

in fact, the discernment of these trivial but nevertheless significant signs is a matter of observation and tact; later, however, in the progress of the disease, these signs become sufficiently obvious to attract the attention of the unobservant; and later still, the poor little child is strangely altered from its normal state; malassimilation, cacochymia, are traced in conspicuous lines on every part of the surface, in every feature. The limbs are thin, showing out the prominence of the joints, the muscles are soft and flabby, the skin is soft and pasty, or discoloured and shrivelled: there is an expression of care, anxiety, of thought, upon the little face; from the general emaciation of the body, the head looks larger than natural. As I before remarked, one is struck by the senile look of the child: the mucous membrane of the conjunctiva and mouth is pale, and above all is the strangely white anæmic eye, sometimes dull and listless, sometimes bright and clear. The eye tells an eloquent tale of defective nutrition.

[To be continued.]

ON FÆCAL FERMENTATION AS A SOURCE OF DISEASE.

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[Read before the Medical Society of London, February 23rd, 1856.]

PART II (continued).

I PROCEED now to consider the effect of faecal fermentation, in solution or suspension in water, in the production of particular diseases.

Cholera. It is not my intention to dwell at great length on the subject of the spread of cholera by water impregnated with choleraic dejections. I conceive it is now generally admitted by all that cholera is most prevalent and fatal in the course of large rivers, and where the water supply is bad. Dr. Snow's work is full of examples on this point. I shall take from this work only three such examples, those of Newcastle-on-Tyne, Golden Square, and Lambeth.

Newcastle and Gateshead. The following table exhibits the mortality from cholera in the periods 1851-2, 1849, and 1853:—

Year.	Newcastle.				Remarks.
	Actual mortality.	Population.	Deaths to 10,000 population.		
1851-2 ..	801 ..	42,760 ..	187 ..		No water works.
1849 ..	295 ..	71,847 ..	41 ..		Good water supplied.
1853 ..	1533 ..	86,114 ..	178 ..		Bad water supplied.

Gateshead.				
1849 ..	Comparative immunity			Water works and water good.
1853 ..	433 ..	26,000 ..	166 ..	Bad water.

Both Newcastle and Gateshead are supplied by the same water company. Previously to 1832, there were no water works; subsequently, these were made, and water was obtained from the Tyne, about a mile above the town, although the tide flows six miles above the town. In 1848 these water works were abandoned, and excellent water was supplied from a small stream ten miles above Newcastle, called Whittle Dean. In 1853, the water from Whittle Dean being insufficient for the wants of the town, the original water works of 1832 were reopened, and thus bad water mixed with the good, so bad as to contain 7.1 parts of organic matter per gallon. (Dr. Thomson says at its origin there was 15.6 total impurities, of which 4.5 were mechanical, 2.68 organic in solution, and 8.48 organic impurity.) Thus, according as the water supply was good or bad, so the mortality from cholera was low or high. Again, the greater number of deaths, viz., 1011 out of 1553, occurred at Newcastle from 13th to 23rd September, inclusive. The reason was this. Owing to the outcry, the company

supplied, after the 15th, no more Tyne water; and although the Tyne water was not out of the pipes till the end of a day or two, the deaths decreased from the 19th.

Sept. 12th	38	Sept. 18th	103
" 13th	59	" 19th	111
" 14th	90	" 20th	85
" 15th	106	" 21st	68
" 16th	114	" 22nd	82
" 17th	103	" 23rd	60
	510		509

It is also to be remarked that places supplied with pump water, and not with that of the company, at most suffered from simple diarrhoea, and not from cholera. Thus, in the workhouse, supplied by the company, out of 440 inmates, the number of deaths was 7 out of 12 cases of cholera. In the barracks, with 590 inmates, and in Greenhow Terrace, supplied by wells, there was no cholera, only diarrhoea. (See Dr. Snow's work.)

