men and sugar often passing off together. He also speaks of the urine in these cases being sometimes opalescent or milky. Does it not seem that the elimination of sugar, albumen, and fat with the urine may be sometimes so related as to be dependent on one and the same cause, this cause being a defective assimilative action?

The hour informs me that I have no longer a right to detain you here, and it now only remains for me to perform the grateful duty of tendering my thanks to you, Sir,—to you, gentlemen, for the indulgent attention that you have been pleased to bestow on these Lectures. In the remarks that I have been afforded the opportunity of making here, I have striven to engage you upon topics that I hoped might prove worthy your consideration. It has fallen to my lot to have been drawn by circumstances into the special study of physiology—a study which cannot but be conceded as forming one of the principal supports upon which the science of Medicine is based. Philosophers have extricated chemistry, astronomy, and such-like sciences, from the depth of mysticism and uncertainty; but unfortunately for Medicine, the science of physiology still remains in its early age. Unfortunately, also, for the science of physiology, it is almost exclusively upon those engaged in the practice of an arduous profession that the labour is thrown of contributing to its advance. It is undeniably a drawback for physiology that there are not greater facilities offered, or a greater encouragement given towards prosecuting its researches. It may be said,—certainly in our own country,—that scraps of time stolen from a busy professional life, often at a considerable pecuniary sacrifice, form the only source for promoting its advance. But physiology is advancing, and there is reason to anticipate that in due course of time it will be placed upon as satisfactory a footing as either of the other sciences. There is nothing, indeed, inscrutable about the study of life. We must recognise here, as elsewhere, the existence of a force acting upon matter, and closely investigate its manifestations. I can have no doubt that there reigns in my body a force which does not exist in the mere earthy matter over which I am standing. The manner, however, in which this force is but too often dragged forward is a great abuse of it; for, if at every step we are to fall back upon the term “vitality” as an expression of the cause of phenomena that may be observed, instead of seeking for an intelligible explanation, vitality only cripples, shackles, fetters our progress, and, used in such a manner, constitutes an excuse for the idle and the ignorant.

In conclusion, Sir, I would fain hope that I now hand back to you untarnished the trust that you reposed in me. Whatever the result, the effort has certainly not been wanting to render myself worthy the honour of having been selected to deliver these Lectures, placed at your disposal by the ancient bequest of Dr. Gulston.

ON A CASE OF OBTURATOR HERNIA.

OPERATION.

By WALTER COULSON, Esq., F.R.C.S.

I AM induced to bring this case before the profession as a contribution to surgical literature, thinking it may interest from the very rare occurrence of protrusion of the intestine through the obturator foramen, and from the still greater rarity of recorded instances in which operations have been performed for the relief of this condition. In cases of intestinal obstruction, where this obstruction cannot be referred to hernia or malignant disease, the question arises whether the surgeon is justified in resorting to abdominal section after having tried all ordinary measures, and where a fatal termination seems otherwise inevitable.

Mrs. S—, a widow, aged about sixty, mother of nine or ten children, was seized with constipation and sickness on Nov. 13th, 1861. On Nov. 15th she applied to Mr. Bolton, of Claremont-square, who, after making an examination for hernia, and ascertaining that there was no peritonitis, gave calomel and colocynth. Subsequently various purgatives were tried, together with turpentine enemata, and the last brought away a small quantity of faecal matter. On Nov. 24th, Mr. Goddard, of Old-street-road, saw her in consultation; and on Nov. 27th, Mr. Coulson, sen., also saw the case with Mr. Bolton. It was supposed that some obstruction existed in the large intestine,

and I was called in with the idea that it might be necessary to operate for artificial anus.

Nov. 28th.—When I first saw her she was lying on her back, her countenance anxious and expressive of suffering; but her face was not pinched as in collapse, and the voice was good; skin warm and moist; pulse about 100, and weak; tongue coated in centre, but moist and clean at edges. She suffered at intervals of five or ten minutes from great pain in the abdomen, and she had recently vomited a considerable quantity of distinctly stercoraceous matter.

On examination, the abdomen was found large, but not particularly tense; the resistance to palpation and the resonance on percussion were equable over its entire extent; and the colon did not appear to have any considerable amount of gaseous or fluid contents. Pressure occasioned no pain, but induced a vigorous peristaltic action of the small intestine, the coils of which could be distinctly traced through the parietes of the abdomen, greatly distended, occupying every part, and very marked in inguinal and colic, as well as in umbilical region. This action recurred at frequent intervals, independently of manipulation, and was always accompanied with great pain. This condition did not last long, not more than half a minute, and when the peristaltic motion ceased she was comparatively free from pain. A careful examination of the different apertures through which hernia might protrude was made, and the vagina was explored, but no tumour could be detected, and on forced coughing there was neither impulse nor pain at any particular point. My diagnosis was, no strangulation, but obstruction about the middle of the ileum, situated in some part of the pelvis, and I conjectured that it was caused by a band of old adhesion crossing over and compressing the bowel. The considerations on which I founded this opinion were as follows:—1st. All the symptoms pointed to intestinal obstruction, but it was concluded that it was not in the large intestine, but that it existed at some distance above the ileo-caecal valve, since it was evident that distension of the whole length of the small intestine to the degree seen to exist when the bowel was thrown into peristaltic action would have produced extreme distension of the abdomen, and would have rendered its walls much more tense than was actually the case. 2nd. The duration of the obstruction before the access of stercoraceous vomiting, the absence of decided collapse, with the fact that there was no pain on pressure at any part, made me certain that true strangulation of the bowel could not exist. 3rd. As this peristaltic action was distinctly seen to extend equally over the entire abdomen without arrest at any one spot, it was inferred that the obstruction was somewhere in the pelvis.

