PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE COLLEGE OF PHYSICIANS.

SAMUEL GORDON, M.B., President.

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

Wednesday, April 12, 1876.

DR. GORDON, President, in the Chair.

DR. GRIMSHAW read a paper, entitled :—" An Outbreak of Small-pox, illustrating the Relations between that Disease and Cerebro-spinal Meningitis." It will be found at page 405. [The discussion on this Paper will appear in our next Number.]

Notes of some Epidemics which have recently occurred in the District of Coagh, County Tyrone. By JAMES KING KERR, M.D., M.Ch. ; Medical Officer of the Coagh Dispensary.

WITH the permission of the Medical Society, I should be very glad to lay before it a few brief notes of two or three epidemics which have lately occurred in my district, in hopes of eliciting some remarks from the members which may afford some guidance for the future.

Coagh^a is a village of about 600 inhabitants, one-third being mill-workers. It is built on the slope of a high hill, and has two principal streets, crossing each other at right angles. The streets are very wide, the main street being eighty feet in width throughout the greater part of its length. At the town end of the village is a good-sized river, on the banks of which the mills are built. It runs through a valley, surrounded

^a The name of the parish of Coagh (that is, the Ecclesiastical name) is Tamlaght, which is said to mean "plague-monument," but on what occasion it was given, or when, I do not know. Old inhabitants have told me that Coagh has always suffered severely when any epidemic has appeared.—See Joyce's "Irish Names of Places." First Series. Fourth Edition. P. 161.

by hills; on the slope of the highest Coagh is situated. A fog from the river not unfrequently envelops the greater part of the village. The house accommodation is rather limited in proportion to the population, and there is consequently a good deal of over-crowding. The people are somewhat improvident and dissipated. Although I do not know that the geology of the district can throw much light on the recurrence of these epidemics, yet I gladly avail myself of the geological knowledge of a friend, who says, in a letter to me:—"Coagh, as you know, stands on the side of a hill, along the base of which flows the Ballinderry River. The village rests on stiff boulder clay, which in its turn rests on tabular trap of the greenstone variety. Passing over the bridge from the village we cross a band (200 yards wide) of new red sandstone—clay, of course, overlying—from which the trap has evidently been eroded; for having ascended the slope, on the side of which is Tamlaght Church, we meet the trap again—not now, however, resting on sandstone, but on chalk (white limestone). A band or escarpment of chalk runs from Springbank to a short distance beyond the Cromlech, thus flanking one side of the basin, or trough, on the other side of which, and about 1,000 yards distant, is Coagh. From the top of the hill above Coagh to the top of the hill above Tamlaght Church—that is, from one side of the trough to the other—here is what we have:—Boulder clay all the way, of course except in the bed of the river, where the rock is exposed. But underlying the clay, we have to the river and a few yards beyond, trap rock, then a band of new red sandstone, then a chalk band, then trap again."

SCARLATINA.

With your permission, I will now relate some of the cases of scarlatina, &c., and then draw attention to the sanitary conditions which have probably intensified each epidemic. The duration of the epidemic of scarlatina was from February 12 to July 26, 1875.

On 11th February I was asked to see Lizzie Mullan, residing in this village. On visiting her I found she was suffering from what appeared to be herpetic tonsillitis. I was told she was a servant in a gentleman's family in Belfast, but that, feeling unwell, she had returned home. A few days afterwards several other members of the family complained of sore throats, and upon examination the tonsils were found greatly congested and enlarged, but not having the herpetic character observed in the first case. Febrile symptoms were very slight, and no rash could be detected. As, however, I felt convinced that these were cases of scarlatina, I called on one of the proprietors of the mill in which these people worked, and requested him not to allow them to enter the mill, nor to mingle with the other workers for some time to come, as I knew if once such an infectious element gained entrance there, it would be an utter impossibility to prevent it spreading over the entire place. Up to this

period we had been quite free from scarlatina, although for a considerable time it had been raging in neighbouring districts, especially in Cookstown, the principal market town of this part of the country, about five miles distant.

