gives rise to the most offensive odour in the waters on that shore. For the very same reason, and owing to the proximity of the cesspools and the tanks, these are frequently mixed, and the water becomes very offensive. The tank water, for this reason, at Fort Cunningham, at last could not be drunk. As an evidence of the impregnation of the soil with faecal matters, it was remarked that the submarine soil where the *Thames* hulk ship was placed was contaminated, so that the odour evolved during its violent commotion in a gale of wind was well nigh intolerable. In the *Minutes of Examination of the Sanitary Condition of Ireland* (No. 1, art. 3), it is stated: "The water in nearly all the tanks was found impregnated with sulphuretted hydrogen gas, and was only used by the inmates for culinary purposes, the water for drinking being procured from other sources." And again, "The tanks were also too close to the houses and to the privies, and thus receive impurities which affect the water." (p. 74.) This state of things (although especially applicable to Rows 3 and 4 of the mechanics' houses, being nine dwellings on the glacia) is yet sufficient to prove the character of the water partaken of, at least for culinary purposes, in which manner much poison could have been transferred to the alimentary canal. It is not everything used for alimentation, or every vessel cleaned which is previously submitted to a temperature of 212°, at which temperature ferments are destroyed. And it is a peculiar property of such localities, when once encountering an epidemic influence, to develop the poisonous ferment very rapidly, as before shown, in reference to Surgeon Jones's opinion (*JOURNAL*, p. 704). Hence one reason why, after a time, an infected locality becomes very dangerous, and all more or less pass under its influence. In the *Boa Vista* fever, although the natives suffered but little at first, afterwards they did suffer, and then more severely than the whites—probably because the whole waters drunk by this town were so impregnated with faecal matters as to be too poisonous to be resisted. A very rainy season preceded this outbreak of fever.

I might have extended this paper in speaking of bad water in its effects in producing some other diseases; but, as Dr. Richardson has so ably done this already, in his paper on the Supply of Water in London, I feel this is unnecessary now. I must however say, that it is possible the effects of the same poison in water or as an emanation may produce occasionally a different effect. But this is no proof of their non-identity. It is quite possible, where two allied diseases coexist, that the one may be produced by the ingestion of the same poison in water, the other by its inspiration as an emanation; and thus we may in the end be able to carry this distinction one step further. If we judge from the effects of medicine taken by the mouth, and inspired as a gas, the difference is marked, varying often not only in degree, but also in kind. Ether, chloroform, and alcohol, inspired, will often produce, in very small quantities, a few drops, effects as powerful as ounces taken by the mouth. The effects, however, vary in kind. Carbonic acid is a well known instance. The tincture of sesquichloride of iron inspired will produce faintness and vomiting, which it will not do taken by the mouth. The powerful and almost celestial feelings of inspired opium and cannabis Indica are frequently not even in degree producible by any dose taken by the mouth. In like manner, it is not impossible that the same animal poison, according as it is inspired or taken by the mouth, may produce very different results.

Such are some of the grounds which lead me to believe that faecal matters may undergo in water changes such that, in their accidental ingestion by the mouth, they may prove injurious to the organism, and, either without further transformation or by additional changes taking place in the alimentary canal, prove the cause of disease. There is, however, this difficulty in tracing out these changes, that it is not always possible to prove to demonstration that the emanations from morbid faecal matters may not have likewise co-operated. Facts are often indistinctly recorded, where, with a little of Dr. Snow's perseverance and

exactitude, precise ground for accurate conclusions might have been given. This is especially the case when biased men are employed, or when the medical element is not sufficiently mixed in a board of commissioners, called upon to investigate the causes of epidemics. Much, however, I trust, has been stated to prove that faecal matters in solution often produce fatal results, in cholera, dysentery, diarrhoea, and typhoid fever, and probably also in yellow and other bad intermittent fevers. If this be so, then the removal of any sources of this infection, especially in the supply of water provided to communities, is imperatively called for, and should be enforced by the most stringent sanitary regulations.

