in the confined space in which the dairy operations were performed the air wafted gases impregnated with minute particles of excremental matter into the milk. A number of cases of typhoid fever, presumably due to the use of the infected milk, is then recorded. Dealing strictly with the propositions advanced in the paper two questions appear to be raised:— (1) Did typhoid or other poisonous matter exist in the milk, and, if so, how did it get there? (2.) Were the instances of disease alleged to have been produced by infected milk cases of enteric fever? With reference to the first point a curious want of concordance of opinion exists. The writer of the paper states that on the 15th of December last a child of the proprietor of the dairy was seen for the first time by a physician, and that she had a gastric attack without diarrhœa or rash. Dr. Cameron states his positive opinion that this girl suffered from typhoid fever. A short time afterwards a little boy gets ill at the dairy. He has symptoms of cerebro-spinal meningitis; no diarrhœa or rash; and subsequently the father of the children passed through well-marked typhus, followed by a low form of fever, ending in double pneumonia, and accompanied by a few rose spots. There existed neither delirium nor diarrhœa. These two cases are regarded as undoubtedly typhoid in their nature. Now, from the account given, the only distinctive sign of typhoid fever present in any of the cases was the existence of a few rose spots upon the father. Of all the signs of typhoid fever this is the one which, I believe, is most likely to lead to an error of diagnosis. We know that Louis mentioned their presence in cases of phthisis, and sometime afterwards he acknowledged that he mistook pimples upon the skin for rose spots. But whilst the evidence adduced by Dr. Cameron as to the existence of this special type of fever is so unconvincing, the consulting physician in charge states positively that none of the cases were typhoid fever. I am certainly of opinion that some value should be attached to the diagnosis of disease made at the bedside, and I feel bound to place more reliance upon the statement of the physician in actual attendance on the cases—one of high standing, and well known from his researches upon the special subject of fever—to the speculative opinion of one who, whilst anxious, no doubt with perfect *bona fides*, to prove an assumed proposition, has not personally been

brought in contact with the disease, the nature of which he is investigating.

It does not, however, dismiss Dr. Cameron's view as to the origin of the fever from polluted milk to show that the special virus of typhoid fever did not pass into it. Some of the highest authorities admit the origin of enteric fever *de novo*; that in exceptional cases decomposing sewage or putrifying animal matter may produce it without the presence of the special contagia. Fully granting the impossibility of proving a negative, cases of typhoid fever have originated without there being any reason whatever for assuming the existence of the typhoid virus. It appears to me, however, to be quite an open question as to the milk in this instance being infected with decomposing animal excreta. According to Dr. Cameron the sanitary condition of the dairy was bad, and it may be that during the confusion attendant upon the presence of illness in the household there was not sufficient cleanliness with regard to the vessels. I should be disposed to hold that if the milk became polluted it did so by the actual contact of excremental matter during the performance of dairy and domestic operations. Taking this view, the hypothesis of the pollution of milk in the same way as that of water through the agency of gases would be unnecessary. I cannot pass from this point without asking Dr. Cameron if he believes the presence in the milk of typhoid matter derived from the excreta of the girl ill at the dairy in November caused an epidemic of fever, how does he connect the occurrence of the small typhoid outbreak in October with the milk from the dairy in question?

It would occupy too much of the time of the Society to analyse the reports of the different cases alluded to in Dr. Cameron's paper. I may remark, however, that out of the 67 cases of illness, judging from the negative evidence adduced as to their nature, a very small proportion of them can be said to have been instances of typhoid fever. I say this in the absence of any proof being afforded that cases of continued fever without spots, diarrhoea, or other signs of intestinal irritation, are enteric in their nature. I quite admit that in epidemics of typhoid fever cases of an anomalous nature occur, cases which but for the presence of the epidemic influence would scarcely be regarded as enteric in their nature. But these cases are the exception, and I am not sure but that this tendency to attach great value to epidemic influence leads us occasionally to make diagnoses of states that have no existence. We believe a certain form of disease to be present, but it may be a case of Hamlet being played without the appearance of the historic prince. My own observation of fever leads me to believe in the existence of a special type, not typhoid in its nature, and of much longer duration than cases of febricula, or simple continued fever. I saw such cases when a student, and I heard my teachers relegating them to the class of nondescript