On the 18th another member of the family was suddenly seized with vomiting and purging, followed by intense congestion and enlargement of the tonsils, and high fever. I had never before seen such intense congestion of these glands; they were perfectly livid, and so distended that I feared sloughing must ensue. No rash appeared, and in about a week she began to convalesce, the throat affection subsiding without any sloughing having taken place.

Notwithstanding my urgent representation, I found that the members of the family, as soon as they were able to work, were admitted into the mill. This, I afterwards found, was due as much to disbelief in the accuracy of my diagnosis as to unwillingness to deprive these poor people of their accustomed means of livelihood; in short, I was regarded as an alarmist.

On the 1st March I was asked to see Daniel Heron, aged eight years, residing in the next house to that of the Mullans. I found him in bed with an attack of scarlatina, accompanied by a distinct rash. On making inquiries, I learnt that, not believing her next-door neighbours had scarlatina, the boy's mother had been in the habit of going out and in of the Mullans' house daily during the entire time of their illness.

The mill proprietors, being now convinced that scarlatina had broken out amongst the workers, acceded to my request, that the boy's father, who was a turner in the mill, should not be allowed to mingle with the other workers; he was at once sent home, but allowed to take his lathe with him, and to send his work, when finished, into the mill.

I cannot say that this could have had any influence in the further spread of the fever, but no new cases made their appearance (or, at least, I was not informed of them) till the 12th of April, when two cases occurred in another part of the village.

Up to the 7th of May there had been only thirteen cases, and all of a mild type. From this date it swept like a wave over the entire place in a most malignant form, several deaths occurring after illnesses of only from twenty-four to thirty-six hours' duration.

On 8th of May I received a visiting ticket in favour of Charles Mullan, aged eight, residing in a very unhealthy entry. I found him complaining of general malaise, but of nothing in particular; he seemed dull, pulse quick, tongue slightly coated, and skin hot. On examination of the throat a slight diffused redness was detected, but no enlargement of the tonsils. On my visit next morning I found him rapidly sinking, and he died that night, about forty-eight hours from the commencement of his illness. No rash could be detected, but the elbows seemed somewhat redder than natural.

On the morning of the 11th I was knocked up to see Mary M'Intyre, aged eight years, and on my arrival found her in a moribund state. The history given to me was, that on the day previous she had gone to the bog, about a mile distant, with her father's dinner, and whilst there had complained of being unwell. I could not obtain definite information as to whether she made any complaint of her throat, but found that at any rate she had been well dosed with the popular "cure-all," whiskey and sulphur.

During the evening, vomiting and purging set in, and continued far into the night, when she became insensible, and I was sent for. I found her lying on her back, quite unconscious and insensible, cheeks and lips livid, and no pulse could be detected. She died a few hours afterwards, about twenty-six hours from the commencement of her illness. No rash could be detected, and an examination of the throat could not be obtained, but I had no doubt that this, as well as the preceding, was a case of malignant scarlatina, and I accordingly gave directions for the houses to be disinfected, and reported the occurrence to the Sanitary Board.

On the following day (12th) I was sent for to see a family named Quinn, residing about a quarter of a mile from the village. On my arrival I found that one boy, aged fourteen years, had just died, having taken ill the day previous. Another boy, aged twelve, who had been unwell for about six days "with a sore throat," was convalescing, and a girl, aged eighteen, in bed, complaining of sore throat and inability to swallow. No rash could be detected, but on examination the tonsils were found much congested and enlarged, almost meeting across the middle line, and presenting somewhat of the herpetic character, but not so well marked as in Mullan's case. On the following day three other members of the family became unwell—two girls, and a boy aged twelve. The latter was a delicate scrofulous child, covered with the scars of numerous abscesses, and was also deformed from spinal disease (caries), presenting a well-marked pigeon-breast. In this case (the boy) there was a copious rash, but of a dusky hue, and somewhat papular; he sank on the third day, the others recovering somewhat slowly.

In this house the sanitary arrangements were very bad, the room in which all these sick people were lying was very small—about 10 ft. $\times$ 8 ft. In it eight persons were in the habit of sleeping, and it was with the utmost difficulty I could persuade them to remove two, out of the four, patients from it; these were accommodated in the kitchen, the "spare-room" of the house being used for storing potatoes.