CASE OF MOLLITIES OSSIIUM, INDUCING SUCH DEFORMITY OF THE PELVIS AS TO REQUIRE THE CÆSAREAN OPERATION.

By GEO. MURRAY HUMPHRY, Esq., Surgeon to Addenbrooke's Hospital, Cambridge.

[Read before the Cambridge and Huntingdon Branch, July 8th, 1856.]

ON February 28th, 1856, near midnight, Mr. Prince's assistant came for me to go to Sawston, to a case of difficult labour, in which the deformity of the pelvis was so great that Mr. Prince thought the Cæsarean operation would be required. I reached the house at about one on the morning of the 29th; found the patient, Mrs. Runham, a sallowish, dark, not very healthy looking person, aged 30 years; she was five feet in height, rather thin. I learnt that, five years ago, she had been delivered, without difficulty, of her first child, a full sized, well formed lad; Mr. Prince attending. Three years ago, she had given birth to a full sized child, under the auspices of a midwife, there being nothing particular about the labour. I saw the two children alive and well. Since the last confinement, she had never been quite so well as before; had complained of pains about the lower part of the back, round the hips, and had walked lame. The lameness had increased of late, obliging her to help herself about the room by bearing with her hands upon the table and chairs. It was uncertain how long she had been pregnant, but it was supposed about eight months. She did not know when the catamenia last appeared. She had been in labour all day; and, as a hand presented and some bleeding took place, Mr. Prince had been sent for in the evening. He found a hand and the funis in the vagina, also hemorrhage going on, though not to any great extent. The pains were slight—not so severe as they were said to have been before he saw her, though they do not appear ever to have been very severe. He found also that the pelvis was much deformed, so much that he feared delivery was impossible. He got away the presenting extremity, but could proceed no further with embryotomy; so he gave the patient two grains of opium, and sent over to Cambridge. This was at 10 p.m.

I made a careful examination of the exterior of the pelvis. The symphysis pubis was prominent; the horizontal rami passing almost directly backwards from it, instead of outwards and backwards. I thought also that the crest of the ilium formed too sharp a curve at its hinder part, being directed too suddenly inwards, instead of inwards and backwards; and that the hinder surface of the pelvis was consequently somewhat too flat. I could not make so sure of this deformity in the hinder part of the pelvic arch as of the one in front. There was no discoverable deformity in the spine or in the lower limbs. Passing my finger into the vagina, I soon encountered a hard mass, which I at first thought to be the head of the child, covered by some soft structure which I could not make out. More careful examination proved this to be the fore part of the sacrum bulging into the middle of the pelvis. There was no doubt about it, for I could distinguish its component vertebræ and intervertebral ridges. Nevertheless, I could move it a little, pushing it backwards with my finger, and again making it advance into the pelvis when I pressed my left

hand upon its dorsal aspect. Mr. Prince told me that he also had mistaken this projecting sacrum for the head of the child, when he first made an examination. The inferior aperture of the pelvis was evidently narrowed by the approximation of the tubera ischii and the coccyx; not enough, however, to present an insurmountable obstacle to delivery. But the upper aperture was so exceedingly contracted by the projection into it of the sacrum, and the pubic and ischiatic bones of either side, that it would scarcely admit more than three fingers. I could not distinctly feel the os uteri, which was situated entirely above the brim of the pelvis, though I could distinguish a bare bone (a clavicle, apparently) that appertained to the member which had been removed. The cord hung into the vagina. The abdomen was of unusual shape, a portion of the fœtus forming a marked prominence anteriorly. The woman was in a very low and somewhat drowsy state, partly, I supposed, under the influence of the opium that had been given; had no distinct labour pains after my arrival. There was not much hæmorrhage then going on.