fevers. I see no reason why the name "asthenic simple fever" should not be generally adopted. The prominent features of such cases are malaise, great languor, slightly coated tongue, confined bowels, rapid pulse, headache, disturbed sleep, and progressive prostration. Reading over the cases of fever described by Dr. Cameron, I cannot help thinking that most of them belong altogether to this type. In many of the cases noted I do not think sufficient data are afforded to warrant any diagnosis being formed, as, for instance, in Cases I. and III. in Fitzwilliam-square, and Case III. in Mount-street. In the last we are told that a child had been treated for gastric fever, which ran into tubercular meningitis. Are we to look upon this case as one of typhoid fever aborting in meningitis, overlooking the fact that the most common of the prodromal symptoms of the latter is gastric disturbance? My object in alluding to some of the cases is to show that insufficient grounds exist for admitting the great majority of them to be cases of typhoid fever, whilst many of them closely resemble either cases of simple continued fever, or the adynamic simple fever of Murchison. Some, no doubt, were cases of genuine enteric fever, but we must bear in mind that during the months of October, November, December, and January a large number of cases of enteric fever occurred in Dublin, which could have no possible connexion with the milk from X.'s dairy. In the Mater Misericordiæ Hospital during the months of October, November, and December of last year 65 cases of well-marked enteric fever were admitted, besides a large number of cases of simple continued fever having the same characteristics as most of Dr. Cameron's recorded cases. The chief features of the typhoid epidemic, judging from the cases in hospital, were severe diarrhœa and intestinal hæmorrhage, the latter of the late variety, and often serious from the amount of blood lost. Although anomalous cases occur in all epidemics, still they are the exception, and I would suggest to Dr. Cameron to calculate the probabilities that out of any 67 selected cases of fever so large a proportion would present such unusual characters as those recorded by him. The idea that the non-diarrhœal nature of the poison produced a non-diarrhœal epidemic seems like a revival of the old "doctrine of signatures" which for so long a time helped to bring medicine into ridicule. It is a fallacy of argument specially indulged in when questions of contagion arise, and is expressed by the assumed law "that the conditions of a phenomenon must, or at least will, resemble the phenomenon itself." We should, therefore, in analysing the cases noted—firstly, satisfy ourselves as to their nature; and, secondly, carefully bear in mind the possible existence of other causes more potent than impure milk in producing a typhoid outbreak. Indeed, the writer of the paper fully admits that in some of the well-defined cases of fever the sanitary condition of the houses in which it occurred was very bad.

With respect to the mathematical proof that the milk from X.'s dairy

caused the epidemic, a fundamental requisite appears to be absent. To apply the doctrine of chances to the solution of any scientific problem, it is necessary to ascertain first the limit of all positive information concerning the subject. We cannot assume that a number of individuals or objects agree or differ, save in one particular, until we have made ourselves fully acquainted with their points of resemblance or difference. Nor are we justified in selecting any single cause for the occurrence of a disease when a plurality of causes may exist, unless we can show that the conjunction of cause and effect is not alone constant—but that all circumstances except this one capable of producing a result may be eliminated. It is not legitimate to premise that all the people living in the various streets where illness occurred were under similar conditions, except as regards their milk supply; that their water supply, their sanitary accommodation, their habits of life, &c., were similar. Nor is it right to assume whilst cases of any special disease were occurring with moderate frequency, any section of the community would be influenced only by a purely local cause. I do not say it would be possible in this particular instance to obtain the precise information that would be desirable, but it is certain that its absence vitiates the calculus of probabilities, and makes its application just as uncertain as it is in testing the credibility of witnesses or the correctness of the verdicts of juries. The theory of probabilities depends upon data of a more certain character and of wider scope than that furnished in this particular question. We should not attribute every case of illness, trivial or grave, to the use of impure milk, to the exclusion of all other causes, nor should we overlook the possible occurrence of illness in households which are supplied with milk from sources different to the one specially indicated.