On the 17th I was asked to see Joseph Gibson, about twelve, of this village, who had taken ill a short time previously. I found him lying on his side in bed, with his knees drawn up, and his head buried in the clothes; he seemed quite stupid, could not be got to answer questions or

to put out his tongue, and was apparently unconscious, but, on being lifted, struggled to get back to his former position; pulse not much altered, skin cool, and face pale. He had already received his whiskey and sulphur, so that purging set in shortly afterwards. A warm bath and friction with a coarse towel revived him; he became quite conscious, and struggled to get out of his bath. After returning to bed he seemed much better, and directions were given to attend carefully to the state of his extremities, to apply warmth to the feet (and, if necessary, counter-irritants), and cold to the head. On my return next morning he was in a comatose state, and died shortly afterwards. A few papules were detected about the forehead. In my absence he had been again dosed with the sulphur and whiskey mixture, with the view of "striking out the rash."

On the 24th another member of the M'Intyre family, a girl, aged six years, was attacked in a similar manner to her sister:—Severe vomiting and purging (in all these cases, however, the preliminary sulphur and whiskey had been administered); face quite congested, and of a deep purple hue; rapid, almost uncountable, pulse; tongue moist, but brown; slight injection of fauces, great prostration, and death in twenty-four hours, consciousness being retained till a short time previous.

On the 30th two other children of the family were taken ill almost in the same manner, though not quite so severely. One of them, a baby, aged one year, succumbed on the fourth day, but the other, aged four, recovered. In all these cases the body, a few hours after death, became of an intensely livid hue, the lividity beginning at the toes, and extending upwards.

On the 25th I was called hurriedly to see John M'Cann, aged four, who had suddenly become insensible, and was thought to be dying by his father, who came for me. I was at the time attending two other members of the family, who were convalescing from scarlatina. I found him on his mother's knee, perfectly unconscious, and insensible to both pricking and pinching; face quite pallid; and only for a faint fluttering of his pulse he might have been regarded as past the aid of remedies. I at once wrapped his legs in mustard poultices; in about forty minutes slight movement of the legs took place, followed by a gradual return of sensibility, and eventually of consciousness. Directions having been given to keep up the counter-irritation, shifting it from one place to another, I left, promising to return later at night. On my return, two hours afterwards, to my astonishment I found him apparently perfectly well, sitting upon a stool, and eating an egg, which he held in one hand, and his spoon in the other. The father, delighted at the sudden transition from apparent death to apparent health, had laid in a supply of whiskey with which to express his gratitude on my return, and it was with the utmost difficulty I could effect my escape. What I declined

was not suffered to go to loss, as he and his wife were heard by their neighbours quarrelling the greater part of the night, and on my return next morning I found the little fellow dying, having apparently been quite neglected, death taking place after twenty-four hours' illness.

On the 31st I was asked to see Phœbe Hamilton, aged eighteen years. She complained of general lassitude, pain in the head and back, had no sore throat, and there was no rash; tongue moist, but coated, and pulse slightly quickened; there was also some thirst. As typhoid fever had by this time made its appearance in the place, I concluded this was a case of it. She continued much in the same condition for about five days, but on the sixth profuse diarrhœa, accompanied by hæmaturia, set in; pulse rose to about 140; delirium followed; and death took place on the eighth day. A day or two after the commencement of her illness a younger sister was attacked by scarlatina, which plainly declared itself by a well-marked rash. They lay in the same room, but in different beds.

On 5th June I received a visiting line in favour of Annie Quinn, aged eighteen, of Drumenny (about two miles distant), who had taken ill the day previous. I found her suffering from a severe attack of scarlatina; rash well marked, but on front of legs was papular, and of a dusky hue; face greatly congested, especially over malars, where it was of a dark purple colour: tongue moist, but somewhat brown; throat but slightly affected, and pulse about 130. She became gradually more prostrate, and sank apparently from pure debility, retaining consciousness almost to the end. Happening to be in the same neighbourhood two days afterwards, I heard that her sister, aged sixteen, had that morning been attacked in a similar manner, but that, owing to the funeral arrangements, no one had had time to go for me. I at once drove to the place, and found the girl in a most critical state, the dusky livid complexion and rapid weak pulse plainly indicating that she was fast following in the wake of her sister. The mother, distracted by the loss of one fine girl, and the too-evident prospect of a like fate for a second, was almost a maniac, rushing about the house shrieking, and wringing her hands, lamenting the loss of her daughter, and the next moment seizing the sick girl in her arms, exclaiming she was losing her too. The sight was a most pitiable one.