I at once agreed with Mr. Prince that the only prospect of removing the child was afforded by the Cæsarean section; which, the woman assenting, I proceeded to perform as soon as she was under the influence of chloroform. The bladder being emptied, I made an incision through the linea alba, from a little above the navel to near the pubes; opened the abdominal cavity; was surprised at the thinness of the structure which then covered the child; made a sufficient division of this to enable me to withdraw the child, which presented with the nates towards the wound, and which was removed easily and carefully. Gentle traction of the cord brought away the placenta and membranes. Very little blood was lost. The omentum and a portion of small intestine appeared in front of the uterus; they were kept back by Mr. Prince and his assistant. I did not disturb the parts to make any further examination; and, as there was little or no bleeding, at once closed the wound by stitches through the linea alba and through the skin; then placed a fold of rag over the wound, and pinned a towel over the abdomen. The uterus appeared to have contracted.

A grain of opium was ordered to be given every four hours, if there were any pain. In the afternoon, I found her with frequently recurring vomiting and rapid pulse, evidently sinking; no pain; and there had been none since the operation. No tenderness, and no great fulness of abdomen. The contracted uterus distinctly perceptible. We gave carbonate of ammonia by the mouth, and beef-tea and brandy by the bowel. She died at 9 P.M., twenty hours after the operation.

On *post mortem* examination, we found no blood, and no traces of inflammation, in the abdomen. The uterus was contracted and healthy; but rupture had taken place before operation. The os uteri had, at the fore part, been detached from the vagina, and there was some ecchymosis round about. It was evident that part of the fœtus, passed through this, had protruded the peritoneum and cellular tissue, causing the peculiar conformation of the abdomen observed before the operation, and accounting for my coming upon the fœtus so quickly after opening the abdomen. The incision was chiefly through this peritoneal pouch, extending only a short distance into the uterus.

It must be observed that, owing to the shape of the pelvis, neither child nor uterus had been able to descend at all into its cavity; that the vagina must, therefore, have been elongated, and, being pressed against the inwardly projecting angles of the deformed upper aperture of the pelvis, must easily have given way under the contractions of the womb. Had those contractions continued, the child would, doubtless, soon have been driven through the peritoneum into the abdominal cavity.

The pelvis was deformed precisely as we had supposed, and as commonly happens in cases of this kind. The promontory of the sacrum projected very forwards, and the point of junction of the pubes and ischium, in the linea ilio-pectinea, was, on either side, pressed backwards into an angle pointing to the sacrum. The horizontal rami of

the pubic bones, being approximated towards one another, took a course almost directly backwards from the symphysis to the angles just mentioned. The apices of these angles were distant from each other $1\frac{1}{2}$ inch; that on the right side approached to within $1\frac{1}{2}$ inch, and that on the left to within $1\frac{1}{2}$ inch, of the most projecting part of the sacrum. Thus the shape of the superior aperture of the pelvis was completely altered, being rendered triradiate. In addition to these flexures in the pubic and ischiatic bones, the curvature at the hinder part of the iliac bones was much sharper than usual. It was partly by the increase of this curvature that the forward advance of the sacrum was permitted; but not entirely, for the sacro-iliac ligaments were somewhat less tight than usual, and permitted movement between the bones. I had been able to perceive this movement in the examination of the patient made before the operation; for, as above stated, when, with the left hand, I pressed upon the back of the sacrum, my right finger, in the vagina, was conscious of its promontory making a slight advance into the pelvis, and *vice versa*.

The bones of the pelvis were decidedly softer and more flexible than natural. They yielded a little under firm pressure; and the projecting angles of the pubic and iliac bones could also be altered by pressure. Indeed, it seemed as if the bones had been broken at this part in removing them, though that was carefully done.

