disease, as being very distinctly marked in very many of my patients. Whether future observation will warrant its being ranked as a diagnostic in cancer, remains to be seen.

CHOLERA, AND THE WATER SUPPLY IN THE SOUTH DISTRICTS OF LONDON.

By JOHN SNOW, M.D.

A PASSAGE, respecting the effect of water supply on cholera, in the recent document published by the General Board of Health, having been brought prominently before the British Medical Association, in a leading article of the JOURNAL of October 10th, I think it highly desirable to point out that this passage does not by any means convey the whole truth, as regards the effect of the water supply on the epidemic of 1854. Instead of the cholera mortality in the houses supplied by the bad water being 3½ times as great as in the houses supplied by the better water (the statement of the Board of Health), it was in reality six times as great.

It may perhaps be asked, of what consequence are the exact proportions, so long as the principle is admitted? If the report were merely intended to produce in public authorities and private individuals a certain amount of scrupulosity with regard to the supply of drinking water, the exact numbers would perhaps not matter much; but, when the facts are laid before medical men, it is of the utmost importance that they should be correctly stated. Science cannot be advanced by incorrect quantities and numbers; and, in the present instance, the real facts have an important bearing on the question as to the nature of the material in the impure water which induces cholera, and the manner in which the same morbid material causes the disease in other cases, without the aid of water as a medium.

My attention had been closely applied to the particulars of the water supply of London for upwards of five years before the epidemic of cholera of 1854; and I had, from various sources, became acquainted with a number of circumstances which made it possible for a very conclusive personal inquiry to be made, in respect to that kind of influence of water supply on cholera which I had published in 1849. These circumstances were necessarily known to a number of workmen and several official persons, but probably not in their collective form to any other person interested in the mode of propagation of cholera, except myself. The particular circumstances of the water supply, and its adaptation to the kind of personal inquiry which I conceived and undertook, were first published by me in the *Medical Times and Gazette* of September 2nd, 1854, p. 247, and were alluded to in a leading article in the ASSOCIATION MEDICAL JOURNAL for October 27th of the same year.

I called myself at every house from which a cholera death had been registered, in the first seven weeks of the epidemic of 1854, in all the districts in which the supply of the two Water Companies in question was intermixed; and, if the illness had not commenced in the house in which the death took place, I then sought the real place of attack, and in either case I ascertained the water supply of the house. I did not rest satisfied with a mere verbal reply; but obtained, in all cases, such corroborative evidence as could leave no doubt on the point, and I have the notes of my results. As a proof of their general correctness, I may mention that Mr. Greenwood, the very intelligent registrar of Christchurch, Southwark, made an inquiry on the same point for the same seven weeks, in his district, and, on our comparing notes, our results were exactly the same in every instance, although our respective inquiries had been conducted in a different manner.

The result of my inquiry was that, in the first four weeks of the epidemic, the cholera was between thirteen and fourteen times as fatal in the population having the impure water supply of the Southwark and Vauxhall Water Company, as in the population having the improved supply of the Lambeth Company, taking into account the number of the population supplied respectively by each company. In the next three weeks of the epidemic, the mortality was nearly eight times as great in the one population as in the other.

Dr. Farr having been much struck with the results which I communicated to him of my inquiries, the Registrar-General, at the end of these seven weeks, directed the district registrars in the south districts of London, to furnish the water supply of each house in which a fatal attack of cholera might occur during the rest of the epidemic.

During this part of the epidemic, comprising ten weeks, and including its most severe period, the mortality was still more than five times as great in the population supplied by the first of the above mentioned companies as in that supplied by the other; so that the result of that part of the inquiry conducted through the office of the Registrar-General, afforded a strong corroboration of the correctness of the previous part. I have, moreover, shown in an article in the *Journal of Public Health* for October 1856, that the whole of the inquiry agrees with the relative mortality of the different districts and sub-districts supplied in varying proportions by the two Water Companies, both at different periods of the epidemic, and for the whole epidemic, in such a manner as could not happen unless the results of the inquiry were substantially correct. I have already stated that the relative mortality of the two populations differently supplied with water was six to one, when the whole epidemic is considered.

The results of the above inquiry having been canvassed by the Scientific Committee of the General Board of Health, a further inquiry was instituted, and was carried out within the eighteen months following the epidemic, and furnished the numbers quoted in the JOURNAL of the Association. This further or supplemental inquiry was conducted as follows. Lists of the houses supplied by each Water Company were obtained from the two companies, and these lists were compared with the lists of deaths from cholera at the General Register Office. There are several reasons, however, why an inquiry thus conducted could only supply an approximation to the truth, and could bear no comparison, in point of accuracy, with a personal inquiry made on the spot, at the time of the epidemic.