I at once saw my way to carrying into operation what I had long been anxious to attempt, but had never previously been able to accomplish—the experiment of a wet pack. It was evident to the mother that her child was sinking rapidly. I told her there was a possibility of saving the girl's life, if she would allow me to wrap her in a wet blanket. She at once said I might do anything I liked, but she knew it would be useless. Calling an elder sister to my aid, I at once had a blanket well wetted with water, and the girl wrapped in it, heaping on the top as many clothes as we could get. I remained with her for nearly two

hours, giving her, at short intervals, beaten-up eggs, whiskey, and milk. On leaving, I directed this mode of treatment to be kept up for another hour.

On my visit next morning the girl was evidently better, but for about six weeks she remained in a low, prostrate state, quite conscious, and able to take nourishment, but so weak and emaciated that it was with great difficulty she could be moved in bed. No special lesion could be detected, the system seemed simply to have been rendered so prostrate by the intensity of the fever poison that it was with great difficulty it could rally. At the end of this time she began to improve, and is now quite well.

On the 30th June I was asked to see a little girl named Benigan, aged ten years, living about half a mile distant from the last place. The messenger urged me to hurry, as he was afraid the child would be dead before I could arrive. Such proved to have actually occurred. It had taken unwell the previous day, but its parents, not thinking the matter serious, took no steps to procure medical aid till they found it dying. Death in this case had taken place in about thirty-six hours' illness. I found that another child, a girl aged eight years, had been attacked that morning. She was in a very excited state, more resembling one having hysteria, but her extremely rapid weak pulse and livid face indicated a malignant type of disease. Encouraged by my success in the former case, I determined again to resort to the wet pack. The parents, who had heard of its previous successful application, were quite as willing as myself to have it tried. In this case, also, the result was satisfactory—the child, after a somewhat lengthened illness, though not nearly so protracted as the other, recovering perfectly.

On the 22nd July I was called to see Margaret Cook, of Coagh, aged eight years, who had taken ill the previous day. I found her in bed; face flushed; pulse quick; skin hot, and tongue moist, but towards the back covered with a brown coating, rash well marked, especially on the front parts of the legs, where it was papular; there was also a good deal of throat affection. Not looking upon this as a malignant case, as it did not present the more aggravated characters observed in other instances, and especially as for some time the malign type seemed to have given place to a mild one, I did not then resort to the wet pack; but on my visit next morning, finding her much worse and almost comatose, I had her wrapped in a sheet dipped in mustard water. She never rallied, but died the same night.

In this epidemic, which commenced on Feb. 11, and ended July 26th, 1875, I had altogether about 100 cases, death occurring in sixteen instances.

I have no doubt the fever was much more extensive than even these figures would indicate, as in many families the fact of its existence was

concealed, from the fear lest, if it were known, it might injure their business. I have reason to believe that it was owing to its concealment by the family of a baker that at one period it spread so rapidly.

TYPHOID FEVER.

In the month of May typhoid fever made its appearance in the village, thirteen cases occurring almost simultaneously. These presented no unusual features, except that there was a great tendency to lung complications. One case, that of a policeman aged twenty-six, was complicated by congestion of both lungs, hæmoptysis, and hæmorrhage from the bowels, his temperature for several nights running as high as 108°; yet, notwithstanding this, after an illness of eight weeks, he began to convalesce, and made a rapid recovery. He is now on active duty, and in excellent health.

ERYSIPELAS.

On 6th of July I was asked to see Mrs. G., the wife of a gentleman residing in the neighbourhood. She had been in her usual good health until the previous evening, when rigors suddenly set in, followed by great heat of skin and a feeling of general soreness.