In conclusion, Sir, I would say that there is no evidence whatever of the pollution of milk with the virus of typhoid fever. Dr. Cameron's argument from the start seems to involve a *petitio principii*. The test of the fallacy is supplied by his reasoning in a circle. He states that because there was typhoid poison in the milk there was an epidemic of typhoid fever, and then he is driven to argue that because there was typhoid fever there must have been typhoid poison in the milk. In one case there is a complete absence of proof as to a matter of fact, and in the other the more generally recognised causes of enteric fever are excluded from consideration.

I am not prepared to say that none of the cases of illness recorded were due to the use of milk containing sewage or other impurities just as malaise, fever, and prostration may be produced by drinking bad water or breathing foul air, but to the question of an epidemic of typhoid fever, arising from this cause, I would certainly return the Scotch verdict of "not proven."

DR. M'CLINTOCK said that as he saw one of the cases he might be

allowed to make a remark. The drift of Dr. Cameron's paper was that a certain proportion of the persons supplied with the milk in question were attacked with fever of the nature of typhoid, and which, from the want of a better adjective—and he (Dr. M'Clintock) was very glad to adopt the adjective he had used—Dr. Cameron called “typhoidal.” That word was equivalent to Dr. Nixon's phrase “nondescript,” and meant a fever having some relation in appearance and symptoms to typhoid. The word “typhoid” itself originally meant a fever having some resemblance to typhus, though it was now used in a more definite sense. Such was the main point of Dr. Cameron's paper; and none of the speakers, except Dr. Nixon, had addressed themselves to it. In fourteen out of twenty-five households supplied from the dairy in question fever attacked thirty-one persons within a fortnight; while in ninety-five households supplied with milk from other sources, not a single case of fever or serious illness of any kind occurred during the months of December and January. Would anyone say that that was a mere coincidence? Until those facts were overturned Dr. Cameron's paper must stand. It was quite unimportant whether the fever that X. and his children had was typhoid or typhus, or gastric, or enteric, or nondescript. With respect to the house in which the case occurred that was under his care he made inquiries. There were six adults in it—namely, three maid-servants, a man-servant, the head of the house, his wife, and two children. Every person in it got fever of a typhoid or typhoidal character; he would not put himself down to a precise diagnosis. The three maid-servants all used the milk uncooked; they got the fever and were sent to the Mater Misericordiæ Hospital and treated there. The master had been in the habit of taking the milk with soda water and of also using it in tea; the two children used the milk; and both got gastric fever, as he would call it. The parents suspected the milk and stopped taking it; and during the whole time of his attendance there the supply of milk for the house was derived from the cow of a friend in Merrion-square. The children recovered. The only person who completely escaped was the lady of the house, who was five or six months in the family-way at the time. She nursed her husband, went her full time of pregnancy, and was confined naturally. He particularly inquired did she drink the milk, and she said she did largely, but never until it had been boiled.

DR. HAWTREY BENSON remarked that before the matter was brought forward the cases in X.'s house were called typhoid fever. After it was brought forward they were not called typhoid fever. But the fact was undoubted that there was fever in X.'s house, and the main point was—was it communicated? The statistical evidence in Dr. Cameron's paper was enough to show that it was.

DR. CHAPMAN said there could be no doubt that fever was exceedingly prevalent in Pembroke Township, including Raglan-road, Elgin-