South London District. This district was supplied with water from two sources, the Lambeth Company and the Southwark and Vauxhall Company. In 1849 the former company got its water from the Thames, near Hungerford Market; the Southwark and Vauxhall from the same river, near Battersea fields. In 1854 the water of the latter company was obtained from the same place, while the former procured it from Thames Ditton. In 1849 the mortality was nearly the same in the districts supplied by each company. In 1853, the deaths were, in those parts supplied by the Southwark and Vauxhall Company, 525; while only 94 occurred in those supplied by the Lambeth Company, and 33 in those districts supplied from pump wells, and other sources. This mortality being divided over two periods, the first four weeks give 286 cases against the Vauxhall Company to 14 against the Lambeth; while, for the remaining three weeks, the deaths were in the proportion of 8 against the former to 1 against the latter. In the General Report of the Board of Health, speaking of the supply of water in London, is the following paragraph: "Those supplied by the Southwark and Vauxhall and Chelsea Companies greatly surpass the others in badness. In the Southwark and Vauxhall water, the evidence of unfiltered contamination reaches its highest degree, revealing to the microscope not only swarms of infusorial life, but particles of undigested food, referable to the discharges from human bowels." (p. 46.) And it is this last contamination which propagates especially the disease, and which is plentifully supplied by the admixture of sewage matter.

Golden Square. The last example to which I shall allude is that afforded by the Golden Square tragedy. As Dr. Snow remarks, "The mortality in this limited area (i.e., within two hundred and fifty yards of the spot where Cambridge Street joins Broad Street) probably equals any that was ever caused in this country, and it was much more sudden, as the greater number of cases terminated in a few hours." (*Op. cit.*, p. 38.) Upwards of five hundred deaths occurred in ten days. I cannot follow the history of the cases, which have been so ably drawn up by Dr. Snow. I can only allude to a few points. The outbreak commenced on the night between the 31st August and September 1st, and was to be traced to the drinking of water from a particular pump in Broad Street. In the subdistrict of Golden Square, Berwick Street, and St. Ann's, Soho, the deaths registered for the week ending September 2nd were 6 in the first four days, 4 on Thursday 21st, and 79 on Friday and Saturday 22nd and 23rd. Into those occurring in these last three days, 83 in all, Dr. Snow made close inquiry. In 68 of these cases the patients had all partaken of the pump water. In a coffee-shop in the neighbourhood, frequented by mechanics, and supplied with this water at their dinner, by the 6th of September ten of its frequenters had died of cholera. It was partaken of by a gentleman and his brother in Poland Street, both of whom died. It was partaken of by a lady and her niece, living at Hampstead, who sent daily for this water from

tracted the disease. (Gulstonian Lectures by Dr. Jenner, *Medical Times*, March 12th, 1853, p. 26.)

It is true in this case, the necessary link, that the first patient's fecal matters had been mixed with the well water, is wanting; and yet it seems to afford a probable explanation. Moreover, when we consider that the well and the cesspool are generally, in country places, in the same yard, and often close to one another, the admixture may sometimes occur through a porous soil, and in this manner occasionally explain the occurrence and spread of disease. Dr. Sutherland (*Report*, p. 19) remarks, "Much of the evil resulting from the close proximity of rivers and canals proceeds from the infiltration of the subsoil, and not merely from the aqueous vapour, which rises from the surface of the water itself." Speaking, moreover, of the Thames, he says, "Besides the evil resulting from imperfect declivity, the sewers are back watered at high tide, and actually become the means of distributing a polluted and unwholesome drainage through all their ramifications, by which the whole subsoil becomes infiltrated with impurities." It is also clear that any imperfection in a sewer, a broken brick, for instance, in connexion with a similar imperfection in a pump close by, may lead to the drinking of contaminated water by a whole neighbourhood. Now, I have remarked that such waters may lose all smell, and even appear to be quite clear, and yet be poisonous from matters held in solution. I remember the example of the common sewer of Fontainebleau, which passes through the park, which is of a gravelly and rocky soil, and which, at times, after about half a-mile's course as a riyulet, is in appearance perfectly clear, limpid, and inoffensive in odour.