On my arrival I found her in bed; face greatly flushed; skin hot; tongue coated, but moist; temperature 102·5°; and pulse 98. There was no sore throat, but a feeling of stiffness in the neck. Next morning I found her face greatly swollen and puffy, and it was now quite plain she was suffering from an attack of erysipelas. The inflammation gradually extended upwards to the vertex and downwards to the neck and back of the ears, the face becoming enormously distended, bullæ forming, and bursting over the malar bones. On the 11th she began to improve, the inflammation having somewhat subsided, and she seemed progressing favourably, but unfortunately next day was "the 12th," and the Orangemen from different parts of the country assembled in a field close by, attended by drums and fifes. On paying my usual visit that evening, she complained of having been greatly disturbed by the drumming, and did not seem so well; that night she had no rest, and I found her the next morning greatly prostrated and delirious. She remained in a low excited condition for several days unable to obtain sleep, though large doses of chloral were administered; but on the 16th amendment set in, and she made a good recovery.

On the 7th July a message was left for me to see Mr. D., aged fifty-seven, a large farmer residing about four miles from Coagh. I found him in bed complaining of great internal heat and a feeling of distension in the epigastric region. I was greatly struck by his sunken aspect and his jaundiced skin and eyes. On closely questioning as to the exact date of his illness, I elicited from him with great difficulty the fact that he

had for fourteen days past had a wound on the front part of his leg: this he described as "a mere nothing," a "pinscratch" which he had got by striking his leg against a stick and had afterwards irritated by riding a long distance upon horseback. He had "been keeping down the inflammation," as he said, by large doses of salts, and seemed greatly pleased at the fact that he had well purged himself and kept himself low. He was exceedingly unwilling to let me see this wound, "as it could have nothing to do with his internal complaint," and was anxious that I should confine myself solely to this latter, seeming to think he was quite able to manage the other himself. I insisted upon seeing it, and found a small irregular unhealthy wound over the middle of the front of the tibia, the leg enormously distended and infiltrated, and bullæ forming on the dorsum of the foot; the liver was somewhat enlarged, and the base of the right lung was found to be considerably congested; his skin and eyes were of a deep yellow hue; urine saffron colour; temperature 103.5° ; and pulse 110, but weak. It was evident I had to do with a case of blood poisoning. It was with great difficulty I could persuade my patient that his case was very serious; he, however, acquiesced in the advisability of having his affairs arranged, but seemed to think rather lightly of his condition. He was a man of very large build, weighing about fourteen stone, and but little accustomed to illness. On the morning of the fifth day following he died, retaining consciousness to the last, and it was only about an hour previous to his death that he became convinced of the impossibility of his recovery. There were no well-marked rigors in his case.

Whilst attending to Mr. D., I was asked by a neighbouring farmer to visit his wife. "She had been unwell for some time with a swelling in her leg," but was at this time unable to pass water. I found the abdomen greatly distended, no urine having been passed for about thirty-six hours. I drew off about two quarts of high-coloured fluid. I had attended to this at once, as the woman was suffering great pain, but I now found her right thigh and leg enormously swollen and of a brawny hardness. Several bullæ had burst at the inner and upper part of the thigh, and were now discharging purulent matter. Several others of a livid colour were forming on the dorsum of the foot. There was no history as to any local injury in the case; her leg had commenced to swell about a fortnight previously, but she could not account for it in any way.

Large abscesses formed in different parts of the thigh, and notwithstanding openings and counter-openings, antiseptics and the insertion of a drainage tube, the matter burrowed over almost the entire surface of the thigh and part of the leg until the skin seemed literally dissected from the parts beneath.

By means of large doses of quinine and the muriate tincture of iron,

with stimulants in large quantities, life was maintained for about six weeks, when she sank, apparently from pure exhaustion, no complication being detected.

From the beginning of July until that of August, erysipelas in various forms, from the simple cutaneous to the diffuse cellular, prevailed extensively, the form known as whitlow being extensively rife.