1. The inquiry of the Board of Health is into the water supply of the house where the death took place, and not, like the previous inquiry, into that in which the fatal attack occurred; but many persons attacked with cholera in houses supplied by the Southwark and Vauxhall Company were removed to workhouses supplied by the Lambeth Company, whilst hardly any persons were attacked in houses supplied by the latter company, and then removed to a workhouse having the opposite supply, as I know from my personal inquiries in the first seven weeks of the epidemic.

2. Throughout the greater part of Lambeth, Newington, and the Borough, the houses were either without numbers, or numbered very irregularly; and the numbers were liable to frequent change, especially where new houses are constantly being added: therefore, numerous errors were liable to be made in comparing the lists. There were often two or three houses of the same number in the same street; thus it happened that, in the first fatal case I inquired about, the death did not occur at the first No. 6 I called at, but at the No. 6 down the other side of the way; and the water supplies of the two houses were different. Now this is particularly important; for, as the deaths were six times as numerous in the houses supplied with impure water as in those with the better supply, the result would be that, out of every six mistakes, five would transfer a death from the former houses to the latter, and only one would transfer a death from the latter houses to the former.

3. It so happened that the lists supplied by the Lambeth Water Company (that with the purer water) are so arranged and explained that every place might be made out, unless when the above mentioned difficulty about numbers occurs; but the lists supplied by the Southwark and Vauxhall Company are made out in such a manner as to be of only very partial service. They have a kind of alphabetical arrangement, but it is of no use. For instance, to put down such names as Albert Terrace and Providence Place, with no other information than that they are somewhere in a district which extends over ten or fifteen square miles, is to give very little information. Consequently, whilst all the deaths occurring in houses supplied by the Lambeth Company could be identified in the list, and others attributed to these houses from the sources of error above mentioned, it would necessarily happen that a great number of deaths occurring in houses supplied by the Southwark and Vauxhall Company could not be identified; and, in the Report of the Board of Health on Cholera, as affected by Impure Water, as many as 1,436 deaths, in the epidemic of 1853-54, are returned as occurring in houses supplied from unknown sources, although there were comparatively few houses which were not supplied by one company or the other.

The deaths in the epidemic of 1853 are included, with those of 1854, in the Report by the Board of Health which is quoted in the JOURNAL of the Association; but this circumstance could not much affect the result, and certainly not in the direction in which it deviates from the original inquiry; for in 1853 there

was but a small number of deaths, especially in the districts to which the water supply of the Lambeth Company extends.

For the various reasons stated above, we may conclude that the supplemental inquiry of the General Board of Health into the influence of water supply on cholera is of some value, and corroborates the original investigation, but ought by no means to be quoted as an exact exposition of facts, or be allowed to set aside the previous inquiry.

CASE OF INTRAUTERINE FRACTURE.

By Francis Davies, Esq., Pershore.

The following case is of no practical value. But as it corroborates some of Dr. Barker's cases, possibly it may be thought interesting.

I was requested to see a woman who had been confined two days. She had been walking down a footpath through a wood of my father's, some six weeks previous to her delivery, when, in crossing a stile, her foot slipped. She fell heavily on her abdomen on the stile. She felt as if a penknife was pricking her for several days. She got quite well, and was confined at her full period.

On examination of the child, I found that the thigh had suffered a compound fracture, and that the bones overlapped nearly an inch. The child has grown up to be a man; but his fractured leg is only now about a foot in length. He is now a schoolmaster in the parish of Llanpumpsaint near Carmarthen.

INTRAUTERINE FRACTURES.

By Gustavus C. P. Murray, Esq., M.R.C.S.E.

This subject of medical science having been recently and ably brought before the notice of those who are especially engaged in obstetric practice, by Dr. Barker, of Bedford, I am induced to narrate the following case, which occurred last year during my attendance at the Vienna General Lying-in Hospital. I must state that my notes were taken for private use, and not for publication; and hence their brevity and imperfectness.

Case. Francisca Raplan, a native of Telluris, aged 26, of a sallow and unhealthy complexion, and in a great state of debility, was delivered of her first child at the end of the seventh month of gestation. The fœtus at birth presented the following appearances:—The left side seemed soft, and as if consisting of nothing but loose and unhealthy fat; whereas the right side exhibited a very remarkable contrast in its rigidity. Upon further and closer examination, the left humerus was found to be broken at its centre, the ulnar and radius of the same arm being perfect; but the fingers, which were longer than usual, and also in proportion to the rest of the body, were greatly curved backwards, especially at their extremities. The right arm was rigid and shrivelled, with the bones unbroken, and the thumb and fingers closely drawn together. The left femur was fractured in its upper third, the tibia and fibula being perfect. The right leg was as rigid and firm as the right arm, and the bones were also entire, but the foot was, to a very great extent, curved inwards, forming a perfect arc. The scrotum and penis were œdematous, and of a slightly greenish yellow colour. The length of the fœtus was from twelve and a half to thirteen inches, and the circumference of its head, measured above the ears, was eleven inches. It survived a few days, and died on the morning I left Vienna. I was therefore, unfortunately, unable to attend the *post mortem* examination.