The same fact is mentioned by the Committee on Dysentery of the American Medical Association (vol. x, p. 568). Speaking of Seconsia, in Calhoun County, it is remarked that the water in the streams was very low, emitting an unusual smell from a quantity of decayed fish having been thrown in it in July. A long time after *men* ceased to detect any offensive odour in it, some *horses* would not drink of it below the bridge, but hurried above it, and drank heartily of the stream there. The first case of dysentery occurred in this neighbourhood. Mr. Foote, in Drs. Arnott and Kaye's *Report on the Sanitary Condition of the Labouring Classes in and about the Metropolis*, remarks, "Two years ago a fever raged at Red Hill, which I attributed to the lodgment of the filth from privies, which I had removed at the time; the same thing occurred also at the Hyde, the fever prevailing there being of the typhoid type. Again, another medical officer writes that fever has been most prevalent in those courts and alleys where there is no free circulation of air, such, for instance, as Rosemary Lane, in which there are about twenty houses, in almost every one of which fever prevailed. The disease first made its appearance there in the month of August last; and, on my first visit, I found the intolerable nuisance of the overflowing of a cesspool, or privy, which continued for some time, there being no sewer to carry off the soil." (p. 4.) Now, a very little reflection explains how a sudden shower of rain would cause these fecal matters to be carried down in the neighbourhood of wells, so that a very contaminated and impure water came to be drunk, through which fecal matters might be absorbed in the system. Such may also be the case in Munich.

[To be continued.]

CASE OF INCIPIENT MANIA CURED BY LARGE DOSES OF OPIUM.

By PYE H. CHAVASSE, Esq., F.R.C.S., late President of the Queen's College Medico-Chirurgical Society, Birmingham.

[Read before the Society, Nov. 6th, 1855.]

I BRING forward the following case, to prove the value of very large doses of opium in certain cases of mania. The account is rather meagre, as it has been copied almost verbatim from short notes taken of the case.

CASE. Miss T., housekeeper, aged 41 years, of melancholic temperament, had amenorrhoea in the summer of 1854, which lasted three or four months; but, in the September of the same year, she became "regular", and continued so until I commenced attending her—that is to say, until and during the beginning of her attack of mania.

My attendance upon her commenced on the 13th of August, 1855. The following particulars of her previous history are all that I was able to glean. She had been a little nervous and eccentric, and had complained of occasional pains in her head, principally at the top and back of the head, and could not sleep well at night; otherwise, she was able to attend to her duties. Not feeling quite well, she returned to her father's house.

A few days before I was called to see her, decided symptoms of mania showed themselves. She became morose and taciturn, sitting for hours without speaking a word, and staring upon vacancy. When spoken to, she would answer only in monosyllables, and even then not always to the purpose. Her natural disposition was gentle, obliging, and affectionate. She could not sleep at night; she had not slept for many days. Although usually taciturn, she occasionally sung a few words, repeating the same over and over again, to a low and monotonous tune. It was necessary to watch her night and day; as, from her manner and gestures, there were indications that she meditated self-destruction. She occasionally became very violent, requiring two or three persons to hold her down. At these times, her father and friends urgently requested me to send her to a lunatic asylum. I begged them to have a little patience, and to let me try for a short time longer the plan of treatment I was then adopting, before sending her from home.

Treatment. I first gave two grains of solid opium and one grain of Castile soap, made into a pill, every night and morning, for two or three days. These doses had no effect in producing sleep; I therefore increased the dose of opium to three grains every night and morning. She continued these increased doses for several days. Still no sleep. I then enlarged the dose to four grains every night and morning. She now had snatches of sleep; but did not sleep more than half an hour or an hour in the day and night. I now gave her five grains of opium every night and morning; and with the happiest results. She now slept six or seven hours in the night without waking, and all symptoms of insanity left her. As soon as she could sleep, I gradually reduced the quantity of opium; so that in a short time, she only took two grains of opium every night; and, after a few weeks, I was able to discontinue it altogether. She is now, I am happy to say, quite well.

REMARKS. This is a deeply interesting and instructive case. It is my firm conviction, that if the opium had not been resorted to, and increased gradually to the large doses that were administered, she must have become the inmate of a lunatic asylum; or, possibly, might have come under the cognisance of a coroner's jury.

I bring this case forward to prove the value of *heroic* doses of opium in certain cases of mania. I say *heroic*, for as long as *moderate* doses were given, not the slightest benefit accrued. I think the plan a good one, to gradually increase the dose of opium until sleep be induced. By so doing, we feel our way, and give just as much as is absolutely necessary. I may state, that as long as she was taking *moderate* doses of opium, the bowels were constipated, requiring aperients; as soon as I resorted to *large* doses, the bowels acted without the necessity of administering a particle of opening medicine.

August 25th, 1856. A year has now elapsed, and I have the satisfaction of recording the fact, that she has not had the slightest return of maniacal symptoms. Since her illness, she has not been again "regular"; although, for two or three months after her recovery, I endeavoured to make her so, by giving her preparations of iron. She considers herself to be quite well.