Let me now say a few words upon the sanitary condition of Coagh, which, indeed, appears to have been entirely neglected, and which is likely to continue so unless some more powerful *vis à tergo* be applied to the sanitary authorities. The streets are wide and roomy, but no attention has been paid to sewerage. Many of the houses, built to accommodate the increasing mill population, have been erected as cheaply as possible, with no regard to site or drainage, and in some instances with no mere accommodation. The channels for carrying off the surface water have been in some parts filled up, so that the surface of the street being merely level, the water flows over the street instead of occupying the channels.

Only one covered sewer exists, and this consists of earthen pipes of about ten inches in diameter, quite unsuited for the purpose. It runs from one of the cross streets, through the main street to the river. Less than a yard distant from this sewer is one of the three pumps from which the inhabitants obtain their water supply. Circumstances having led me to suspect the condition of the water in the wells, I examined and found that in two instances a communication existed between these wells and the water channels; but although I reported this to the Sanitary Board early in 1875, no steps were taken beyond admonishing the contractor to keep his channels clear. In May I made further remonstrances as to the state of the wells, and the result I give in the words of my report to the Registrar-General on June 30, 1875:—"A committee, to meet on the following Tuesday in Coagh, was at once called. All the members attended, and on the suggestion of the Chairman of the Board, it was decided not only to clean out and put in proper working condition the existing wells, but, in addition, to re-open a well of very pure water which had for several years been closed owing to its inconvenient situation. In the beginning of the following week one of the wells was opened, and my suspicions were fully justified. In the lower ten or twelve feet of this well the water was of the consistence and colour of a strong solution of tar, and the odour so offensive that the people in the adjacent houses were obliged to close their windows whilst it flowed past. A few days afterwards (heavy rain having fallen) the fluid contents of the sewer, which is in close proximity, were seen flowing in a regular stream through the sides of the well. Notwithstanding my repeated remonstrances, this well was covered over and put in working

condition, and is now in general use, no steps having been taken to remedy the evil, except leaving open for a few yards that part of the sewer close to the well which had previously been blocked up."

I was absent for my holidays during the month of August, and on my return I found the water of this well in a most unsatisfactory condition, offensive both to sight and smell, resembling diluted ink in colour, and exhaling sulphuretted hydrogen. I despatched a bottle of it to the Board, who agreed at last to have the well closed. A fortnight afterwards the new pump was completed, and has since provided an ample pure supply of water. The other pump remains *in statu quo*.

So much for the sanitary condition of the village. The Society will form its own judgment as to how far it may have originated or intensified the epidemics which have prevailed. Upon the whole, I could find little or no peculiarity of constitution in the patients to account for the intensity of the attacks and their rapidly fatal termination.

Treatment.—I shall not detain the Society long on this subject, but having had extensive experience in scarlatina, and having given a fair trial to the usual remedies, I may state that I am disposed to place my greatest reliance upon the "wet pack" and the chlorine mixture (Watson). I am unable to state the exact temperature of the water I used, but my plan was as follows:—I procured water about lukewarm, dipped the sheet or blanket in it until thoroughly saturated, then shook them until they were cooled, and wrapped the patient in them, covering them well with bed-clothes.

The chlorine mixture seemed very effective in bad cases, speedily modifying the graver symptoms, and affecting beneficially the state of the throat.

TYPHOID FEVER IN RED-ROW.

The last epidemic I have to bring under your notice occurred this year in a district of my dispensary, about three miles from Coagh, and in the parish of Ardtrea.

Since the middle of January of this year (1876) up to the beginning of March, thirty-four cases of fever have occurred—all but one in the same row of small houses called Red-row, and the exceptional one doubtless contracted the disease from dining in one of the houses, which, as she was a mill-worker, saved her a long walk home. Indeed, I may say that very nearly (if not quite) every inhabitant of the row underwent the fever. The greater number, of course, were children or young persons, but there were some adults, and, as a rule, they had the fever more severely. In a few cases the attack was cut short by diaphoretics, but it generally ran its course in from ten to fifteen days, though in one or two cases it was much more prolonged. The attack generally commenced suddenly by chills or rigors, followed by heat and moderate

sweating. In some cases there was diarrhœa, but, although the appetite was utterly extinguished, I do not think that there was either nausea or vomiting. The poor girl who died suffered comparatively little, and exhibited few symptoms but those of ordinary typhoid fever. Her tongue was moist and loaded; appetite quite lost; and the bowels, which at first were too free, became afterwards constipated. There was no great thirst; the pulse was rarely above 100, and the thermometer was 98°; the skin was never very hot. She was generally collected, and answered questions correctly, and only occasionally she wandered a little. Thus she lingered on until the twelfth day, when she died.