road, and Clyde-road about the time referred to by Dr. Cameron. It had been prevalent there for several years; and it was well known to many gentlemen in that room that the neighbourhood had been a focus of typhoid fever for a long time. Dr. Cameron himself had referred to the existence of that type of fever there previous to the occurrence of the cases mentioned in his paper. Typhoid fever was prevalent there in July. He (Dr. Chapman) was then Medical Sanitary Officer, and on the 2nd of August, 1878, sent a report to the sanitary authorities asking them to take some steps in reference to that particular neighbourhood, and to have the houses and the sewers connected with them examined. The surveyor reported that the sewers were all right, but that he had not been able to examine all the houses. Dr. Cameron had told them that he (Dr. Chapman) had twenty-seven cases. That was accurate. Thirteen of them occurred in the month of December, and five in January. Only two out of the eighteen that occurred in those two months drank the milk from X.'s dairy. From the 20th of May, 1878, to the 1st of August, 1879, there were eighteen deaths registered in Pembroke Township from typhoid fever. These facts proved conclusively that typhoid fever was prevalent in the neighbourhood for a considerable time before Dr. Cameron's cases occurred. In December and January, however, there was a decided increase in the number of cases. On the 16th of January he sent in a report to the sanitary authorities recommending, amongst other things, that the sanitary condition of the houses should be particularly examined. He adverted to all the points that he thought required attention, and suggested that inquiry should be made as to the persons who supplied the milk. The people living in Elgin- and Raglan-roads were afterwards put to considerable expense, and they blamed him (Dr. Chapman) for it. In the case of No. 1, Elgin-road the sanitary arrangements of the house were exceedingly bad, and all the children had been drinking water from a large tank, which was open and placed over the water-closet; and he had not the slightest doubt that the water in that tank was not right. As to the cases in No. 1 and No. 3, Dr. Grimshaw concurred with him that the cases were typhoid. Fifty houses were examined out of 103 on the roads mentioned, and every one of them except five were found to have very serious sanitary defects, dangerous to health. Of the five, the defects in three were afterwards remedied in consequence of the recent occurrence of typhoid illness in them. Not a single house in Pembroke Township was examined in which serious sanitary defects were not found. It would be wrong, therefore, to say that the milk caused all the illness; it might have caused some of it but not all. The disease might have originated otherwise. They knew that the sanitary condition of the houses in Dublin was far from what it ought to be. On the other hand, almost every resident in the township seemed to be under the impression that the house he lived in

was perfect as to its arrangements. In one case, in which the landlord declared that his house was perfectly right, twenty distinct and serious sanitary defects were found to exist. These facts were worthy of note. At the same time he thought there was something more than accident in the way in which the persons who used X.'s milk had been attacked.

DR. DOYLE said he would like to know had the cows in X.'s dairy been examined. He had under his charge on one occasion two cases of typhoid fever—a man and a child—who got it from drinking the milk of a goat that was suffering from disease. The man had got the goat from persons who were suffering from typhoid fever. The milk of the goat was of a reddish colour.

After some remarks from DRs. MACSWINEY, CHARLES F. MOORE, and HENRY KENNEDY,

DR. KELLY said he wished to mention a case that fell under his own observation. Last July he attended a milkman for a fever, which he considered to be typhoid. The milkman's dairy was a short distance from his house, and the milk was brought to his house to be distributed. The peculiarities in his case were the extreme length of the fever, which continued for five or six weeks; that he was free from diarrhœa, but had a continuation of rose spots all through; and that his throat was in a most congested state—so much so that he thought he had some form of mortification or gangrene of the soft palate. This man supplied milk to an institution in which fifteen cases of fever occurred. He made inquiry as to the form of that fever, and found that its characteristics were the same as in the case of the milkman.

The CHAIRMAN said the first question was, were the cases in X.'s house typhoid fever? He thought the cases of the father and the child were distinct, and that the child had had typhoid fever. With respect to Dr. Cameron's sixty-six cases he was unwilling to use such an adjective as "typhoidal," because such adjectives generally covered a weak diagnosis. At the same time it should be recollected that Dr. Cameron was not the clinical physician attending the cases, but had to get his information at second-hand, and, therefore, he was right in using a vague term when he had only hearsay information. A great number of his cases did not present the typical phenomena of typhoid fever; but it was admitted on all hands that the typhoid poison was capable of producing symptoms of every degree of intensity, from very slight to very severe; therefore, it did not invalidate his argument to show that those cases did not present the typical phenomena of typhoid fever. The cases that were under the care of Dr. Ringwood reminded him of the cases of the late Professor Morgan and his daughter, that occurred in this city. In both cases the diagnosis of typhoid fever was verified by Mr. Richardson and himself by *post mortem* examination. As to the connexion between Dr. Cameron's sixty-six cases and the cases in X.'s house it had

been thought that if the connexion between X.'s house and particular cases were shown to be weak, the connexion with the rest was proved not to exist. But that was a fallacy. If the proposition were that the fever spread through a number of persons, like links of a chain, to a particular person, on its being shown that there was no connexion between any two of those persons the chain was broken. But here a number of persons were separately in communication with this man, and all got typhoid fever. Dr. Lyons had said that he had been very much refreshed by X.'s milk, and that he had not got typhoid fever; therefore, he argued, there was no contagion in it. As well might they argue that there was no contagion in smallpox because physicians in smallpox hospitals did not get it.