As to the nature of this obstruction, a guess only could be made, and the most probable conjecture seemed to be the presence of a band of lymph compressing bowel, or invagination of some portion of intestine. The question of immediate operative interference was discussed; but I did not consider that I should be justified in resorting to so hazardous a measure without first passing a long tube, and ascertaining by the injection of a large quantity of water that no stricture existed in the large intestine. Having placed the patient on her left side, I proceeded to pass the tube, but was unable at first to pass it more than three inches. Finding this difficulty, I requested Mr. Bolton gently to inject the warm water so as to distend the bowel, and in this way I was enabled by degrees to pass the tube beyond the sigmoid flexure. When the rectum and descending colon were filled, the patient was placed on her back, and the injection of fluid continued. After filling the transverse colon, she was turned on to her right side. In this way the whole colon was filled with warm water. This could be distinctly traced by percussion, and it displaced to some extent by pressure the contents of the small intestine, inducing stercoraceous vomiting, but apparently none of the fluid passed the ileo-caecal valve. This occasioned considerable exhaustion, and the only result was to bring away a small quantity of faecal matter. It was resolved to keep up the strength by nutrient enemata, and operate next day if no relief was obtained.

Nov. 29th.—Five P.M.: Though somewhat weaker, the patient was in much the same state as on the previous day. There had been no action of the bowels, and the pain and vomiting had continued. She had had some sleep during the night. The secretion of urine was scanty. It was evident that unless some relief was speedily obtained she must die. It was accordingly determined, in consultation with Mr. Bolton (of Claremont-square), Mr. Goddard (of Old-street-road), and Dr. Broadbent, that an exploratory incision should be made in the abdomen. A catheter was first passed, and an ounce of urine withdrawn. Chloroform having been administered, an incision was made in

the median line, from an inch below the umbilicus downwards for a distance of three inches. After dividing the linea alba and the transversalis fascia, an opening was made in the peritoneum only large enough to admit the finger. On doing this the cæcum was found empty, but the distended intestine rendered it impossible to find the seat of obstruction without enlarging the incision. This was accordingly done, and the distended small intestine was brought into view, and was followed for some distance without meeting with the obstruction. Accordingly I passed my hand down towards the cæcum and encountered a portion of empty intestine. This was traced coil by coil until it reached the obturator foramen in the left side, in which a knuckle of intestine was found firmly impacted. Some difficulty was at first experienced in withdrawing it from the canal; but this was at last effected by continued and cautious traction. On examining the portion that had been impacted, it was found to consist of about two inches of the ileum, a good deal congested, but not so much so as might have been anticipated. The intestine was now replaced, and the wound was brought together by six sutures and strips of adhesive strapping. She recovered quickly from the effects of the chloroform, and there seemed to be little shock from the operation. A small quantity of brandy was given, and she was ordered twenty drops of tincture of opium, and a drachm of tincture of opium was administered with a little beef-tea as an enema. At half past eight P.M., when I again saw her, she seemed a good deal exhausted, and the bowels had acted twice copiously. The exhaustion was partly due to the rapid discharge of the contents of the intestines and to the exertion attendant on the attempt of clumsy nurses to make a large chamber utensil answer the purpose of a bed-pan. She also complained of pain in the abdomen. Brandy was ordered to be given freely. Mr. Bolton saw her again in the course of the evening, but it was evident that there was no chance of saving her life. The bowels continued to act violently, and she died at twenty minutes past two A.M., Nov. 30th.

A case remarkably similar to this is given by Mr. Hilton in the thirty-first volume of the "Medico-Chirurgical Transactions." The hernia was detected only after the abdomen had been opened, and the patient died a few hours after the operation. The question arises, Ought the nature of the case to have been recognised in this instance? I believe it was impossible. Femoral or inguinal hernia not existing, a strict examination was made with especial reference to obturator and other uncommon varieties of rupture. No swelling could be made out; there was no distinguishable difference between the two sides; and there was no pain or tenderness to serve as an indication. This is explained by the fact that there was incarceration of intestine, but no true strangulation; had this existed, all the symptoms would have been more severe and the progress of the case more rapid, and the bowel would not have resumed its action so soon. In no case of intestinal obstruction should gastrotomy be performed without first exploring the rectum and colon with the long tube. It was satisfactory to find that the operation had not robbed the poor woman of any chance of life, as she must inevitably have died had it not been done. Her death was but little accelerated by the operation—scarcely any blood was lost, and she suffered very little shock,—but it was certainly hastened by the incompetence of friends who acted as nurses, and the exhaustion caused by the rapid emptying of the intestine.