The only other fatal case was in a man, aged forty, whose habits were not as moderate as they might have been, and whose wife and five children had the disease slightly before he was attacked. In him the fever was unusually severe and prolonged. The skin was burning hot; face flushed; eyes injected; pulse ranged from 120 to 140; tongue dry and brown; no appetite, but much thirst. The bowels were at first too free, but afterwards requiring medicine.

At times he was delirious, but never violent; at other times he lay in a stupor, from which he could be roused. He was very deaf. Thus he went on for twenty-one days, when there seemed some critical symptoms, but these disappeared, with no remission of the fever. His stomach was never sick, and he took plenty of wine and fluid nourishment. After this time there were signs of typhoid pneumonia, and a bed-sore formed on the sacrum. He died on the thirty-eighth day of his illness.

So much for the fever itself; now a word or two as to the locality, which was of such limited extent that the fever would rather deserve the designation of endemic than epidemic, had not similar cases occurred in other parts of the district.

Red-row, as its name would indicate, consists of a row of red stone houses, built for the accommodation of the mill-workers. There are thirty-nine two-storied tenements, each with a frontage of ten feet, and no back yards, so that the rooms are very small. The row is built on the banks of the mill-race, which is diverted from the Ardtrea river and separated from it by another mill-race and the banks between. The row runs east and west, or nearly so, and both in front and rere it is overtopped by hills, and the eastern end of the little gully is blocked up by the mills, so that the ventilation is very imperfect. Both mill-races are small, and one intermittent, stopping when the mills cease working, and this is the one that runs in front of the houses about nine yards distant, joining the river twenty or thirty yards beyond the houses and the well which supplies them with water when they do not take it from the mill-race. Along the edge of the race, facing the houses, are a series of about four or six privies, so placed that all discharges fall at once into this intermitting stream. The row of houses is 130 yards in length, and

nine yards beyond this is the well, which is just seven yards from the mill-race, and sunk far below its level. Analysis of the water shows no great variation from the proper constituents, except the unusual amount of free ammonia, "indicating admixture with sewage matter."

Between the houses and the mill-race runs a wall with openings in it, and on the narrow space between it and the mill-race all the refuse and manure of the houses is thrown. Of the thirty-nine houses, only ten are inhabited at present.

So much for the locality. In the effluvium from the manure-heaps inside the wall in front of the houses, and less than five yards from them, and in the deteriorated water of the mill-race, percolating through the soil to the well, we may reasonably find two sources of fever, and if the same conditions were found in the poorer districts of a town, we should hardly hesitate in thus judging, but the conclusion is not so undoubted in the country, for we find even worse manure heaps close to each small farmhouse in the country with families, often overcrowded, sleeping in close proximity, and apparently with no mischievous results.

Again, this insanitary condition of the Red-row is no new thing. Up to eight or ten years ago, the row was fully inhabited, and the insanitary condition was worse. Then, on closure of the mills, the number of families was reduced to two or three, and I believe cattle were sheltered in the other houses. Some eight or nine months ago the mills were again set going, drawing the present population to the Red-row. Yet, up to last January, I am told that fever was never known to be there.

Must we not conclude that, perilous as such an insanitary state is to the inhabitants, it is not one condition in the production of an epidemic—a collection, indeed, of combustible matter, but which may remain harmless if not ignited. Once ignited, there appears to be scarcely any limit to the extent of the mischief. Whence the light comes, and what it is, I respectfully submit to the decision of the Medical Society.

[The discussion on Dr. King Kerr's Paper will appear in the next Number of the Journal.]

The Society then adjourned.