DR. CAMERON, in reply, said that not a single one of the statements that he had made in his paper had been substantially rebutted. It was no part of his case to prove the precise nature of the fever that occurred in the dairy. He paid very little attention to X.'s illness, because many of his customers were previously down with the same kind of fever. He attributed the origin of the epidemic to the case of the little girl. The very day he made the discovery of so many persons in households which were supplied with milk from X.'s dairy having got fever, he met his friend, Dr. Harley, who told him that the little girl had been ill for a fortnight with gastric fever. Now, most physicians look on gastric fever as closely allied to typhoid fever, if it be not absolutely identical. Might there not be some very slight forms of typhoid fever which might pass under the name of gastric fever, but the contagium of which might be capable of inducing in other persons most virulent forms of typhoid fever? Therefore, he thought he might be allowed to use the term "typhoidal." As a sanitarian he was satisfied that there was either typhoid or typhoidal fever in X.'s house in December. Then he found a most unsatisfactory state of things existing in the dairy, and such as had not been noticed in the outbreaks recorded by Ballard or Russell. Out of the cases recorded in his (Dr. Cameron's paper) forty or fifty were cases of acknowledged typhoid fever, while the remaining twenty or so had some kind of low fever of an indefinite character. All had *some* kind of fever. A good deal had been said as to the unsanitary condition of the houses. He agreed with Dr. Chapman that they were all in a bad condition. But, when they were all so, could it have been a mere accident that all the houses in which fevers occurred were supplied from X.'s dairy? A great deal had been said, too, as to the enormous amount of typhoid fever then prevailing in Dublin. One would think, from what had been said on that point, that Dublin was like London in the time of the plague. He had the official report of the sanitary authorities of Pembroke Township, and he looked in vain in it for that terrible state of things. He had a list of all the houses in Elgin-

road and Raglan-road in which fever was reported to have occurred for the last two years, and he found that only one or two cases had occurred in those two roads which were not connected with the milk from X.'s dairy. Dr. Hayden had only picked out the cases that were not of a marked typhoid character, without accounting for the others. It was not possible for him (Dr. Cameron) to take a forcible census of every house into which the milk in question went; but he had found out forty-two houses supplied by X., and he could not have supplied many more because he had only fourteen cows, and some of the houses took from five to ten gallons a week. Out of the forty-two houses fever occurred in no less than thirty. Since he brought forward this matter he found that the only house on Burlington road in which fever occurred during the latter part of the year was supplied with milk by X. Mr. Maguire examined the house and found nothing wrong with it. The child who got ill was living in a large, airy nursery, at the top of the house. With respect to the cases in 11, Fitzwilliam-square, the sanitary arrangements of the house were most perfect; yet three of the children living in the house who used X.'s milk raw got fever, which Professor Moore said was typhoid. The other two children, who drank the milk cooked, remained perfectly well. There were only four houses attacked in Fitzwilliam-square during two months, and X. supplied only those four with milk. With respect to Dr. Doyle's question, he (Dr. Cameron) most carefully examined X.'s cows, and found them to be perfectly healthy.

The Society then adjourned.

IODINE IN INTERMITTENT FEVER.

DR. J. WADSWORTH, who practises in Mexico, where periodical fevers are endemic, corroborates the conclusion of Dr. Willibrand (*Virchow's Arch.* XLVII., 243), that in iodine we possess a specific remedy for malarial diseases equal to cinchona, and in one respect superior, since fewer relapses occur in cases of cure effected. During a recent very severe epidemic, Dr. Wadsworth treated over three hundred cases of intermittent fever in four months. In the severe cases from ten to fifteen grains of quinine, in two doses, were generally given during the *apyrexia*, and immediately followed by tincture of iodine in doses of from ten to fifteen minims thrice daily. In the severest cases it was combined with liquor arsenicalis. In every case the paroxysm was arrested within twenty-four hours, and twelve doses, lasting four days, were sufficient to guarantee the cure, with the exception of eight relapses.—*N. Y. Med. Journal*, May.