St. James's-place, St. James's-street, Aug. 1863.

ON

ELECTRICITY AS THE PRINCIPLE WHICH CAUSES THE VITALITY AND COAGULATING PROPERTY OF THE BLOOD.

By R. C. SHETTLÉ, M.D., Shaftesbury.

No. II.

IN my last paper I endeavoured to show the mode in which electricity is generated in the lungs, taken up by the iron of the blood, and conveyed by the same channel to the systemic capillaries. I must now seek to make it clear why the electricity is taken up in the pulmonary, and discharged again in the systemic, capillaries; for which purpose it will be necessary to enter somewhat upon the differences which characterize the two sets of vessels.

The structure of the lungs is admirably adapted for the exposure of the blood in the capillary to the action of the air. "Between the atmospheric air in the cells and the blood in these vessels nothing intervenes but the thin membrane of the cells and capillaries and the delicate epithelial lining of the former; and the exposure of the blood to the air is the more complete, because the folds of membrane between contiguous cells, and often the spaces between the walls of the same, contain only a single layer of capillaries, both sides of which are thus at once exposed to the air."—(Kirkes.) And, apparently, we could have no more perfect method of exposing the blood, and the iron it contains, to the action of the air, so as to enable it to carry off any electricity developed. It is more than probable that the delicate membrane of which the air-cells are composed is but imperfectly supplied with nerves, as compared with more sensitive structures of the body. And it must be remembered that it is not from the blood which has just been regenerated that the lungs derive their nutrient vessels, such being sent to them from another source; and the venous blood which is sent through the pulmonary arteries to the lungs is transmitted for the express purpose of being regenerated, immediately after the completion of which process, it passes into the pulmonary veins, and, having entered those vessels, it is no longer subjected to the action of, or in any way affects, the nerves. So that let the supply of nervous influence to the lung-cells be as perfect as to any other portion of the body, it could only have influence over the blood sent to the lungs through their nutrient vessels. We have every right to assume that although the quantity of iron contained in the blood may and does vary at different times, and especially under disease, yet that the amount existing in the globules at any given moment is equally distributed, and that each globule has sufficient iron in itself to attract an amount of electricity capable of effecting a sensible change in itself with regard to colour (of which I think I have given proof already). The quantity of iron in the globules being equal, the amount of electricity also must be equal, such being regulated partly by the amount of attracting force, and partly by the amount generated. And so long as such a state of affairs remains, the globules have no power of exerting any attracting influence over each other, at any rate under ordinary circumstances; but when the stimulating fluid has been pumped into the systemic capillaries, an immediate change in their state is effected under the chemical action which takes place there. No matter what organ or tissue is supplied, chemical changes are at once set up, fresh electricity must be developed under a form of electrolysis—that is, the electricity that is in excess or plus, must attract the electricity that is minus, under the influence of which the various secretions are effected, and new matter is deposited; whilst the blood-globule, deprived of its stimulating property, becomes dark and passes into the vein; for having once lost its electricity during its passage through the capillary, it cannot regain such, its place in the circulation being at once occupied by globule after globule, in which corresponding changes are ever going on. In this way the vital energies of the parts are maintained; and we have no difficulty in assigning a reason for the deposition of matter to form bone in one place, of brain or nerve-tissue in a second, or of muscular tissue in a third, and so on throughout the system generally, these processes all being under the influence of the laws which determine electric action, and differing only in degree from the action of electro-plating—the systemic capillary acting as one electrode, probable the negative; the secreting tissue or membrane supplied with its nerve-filament acting as the positive electrode. The regularity of these various processes under such influences (influences which are not imaginary, but must exist) cannot create surprise, for they must be carried on with all their regularity so long as the body continues in a healthy state. The various senses may also be entirely amenable to the same laws, and may have their origin in peculiar modifications of electric action.

I now hope to be able to show the true nature of inflammation and its analogy to coagulation of the blood, which is clearly, as Mr. Hunter asserted, "an operation of life;" with this difference, however, that an attack of inflammation is attended with a morbid increase of the operation. If we apply an irritant—say a mustard plaster—to some portion of the surface of the body, we produce in the part redness, heat, pain, and, if we continue the process further, swelling also. Let us see what takes place under irritation. More blood is drawn into the capillaries, the immediate effect of which must be to increase the redness of the part. The secondary effect is to increase chemical action. Consequently a larger amount of electricity, or, in other words, vital energy or nervous power, must be de-