

108, small. He was ordered to have ten grains of compound gamboge pill night and morning, and a senna draught every four hours.

He went on in the same way for the next three days. It was still necessary to give a purge every morning.

July 12th. It was noticed that the features were more drawn; the tongue was furred; the pulse full. The state of the back required the use of a water bed.

July 14th. About 7 p.m., he became quite insensible, with profuse perspiration, and yawning occasionally. The left pupil was contracted to about the size of a pin's head; the right natural. The pulse was not perceptible. There were no convulsions or distortion of the features. In this condition he remained for about an hour, and then died.

Post mortem examination, twenty hours after death, showed the muscles well developed and firm. The substance of the right hemisphere was much disorganised; upwards of twenty ounces of blood was found in this lateral ventricle. A clot was also found at the base of the brain, corresponding to the floor of the third ventricle. The convulsions were soft and pulpy. In the left hemisphere were remains of an apoplectic cyst, just external to the optic thalamus. The brain-substance around it had a yellowish tinge. The heart was somewhat hypertrophied. The kidneys were small and flabby; their surface was granular; the cortical portion was diminished in thickness.

ST. BARTHOLOMEW'S HOSPITAL.

PULSATING TUMOUR IN THE RIGHT THIGH—PROBABLY ANEURISM BY ANASTOMOSIS: TREATMENT BY REPEATED LIGATURE: RECOVERY.

Under the care of W. LAWRENCE, Esq.

[From Notes by W. CHIPPENDALE, Esq., House-Surgeon.]

C. A., aged 51, was admitted into Henry Ward on July 30th, 1856, having a pulsating tumour situated on the inner aspect of the right thigh, about two inches below Poupart's ligament.

He stated that the tumour appeared first about Christmas time, and that his attention was directed to it by hæmorrhage, which took place suddenly when walking. The tumour increased steadily in size, up to the time of his admission. There has been also a return of the hæmorrhage since he came into the Hospital.

He is an innkeeper, of temperate habits, and always enjoyed good health, till within the last nine months. He has purpurous spots about his body at various times. The conjunctivæ are slightly tinged, of a yellowish colour, and there is also a very perceptible enlargement of the liver. He has also had frequent hæmorrhage from his gums during the past twelve months.

October 18th. A ligature was placed tightly round the base of the tumour to-day, which it was necessary to draw with the greatest force that could be applied, in order to stop the pulsation which returned; very little hæmorrhage ensued.

October 25th. The ligature has cut its way around the base of the tumour to the depth of the third of an inch. The vitality of the centre is unimpaired. Mr. Lawrence applied another ligature to-day.

November 3rd. The supply of blood which appeared to have been wholly stopped by the last ligature, was not so, however. Two thirds of the tumour have separated all round, but the centre is still alive. Another ligature was applied.

November 8th. The tumour has now come away, leaving a healthy surface, which is closing in fast. The patient's general health is very much improved.

Original Communications.

ENCEPHALOID CANCER: REMOVAL BY OPERATION: LIGATURE OF THE CAROTID: RECOVERY.

By J. SEATON SMYTH, Esq., Liverpool.

WILLIAM PEACOCK, aged 48, presented himself at my public consultations about the close of July last, with a large, irregular, spherical tumour on the right side of the neck, extending from the lobe of the ear to within one and a half inch of the clavicle, projecting about three inches, of a dusky red colour, movable, and constantly attended with pain. His general appearance was cachectic, with the waxy-yellow,

anæmic complexion, and other peculiarities of the cancerous diathesis; the arcus senilis was very distinct; his general health was good, and his appetite unimpaired. His antecedent history may be epitomised as follows. Whilst young, his mother died of cancer. He is not aware of having had any serious illness before puberty. He married at twenty, and had been the father of twenty-one children. He is a ship-carpenter by trade, and had always led an active, temperate life. At the age of twenty-five he became subject to epileptic fits, which continued with more or less frequency and severity for thirteen years, and were then superseded by a violent pain in the frontal region and otorrhœa. These symptoms all disappeared in November 1856, when he met with an accident; viz., a blow from the shaft of a car, to which he refers the origin of the tumour. The swelling was at first very gradual, but had latterly increased very rapidly. Before seeking my advice, he had acted upon that of many intelligent practitioners; poultices and strong embrocations were alternately recommended. When under my care in August last, iodide and bromide of potassium, arsenic, etc., were employed in turns; and *sanguinaria*, so much praised of late, had also a fair trial, and proved itself, as in all cases where I have used it, inefficacious. Iodine ointment, though only smeared over the surface with no friction, seemed to favour its growth. The tumour steadily increased in prominence and circumference, without losing its primitive rounded form. Pain became so urgent that he was almost worn out for want of sleep, and earnestly requested an operation. The neighbouring glands were not increased in size, nor apparently contaminated. Nothing but the depth and extent of the tumour contraindicated its removal, especially as general prostration of the system had become more apparent for some days.

On August 29th the operation was performed under the influence of chloroform. The first incision extended from behind the ear to the clavicle, and the second transversely. The separation of the skin, with its subjacent tissue, from the mass, was then proceeded with as rapidly and carefully as possible. But the surrounding and deep-lying structures were so involved that, before completing the dissection, and in order to save the patient's life from excessive hæmorrhage, I was obliged to ligature the carotid close to its bifurcation with the subclavian. The difficulties of this proceeding were amply compensated for by the very trifling subsequent hæmorrhage.

However inviting, I shall not dwell longer upon the operation, but proceed rather to describe the position and appearance of the tumour. It rested upon the splenius, the sterno-hyoid, the omo-hyoid, and the scaleni muscles, bounded behind by the trapezius, above by the sterno-mastoid, which was implicated for a great part of its extent, and required removal.

The tumour—a beautiful specimen of encephaloid—weighed about two pounds: was of a dark mottled purple colour, placenta-like, spongy, and easily torn. Infusion of arnica was used internally and externally after the operation.

The patient progressed favourably until the fifth day, when there was a slight attack of paralysis, followed by a difficulty of deglutition, speech, and hearing. These, however, yielded, after a few days, to belladonna. He was able to sit up on the tenth day, to go out on the fourteenth, and to walk a distance of half a mile on the twenty-first, since then his recovery has been uninterrupted.

REMARKS. In my description of this case I have studied brevity, having scarcely glanced at the various steps of the operation; its difficulties must be experienced to be fully understood; but there are some points worth noticing; as, *e.g.*, the origin, primary and exciting, and other peculiarities. The exhibition of cancer wholly depends on preëxisting diathesis, this being always hereditary. I have rarely met with a case which could not be traced back on either the maternal or paternal side. Some few, certainly, have denied its existence through transmission. But in such cases I have found that the death of the parents had taken place when the patients interrogated were too young to have any recollection of the circumstance, or the cause of death was involved in obscurity and doubt. Mechanical injury, it may be observed, is almost invariably the *exciting* cause. Out of a very large number afflicted with this disease who have come under my notice, I do not know one to whom this remark does not apply. The age of this patient corresponds with that generally noticed as the most favourable for the exhibition of cancer, and the preference which it shews to the *right* side, as observed by Walshe and others, is confirmed in my experience. The presence of the arcus senilis has been noticed by me repeatedly in this

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 $3\frac{1}{2}$ 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, become 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