The tubera ischii were approximated to one another, and the coccyx to the interval between them, owing to the curvature of the sacrum being preternaturally sharp. In dividing the lumbar part of the spine, I found that my knife had passed nearly through the body of a vertebra, when I thought it was cutting an intervertebral substance; and I found no difficulty in carrying the knife on through the arches and articulating processes. The saw passed quickly through the thigh bones, an inch below the lesser trochanters, indicating them to be less solid than natural. Removing one of them from the acetabulum, I found that the head, just external to the margin of the articular cartilage, yielded under slight pressure, as though the external laminae were reduced to extreme tenuity. This part was also of a pinkish colour; and the tissue on its exterior contained at the lower part more fat, and was more vascular than usual. A section showed the osseous laminae through the interior comparatively few and very delicate; the areolæ proportionately wide, and the medulla exceeding the natural standard in a proportionate degree. Nevertheless, although the disproportion between the medullary and the osseous tissue was so manifest, each of those tissues appeared to be healthy. The medulla was perhaps rather more vascular than usual; but it seemed to contain oil having the natural characters. The thin laminae of the cancelli also presented to the unassisted eye nothing unnatural; they had the ordinary colour, elasticity, etc.; and, when placed under the microscope, they were found to contain a sufficient number of well formed bone-cells, without appearance of oily matter in their substance. If there were any peculiarity in the tissue, it was, that the molecular structure was rather more apparent than it is commonly found to be. In the shaft of the femur, the cancelli had almost disappeared from the interior, the spaces left by them being filled with medulla. The outer wall was thin, and more or less porous: still it was hard, and resisted the point of the knife.

The ribs were more yielding than usual at her time of life. The bones of the arm and leg had their ordinary size, and resisted pretty strong attempts to break them. I did not examine these, but the condition of the vertebrae and thigh bones leaves little doubt of the disease having involved all the bones of the skeleton, though its effects were most marked in those of the pelvis.

The macerated bones, preserved in the Pathological Museum of the University, are very porous, fragile, and light; those of the pelvis, together with the two lower lumbar vertebrae, two intervertebral substances, and the fibro-cartilages of the pubic and sacro-iliac symphyses (dried), weighing only nine ounces. It is worthy of remark, that

they are, in many places, covered with small knotty outgrowths, indicative of that association of a tendency to osseous growth on the exterior, with atrophy of the interior, which is not uncommonly observed in the bones of old people, and under some other circumstances, and which has, I believe, been before observed in this disease.

The particulars of this case correspond with those given by Naegelé and others, the disease having taken place in the intervals between confinements, so as to render delivery impossible in a woman who had previously had easy labours.

The analysis of a portion of one of the vertebrae, kindly made by Mr. Liveing of St. John's College, shows it to contain 47.8 per cent. of earthy matter, instead of about 65, which is the usual proportion. This agrees with the analysis of bones, in similar cases, by various chemists, given in Simon's *Chemistry*, all of which confirm the generally received opinion, that the bones in mollities are not only subject to interstitial absorption and fatty degeneration, but that they undergo also an alteration in their composition, the chief feature of which consists in a deficiency of earthy matter. An account of the histological changes that sometimes occur may be found in Wedl's *Rudiments of Pathological Histology*, translated for the Sydenham Society by George Busk, F.R.S. (p. 237).

ON ECZEMA INFANTILE.

By ERASMUS WILSON, Esq., F.R.S.

[Read before the Annual Meeting of the British Medical Association, July 31st, 1856.]

[Concluded from page 762.]

I HAVE remarked, that the symptoms of internal disorder are but trifling at the commencement of the disease, and far from being severe during its course; they attract little of the attention of the mother of the child, or of the medical man. The great, the urgent symptom of the whole, is the teasing, the intense, the violent itching; sometimes the itching is constant with frequent exacerbations, sometimes there are intervals of repose, which are apt to be disturbed by any change of temperature, and then a violent attack of pruritus recommences; but the crowning suffering of all occurs at night; the child is often frantic with itching, it scratches with all its force, digging its little nails into the flesh, while the blood and ichor run down in streams. At last, worn out with suffering and exhaustion the child sleeps, probably to be awaked again several times in the night, by a repetition of the same agony. This constant suffering naturally wears upon the child's powers, and, added to the malassimilation, brings about that state of atrophy which I have previously described. But it is nevertheless remarkable how little the strength and spirits of the child are affected by these desperate paroxysms of suffering. In the morning, after a night of distress, the little thing is fresh and lively, eager for its food, and ready for the battle of the day; while the nurse or mother is languid and powerless from watching and anxiety.