Through the kind assistance of a German friend, I learnt from the mother that she had met with no accident or unusual circumstance during her pregnancy; but she admitted that about the fourth week after conception a syphylitic eruption appeared over her whole body, and for this she consulted a homœopath, who administered minute doses of corrosive sublimate. After pursuing this treatment for two months the eruption entirely ceased, and she remained perfectly well up to a week before her confinement, when condylomata appeared on the labia, the inner part of the thighs, and around the anus.

Remarks. With the above positive evidence of syphilis existing at an early period of gestation, and presuming, from the character and habits of the mother, that she had been no doubt infected with the syphilitic poison long before conception, we have, I think, some good grounds for supposing that the fœtus became affected through the diseased condition of its parent. The fœtus had evidently not arrived at maturity; and as it was not dead, and the mother had received no external or internal injury, either of which might have brought on labour, we are left to seek for some reason why the fœtus should have been born before its time, and when born why we should find one half of its body in a state of rigidity and atrophy, whilst the other half was pulpy, and contained two fractures.

I hope, in conclusion, that the history of this case may throw some light on the possibility of certain diseases, such as syphilis, when attacking the mother, being transmitted to the offspring, and causing either the fracture of its bones, or the arrest of its development.

Green Street, Grosvenor Square, October 1857.

Introductory Lectures.

ST. GEORGE'S HOSPITAL.

Dr. Fuller began his address by recalling to the senior part of his audience the difficulties and temptations they had had to encounter at the outset of their professional career, and made this a ground for addressing the remainder of his remarks to those who are now about to commence their studies in London. He first pointed out the nature of their adopted calling, and the motives with which it ought to be pursued. "If," he said, "it be true that a profession, which has for its object the saving of human life and the prevention of human suffering; which calls forth the noblest qualities of the mind, enlarges its sympathies, and tends to clear it of prejudice or error; which brings us in direct and intimate relation with our suffering fellow-creatures, and by giving us an insight into human nature under every form and every aspect, enables us to learn wisdom from the dearly bought experience of others,—if such a profession be worthy of your desire, you may be truly thankful for the selection you have made. A life of honourable usefulness lies before you, such as does not fall to the lot of every one. The profession of medicine, if worthily pursued, is a noble and beneficent vocation, softening and humanising those who follow it, leading them to regard with leniency the weaknesses of their fellow-creatures, and prompting them to spare no effort to relieve their mental anguish or assuage their bodily suffering." He urged them to take a high view of their profession, and to follow it steadily and consistently, in the hope that, whilst it may one day yield them an honourable subsistence, it may also enable them to cultivate those qualities which serve to distinguish a Christian gentleman. He then proceeded to offer them advice respecting the choice of friends and companions, and warned them not only against the idle and the dissolute, but against the good natured, well meaning, but thoughtless, whose inexperience leads them to imagine that there can be no harm in a little temporary self-indulgence, a little time devoted to the so called pleasures of a London life. He urged them to begin as they intended to go on, to be regular and constant in attendance at lectures, diligent in the dissecting-room, earnest in their private studies, zealous in the pursuit of that practical knowledge which is only to be acquired in the wards of the hospital. "The study you have embraced," he said, "is one to engross your whole attention, even if it had no relation to your future career through life. But forming, as it does, the groundwork of that profession which you have deliberately chosen, you are bound to devote your whole energies to its prosecution. You are bound to do so for the sake of your own reputation and future happiness, for the sake of those friends who have given you your education, and who are still assisting you, and for the sake of those poor suffering fellow-creatures who will one day look to you for relief; above all, you are bound to do so as the servants of an all-wise Providence, who has been pleased to enrol you among the number of those whom He employs as the channels of His mercy and the ministers of His earthly blessings, and who one day will require at your hands an account of the talents committed to your charge." He then proceeded to point out the necessity for learning to regulate the feelings and behaviour, to discipline the mind, and to follow strictly in the path of moral rectitude. "You must learn," he said, "to cultivate habits of order, method, and punctuality, so as to be able to economise your time; you must acquire the habit of directing your whole attention to the subject before you, so as to analyse