Not unfrequently in eczema infantile, the mucous membrane of the mouth and nose, of the air-tubes and lungs, and of the alimentary canal, participates in the disease, and is either affected simultaneously with the skin, or takes a vicarious part. The affection of the alimentary canal gives rise to diarrhoea, and the production of mucus in large quantities, and sometimes of coagulated lymph. The affection of the mucous membrane of the mouth and nose is shown by redness, sometimes aphthae and augmented secretion; and the eczematous congestion of the mucous membrane of the air-tubes produces bronchitis in various degrees, accompanied with hoarseness from the thickening of the mucous lining of the larynx, and an excessive accumulation of phlegm throughout the lungs. This latter symptom is one which is calculated to give us some anxiety, and requires dexterous management; but it is less severe than common bronchitis, and is often as sudden in getting well,

as in its attack. When the mucous membrane of the mouth and air passages is affected, hoarseness is a conspicuous and striking feature of the complaint; the hoarse cry is unmistakable, and is sometimes the first and only sign of the congestion of the mucous membrane. It is a sign diagnostic of the congestion of the respiratory mucous membrane, as is whiteness of the eye of general anæmia.

In the treatment of eczema infantile, the three great principles which I have on every occasion advocated as the law of treatment of cutaneous disease, namely, *elimination*, *restoration of power*, and *alleviation of local distress*, are to be put in force, but with a change in their order. Elimination must always go first: in eczema infantile I would place alleviation of local distress, second; and restoration of power, third. The principle of treatment, the indication for treatment, being thus settled, let us consider the means.

For *elimination*, the remedy is calomel or grey powder. I prefer the former. One grain of calomel rubbed down with one grain of white sugar, or sugar of milk, is the dose for the youngest infant; for a child a year old, a grain and a half; for a child two years old, two grains. Of course this dose is modified according to the apparent strength of the child in the first instance, and in accordance with the action of the medicine in the second; the object to be attained being such a dose as will produce an efficient relief to the alimentary canal, and moreover such an amount of relief as shall act as a diversion to the morbid secreting action taking place in the skin—in other words, as shall divert the morbid secretions of the skin into their more natural and proper channel, the alimentary canal. For this purpose, calomel excels every other medicine; and from its small bulk it is convenient for exhibition, merely requiring to be dropped into the child's mouth. It stimulates the liver to an increased flow of bile, and in children it always acts most kindly on the alimentary canal. Again, a free action of the alimentary canal being secured, all probability of *repulsion* of the eruption by the remedies required for the second indication is at an end, and the mother's and nurse's alarm lest the disease should be *driven in* are set at rest. A free clearance of the stomach and bowels is therefore a primary, a necessary step, at the very commencement of the treatment. After the first dose, the calomel may be repeated according to circumstances; once a week, twice a week, every other night for a few times, even every night for two or three nights if it be absolutely necessary. In my own practice, I usually find once a week sufficient; and I am guided to the repetition of the dose by the state of the little patient. If there be any feverishness, fractiousness, irritability of temper, any increase of pruritus, inaction of the bowels, morbid secretion of the bowels, or threatened congestion of the mucous membrane of the air-tubes, then the calomel powder is to be administered at once without hesitation and without delay. The mother or nurse soon learns the moment for a powder, and, whatever prejudices they may have to the name of calomel, they are always ready to resort to it after they have once seen its action in this disease. As I have already said, I have no objection to the mercury with chalk, beyond the fact of its being more bulky and less agreeable to swallow, while it certainly possesses no recommendation which can render it superior to calomel. Sometimes I find one or two grains of nitrate of potash an useful addition to the calomel and sugar.

Having disposed of the first indication, and cleared out of the system any acrid matters that might be rebellious and capable of exciting irritation and feverishness; having moreover unloaded the blood-vessels of some of their watery and solvent elements by the same remedy; we may now have recourse to our means of *alleviating the local distress*, in other words, of soothing and healing the eruption, subduing the pruritus, and arresting the morbid discharge. We can do all this by the benzoated oxyde of zinc ointment * rubbed down with spirits of wine, in the proportion

* For the formula for preparing this ointment, see the "Pharmaceutical Journal", No. 5, for November, 1854.